

Meridian Mail Modular Option GP

Installation and Maintenance Guide

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About this document

This document describes installation and maintenance procedures to be followed by the technician or technical support engineer who installs and/or maintains Meridian Mail, or by the Meridian Mail system administrator.

This document shows you how to install and configure a Meridian Mail system and how to connect cables between the switch and Meridian Mail. It also shows you how to expand a Meridian Mail system.

The “Troubleshooting” section provides tables for fast identification of a problem and procedures for problem correction.

The “Hardware maintenance” section describes how to install those hardware parts that can be replaced in the field. The parts are

- printed circuit packs (PCP)
- power converter assembly
- hard disk subsystem
- cartridge tape unit

The following parts are repaired in the factory, so they are not covered:

- Meridian Mail backplane assembly
- cable harnesses

It is assumed that you have a functioning switch and either

- do not have Meridian Mail, or
- have Meridian Mail and are adding one or more nodes

There is also a chapter on how to program a Northern Telecom switch to recognize newly added loops and/or ports, and to communicate command and status information to Meridian Mail

If your Meridian Mail Modular Option GP system is equipped with the Other Integrations option, refer to the following for information on troubleshooting the PBX integration unit:

- *VoiceBridge Installation Procedures for AT&T switches* (NTP 555-7001-216)
- *VoiceBridge Installation Procedures for ROLM switches* (NTP 555-7001-217)
- *VoiceBridge Installation Procedures for NEC switches* (NTP 555-7001-218).

Tools required

Have the following tools at hand for general maintenance purposes:

Tool	Description
Slotted screwdriver	small, 4.76 mm (3/16-inch)
Carpenter's level	
Phillips screwdriver	small, stubby
Phillips screwdriver	medium
Socket wrenches	6.35, 7.94, and 14.29 mm (1/4, 5/16 and 9/16 inch)
Multimeter	
9 – 25-pin adapter cable	NT product number NT4R60AA (for monitoring node expansion)
ESD wrist strap	

Chapter 1: Preparing for installation

Ensure that the site meets the requirements listed in the *Site and Installation Planning Guide* (NTP 555-7051-200).

Tools required

Have the following tools at hand before beginning the installation:

Tool	Description
Slotted screwdriver	small, 4.76 mm (3/16 inch)
Wire strippers	
Wire cutters	
BIX connector tool	NT product number GYB1X16
Carpenter's level	
Phillips screwdriver	small, medium
Socket wrenches	6.35, 7.94, and 14.29 mm (1/4, 5/16, and 9/16 inch)
Hammer	
Flashlight	
9-25-pin adapter cable	NT product number NT4R60AA (for monitoring node expansion)
ESD (electro-static discharge) wrist strap	

Other documents referenced in this document

Installation procedures for some of the components of this system require you to refer to additional documentation. For example, installation of the Universal Equipment Modules asks you to refer to the Meridian 1 Installation procedures.

1-2 Preparing for installation

Documents referenced in this manual are listed below in Table 1-1.

Table 1-1
Referenced documents and NTP numbers

Reference document name	NTP number
<i>SL-1 System Installation Procedures</i>	553-3001-210
<i>Circuit Card Installation and Testing</i>	553-3001-211
<i>Meridian Mail Master Index</i>	555-7001-000
<i>System Installation and Modification Guide</i>	555-7001-215
<i>Meridian Mail System Administration Guide</i>	555-7001-301
<i>Meridian Mail System Administration Guide for Multi-Customer Systems</i>	555-7001-302
<i>System Administration Tools</i>	555-7001-305
<i>Meridian Mail Maintenance Messages (SEERS) Guide</i>	555-7001-510
<i>Meridian Mail Modular Option GP Site and Installation Planning Guide</i>	555-7051-200

Chapter 2: Meridian Mail assembly overview

This chapter summarizes the steps required to install a Meridian Mail system or expand an existing system by adding a node (refer to Table 2-1). Because Meridian Mail is housed in a Universal Equipment Module (UEM), you will need the appropriate Meridian 1 documentation to install this part of the system. The manuals you need to install the UEM are listed in Chapter 4, “Installing a column or a module.”

Before starting the installation, make sure the site meets the requirements listed in the *Site and Installation Planning Guide*, NTP 555-7051-200.

Hardware must be installed in the proper order. The chapters in this document have been arranged in the order in which they are needed. When you have finished the installation steps in one chapter, continue with the next.

The only exception to this statement is when installing a new system, in which case you skip Chapter 8, “Diagnostics and software expansion”.

Whenever possible, install external power equipment before installing a Meridian Mail column.

Note: System installation is to be performed by qualified personnel only.



WARNING
Risk of electrocution

Northern Telecom requires that a licensed electrician make all connections needed at an electrical service panel.

Table 2-1
Installation task list

Procedure	Reference
Unpack and inspect equipment	Chapter 3
If necessary, install Meridian Mail columns, including power and grounding, and earthquake protection. Install Meridian Mail modules.	Chapter 4
Install the power supplies and disks	Chapter 5
Prepare for system migration if necessary.	Chapter 6
Install the printed circuit packs and associated cables	Chapter 7
Perform diagnostics and software expansion for node expansion	Chapter 8
Install the Meridian Mail to PBX interface	Chapter 9
Connect Meridian Mail to AT&T, ROLM, or NEC PBXs.	For Voice Bridge installation procedures for the following switches, refer to these NTPs: AT&T: 555-7001-216 ROLM: 555-7001-217 NEC: 555-7001-218
Install and configure peripheral devices	Chapter 10
Configuring the PBX/DMS	Chapter 11
Start up, configure, and acceptance test Meridian Mail	Chapter 12

Chapter 3: Unpacking and inspecting the Meridian Mail equipment

Procedure 3-1 describes the steps required to unpack and inspect the Meridian Mail equipment to make sure all the components are present.

**CAUTION****Risk of equipment damage**

Wear an anti-static wrist strap when handling components. As an additional safety measure, handle components by the edges and, whenever possible, with the loosened packing material still around the component.

Procedure 3-1**Unpacking and inspecting the Meridian Mail equipment**

- 1 If equipment is mounted on a shipping pallet, follow unpacking instructions provided with the packaging material, and remove equipment from the pallet.
- 2 Cut any remaining strapping and/or tape.
- 3 Remove transport protection devices and loosen any stretch-wrap film (if provided) from equipment.

The stretch-wrap film can be removed at your own discretion. However, it is advisable to keep the film wrapped loosely around the equipment during handling.

Retain the packaging material in case any equipment needs to be returned.

- 4 Remove all hardware components that were shipped in separate boxes, and check for damage such as loose parts, broken edges, and any other obvious damage to the components.

3-2 Unpacking and inspecting the Meridian Mail equipment

Components usually shipped in separate boxes include documentation, disk and tape units, power supply, cables, administration terminals, printer, and spares.

- 5 Check all items delivered against the order form and the packing slip. Report any errors or omissions to your supplier.
See "Appendix A" in Meridian Mail Modular Option GP Site and Installation Planning Guide (NTP 555-7051-200) for a list of part numbers.
- 6 Repack the hardware components in their boxes until you are ready to install the system.
- 7 Place the module(s) in a safe, dry location in the equipment room close to the final location.
- 8 Remove the preinstalled printed circuit packs from each new module, following Procedure 3-2, and check for any loose parts, broken edges, and any other obvious damage to the component.



CAUTION

Risk of equipment malfunction

Take care to return each card to the module and the slot where it came from. Although the voice processor cards in the VP/GSP slots appear to be identical, they have different switch settings from each other. It is strongly recommended that each be returned to its own slot.

- 9 Inspect the remaining equipment for the following:
 - damaged connectors or connectors containing foreign material
 - defects in the molded plastic covers
 - any loose items remaining in the shipping cartons
 - any obvious damage to the equipment
- 10 Using a flashlight, make sure there are no broken pins or shrouds on the backplane connectors.
Report any damage or defects to the supplier.

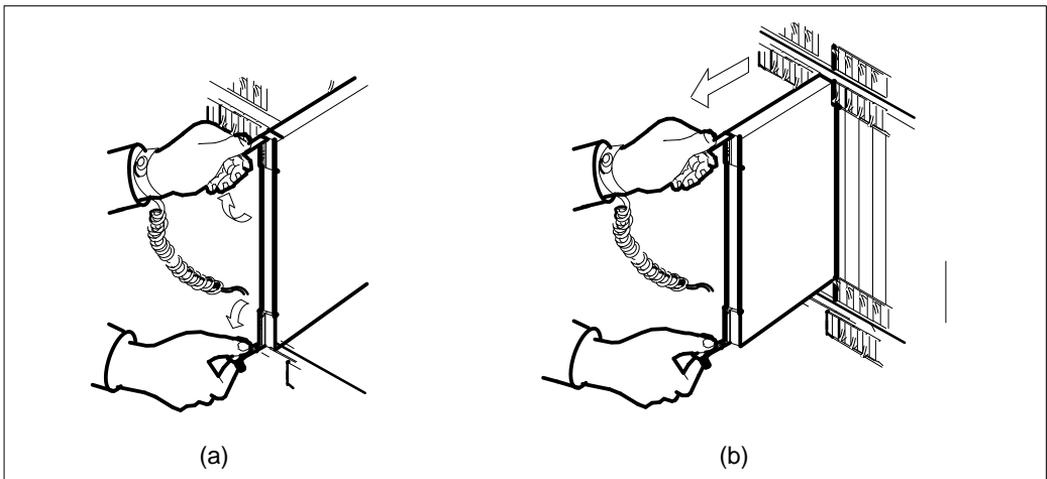
Procedure 3-2

Removing and reinstalling printed circuit packs

- 1 Open the ejectors on the pack, and gently pull the pack towards you until it clears the shelf. (See Figure 3-1).

- 2 Check the pack to make sure it is not bent and there are no loose parts.
- 3 Replace the pack in the module, aligning it with the slots in the module, ejectors still in the open position, and gently sliding the pack back into the module.
- 4 Seat and lock the pack:
 - a. Push on the upper and lower edges of the front of the pack to ensure that the pack is fully seated in the module.
 - b. Close the ejectors.

Figure 3-1
Printed circuit pack removal



Chapter 4: Installing a column or a module

The procedure for installing an equipment column or module for Meridian Mail is identical to the procedure for installing a Meridian 1/SL-1 column or module.

Since the relevant SL-1 documents were supplied with your Meridian Mail system, the information is not repeated here. Instead, references are given to the SL-1 documents.

Which procedures you need to follow depends on whether you are installing a new column or adding modules to a new or existing column.

Installing a column

Procedure	Reference
Install Meridian Mail columns	<i>SL-1 System Installation Procedures</i> (NTP 553-3001-210); Chapter: "Introduction," section: "Equipment handling precautions" except for the part on "Data disks"
Install earthquake protection, if needed	<i>SL-1 System Installation Procedures</i> (NTP 553-3001-210); Chapter: "Installing earthquake bracing"
Position and level the equipment	<i>SL-1 System Installation Procedures</i> (NTP 553-3001-210); Chapter: "Positioning and levelling equipment"
Install DC grounding and power	<i>SL-1 System Installation Procedures</i> (NTP 553-3001-210); Chapter "Installing DC power"

Installing a module

Procedure	Reference
Install each Meridian Mail module	<p><i>SL-1 System Installation Procedures</i> (NTP 553-3001-210); Chapter: "Adding a module to a column"</p> <p>Note 1: Ignore the references to overlay 37.</p> <p>Note 2: You cannot set power supply switches ON as instructed at the end of "Adding a module to a column", because you have not yet installed the power supplies.</p>

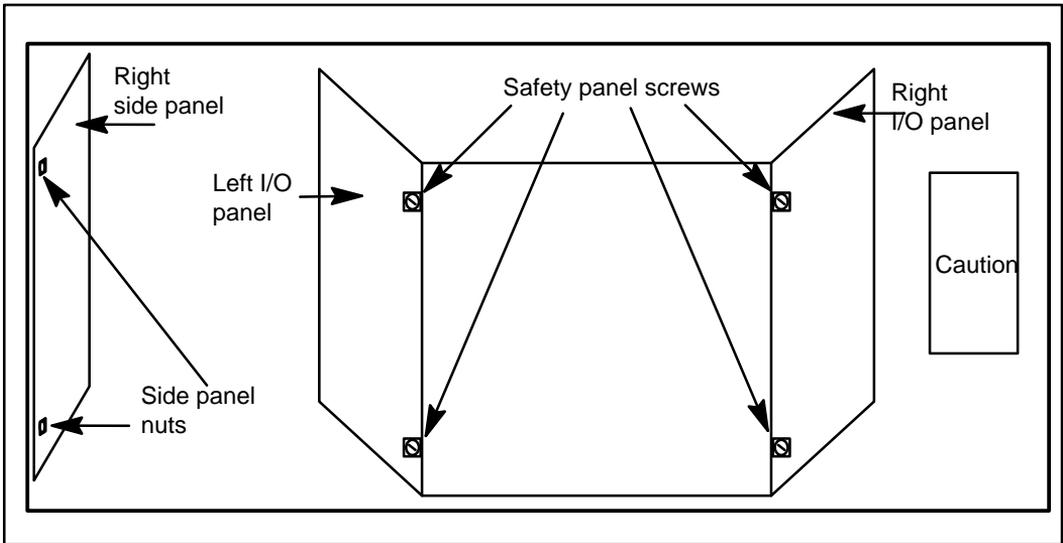
Module doors, side panel, and safety panel

To install power supplies, disk drives, and tape drives, and to check the printed circuit packs, you need to open the front door of the module. To install cables between modules and between Meridian Mail and the switch, you need to open the rear door of the module. For this reason, you should leave the module doors open after installing the module.

You also need to remove the right side panel (as seen from the front) from each new module, and from each module on top of which you are adding a module. See Figure 4-1 for the location of the side panel nuts at the rear of the module. There are similarly located nuts at the front. Remove all four nuts to free the side panel.

Remove the rear safety panel from each new module by turning the screws one-quarter turn anti-clockwise. See Figure 4-1 for the location of the screws at the rear of the module.

Figure 4-1
Safety panel and side panel screw locations—rear of module



Identifying nodes

Nodes are identified by a label at the right side of the front of the case.

They are numbered node 1 to node 5, or as many nodes as you have in your system.

If you are expanding an existing system by adding a new node, the node is shipped with labels that allow you to choose the node number.

Complete the installation of all nodes of your Meridian Mail system before proceeding to the next chapter.

Chapter 5: Inspecting and installing the power supplies and mass storage units

Power supplies

The following procedures describe the installation of the power supplies.



WARNING
Personal Hazard

Ensure that power supply switches are OFF before installing power supplies.

Location of power supplies

Each node needs a power supply in the left Common Equipment Power Supply (CEPS) slot.

Procedure 5-1
Installing the DCEPS

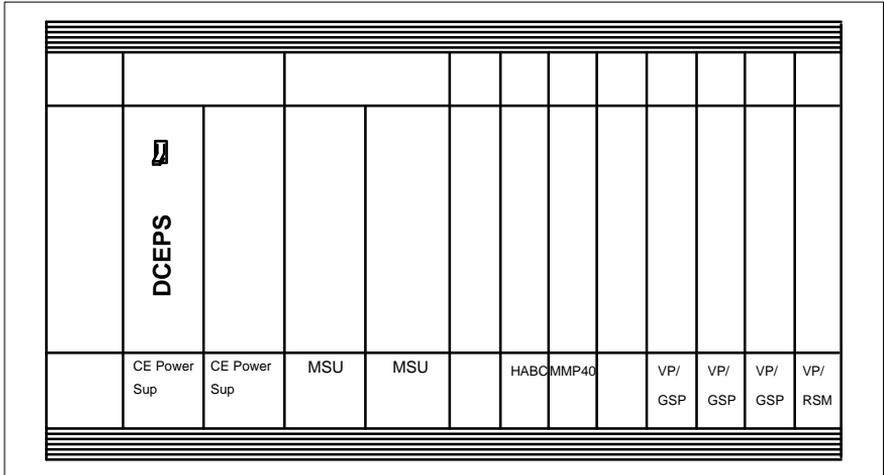
- 1 Verify that the switches on the DC Common Equipment Power Supply (DCEPS) are off.
- 2 Open the ejectors and align the power supply with the left CEPS slot in the module. Refer to Figure 5-1.
- 3 Gently slide the power supply into the module, pushing on the upper and lower edges to ensure that it is fully seated in the module.
- 4 Close the ejectors.
- 5 Briefly turn on the switches on the DCEPS, and verify that the LED at the top of each DCEPS lights.

5-2 Inspecting and installing the power supplies and mass storage units

- a. If they do, turn power off again.
- b. If they do not, follow the procedures in the chapter “Troubleshooting startup problems” in Chapter 13 of this manual.

Figure 5-1

Location of DCEPS

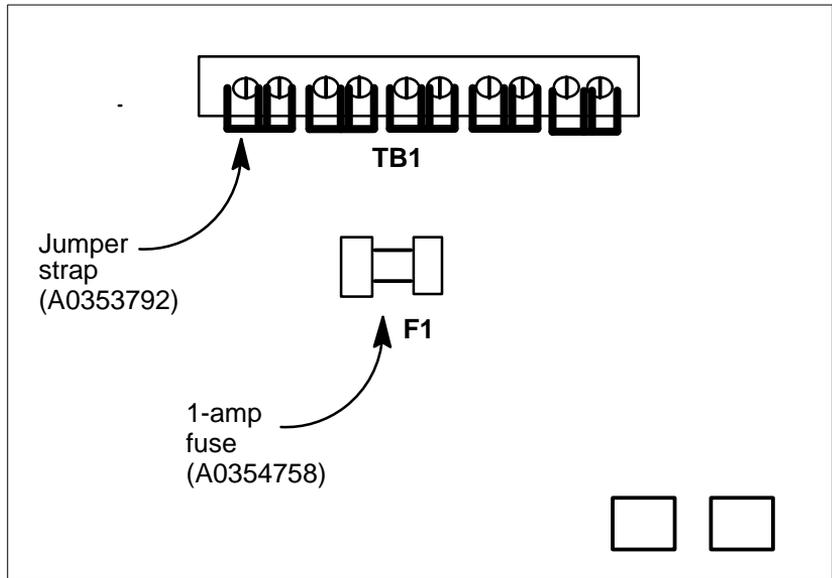


Verifying the backplane configuration

Verify the backplane configuration of each new module as follows:

- 1 Verify that the power to the Meridian Mail module is off. Use the switches on the DCEPSs shown in Figure 5-1.
- 2 Ensure that the five jumper straps (A0353782) are installed on TB1 on the backplane. See Figure 5-2.
- 3 Ensure that a 1-amp PCB mount fuse (A0354758) is installed in the F1 fuse holder on the backplane. This is located just under TB1.

Figure 5-2
Installation of fuse and straps on the backplane



Installing the disk/tape unit in node 1

The tape drive for a prime node is installed in an MSU cage along with a disk drive.

Procedure 5-2 Installing the disk/tape unit in node 1

- 1 Check the jumpers and terminators on the tape unit.

For the Archive Viper tape drive, this involves removing any jumpers on the header in positions ID1 and ID2 and inserting a jumper on the header in position ID0 as shown in Figures 5-15 and 5-16.

For the Tandberg TDC4220, this involves inserting jumpers on the header in position 0 and Parity as shown in Figures 5-17 and 5-18.

Terminating resistors must be installed in the Meridian Mail module prime node.

- 2 Go to the disk installation procedures to continue with installation.

Overview of disk drives

The disk units used in Meridian Mail are shown in Table 5-1. Each Meridian Mail disk drive is mounted in a Mass Storage Unit (MSU) cage. The NT designation and the A0 product code applies to the drive in its cage, and not to a “bare” drive.

The tape drive for a prime node is installed in an MSU cage along with the primary disk drive.

Table 5-1
Disk and disk/tape assemblies

Assembly number/ common product code (CPC)	Title of assembly	Models included	Individual disk drive CPC
NT6D47BA / A0393283	300-Mbyte Hard disk unit	Maxtor LXT340SY	A0351371
		Seagate ST3390N	A0602257
NT6D47DA / A0398354	300-Mbyte disk and 250-Mbyte tape	Seagate ST5660	A0616840
		Seagate ST3390N	A0602257
		Maxtor LXT340SY	A0351371
NT6D48AA / A0365883	600-Mbyte Hard disk module	Maxtor XT8760S	A0354197
NT6D48DA / A0398355	1-Gbytedisk and 250-Mbyte tape	DEC DSP3105 or DSP3107	A0383809
		Seagate ST11200N	
		Maxtor MXT1240	
		Seagate ST31230N	A0616792
		DEC DSP3107	
NT6D48BA / A0393284	1.2-Gbyte Hard disk unit	DEC DSP3105 or DSP3107	A0383809
		Seagate ST11200N	
		Seagate MXT11200N	
		DEC DSP3107	A0616792
		Seagate ST31230N	
NT6D48EA / A0629940	1.0-Gbyte disk and 2.5-Gbyte tape	Seagate ST31230N	A0616792

Disk or disk/tape unit installation

The following procedure shows you how to install the disk or disk/tape unit in a Meridian Mail node. Nodes have different combinations of disk, tape, and disk/tape units according to whether they are shadowed and whether they are prime or voice.

Table 5-2
Node combinations: shadowed/unshadowed

Shadowed	prime	L) primary disk mounted with tape R) secondary disk
	voice	L) primary disk R) secondary disk
Unshadowed	prime	L) primary disk mounted with tape
	voice	L) primary disk

where "L" = Left, and "R" = Right



CAUTION
Risk of equipment damage

Use extreme care and wear a grounding strap when installing the disk unit. It is susceptible to damage from rough or improper handling and from electrostatic discharge.

Upgrading from an unshadowed to a shadowed node is covered in Chapter 15 of this manual.

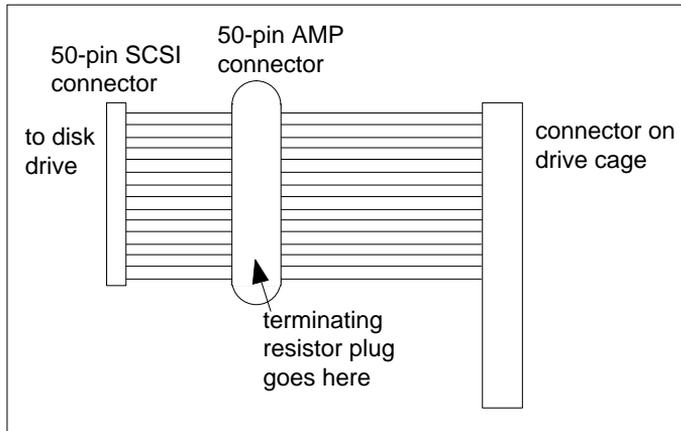
Note 1: There are slight variations on these disk drives, so your disk drive may not look exactly like the ones pictured here (even though the model number is the same).

Note 2: Each disk or disk/tape unit is labelled to show the node number for which it is configured. The label for a disk for a shadowed node also indicates whether the drive is primary or secondary. The single drive for an unshadowed node is a primary drive. Be sure to check the label and install the disk or disk/tape unit into the correct position in the correct node.

Note 3: The disk drives must have their 'onboard' terminator resistors removed. Primary drives (except node 1), which require terminating resistors, have an external resistor plug installed on the 50-pin AMP connector on the SCSI cable between the disk drive and the back of the drive cage. See Figure 5-3.

Note 4: Ensure that the tape drive in Modular Option GP systems is terminated.

Figure 5-3
SCSI cable external terminating resistor plug



Procedure 5-3
Installing the disk or disk/tape unit

- 1 Ensure that the disk or disk/tape unit has the correct PEC including suffix. It must be the same as the one on your packing slip.
- 2 Confirm the jumpers and terminators on the disk drive according to Figures 5-5 to 5-13. See also Table 5-3.

Note: If you are installing the disk/tape unit in node 1, you should have already checked the SCSI ID of the associated tape drive. See Procedure 5-2 for details.

Table 5-3
Disk slots, SCSI IDs, and terminators

Disk	MSU slot	SCSI ID	Terminators
Primary (Node 1)	Left	0 – no SCSI ID jumpers	None
Primary node (2, 3, 4...) other than node 1.	Left	0 – no SCSI ID jumpers	On SCSI cable AMP connector
Secondary drive in a shadowed node	Right	2 – SCSI ID jumper on A1 indicating SCSI ID=2	Off

- 3 Verify that the power to the Meridian Mail module is off. Use the switches on the DCEPSs shown in Figure 5-1.
- 4 Open the locking levers and align the disk unit with the appropriate MSU slot in the module (refer to Figure 5-4 for MSU slot location). Gently slide the unit into the slot pushing on the upper and lower edges to ensure that the unit is fully seated in the module.
- 5 Close the locking levers.

For further information on disk shadowing, see Chapter 12, Procedure 12-2, “Enabling/disabling disk shadowing.”

Figure 5-4
MSU slot location

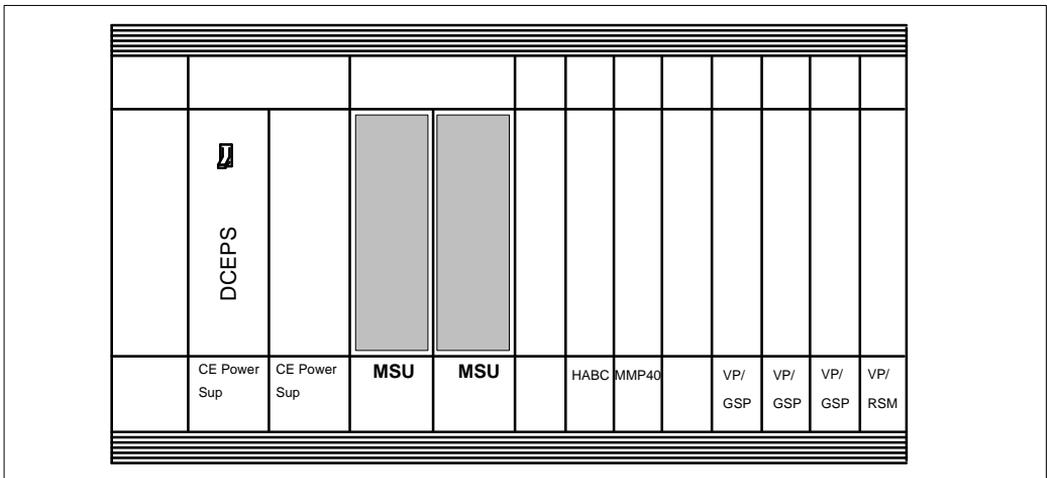


Figure 5-5
300-Mbyte Seagate ST3390N disk drive connectors and jumper settings

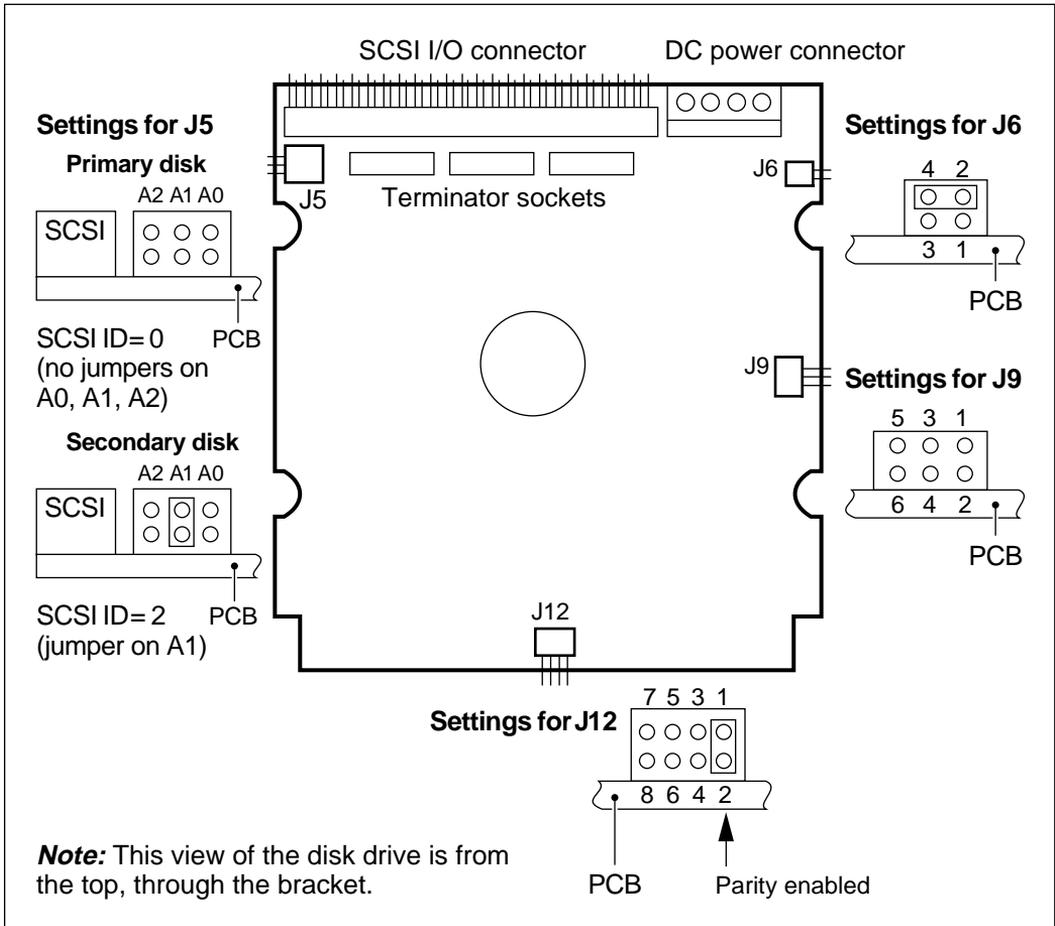


Figure 5-6
300-Mbyte Maxtor LXT340SY disk drive connectors and jumper settings

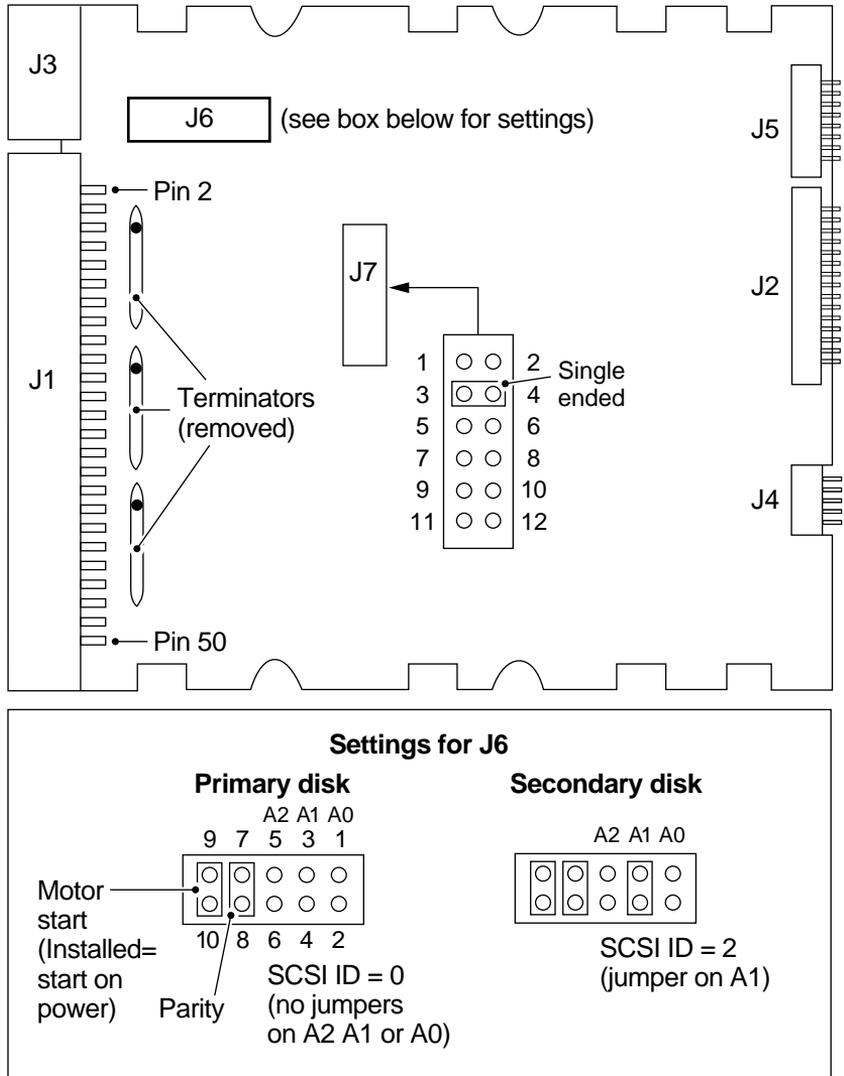
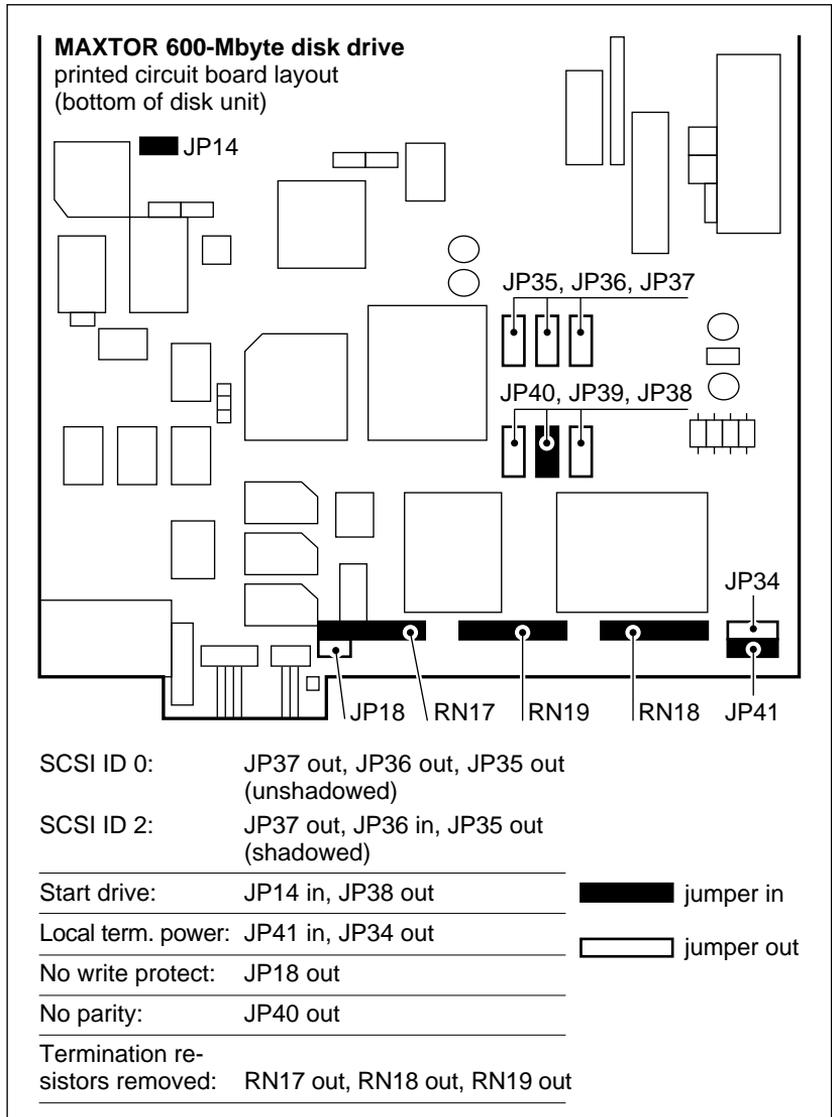
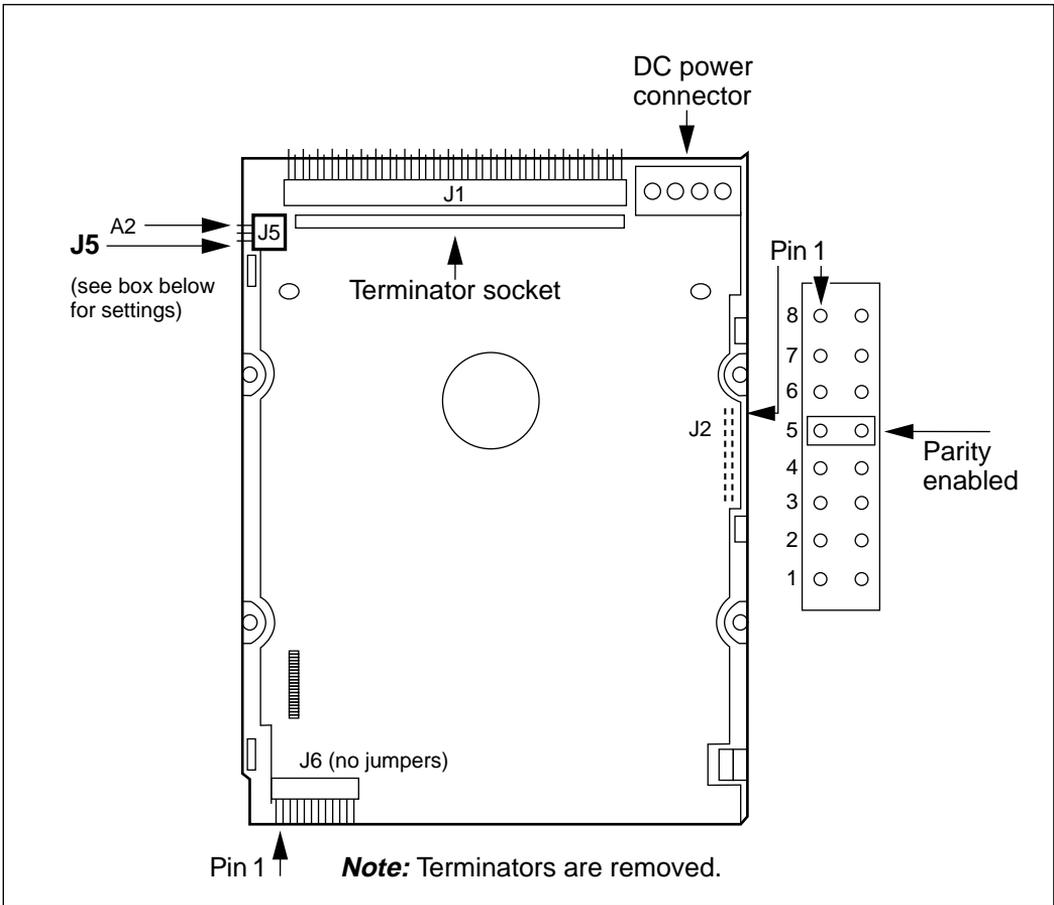


Figure 5-7
600-Mbyte Maxtor/Sequel XT8760S disk drive connectors and jumper settings



Note: Parity should be enabled. Set JP40 to “in.”

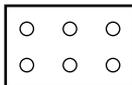
Figure 5-8
1.0-Gbyte Seagate ST11200 disk drive connectors and jumper settings



Settings for J5

Primary disk

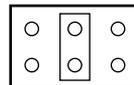
A2 A1 A0



2-by-3 header
 SCSI ID=0
 (no jumpers)

Secondary disk

A2 A1 A0



2-by-3 header
 SCSI ID=2
 (jumper on A1)

Figure 5-9
1.0-Gbyte Maxtor MXT1240 disk drive connectors and jumper settings

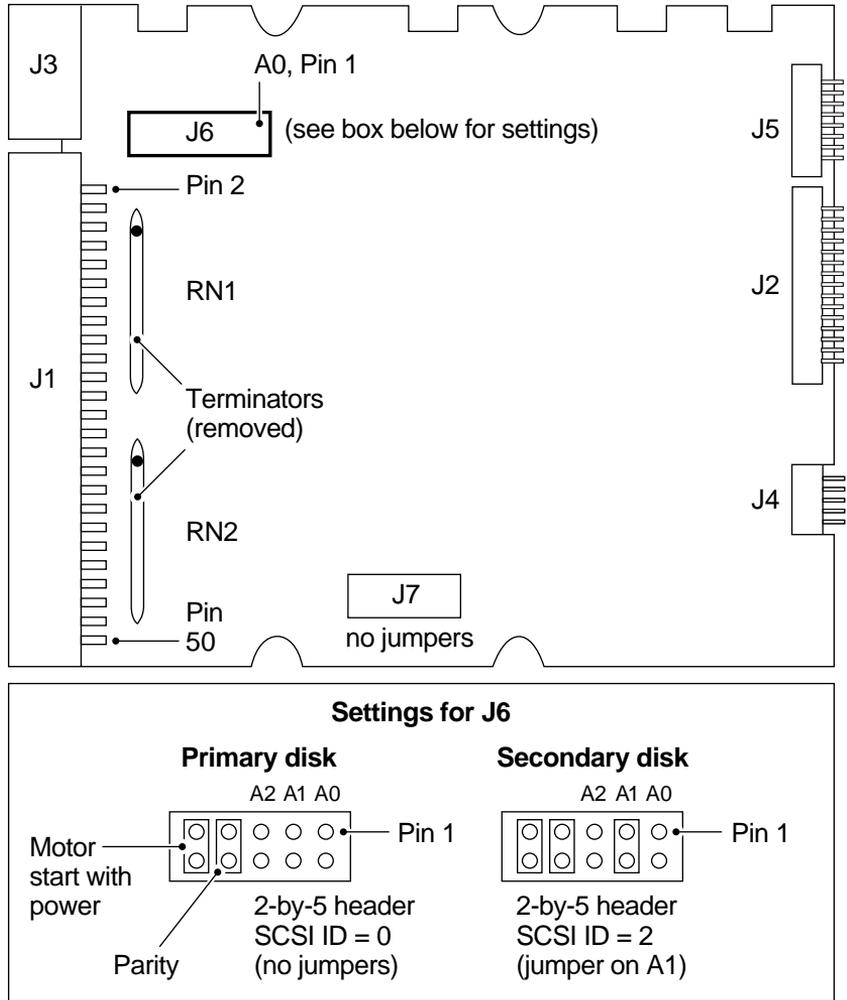


Figure 5-10
1.0-Gbyte DSP3107L disk drive connectors and jumper settings

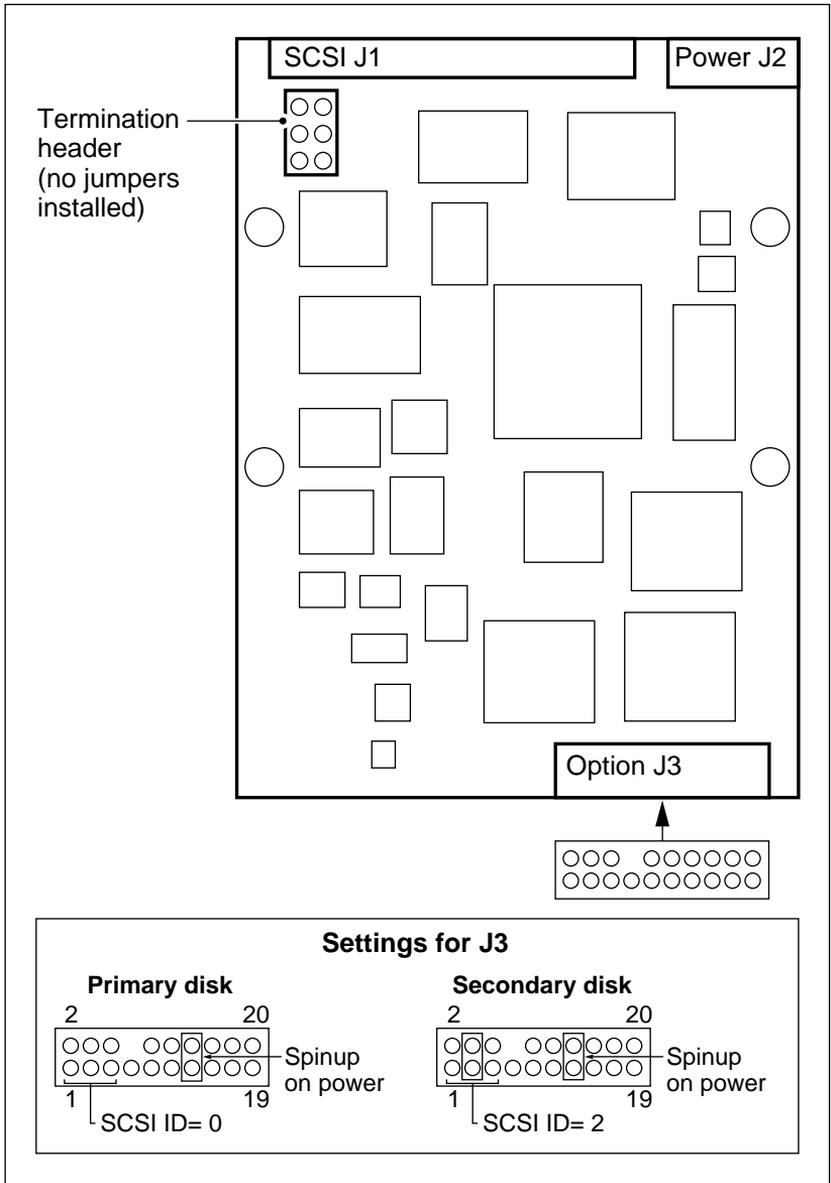


Figure 5-11
600-Mbyte Maxtor/Sequel XT8760SH disk drive connectors and jumper settings

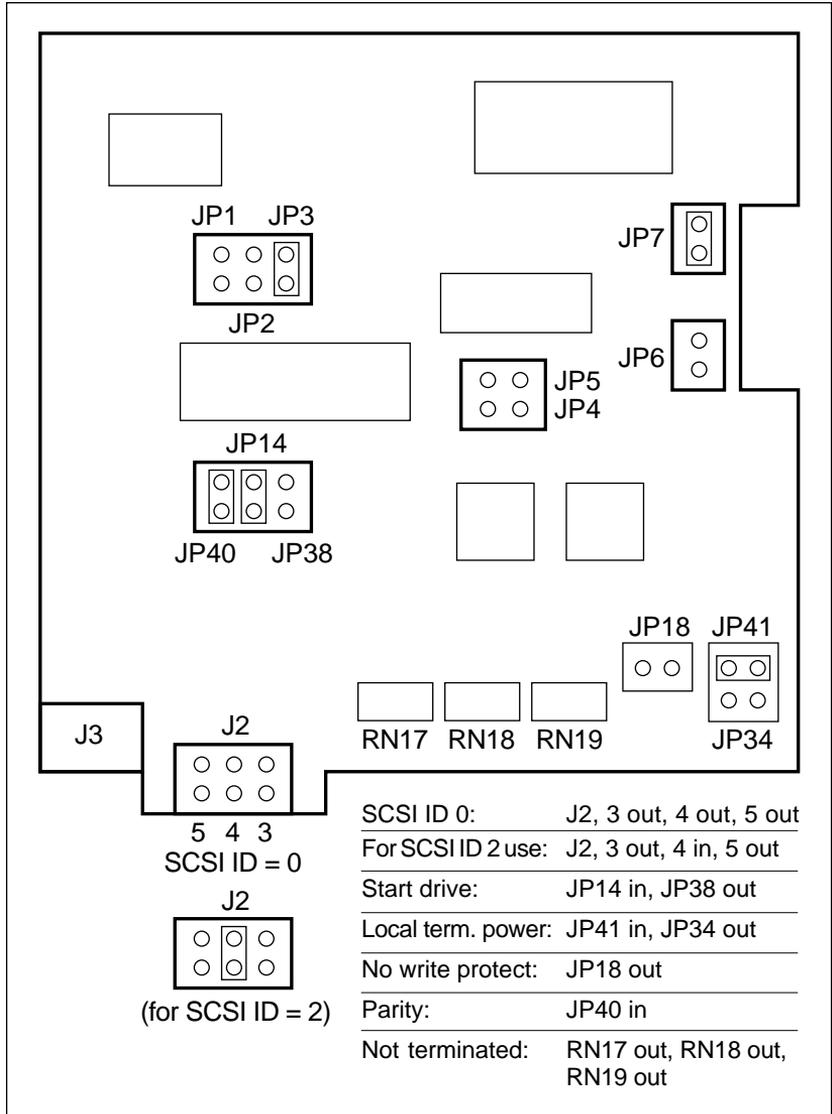


Figure 5-12
Seagate Hawk 2LP disk drive (ST31230N & ST32430N) connectors and jumper settings

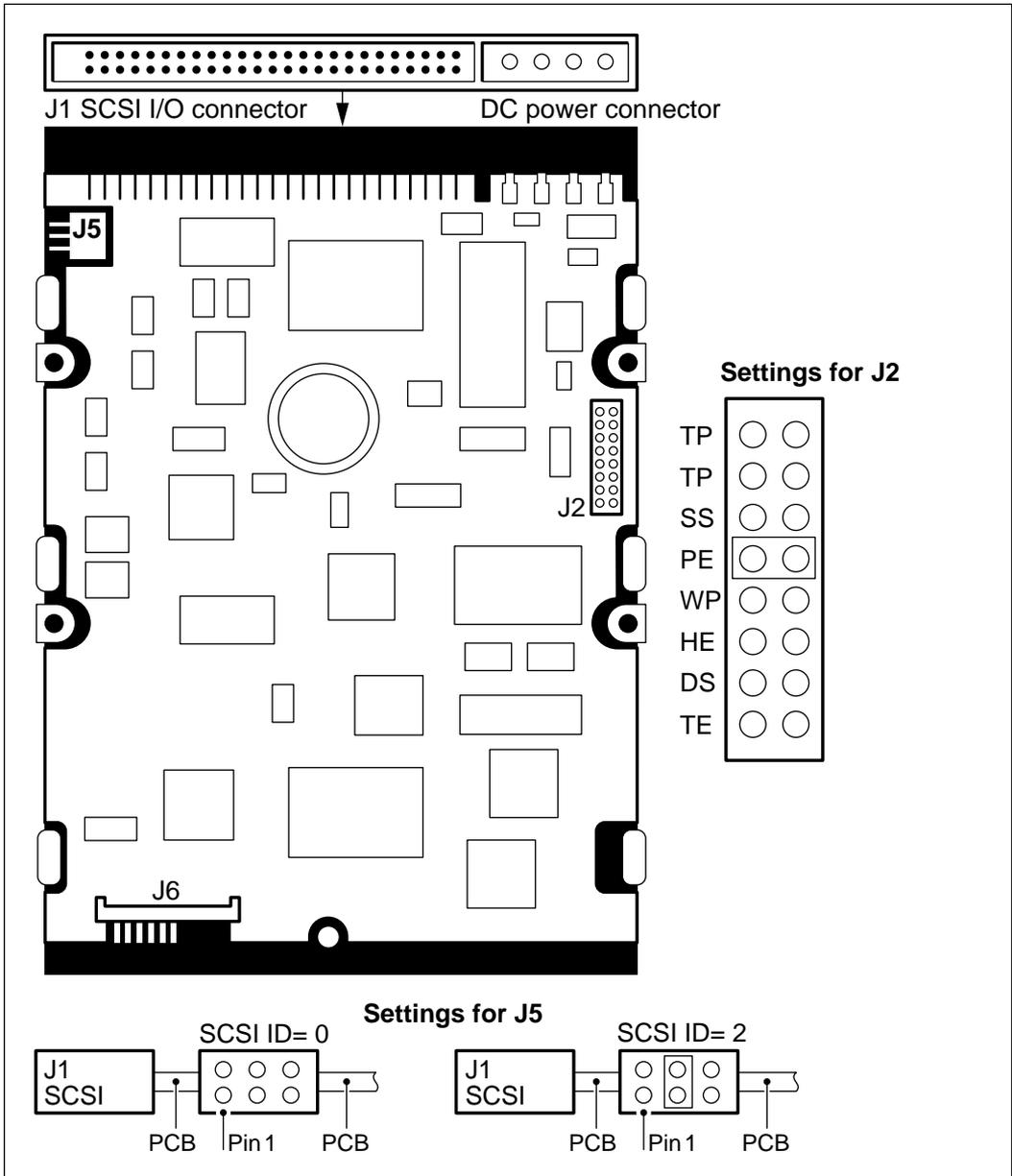


Figure 5-13
300-Mbyte Seagate ST4376N disk drive connectors and jumper settings

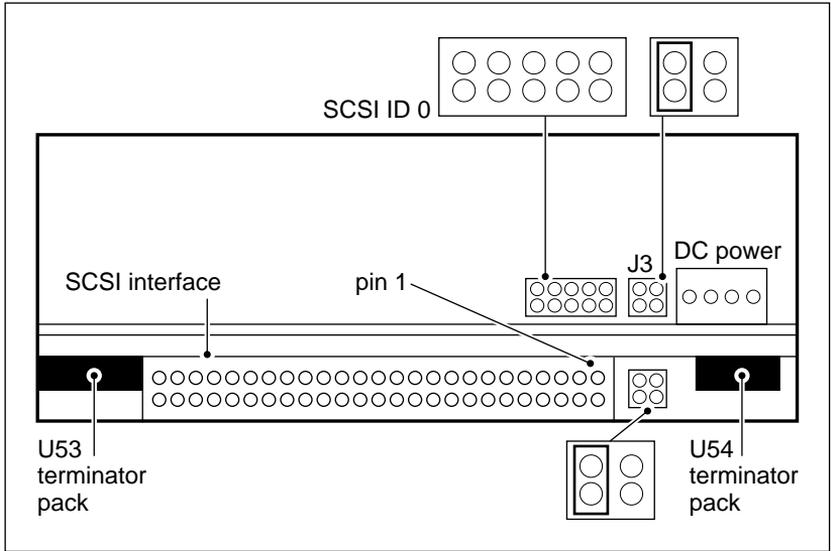
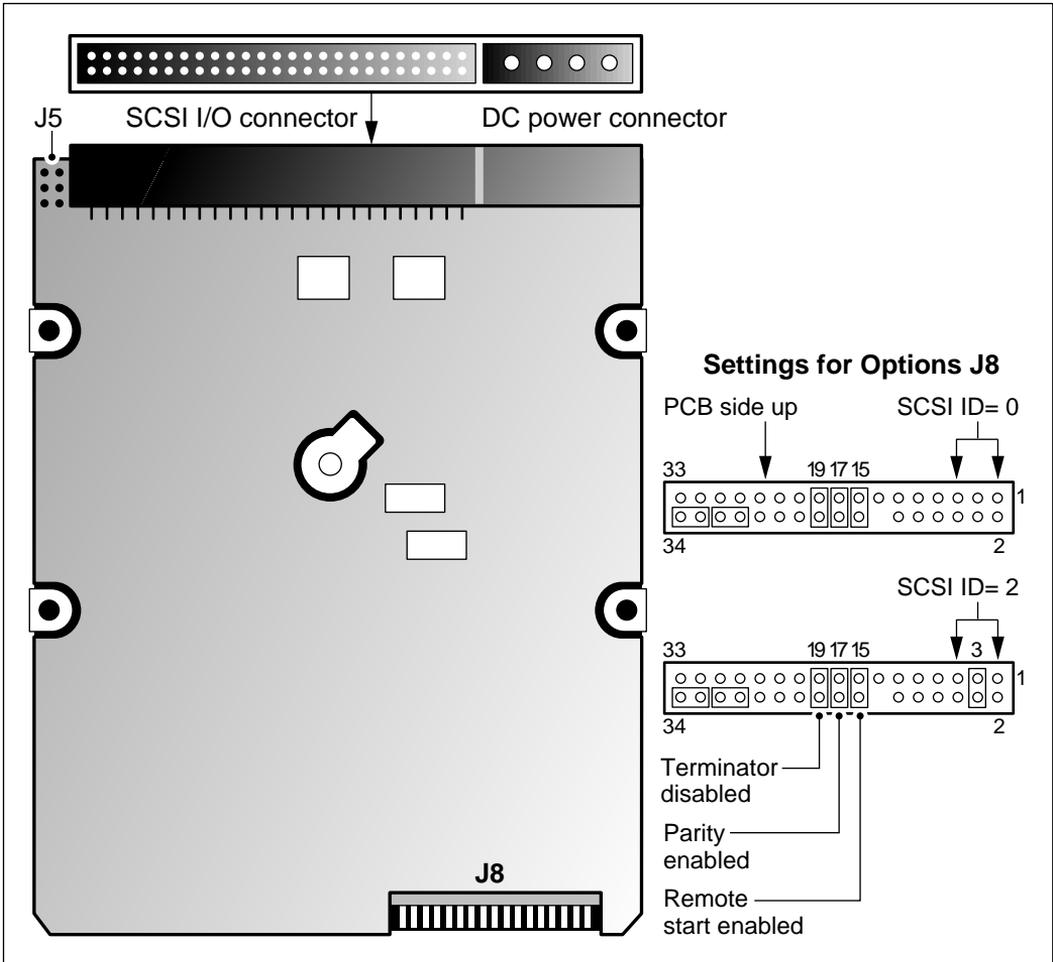


Figure 5-14
545-Mbyte Seagate ST5660 disk drive



Note: All jumpers are removed.

Overview of tape drives

The tape unit used with Meridian Mail Options is either the high density Tandberg tape drive (NT4R28BA) or the Archive (Viper) tape drive (NT4R28AC).

Northern Telecom will ship the customer the appropriate backup tape with the tape drive assembly. The following table lists some of the backup tapes:

Table 5-4
Backup tapes

CPC code	Description
A0369779	DC6150 backup tape
A0368760	DC6250 backup tape
A0630697	2.5-Gb Magnus backup tape
<div style="display: flex; align-items: center;">  <div> <p>WARNING Risk of data errors</p> <p>If you are using the DC6250 media, you should not revert back to the DC6150 media as this may cause data errors when reading from the tape.</p> </div> </div>	

The procedures in this section describe the following:

- how to remove the mass storage unit (MSU) from the Meridian Mail Options system
- how to install the mass storage unit (MSU) into the Meridian Mail Options system. This procedure involves the following:
 - setting the SCSI ID on the tape drive
 - the actual installation of the tape drive

Removal of mass storage unit

Procedure 5-4 Removing the mass storage unit

- 1 Power off the prime node.
- 2 Look on the replacement unit for the tape drive jumper settings, and ensure that they are configured as shown in Figures 5-15, 5-16, 5-17 and 5-18.

- 3 If the node is shadowed, see Procedure 15-4, “Primary (left side) disk replacement.”
- 4 Install the new unit in the same MSU slot as the unit you are replacing by carefully sliding the unit in and locking the ejectors in place.
- 5 Reboot the system.

Installation of mass storage unit

Procedure 5-5

Setting the SCSI ID for the tape drive

- 1 Locate the header beside the SCSI connector.
Archive—this is the 3-by-6 header (see Figures 5-15 and 5-16).
Tandberg—this is the 2-by-10 (see Figures 5-17 and 5-18 for the header location).
- 2 Set the SCSI ID to 1.
Archive—this involves removing any jumpers on the header in positions ID1 and ID2 and inserting a jumper on the header in position ID0 as shown in the figures (5-15 and 5-16).
Tandberg—this involves inserting jumpers on the header in position 0 and Parity as shown in the figures (5-17 and 5-18).
Terminating resistors must be installed in the Meridian Mail module prime node.
Note: Refer to the figures and ensure that all other settings (for example, parity) have been correctly set.
- 3 Ensure that the tape drive terminator resistor packs are removed as indicated in the figures.
- 4 Verify the other jumpers as shown (see Figures 5-15, 5-16, 5-17 and 5-18).

Procedure 5-6

Installing a mass storage unit

- 1 Check the jumper settings are correct as per Figures 5-15, 5-16, 5-17 and 5-18.
- 2 Make sure no SCSI bus terminator is mounted on the tape drive. (See Figure 5-15, 5-16, 5-17 and 5-18.)
- 3 Slowly insert the MSU.
- 4 At the rear side, connect the SCSI interface cable with the red stripe in pin #1, and connect the harness cable into the power connector (12 V, 5 V, and ground) of the tape.

Note: 1 There are two power harness cables. One is extra. Secure it for safety.

Note: 2 A longer SCSI cable is included because the connector on the Viper drive requires the longer SCSI cable in order to complete the installation. As the shorter version of the SCSI cable is shipped only for a brief period of time, you may not need to replace this.

- 5 Make sure the MSU is mounted securely. Tighten mounting and screws.
- 6 Insert power converter pack (QPC585).

Note: DC6150 and DC6250 tapes are recommended for backup. Keeping one type helps to reduce tape drive wear.

Figure 5-15
Archive tape drive

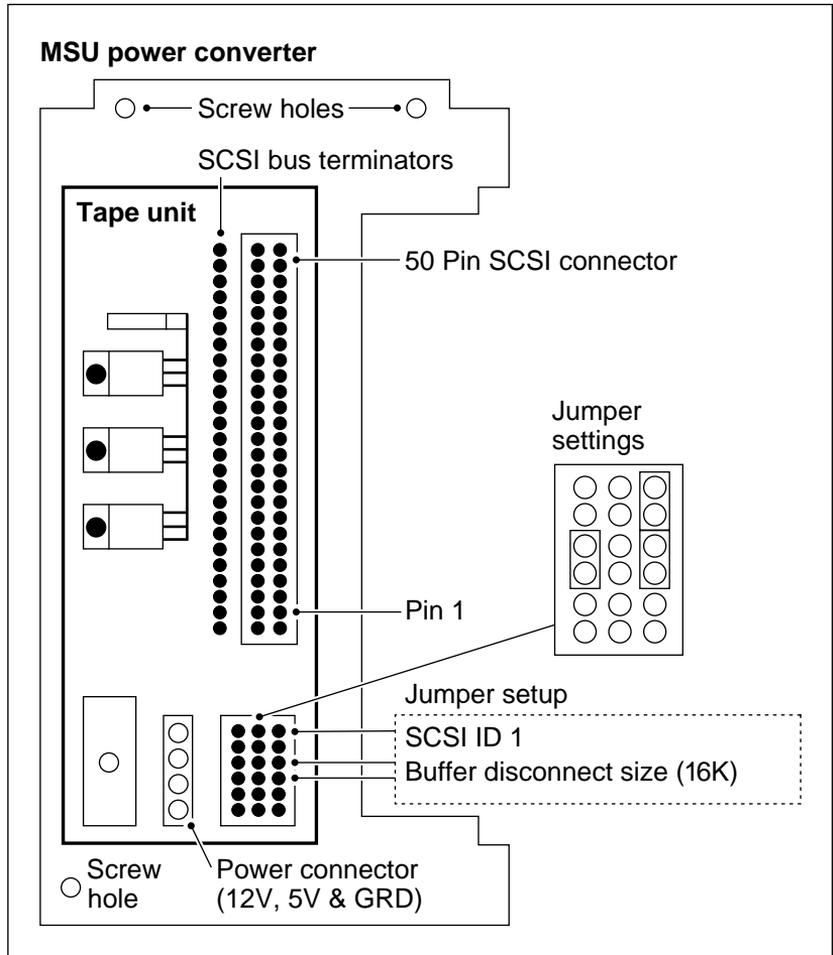


Figure 5-16
Archive tape drive jumper settings

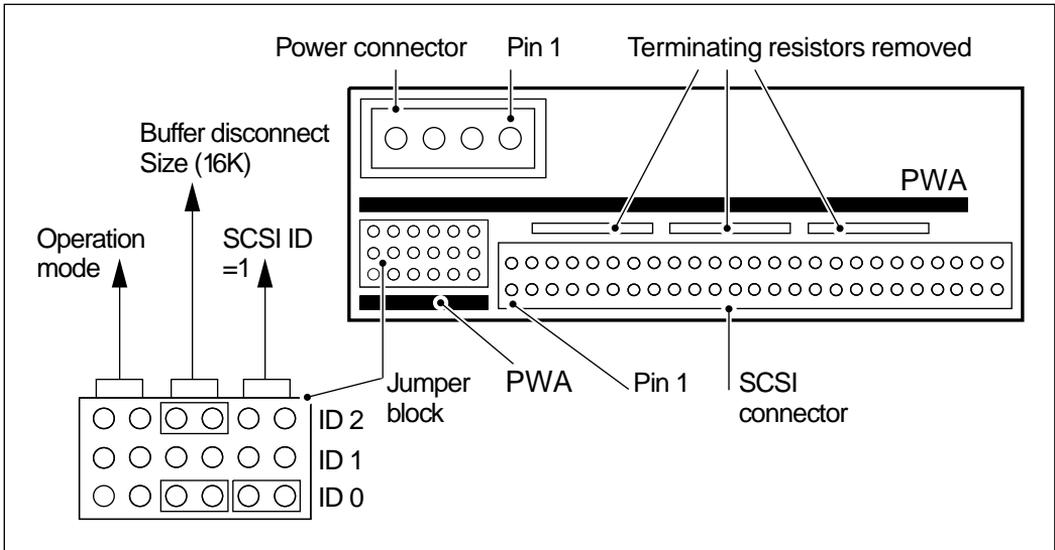
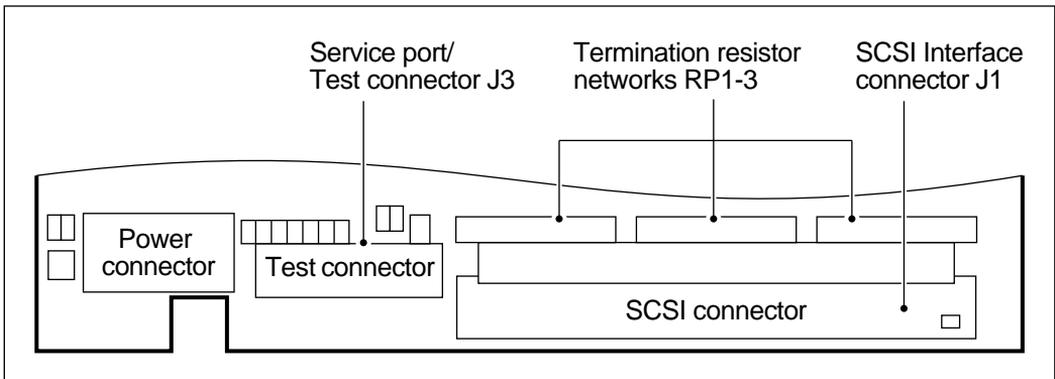
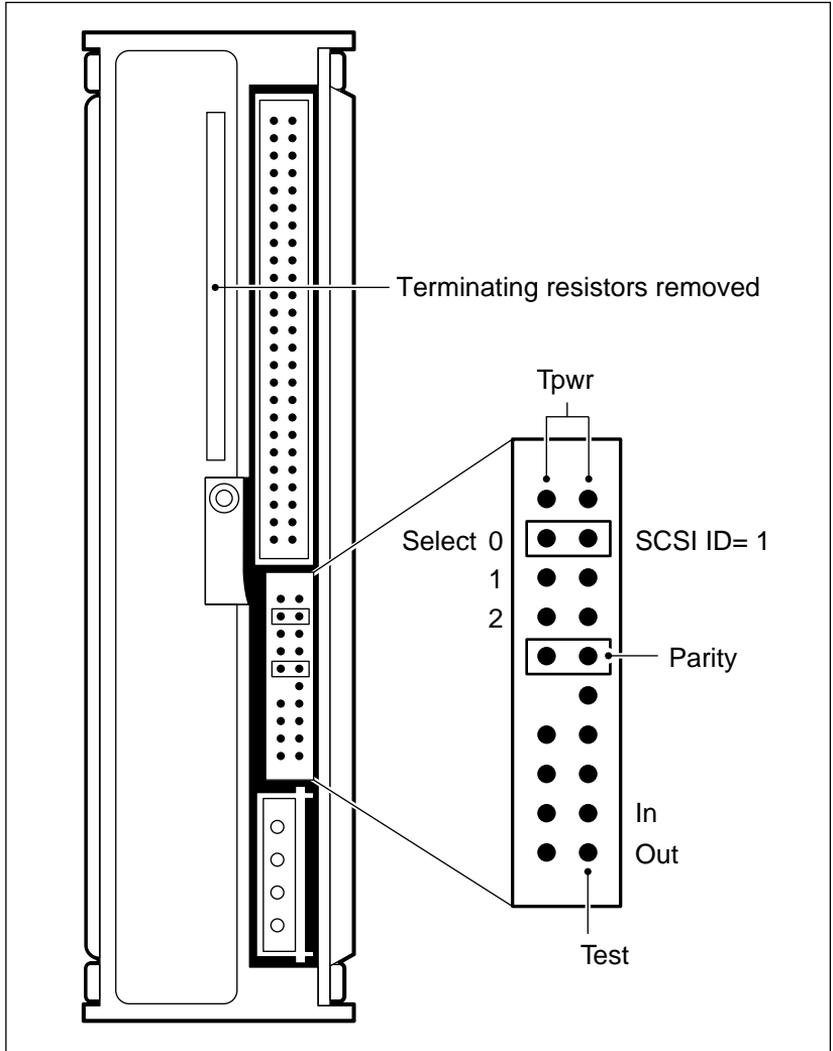


Figure 5-17
Front view of Tandberg tape drive connectors



Note: Terminator resistors are removed.

Figure 5-18
Tandberg tape drive connectors and jumper settings



Chapter 6: Converting to Meridian Mail Release 10.0

If you are converting from an existing Meridian Mail system, then any hardware installation or modification will have to be performed as part of the software installation. The *System Installation and Modification Guide* (NTP 555-7001-215) discusses all the necessary steps for software (system) installation, release conversion, and hardware modification. When necessary, the *System Installation and Modification Guide* refers back to this manual for hardware installation information.

Before beginning the system installation and modification procedures, unpack and inspect the new hardware as described in Chapter 7. Then refer to the *System Installation and Modification Guide* to begin the conversion to Release 10.0.

Note: If you are also expanding your system (adding nodes), then you still need to start with the *System Installation and Modification Guide* to perform the release conversion before expanding the system.

For Release 10.0 of Meridian Mail, an MMP40 card is required on all nodes. The MMP40 CPU card allows the system to be upgraded to run at 9600 bps. This upgrade is optional as the system will run at 2400 baud. The most important aspect of deciding to run at either speed is to ensure that the console/terminal and modems are set to match the speed of the installed BootROM.

To facilitate the conversion, a speed change utility is available either through the Install/data tape during installation, or through the TOOLS level to select the appropriate speed. If you choose to operate your system at 9600 bps, affix a sticker to indicate the CPU card is configured for 9600 bps operation.

Converting to Release 10.0

Table 6-1 shows the equipment that needs to be replaced when installing an MMP40 node.

Table 6-1
Equipment to be replaced when converting from ESBC to MMP40 node

Equipment	Replace with
ESBC card	MMP40 card
SCSI card	No replacement (removed)
2 Mbyte/2.5 Mbyte memory card	No replacement (removed)
SCSI cable (NT6D4409)	SCSI cable (NT6D4417)
CSL/SMDI cable (NT6D4410)	CSL/SMDI cable (NT6D4419)
CRT cable (NT6D4405)	Combined with CSL/SMDI cable
Null modem cable (NTND82AA/AB) from ESBC to A/B switch box	Straight RS-232 cable (NTND91AA/AB) from MMP40 to A/B switch box
Designation strip	New designation strip (A0803252), can be mounted on original strip



ATTENTION

MMP40 cards must be used both for the primary node and all voice nodes. Other types of cards cannot be substituted or used with the MMP40 cards.

You must also replace the null modem cable (NTND82AA/AB) between the MMP40 and the A/B switch box with a straight RS-232 cable (NTND91AA/AB). Refer to Figure 10-1 for proper cable configurations.

The ESBC configuration *will not* support Meridian Mail 9.0 or later. To upgrade from Meridian Mail release 8.0 or earlier, you must perform the MMP40 hardware upgrade.

Hardware conversion requirements for Release 10.0 depend on whether your system already has MMP40 cards installed. The conversion is also affected by the selected terminal baud rate (2400 or 9600 bps). See Table 6-2 for an overview of the hardware requirements for each conversion scenario.

Table 6-2
Hardware requirements

Hardware	Current configuration	After conversion	Hardware change required
CPU card	68K card in any node	MMP40 card in each node	Insert MMP40 card in every node. See Procedure 6-1.
	MMP40 card in each node	MMP40 card in each node	No change
Terminal baud rate	Terminal set to 2400 bps	Terminal set to 2400 bps	No change
	Terminal set to 2400 bps	Terminal set to 9600 bps	Install high-speed modem. See Procedure 6-2.
Tape drive	Archive Viper	Archive Viper	No change
	Archive Viper	Tandberg TDC4220	Install Tandberg tape drive. See Chapter 15.

All MMP40 cards are shipped from the factory with a default baud setting of 2400 bps. If you decide to use the 9600 baud rate for your system, you will also have to install new high-speed modems. When the MMP40 cards have been installed, with high-speed modems (if required), you must complete a system conversion to the Meridian Mail Release 10.0 software.

The Install/data tape is used to convert the existing Modular Option or Modular Option GP system to Release 10.0. Both the terminal and remote support modem must be set to the pre-MM10 speed of 2400 bps.

The system conversion must be performed as described in the *System Installation and Modification Guide* (NTP 555-7001-215). During the conversion, when the System Modification and Installation menu is displayed, select the appropriate option (“Convert from MM8 to MM10” or “Convert from MM9 to MM10”) to complete the software conversion to Release 10.0.

When the *System Installation and Modification Guide* instructs you to “install the new hardware,” refer back to this chapter for instructions.

For 2400 bps systems, no additional steps are required once the conversion is successfully completed as described in the *System Installation and Modification Guide* (NTP 555-7001-215).

For a system which is to be set to 9600 bps, once the conversion is successfully completed, you must run the speed change utility to set the speed to 9600 baud. If you choose to operate your system at 9600 bps, affix a sticker to indicate the CPU card is configured for 9600 bps operation. See the *System Installation and Modification Guide* (NTP 555-7001-215) for details.

Note: The reason for running the utility after the conversion is that, if the conversion fails, the system can be restored to its previous state without having to reset the terminals and modems.



CAUTION **Risk of equipment damage**

Wear an anti-static wrist strap when handling components. As an additional safety measure, handle components by the edges and, whenever possible, with the loosened packing material still around the component.

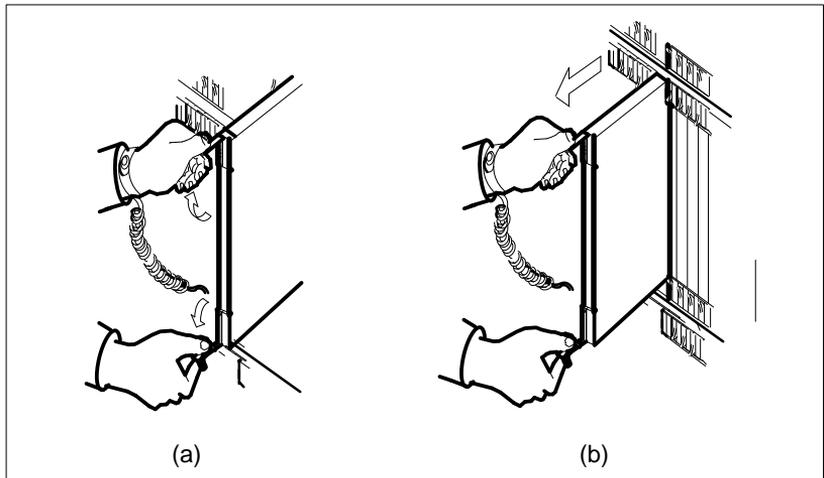
Procedure 6-1 **Replacing the 68K card**

If your existing system currently uses 68K cards, replace the cards with MMP40 cards for Release 10.0.

- 1 Unpack and inspect the new hardware as described in Chapter 3.
- 2 Refer to the *System Installation and Modification Guide* (NTP 555-7001-215, Chapter 4, “Conversion”), and follow the instructions. This will involve some preliminary steps including doing a full backup of the system.
- 3 When the *System Installation and Modification Guide* instructs you to “install the new hardware,” continue with Step 4 in this procedure.
- 4 Open the ejectors on the 68K card you are replacing, and gently pull the card towards you until it clears the shelf (see Figure 6-1). Store the 68K card in a safe place. You will need this card if you need to reinstall the old system.

- 5 Insert the MMP40 card in the module by aligning it with the slots in the module where the 68K card resided. With the ejectors still in the open position, gently slide the card into the module.
- 6 Seat and lock the card by doing the following:
 - a. Push on the upper and lower edges of the faceplate to ensure that the card is fully seated in the module.
 - b. Close the ejectors.
- 7 Install the supplied designation strips (A0803253) on the Meridian Mail shelves.
- 8 If the terminal baud rate is to be changed to 9600 bps, continue with Procedure 6-2. If the terminal baud rate is to remain at 2400 bps, continue with step 9.
- 9 Return to the *System Installation and Modification Guide* to continue the system conversion. You have now finished all the necessary hardware changes.

Figure 6-1
Printed circuit pack removal



Procedure 6-2
Installing 9600 bps modems

If you decide to upgrade your terminal baud rate to 9600 bps, new high-speed modems must be installed before the system conversion can be completed.

- 1 Unpack and inspect the new modem. Refer to Appendix B “Modem configuration for Remote Access” in this manual to ensure the modem is supported for 9600 bps.
- 2 Install the external modems as outlined in Chapter 10 of this manual, “Installing and configuring peripheral devices.”
- 3 Return to the *System Installation and Modification Guide* to continue the system conversion.

You have now finished all the necessary hardware changes.

Chapter 7: Inspecting and installing PCPs and cables

Printed circuit packs

The following printed circuit packs (PCPs) are used in Meridian Mail with MMP40 installed. See Table 7-1 and Figure 7-1 for slot locations.

Table 7-1
Meridian Mail PCPs

PCP	Slot	NT Code
HABC - High Availability Bus Controller (prime node of a multinode system only)	HABC	NT4R08AA
MMP40 - Meridian Mail Processor 68040	MMP40	NT4R45AA
GSP - General Purpose Signal Processor	VP/GSP or VP/RSM	NT4R04AA / AB
RSM - RS-232 Service Module	VP/RSM	NT4R03AA / AB

Inspecting printed circuit packs

PCPs are pre-installed in their nodes before delivery. However, it is recommended that you remove the packs from each new module, and check that switch settings are correct.

Changes to PCPs during node expansion

When you are expanding a system by adding one or more nodes, PCPs may need to be moved from one node to another, and switch or jumper settings may need to be changed. Table 7-2 summarizes the changes that need to be made.

Table 7-2
Summary of changes to PCPs for node expansion

Original # of nodes	New # of nodes	Pack	Changes
1	2	GSP	If 3 GSPs present in node 1, move 1 GSP to node 2 Reset switches on GSPs being moved
		MMP40	Attach terminator to MMP40 in node 2.
		HABC	Attach HABC terminator. Install pack in HABC slot, node 1.
2	3	GSP	Remove GSPs from node 1 Reset switches on GSPs being moved
any	any	MMP40	If original # of nodes is not 1, remove terminator from MMP40 in original last node. Attach terminator to MMP40 in last node.



CAUTION

Risk of equipment damage

Wear a wrist strap connected to the grounding point while handling PCPs. This precaution protects the packs against damage caused by static electricity.

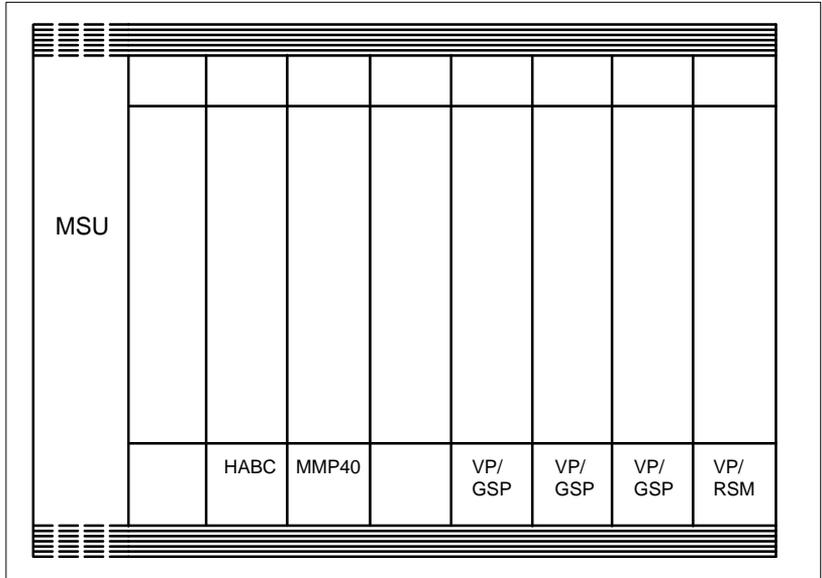
Procedure 7-1
Inspecting PCPs

- 1 Locate the PCP slot area in the Meridian Mail module to the right of the MSU slots. Refer to Figure 7-1.
- 2 Remove the faceplate covering the PCPs.

You can now see the designation strip at the bottom of the module. This strip identifies the locations of each pack. The VP/RSM slot and some VP/GSP slots may be empty depending on system size.

- 3 Place the MMP40 sticker over the designation strip on Node 1 with the MMP40 label under the ESBC slot.
- 4 Remove the cable connectors from the fronts of the packs.

Figure 7-1
Card slot locations



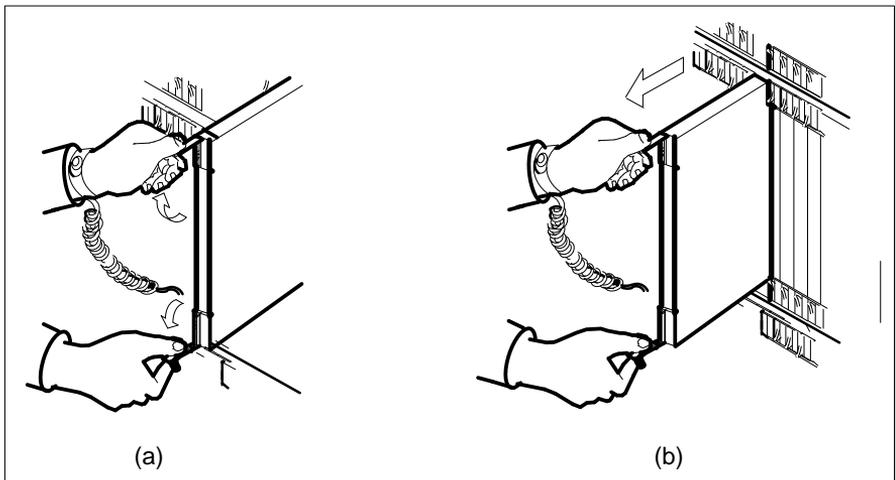
- 5 Open the locking levers on each pack and gently pull the pack towards you until it clears the shelf. (See Figure 7-2).

ATTENTION

Take care to return each card to the module and the slot where it came from unless instructed otherwise.

Although the voice processor cards in the VP/GSP slots and in the VP/RSM slot appear to be identical, they have different switch settings from each other. It is strongly recommended that each be returned to its own slot.

Figure 7-2
PCP removal



- 6 Check the pack to make sure it is not bent and there are no loose parts.
- 7 If you are not placing the pack back in the shelf immediately, put it in an electrostatic discharge (ESD) protective container labeled with the number of the node it came from and the card type from the designation strip.
 - a. Label each pack from a VP/GSP slot with a number from 1 to 3. Number the packs starting with 1 for the leftmost pack in the VP/GSP slots.
- 8 Table 7-3 lists figures that show the locations of switches and jumpers on each pack, and the tables that show the settings for each switch and jumper.
- 9 Replace the pack in the shelf by aligning it with the slots in the shelf (the locking levers are still open) and gently sliding the pack back into the shelf.

The designation strip at the bottom of the module identifies the locations of each pack. Refer to Figure 7-1.

Table 7-3
PCP switch locations and settings

Printed Circuit Pack	Switch Locations	Switch Settings
HABC	Figure 7-3	Table 7-4
MMP40	Figure 7-4	Table 7-5
GSP (NT4R04AB)	Figure 7-5	Table 7-7
GSP (NT4R04AA)	Figure 7-6	Table 7-8
RSM	Figure 7-7	Table 7-9

- 10 Seat and lock the pack.
 - a. Push on the upper and lower front edges of the pack to ensure that it is fully seated in the shelf. It is particularly important to seat packs firmly with only one locking lever (for example, the MMP40).
 - b. Close the locking levers.

High availability bus controller

The high availability bus controller (HABC) pack is used in the HABC slot of the first node of a multi-node system. See Figure 7-3 for switch locations and Table 7-4 for the settings.

Note: The HABC pack needs a terminator daughterboard, NT4R10AA. The terminator is installed on the connector at the front of the pack. The bus cable runs from the HABC to the MMP40 card in each node, and ends on the terminator daughterboard on the MMP40 in the last node.

Figure 7-3
HABC switch locations

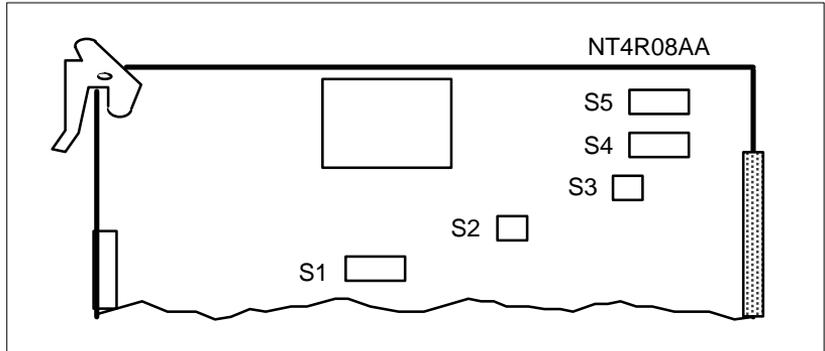


Table 7-4
HABC switch settings

S1-1 = Off	S2-1 = On	S3-1 = Off	S4-1 = Off	S5-1 = Off
S1-2 = Off	S2-2 = On	S3-2 = On	S4-2 = Off	S5-2 = Off
S1-3 = Off	S2-3 = On	S3-3 = On	S4-3 = Off	S5-3 = On
S1-4 = Off	S2-4 = On	S3-4 = Off	S4-4 = Off	S5-4 = On
S1-5 = Off			S4-5 = Off	S5-5 = Off
S1-6 = Off			S4-6 = Off	S5-6 = Off
S1-7 = Off			S4-7 = Off	S5-7 = Off
S1-8 = Off			S4-8 = Off	S5-8 = Off
On = Closed				
Off = Open				

Meridian Mail Processor 68040

The Meridian Mail Processor 68040 (MMP40) contains an MC68040 microprocessor, 16 Mbytes of memory, a SCSI interface, two programmable serial ports, and a BootROM that includes system diagnostics.

Figure 7-4 shows the locations of the switches whose settings are listed in Table 7-5.

Note: In a multinode system, the MMP40 pack in the last node needs a terminator, NT4R11AA. The terminator is installed on the largest (middle) connector at the front of the pack. The bus cable runs from the HABC in node 1 to the MMP40 card in each node, and ends on the terminator daughterboard on the MMP40 in the last node.

Figure 7-4
MMP40 switch location

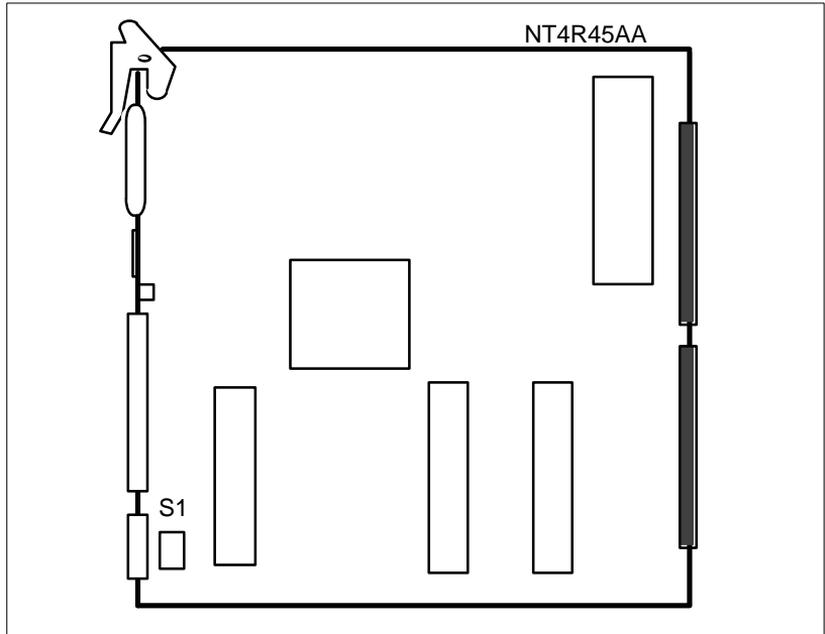


Table 7-5
MMP40 switch settings

Switch settings		1	2	3	4	5	6	7	8
S1	Single node system:								
	Node 1	On	On	On	On	On	On	On	On
	Multiple node system:								
	Node 1	On	On	Off	On	On	On	On	On
	Node 2	Off	Off	Off	On	On	On	On	On
	Node 3	On	Off	Off	On	Off	On	On	On
	Node 4	Off	Off	Off	On	Off	On	On	On
	Node 5	On	Off	Off	On	On	Off	On	On

General-purpose signal processor (GSP)

The General-purpose signal processor (GSP voice processor) board provides four channels of voice processing.

In general, set the card up for ground start when connecting to DMS, AT&T #1 ESS and AT&T ESS #10 Centrex switches. When connecting to PBXs (e.g., AT&T, ROLM) the card must be set up for loop start.

Each Meridian Mail node except for node 1 can have a maximum of four GSP cards. The maximum number of GSPs in node 1 depends on the number of nodes in the system. See Table 7-6.

Table 7-6
Number of GSPs in node 1

Number of nodes in system	Maximum number of GSPs in node 1
1	3
2	2
3 or more	0

GSP version NT4R04AB

See Figure 7-5 for switch locations and Table 7-7 for switch settings.

Figure 7-5
GSP switch locations for NT4R04AB

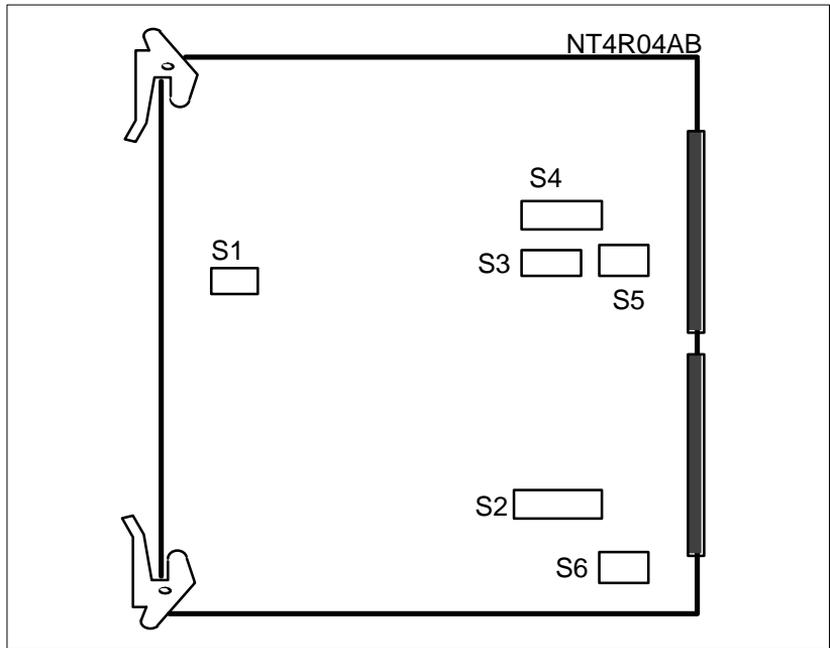


Table 7-7
GSP switch settings for NT4R04AB

Switch	GSP 1	GSP 2	GSP 3	GSP 4
S1-1	On	On	On	On
S1-2	On	On	On	On
S1-3	On	On	On	On
S1-4	On	On	On	On
S2-1	On	On	On	On
S2-2	On	On	On	On
S2-3	On	On	On	On
S2-4	On	On	On	On
S2-5	On	On	On	On
S2-6	On	On	On	Off
S2-7	On	Off	Off	On
S2-8	Off	On	Off	On
S3-1	Off	Off	Off	Off
S3-2	Off	Off	Off	On
S3-3	Off	On	On	Off
S3-4	On	Off	On	Off
S3-5	Off	Off	Off	Off
S4-1	On	On	On	On
S4-2	Off	Off	Off	Off
S4-3	Off	Off	Off	Off
S4-4	On	On	On	On
S4-5	Off	Off	On	On
S4-6	Off	On	Off	On
S5-1 (see note below)	On	On	On	On
S5-2	On	On	On	On
S5-3	On	On	On	On
S5-4	On	On	On	On
S6-1	On	On	On	On
S6-2	On	On	On	On
S6-3	On	On	On	On
S6-4	Off	Off	Off	Off
<p>Note: Ground start lines: All S5 switches On Loop start lines: All S5 switches Off On=Closed Off=Open</p>				

GSP version NT4R04AA

The General-purpose signal processor (GSP voice processor) board provides four channels of voice processing. See Figure 7-6 for switch locations and Table 7-8 for switch settings.

Figure 7-6
GSP switch locations for NT4R04AA

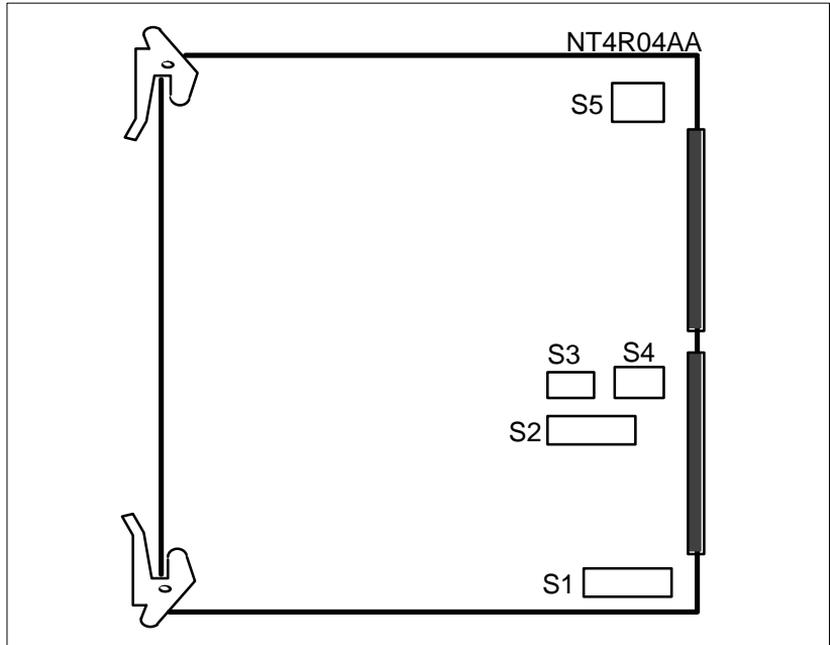


Table 7-8
GSP switch settings for NT4R04AA

Switch	GSP 1	GSP 2	GSP 3	GSP 4
S1-1	On	On	On	On
S1-2	On	On	On	On
S1-3	On	On	On	On
S1-4	On	On	On	On
S1-5	On	On	On	On
S1-6	On	On	On	Off
S1-7	On	Off	Off	On
S1-8	Off	On	Off	On
S2-1	On	On	On	On
S2-2	Off	Off	Off	Off
S2-3	Off	Off	Off	Off
S2-4	On	On	On	On
S2-5	Off	Off	On	On
S2-6	Off	On	Off	On
S3-1	Off	Off	Off	Off
S3-2	Off	Off	Off	On
S3-3	Off	On	On	Off
S3-4	On	Off	On	Off
S3-5	Off	Off	Off	Off
S4-1	On	On	On	On
S4-2	On	On	On	On
S4-3	On	On	On	On
S4-4	Off	Off	Off	Off
Ground start lines: All S5 switches On Loop start lines: All S5 switches Off On=Closed Off=Open				

RS-232 service module

The RS-232 service module (RSM) pack provides four RS-232 ports as well as a battery-backed clock. The NT4R03AB version of the pack also includes a bypass switch which allows you to operate the system in “bypass” mode during recovery from such problems as hardware and link failures. Unless otherwise instructed by Nortel support, leave the card set to “normal” mode (the switch down). The LED is on when the card is in normal mode. See Figure 7-7 for switch locations and Table 7-9 for the settings.

Figure 7-7
RSM switch locations

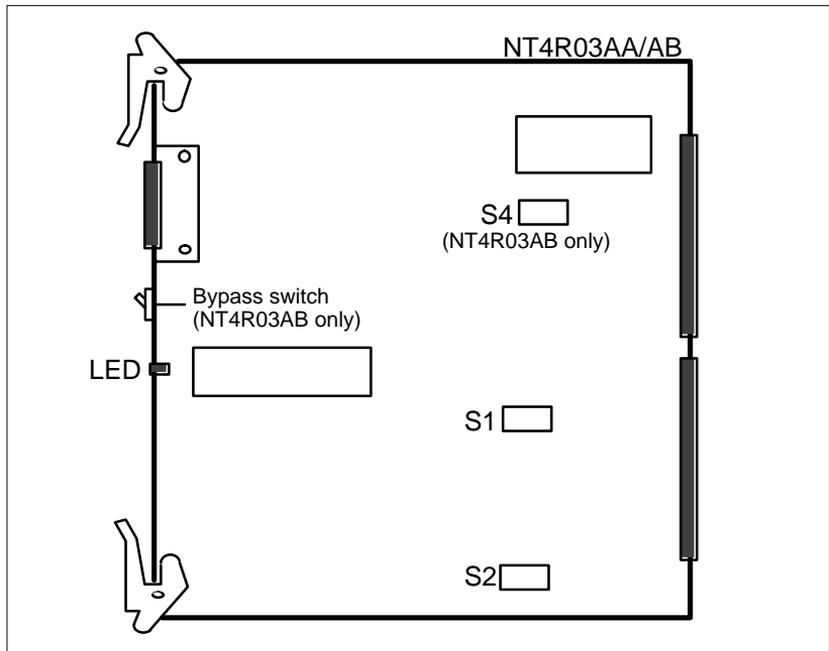


Table 7-9
RSM switch settings

NT4R03AA/AB	NT4R03AA/AB	NT4R03AB only
S1-1 = On	S2-1 = On	S4-1 = On
S1-2 = Off	S2-2 = On	S4-2 = On
S1-3 = Off	S2-3 = On	S4-3 = On
S1-4 = Off	S2-4 = On	S4-4 = On
S1-5 = On	S2-5 = On	S4-5 = On
S1-6 = Off	S2-6 = Off	S4-6 = On
S1-7 = Off	S2-7 = On	S4-7 = On
S1-8 = On	S2-8 = On	S4-8 = On

Verifying PCP cabling

Cabling from printed circuit packs (PCPs) to the backplane (SCSI card) or rear I/O panel is in place when modules are shipped, but it is sometimes necessary to move or replace cables. Because, apart from the SCSI cable, cabling runs from the front of the packs through the right-side cable channel (looking from the front) to the rear, you normally need to remove all the cables from the fronts of the PCPs in order to remove the voice processor cards to check or change switch settings.

This section provides a complete reference to the cabling involved.

Figure 7-8 shows the I/O panel which is at the left of the rear of each module.

Figures 7-9 to 7-11 illustrate the cables at the circuit packs, and Table 7-10 describes how they are routed.

Figure 7-8
Meridian Mail I/O panel

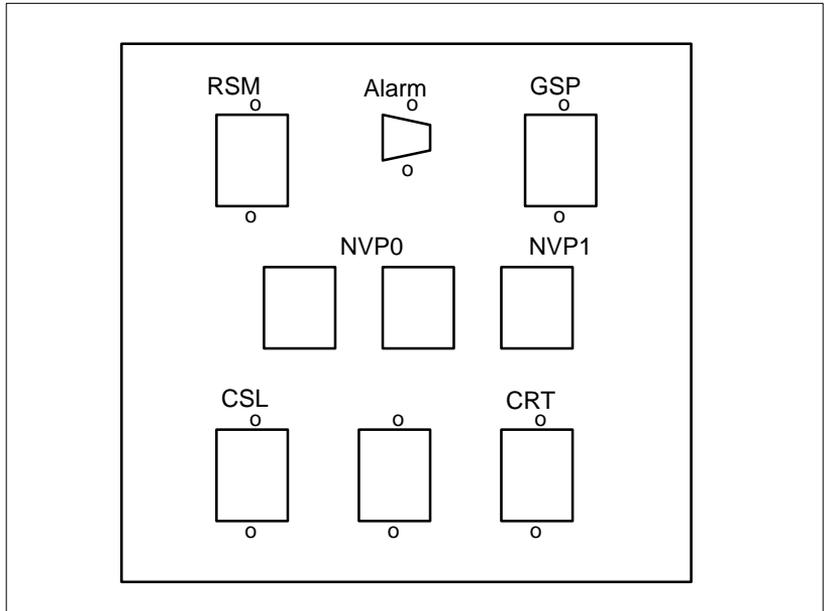


Figure 7-9

PCP cables for a single-node system

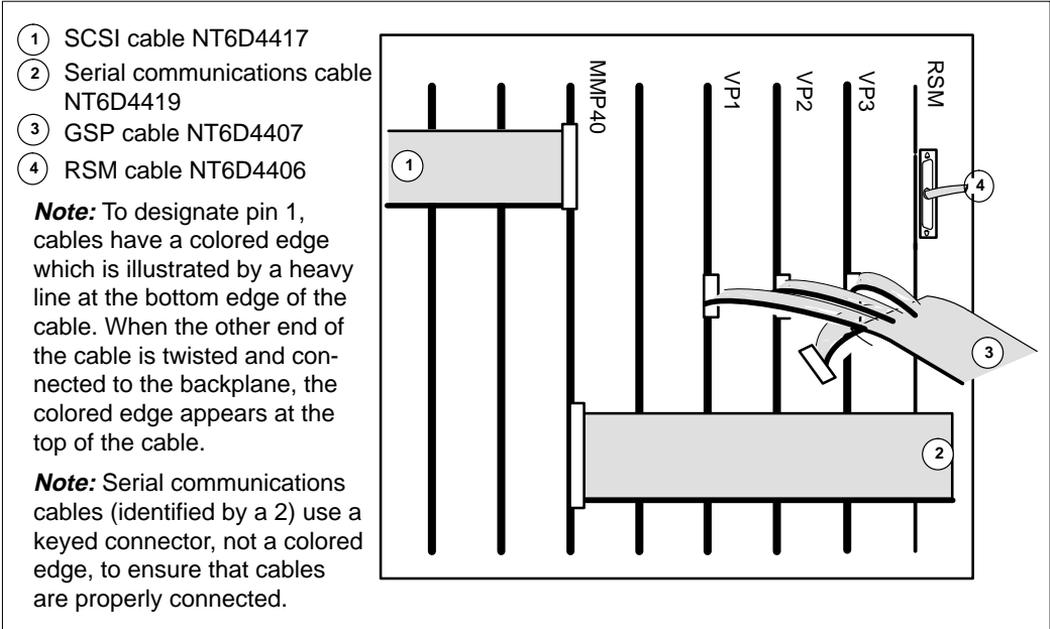


Figure 7-10
PCP cables for a 2-node system

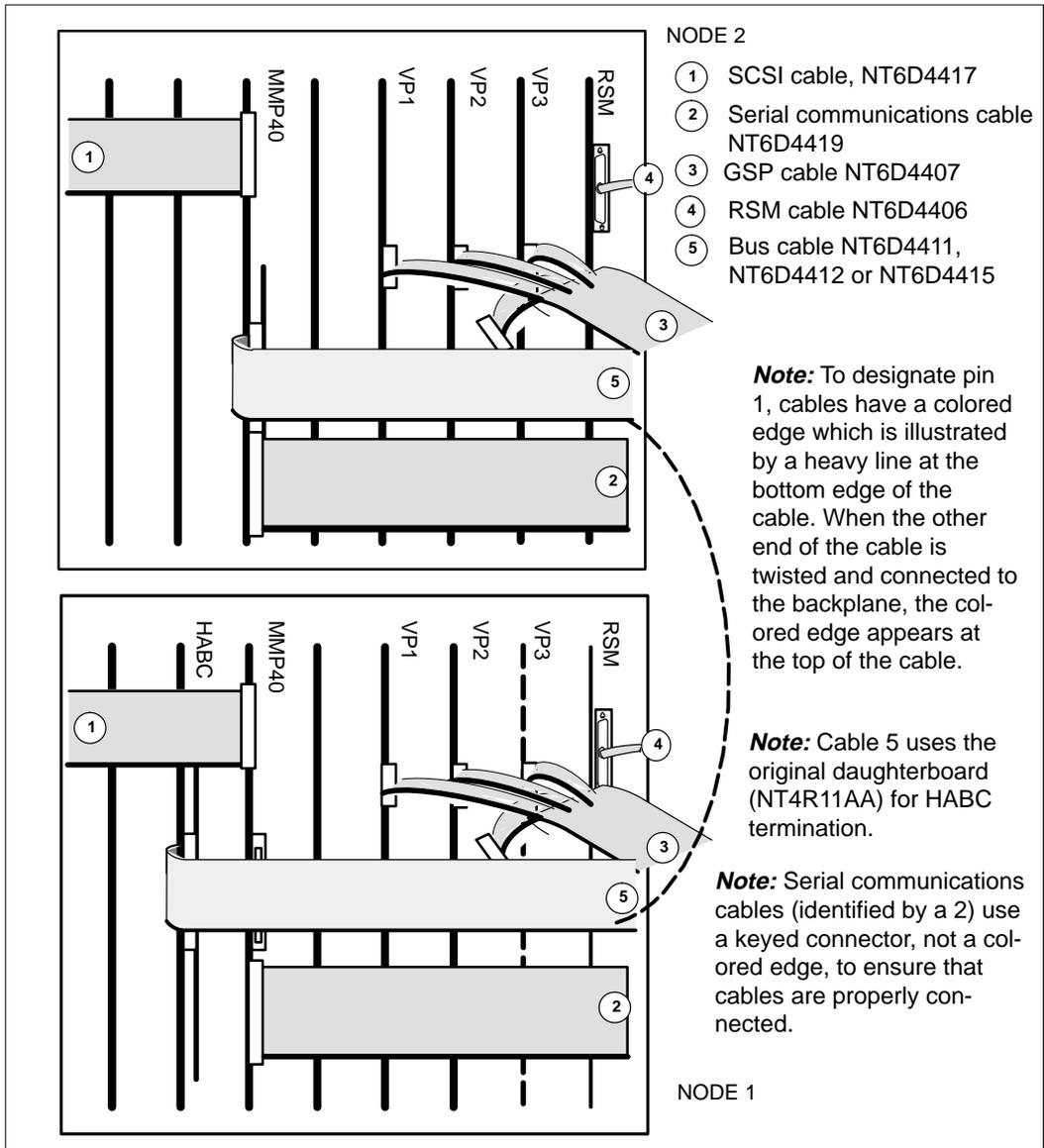


Figure 7-11
PCP cables for a multi-node system

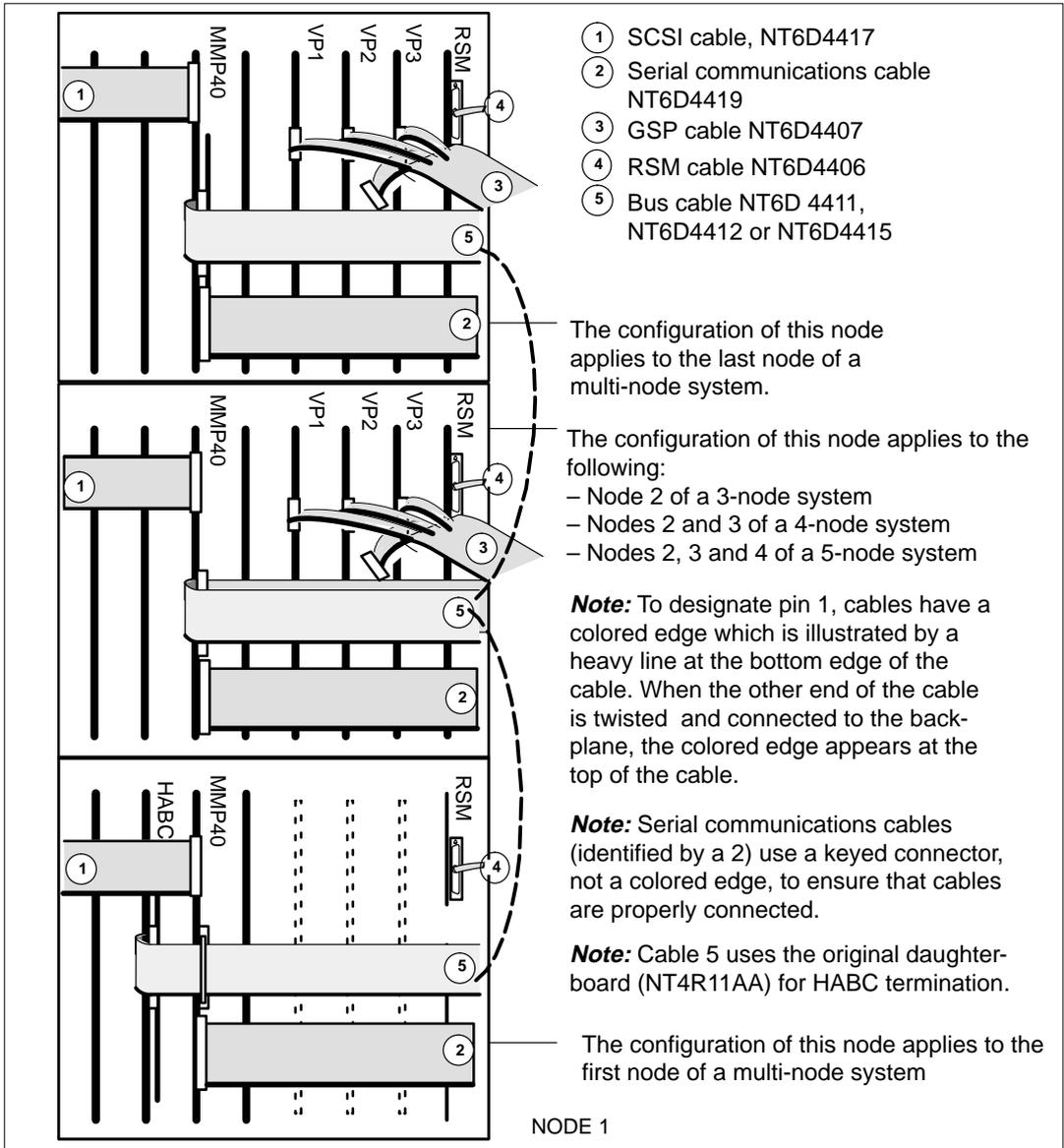


Table 7-10
Cable routing (Reference—Figures 7-9 to 7-11)

	NT code	Cable	Routing information
cable1	NT6D4417 (A0618621)	SCSI	<p>From front of MMP40 card to rear of shelf, between the MMP40 card and the metal plate (a clip is provided to hold the cable in place). Attach to 50-pin connector on the front side of the backplane.</p> <p>Note: Caution is required when folding and positioning the new SCSI cable. The cable has to be twisted to ensure proper lineup of the pins. Also, ensure the cable is properly folded and positioned away from the edges, as it may become pinched when replacing the metal cover.</p>
cable 2*	NT6D4419 (A0618623)	Serial communications cable	From the bottom connector at the front of MMP40 card to rear of shelf, between the RSM card and the metal plate (a clip is provided to hold the cable in place). Route to CSL and CRT connectors on the Meridian Mail I/O panel.
cable 3	NT6D4407 (A0363746)	GSP	<p>From front of GSP cards to rear of shelf, between the RSM card and the metal plate (a clip is provided to hold the cable in place). Route to the GSP connector on the Meridian Mail connector panel.</p> <p>See “Connecting cables to GSP cards” later in this chapter.</p>
cable 4	NT6D4406 (A0363813)	RSM	From front of RSM card to rear of shelf, between the RSM card and the metal plate (a clip is provided to hold the cable in place). Route to the RSM port on the Meridian Mail connector panel.
cable 5	NT6D441 n where n is 1, 2 or 5 (A0367987) (A0368070) (A0364039)	Bus	<p>Systems with two or more nodes only—from HABC terminator on node 1 HABC to the middle connector at the front of the MMP40 card on node 1. Route between RSM card and the metal plate, and through an opening on the plate. Route cable up to the next module, and through a plate opening on node 2.</p> <p>(2-node system) Connect to MMP40 terminator, node 2.</p> <p>(Multi-node system) Connect to the middle connector at the front of the MMP40 card on node 2 and route (as from node 1 to node 2) to the next node. Continue to each MMP40 card until the MMP40 terminator is reached on final node. Daisy-chain cables as needed.</p>
* The combined SMDI/CRT cables each have a brown wire on the inside edge that is intentionally not used.			

Connecting cables to GSP cards

When connecting cables to GSPs, connector J1 connects to voice processing card #1, the leftmost card. J2 connects to the next voice processor card to the right. J3 connects to the next voice processor card to the right. J4 connects to the voice processor card in the rightmost slot.

Chapter 8: Diagnostics

After you have added the new node or nodes to your system, installed power supplies, mass storage units and printed circuit packs (PCPs), and connected all the PCP cables, you can perform sanity testing on the cabling and new hardware using the following procedure.

Note that, depending on the changes made to the system, this procedure may not test the functionality. For example, if a new node has been added to the system, its ability to communicate with the prime node cannot be tested until the software expansion feature is attempted. This procedure will test features such as the functionality of the MMP40 card, the ability of the high availability bus controller (HABC) (for multi-node systems) to provide bus clocks, and power supplies.

Note, also, that there are some errors that bootROM diagnostics do not detect. For example, the bootROM routines have no way of knowing whether your GSPs should be set for ground start or loop start, and so cannot detect errors in the settings of switch 5 on the GSP packs.

Procedure 8-1 Sanity testing

Perform diagnostics on each module as follows:

- 1 With the console terminal connected to node 1, turn the power on at node 1, and observe the output on the terminal and on the MMP40 hexadecimal display.

The hexadecimal display should follow the normal bootup sequence described in Chapter 13. If it does not, follow the troubleshooting procedures in the "System fails to boot completely" section in Chapter 13.

- 2 For multi-node systems, observe the HABC message displayed early in stage 1 of table 13-2. This message should indicate that an HABC has been detected.
- 3 Turn the power off at node 1, and check the results of the diagnostics. If diagnostics failed, refer to Chapter 13.
- 4 For single node systems, testing is complete. For multi-node systems, continue with step 5.

Multi-node systems only:

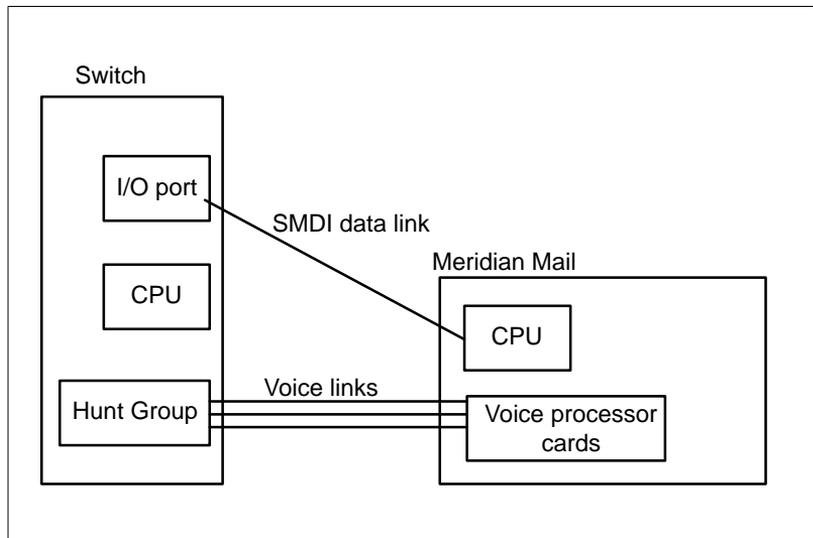
- 5 Power up the system and observe the hexadecimal display on the MMP40 cards in the non-prime nodes.
The displays should advance to “.6”.
- 6 Turn the power off at all nodes.
All testing that can currently be performed is complete. If any node failed the testing, replace the MMP40 card and return to step 5. If the problem is not corrected, refer to the troubleshooting procedures in Chapter 13 to verify the installation.
- 7 Turn to the “Performing Modular Option GP hardware modification” section in the Hardware modification chapter of the *System Installation and Modification Guide* (NTP 555-7001-215). Go to the step after installing the new hardware.

Chapter 9: Installing the Meridian Mail to PBX/DMS interface

There are two types of Meridian Mail connections to the PBX: voice and SMDI (simplified message desk interface) link control. Meridian Mail can support up to eight SMDI links.

See Figure 9-1 for an overview of Meridian Mail connections to the switch.

Figure 9-1
Meridian Mail interface to the switch



Installing the voice cable

The voice cable (25-pair, with a male cable-to-panel Amphenol D-shell connector) must be installed to the specifications outlined in the “Selecting a site” chapter of the *Site and Installation Planning Guide*, 555-7051-200, prior to its connection to Meridian Mail. The cable should already be installed between the appropriate PBX/DMS cards and the Main Distribution Frame (MDF) panel.

Further information about the MDF BIX connector and cable terminations can be found in the following documents:

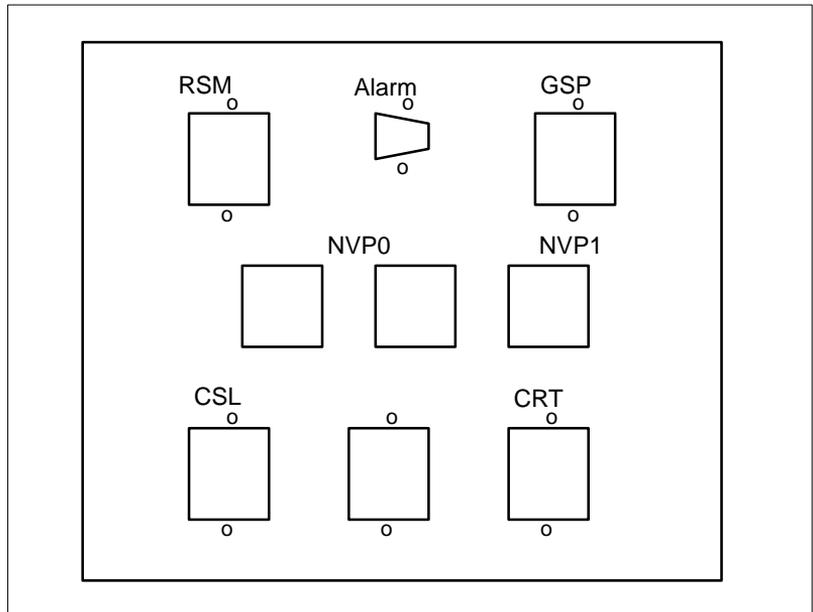
- *BIX Material Description and Ordering*, NTP 555-4511-100
- *BIX Material Planning*, NTP 555-4511-150
- *BIX Installation and Servicing*, NTP 555-4511-200
- *BIX Customer Premises Distribution Frame*, NTP 555-4511-210

Procedure 9-1

Install the voice cable from Meridian Mail to the MDF

- 1 Install EMI/RFI filters (A0318423) on the GSP ports on the I/O panels of each Meridian Mail module, if they are not already installed. See Figure 9-2.
- 2 Attach the male end of a voice cable to the GSP port on each node.

Figure 9-2
Connector panel



- 3 Route the cable between the Meridian Mail cabinet and the Main Distribution Frame (MDF) panel.
- 4 Connect the voice pairs at the MDF panel as shown in Table 9-2. Figure 9-3 shows the voice pair breakout pattern from the GSP 50-pin connector to the MDF BIX strip.

Figure 9-3
MDF wiring detail on the BIX strip

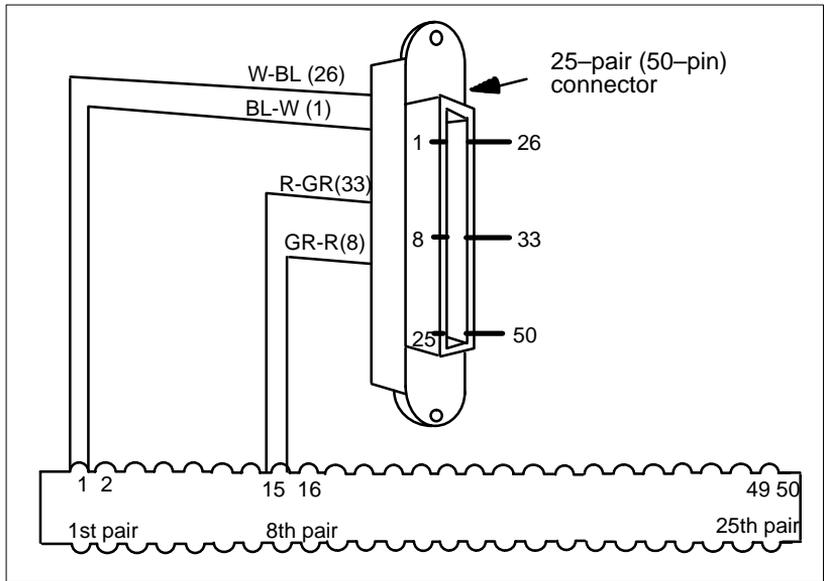


Table 9-1 indicates the connection of the voice pairs from Meridian Mail to the PBX/DMS. The first column defines the Meridian Mail voice processor card number. The second and third columns indicate the voice channels associated with each voice processor card. The fourth column lists the connector numbering on the 9-pin connector on each voice processor card. The fifth column indicates the connector numbering on the 50-pin GSP connector on the I/O panel. The final three columns indicate the tip and ring colors of each pair. (Pairs 17 to 25 of the voice cable must be left in reserve for future use.)

Table 9-1
Voice pair descriptions

Card	Voice Channels		Connectors		Color Code		
	Channel	Signal	9-pin	50-pin	Pair	Main stripe	Tracer
1	0	Tip	6	26	Tip 1	White	Blue
	0	Ring	1	1	Ring 1	Blue	White
	1	Tip	7	27	Tip 2	White	Orange
	1	Ring	2	2	Ring 2	Orange	White
	2	Tip	8	28	Tip 3	White	Green
	2	Ring	3	3	Ring 3	Green	White
	3	Tip	9	29	Tip 4	White	Brown
	3	Ring	4	4	Ring 4	Brown	White
2	0	Tip	6	30	Tip 5	White	Slate
	0	Ring	1	5	Ring 5	Slate	White
	1	Tip	7	31	Tip 6	Red	Blue
	1	Ring	2	6	Ring 6	Blue	Red
	2	Tip	8	32	Tip 7	Red	Orange
	2	Ring	3	7	Ring 7	Orange	Red
	3	Tip	9	33	Tip 8	Red	Green
	3	Ring	4	8	Ring 8	Green	Red
3	0	Tip	6	34	Tip 9	Red	Brown
	0	Ring	1	9	Ring 9	Brown	Red
	1	Tip	7	35	Tip 10	Red	Slate
	1	Ring	2	10	Ring 10	Slate	Red
	2	Tip	8	36	Tip 11	Black	Blue
	2	Ring	3	11	Ring 11	Blue	Black
	3	Tip	9	37	Tip 12	Black	Orange
	3	Ring	4	12	Ring 12	Orange	Black
4	0	Tip	6	38	Tip 13	Black	Green
	0	Ring	1	13	Ring 13	Green	Black
	1	Tip	7	39	Tip 14	Black	Brown
	1	Ring	2	14	Ring 14	Brown	Black
	2	Tip	8	40	Tip 15	Black	Slate
	2	Ring	3	15	Ring 15	Slate	Black
	3	Tip	9	41	Tip 16	Yellow	Blue
	3	Ring	4	16	Ring 16	Blue	Yellow

Installing the SMDI link

Switch type

If the switch to be attached to Meridian Mail is a Northern Telecom DMS-100 or SL-100, see the instructions following the heading “DMS-100/SL-100” below.

If the switch is a Northern Telecom DMS-10, use the DMS-10 Installation Methods guide.

If the switch is manufactured by AT&T, NEC or Rolm, look under the heading “Connections” for references to the correct documentation to install the VoiceBridge unit, and cable it to Meridian Mail and your switch.

Connections

When the Meridian Mail System is equipped with Connections, the SMDI link is established between the data port on Meridian Mail and the VoiceBridge integration unit. Refer to:

- *VoiceBridge Installation Procedures for AT&T switches* (NTP 555-7001-216)
- *VoiceBridge Installation Procedures for ROLM switches* (NTP 555-7001-217)
- *VoiceBridge Installation Procedures for NEC switches* (NTP 555-7001-218).

The rest of this chapter applies only to the Northern Telecom DMS-100 or SL-100 switch.

DMS-100/SL-100

The SMDI data link is a 2400 baud full duplex RS-232 data link used for transferring call setup information and for Message Waiting Indicator (MWI) activation or deactivation. It is connected to an RS-232C port on Meridian Mail.

Refer to *DIP Switch Settings for Printed Circuit Packs and Balance Networks* NTP 297-3401-316 for the required switch settings.

Note: The procedures in this section (Installing the SMDI link) are applicable to DMS only and should not be generalized to all PBX/DMS installations.

To install the SMDI link on the DMS-100/SL-100, you need the following hardware:

- SMDI Link cable—cable between the IOC/MPC port on the DMS and any suitable RS-232 connector on Meridian Mail
- data communications card
 - NT1X67FA or higher vintage (IOC) card for 1200 baud
 - NT1X89AA/AB or higher vintage (MPC) card for 2400 baud (recommended)

Note: If you are using the NT1X67 IOC card on a DMS-100, the connection must be programmed for port 0 on the data communications card and the card must be dedicated to Meridian Mail.

The hardware interface to the IOC/MPC port varies with different switch models, so there is no standard SMDI link cable. Meridian Mail pin assignments are given in Tables 9-2 and 9-3 on the following pages so that a crafts-person can create the cable.

If the switch is within 15.25 metres (50 feet) of Meridian Mail, you may cable the switch directly to Meridian Mail (local connection) using a null-modem cable. If the switch is between 15.24 and 1219.2 metres (50 and 4000 feet) from Meridian Mail, you may cable the switch to Meridian Mail using short-haul modems (remote connection). For remote configurations, the cable between Meridian Mail and the modem is a straight through RS-232 cable.

You may select any unused RS-232 port on Meridian Mail, subject to the restrictions in Table 10-1. This table shows recommended dataport usage and the correlation between the dataport connectors on the I/O panel and the dataports on the RSM and MMP40 packs in the Meridian Mail modules.

Local connection

- 1 Use an RS-232 null modem cable, for example, NT0X26PJ, for the SMDI link. See Table 9-2 for pin assignments.
- 2 Attach the Meridian Mail end of the SMDI link cable to the selected RS-232 connector on the Meridian Mail I/O panel or RSM fanout cable.

- 3 Connect the other end of the cable to the IOC/MPC data port on the switch.

This connection may be made via the I/O panel on the switch.

Table 9-2
SMDI cable for local connection

Meridian Mail connection (DTE)		Switch connection (DTE)	
(FG)	1	_____	1 (FG)
(TD)	2	_____	3 (RD)
(RD)	3	_____	2 (TD)
(RTS)	4	_____	8 (DCD)
(CTS)	5		
(DSR)	6	_____	20 (DTR)
(SG)	7	_____	7 (SG)
(DCD)	8	_____	4 (RTS)
			{ 5 (CTS)
(DTR)	20	_____	6 (DSR)

Remote connection

- 1 Create the RS-232 cable (straight-thru) for the SMDI link according to Table 9-3.
- 2 Attach the Meridian Mail end of the SMDI link cable to the selected RS-232 connector on the Meridian Mail I/O panel or RSM fanout cable.
- 3 Connect the other end of the cable to the modem on the Meridian Mail side.
- 4 Connect a second straight-thru cable from the modem on the switch side to the IOC/MPC data port on the switch.

Table 9-3
SMDI cable for remote connection

Meridian Mail (DTE)	Signal name	
1	FG	Frame ground
2	TD	Transmit data
3	RD	Receive data
4	RTS	Request to send
5	CTS	Clear to send
6	DSR	Data set ready
7	SG	Signal ground
8	DCD	Data carrier detect
20	DTR	Data terminal ready

Chapter 10: Installing and configuring peripheral devices

Meridian Mail peripheral devices

Peripheral devices for Meridian Mail include the following:

- administration terminal and printer
- additional terminals for user administration, if required
- A/B switchbox and local modem (for remote administration)

Note: To get full support from Northern Telecom, you must install an A/B switchbox and local modem, and connect the modem to a functioning phone line. These devices allow Northern Telecom support personnel to dial in to the system and provide diagnosis and maintenance. This facility is under the control of an onsite technician who must put the A/B switch in the “Remote” position to connect the modem to Meridian Mail.

- terminal and remote modem (for remote administration)
- networking modem if required

If you are using the Meridian Mail Reporter (formerly AdminPlus) package, many of the procedures in this section do not apply. See the documentation set for Meridian Mail Reporter for installation instructions.

Overview of installation

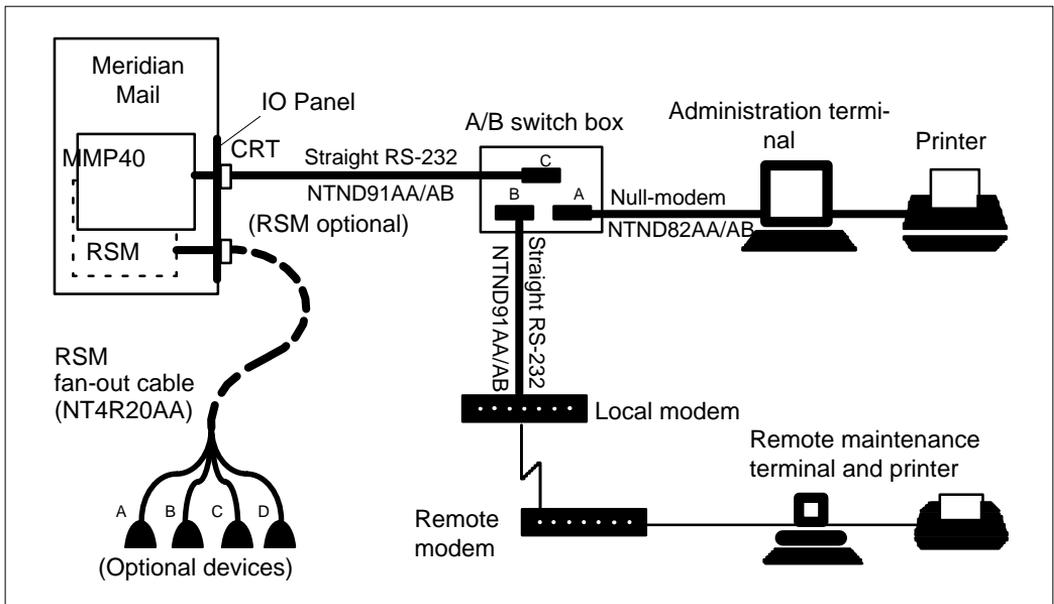
Install peripheral devices as follows (see Figure 10-1 for an overview):

- 1 Install the A/B switchbox if used.
- 2 Install the RSM fanout cables.
- 3 Install and configure the administration terminal.

10-2 Installing and configuring peripheral devices

- 4 If you have the multiple user administration feature, install the multiple user administration terminals (MATs).
- 5 Install and configure the administration printer, and connect it to the administration terminal.
- 6 Install the local modem if used.
- 7 Install the remote terminal and modem if used.
- 8 Install networking modems if used.

Figure 10-1
Overview of Meridian Mail peripherals



Installing the A/B switchbox

Procedure 10-1

Installing the A/B switchbox

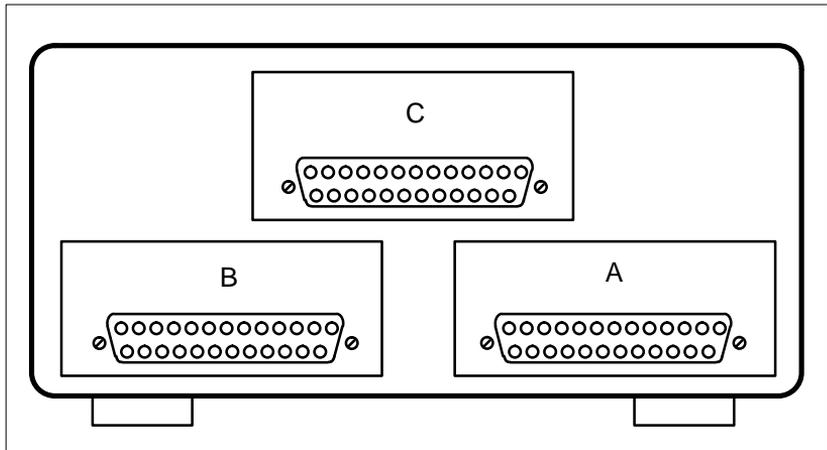
The A/B switchbox (see Figure 10-2) is used when needed to permit remote administration and maintenance.

- 1 Place the A/B switchbox in a suitable location near Meridian Mail.

Although the switchbox may not be exactly as indicated in this document, the installation is the same. See the instructions provided with the switchbox for specific details.

- 2 Put the switch on the front of the A/B switchbox to the “A” position.
 - a. Label this switch position “local.”
 - b. Label the other position “remote.”

Figure 10-2
A/B switchbox (rear view)



Installing the RSM fanout cable

Procedure 10-2 Installing the RSM fanout cable

The RSM fanout cable breaks out the four RS-232 dataports available on the RSM to separate connectors labeled “A”, “B”, “C”, and “D”.

- 1 Attach an RSM fanout cable to the RSM connector of the I/O panel of each module that contains an RSM.
- 2 Attach peripheral devices as needed to the connectors “A”, “B”, “C” and “D” at the other end of the fanout cable.
- 3 If necessary, program the RSM ports for the devices you are attaching to them.

See *System Administration Tools* (NTP 555-7001-305) for information about programming the ports.

10-4 Installing and configuring peripheral devices

Table 10-1 shows recommended dataport usage and the correlation between the dataport connectors on the I/O panel and the dataports on the RSM and MMP40 packs in the Meridian Mail modules.

In the column for Connector, “Module 1 RSM fanout A” means the connector labeled “A” on the RSM fanout cable attached to the I/O panel of module 1, and “Module 1 I/O panel CRT” means the CRT connector on the I/O panel of module 1. The entry in the Port column corresponds to the Port Location on the Hardware Administration—Data Port Configuration screen at the Tools level.

Table 10-1
Dataports and their I/O panel connectors

Port	Connector	Allowable uses
Node 1 MMP40 port 1	Module 1 I/O panel CRT	System Console or AdminPlus
Node 1 MMP40 port 2	Module 1 I/O panel CSL	SMDI
Node 1 RSM port 1	Module 1 RSM fanout A	MAT, Network Modem, Printer, ACCESS Link, SMDI
Node 1 RSM port 2	Module 1 RSM fanout B	MAT, Network Modem, Printer, ACCESS Link, SMDI
Node 1 RSM port 3	Module 1 RSM fanout C	MAT, Network Modem, Printer, ACCESS Link, SMDI
Node 1 RSM port 4	Module 1 RSM fanout D	MAT, Network Modem, Printer, ACCESS Link, SMDI
Node 2 MMP40 port 1	Module 2 I/O panel CRT	MAT, Printer, SMDI
Node 2 MMP40 port 2	Module 2 I/O panel CSL	Maintenance
Node 2 RSM port 1	Module 2 RSM fanout A	MAT, Network Modem, Printer, SMDI
Node 2 RSM port 2	Module 2 RSM fanout B	MAT, Network Modem, Printer, SMDI
Node 2 RSM port 3	Module 2 RSM fanout C	MAT, Network Modem, Printer, SMDI
Node 2 RSM port 4	Module 2 RSM fanout D	MAT, Network Modem, Printer, SMDI
Node 3 MMP40 port 1	Module 3 I/O panel CRT	MAT, Network Modem, Printer, SMDI
Node 3 MMP40 port 2	Module 3 I/O panel CSL	Maintenance
Node 3 RSM port 1	Module 3 RSM fanout A	MAT, Network Modem, Printer, ACCESS Link, SMDI
–continued–		

Port	Connector	Allowable uses
Node 3 RSM port 2	Module 3 RSM fanout B	MAT, Network Modem, Printer, ACCESS Link, SMDI
Node 3 RSM port 3	Module 3 RSM fanout C	MAT, Network Modem, Printer, ACCESS Link, SMDI
Node 3 RSM port 4	Module 3 RSM fanout D	MAT, Network Modem, Printer, ACCESS Link, SMDI
Node 4 MMP40 port 1	Module 4 I/O panel CRT	MAT, Printer, SMDI
Node 4 MMP40 port 2	Module 4 I/O panel CSL	Maintenance
Node 4 RSM port 1	Module 4 RSM fanout A	MAT, Network Modem, Printer, SMDI
Node 4 RSM port 2	Module 4 RSM fanout B	MAT, Network Modem, Printer, SMDI
Node 4 RSM port 3	Module 4 RSM fanout C	MAT, Network Modem, Printer, SMDI
Node 4 RSM port 4	Module 4 RSM fanout D	MAT, Network Modem, Printer, SMDI
Node 5 MMP40 port 1	Module 5 I/O panel CRT	MAT, Printer, SMDI
Node 5 MMP40 port 2	Module 5 I/O panel CSL	Maintenance
Node 5 RSM port 1	Module 5 RSM fanout A	MAT, Network Modem, Printer, SMDI
Node 5 RSM port 2	Module 5 RSM fanout B	MAT, Network Modem, Printer, SMDI
Node 5 RSM port 3	Module 5 RSM fanout C	MAT, Network Modem, Printer, SMDI
Node 5 RSM port 4	Module 5 RSM fanout D	MAT, Network Modem, Printer, SMDI
-end-		

Installing the primary administration terminal and multiple user administration terminals (MATs)

Every system requires an administrative terminal. If you have the Multiple Administration feature, you may also install MATs.

Procedure 10-3 Installing the primary administration terminal

- Place the administration terminal in a suitable location.
The administration terminal should be installed within 15.24 metres (50 feet) of the Meridian Mail system. If the cable distance is greater than 15.24 metres (50 feet), asynchronous Limited Distance Modems (LDMs) must be used.
- Connect the keyboard and power cord to the terminal.

- 3 Connect one end of a null modem terminal cable (NDND82AA/AB) to the COMM connector on the terminal via an INMAC 328 adapter.
Depending on the type of terminal, you may also have to use a 6- to 25-pin adapter which is supplied with the terminal.
Note: The INMAC328 is a DB25F-F gender adapter.
- 4 If you are not using an A/B switch, connect the other end of the null modem cable to the CRT connector on the Meridian Mail I/O panel.
- 5 If you are using an A/B switch (see Figure 10-1) proceed as follows:
 - a. Connect the other end of the null modem cable to the connector labelled A on the A/B switch.
 - b. Connect one end of a straight RS-232 cable (NTND91AA/AB) to the CRT connector on the Meridian Mail module 1 I/O panel.
 - c. Connect the other end of the straight RS-232 cable to the common connector (usually marked C) of the A/B switchbox.
- 6 Plug the terminal power cord into an AC receptacle.
- 7 Power on the terminal.
- 8 Configure the terminal as described in Appendix A for your type of terminal.

Procedure 10-4 **Installing a MAT**

Note 1: *You must have the multiple user administration feature installed.*

Note 2: *You may not have more than one MAT on a node, or a total of more than three MATs on a system.*

- 1 Place the terminal in a suitable location within 50 feet of the Meridian Mail System.
If the cable distance is greater, a pair of limited distance modems (LDMs) is required.
- 2 Connect the keyboard and power cord to the terminal.
- 3 Connect one end of the null modem terminal cable (NDND82AA/AB) to the COMM connector on the terminal, via an INMAC 328 adaptor.
Depending on the type of terminal, you may also have to use a 6- to 25-pin adaptor which is supplied with the terminal.
- 4 Connect the other end of the null modem cable to a connector on an RSM fanout cable connected to the Meridian Mail I/O panel, or to a CRT connector on a Meridian Mail I/O panel.

This connector must correspond to a port that has been configured for a MAT. See Table 10-1 for the correspondence between fanout cable connector labels and ports configured during system installation or modification, and for recommended dataport usage.

- 5 Plug the terminal power cord into an AC receptacle.
- 6 Power on the terminal.
- 7 Configure the terminal as described in Appendix A for your type of terminal.

Note: A port should have been configured at software installation time for each MAT. If this was not done, you will need to reconfigure ports from the administration terminal. Go to the System Administration Tools level on the MMI screen and select “Configure MATs” to configure ports as MATs. See *System Administration Tools* (NTP 555-7001-305).

Installing and configuring the LA75 Plus Companion printer

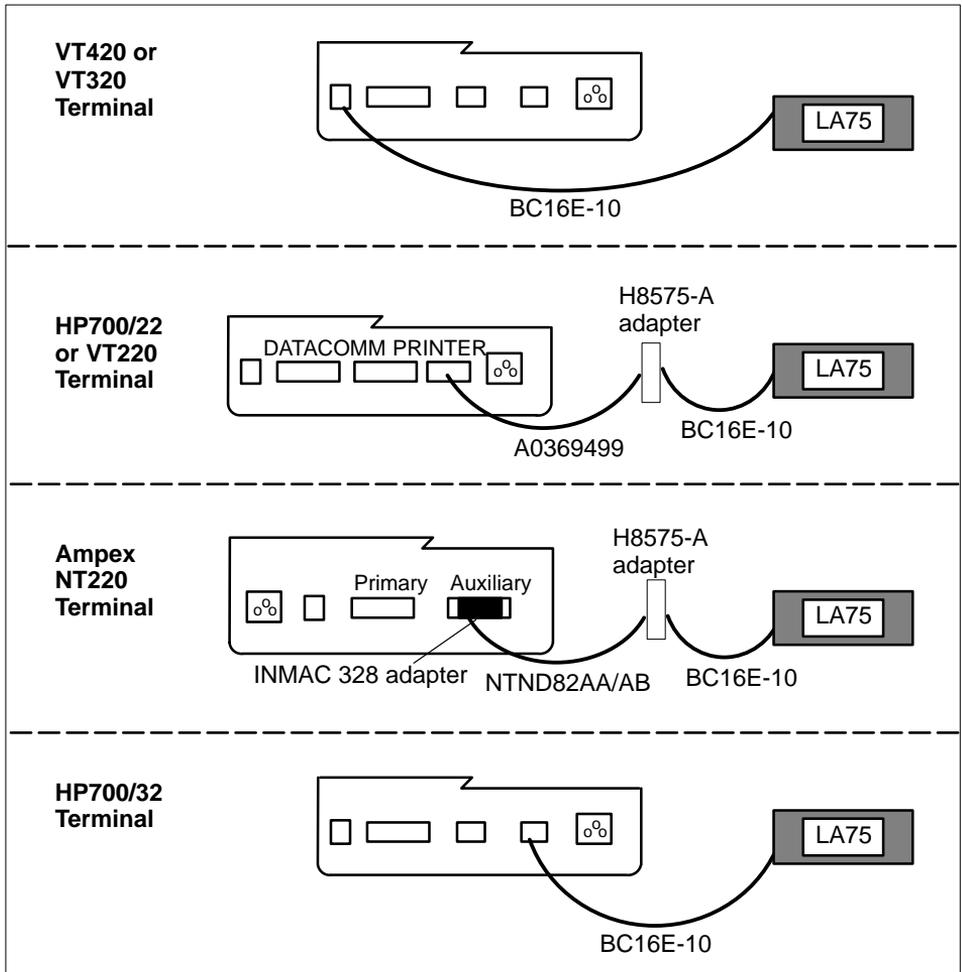
Install the LA75 Plus Companion printer as described in Procedure 10-5. Note that cables and adapters needed vary with the type of terminal you are using.

Procedure 10-5

Installing the LA75 Plus Companion printer

- 1 Place the printer in a suitable location near the administration terminal.
- 2 Connect the power cord to the printer.
- 3 Connect one end of the BC16E-10 interface cable to the back of the printer. See Figure 10-3.
- 4 Connect the other end of the interface cable, using adapters and cables as needed, to the terminal. See Figure 10-3 for details of the required cables and adapters.
- 5 Plug the printer power cord into an AC receptacle.
- 6 Leave the printer powered off to start configuration.
- 7 Configure the printer as described below.

Figure 10-3
LA75 Plus Companion printer connections to administration terminals



Procedure 10-6 Setting up the LA75 Plus Companion printer

- 1 Ensure the printer is turned off.
- 2 Press and hold the Set-up button on the front control panel of the printer, and, *at the same time*, power on the printer. Release the Set-up button one to two seconds after powering on. See Figure 10-4 for the layout of the front panel.

The printer will automatically print out a list of the default settings. When the list is complete, it will go back to the beginning of the list, reprint the first setting, and stop. (That is, it will go back to "Generic 1" and stop.)

Figure 10-4
Front control panel on LA75 Plus Companion printer

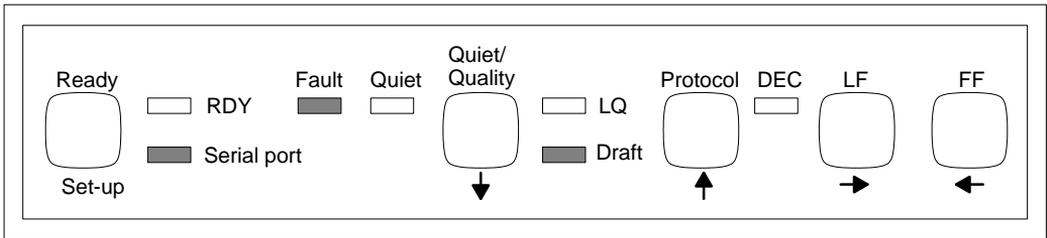


Table 10-2
LA75 printer default settings

Feature number	Name	Required value	Meaning
Generic 1	Protocol at Power-up	3	Port dependent
Generic 2	Form length	9	11 inches (A)
Generic 3	Vertical pitch	4	6 lines per inch
Generic 4	Automatic advance	1	Selected
Generic 5	Print quality control	1	Software control
Generic 6	Port selection	1	Serial port
Generic 7	Baud rate	7	9600
Generic 8	Data bits and parity	7	8-None
Generic 9	Buffer Control	1	XON/XOFF
-continued-			

Table 10-2
LA75 printer default settings – continued

Feature number	Name	Required value	Meaning
Generic 10	Error beep	1	One beep
Generic 11	Typestyle	1	Internal
Generic 12	Input buffer size	1	8 K
Generic 13	Disconnect on fault	1	Not selected
DEC 1	Horizontal pitch	7	10 Char. Per In. (80 Col)
DEC 2	GO character pitch	1	U.S. ASCII
DEC 3	User Pref. Char Set.	1	DEC Supplemental
DEC 4	Printer ID	4	Conf. Level 2 (LA75 Plus)
DEC 5	Text Mode Right Marg	2	Wrap
–end–			

- 3 If you want to change the value of the current setting, press the left arrow key on the front of the printer. See Table 10-2 for the required values.
The current feature number is printed again with the new value.
- 4 If this is not the value you require, press the left arrow key again, and the next value for that feature number is printed. Refer to the user manual that is provided with the printer for the list of values available for each feature.
- 5 Repeat step 4 until the value that you want for this feature is printed. Press the “down” arrow key to move on to the next feature.
- 6 Repeat steps 4 and 5 until you have selected the required values for all of the features.
- 7 Press the Set-up button on the front of the printer to save the settings.

Install and configure the HP Thinkjet printer

Procedure 10-7

Installing the HP Thinkjet printer

- 1 Place the printer in a suitable location near the administration terminal.
- 2 Connect the power cord to the printer.

- 3** Connect one end of the appropriate cable to the back of the printer. See Figure 10-5.
- 4** Connect the other end of the cable, using an adapter if needed, to the terminal. See Figure 10-5 for details of the required cables and adapters.
- 5** Set the printer switches as shown in Tables 10-3 and 10-4. Figure 10-6 shows the location of the switches.
- 6** Plug the printer power cord into an AC receptacle.
- 7** Power on the printer.

Figure 10-5
HP Thinkjet printer connections to administration terminals

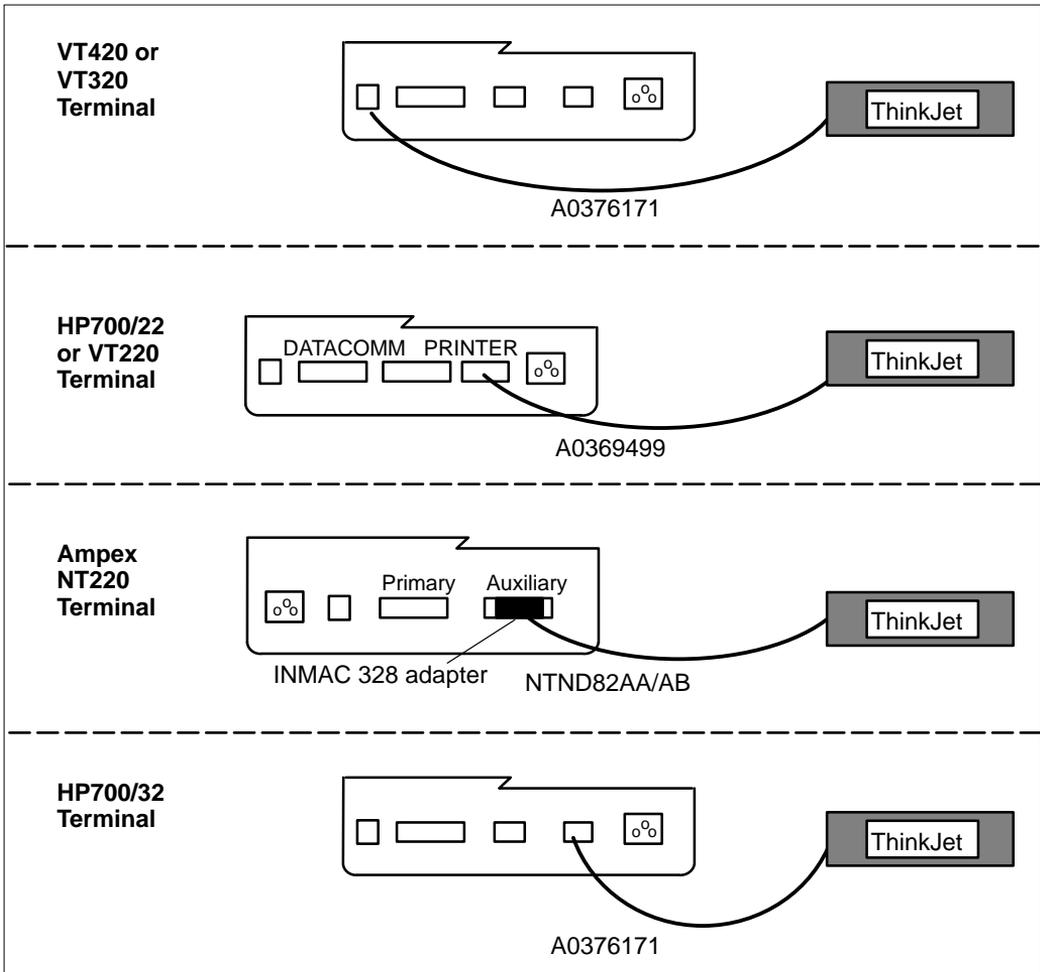


Figure 10-6
HP Thinkjet printer switch locations

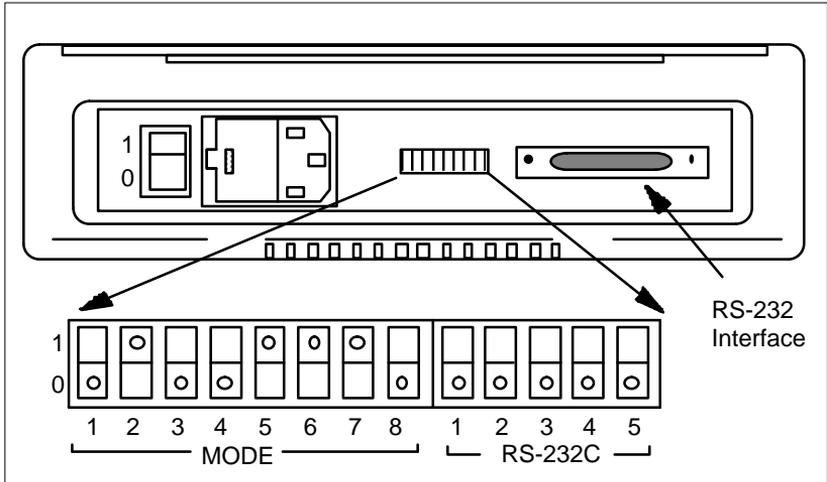


Table 10-3
HP Thinkjet printer mode switch settings

Switch	Position	Function
1	DOWN	CR definition
2	UP	LF definition
3	DOWN	Perforation skip mode
4	DOWN	Page length
5	UP	Control sequence mode
6	UP	Character set
7	UP	Character set, for IBM 8-character set
8	DOWN	Character set

Table 10-4
Printer RS-232 switch settings

Switch	Position	Function
1	DOWN	Handshaking mode, set for DTR
2	DOWN	Parity, set for none
3	DOWN	Parity
4	DOWN	Baud rate, set for 9600 baud
5	DOWN	Baud rate

Install and configure modems for remote administration

The modem configuration procedures below are for the AT command method. If you have a UDS 2440 modem, you may prefer to use the front panel method. Refer to Appendix B, Modem configuration.

Procedure 10-8 **Installing the local modem**

- 1 Connect one end of a straight RS-232 cable (NTND91AA/AB) to the modem connector labeled
 - RS232/EIA for Ven-Tel modems
 - DTE for UDS modems
- 2 Connect the modem to the phone line designated for remote administration and maintenance.
- 3 Plug the modem power cord into an AC receptacle.

Procedure 10-9 **Configuring the local modem—AT command method**

- 1 If the modem is a Ven-Tel, set the internal switches. Refer to Appendix B, "Modem configuration."
- 2 Power on the modem.
- 3 Temporarily disconnect the administration terminal from the A/B switchbox.
- 4 Connect the free end of the modem cable to the terminal for the purpose of configuring the modem.
- 5 Configure the modem. Refer to Appendix B, "Modem configuration," for configuration procedures for your modem type.
- 6 Disconnect the administration terminal from the modem cable.
- 7 Reconnect the administration terminal to the A/B switchbox.

- 8 Connect the free end of the modem cable to the B connector on the switchbox.
- 9 Connect the modem to a convenient phone line.

Configure the remote modem using the administration terminal (optional)

You may configure the remote modem using the administration terminal, or wait until you have installed and configured the remote terminal before configuring the remote modem.

Procedure 10-10

Configuring the remote modem using the administration terminal

- 1 If the modem is a Ven-Tel, set the internal switches. Refer to Appendix B, "Modem configuration."
- 2 Connect one end of a straight RS-232 cable (NTND91AA/AB) to the modem connector labeled
 - RS232/EIA for Ven-Tel modems
 - DTE for UDS modems
- 3 Plug the modem power cord into an AC receptacle.
- 4 Power on the modem.
- 5 Temporarily disconnect the administration terminal from the A/B switchbox.
- 6 Connect the free end of the modem cable to the terminal for the purpose of configuring the modem.
- 7 Configure the modem. Refer to Appendix B, "Modem configuration for Remote Access," for configuration procedures for your modem type.
- 8 Disconnect the administration terminal from the modem cable.
- 9 Reconnect the administration terminal to the A/B switchbox.

Procedure 10-11

Installing the remote terminal and modem

- 1 If the modem is a Ven-Tel, set the internal switches. Refer to Appendix B, "Modem configuration for Remote Access", for configuration procedures for your modem type.
- 2 Place the terminal and the modem in a suitable location.
- 3 Connect the keyboard and power cord to the terminal, and the power cord to the modem.

- 4 Connect one end of a straight-through RS-232 cable to the COMM connector on the terminal via an INMAC 328 adapter. Depending on the type of terminal, you may also have to use a 6 to 25-pin adapter which is supplied with the terminal.
- 5 Connect the other end of the straight RS-232 cable to the modem.
- 6 Plug the terminal and modem power cords into an AC receptacle.
- 7 Power on the terminal and modem.
- 8 Configure the terminal as described in Appendix A for your terminal.
- 9 If you did not already configure the modem, do so now. Refer to Appendix B, "Modem configuration for Remote Access," for configuration procedures for your modem type.

Install a networking modem

Procedure 10-12

Installing a networking modem

- 1 Configure the modem as described in the "Installing Meridian Networking hardware" chapter in the *Networking Installation Guide* (NTP 555-7001-213). This chapter also describes how to configure the appropriate port if the port was not configured at software installation time.
- 2 Connect one end of a straight RS-232 cable (NTND91AA) to a connector on an RSM fanout cable attached to the Meridian Mail I/O panel.

This connector must correspond to a port that has been configured for a networking modem. See Table 10-1 for the correspondence between fanout cable connector labels and ports configured during system installation or modification, and for recommended dataport usage. See System Administration Tools (NTP 555-7001-305) for information on configuring a dataport.

- 3 Connect the other end of the cable to the RS232/EIA connector on the modem.

Optional peripheral devices

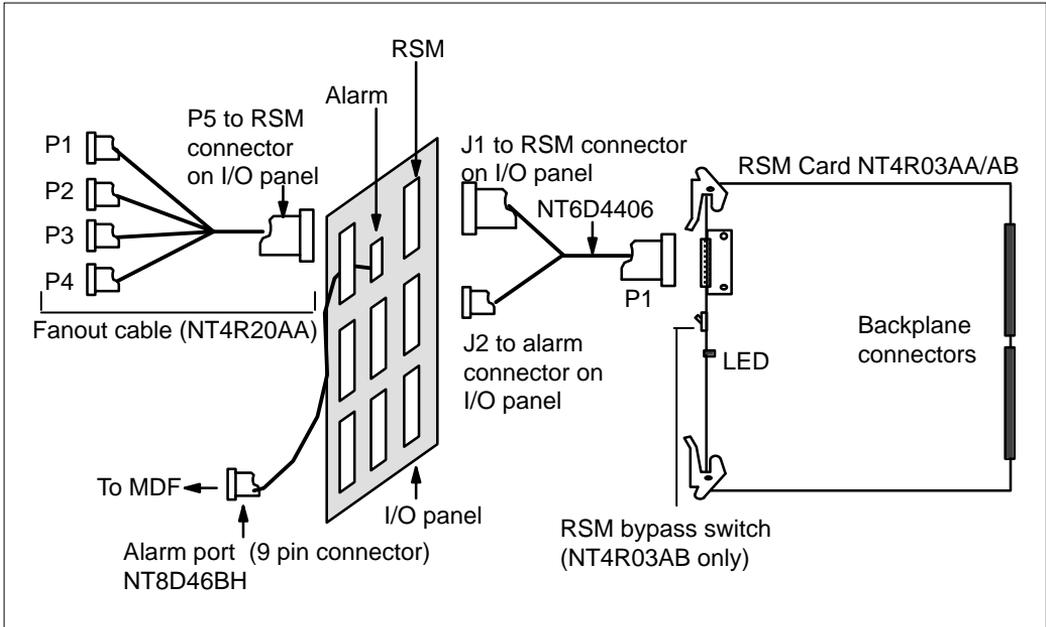
RSM card and cabling installation

The RS-232 Service Module (RSM) provides four RS-232 ports and alarm capabilities. Figure 10-7 illustrates the cabling involved in these functions. Table 10-5 lists the alarm port and ground cable connections.

Table 10-5
RSM alarm, ground, and power monitor connections

Description	J2 pin
Frame ground	1
Ground	2
Power monitor	6
Minor alarm, normally closed	7
Minor alarm, normally open	3
Minor alarm, common	8
Major alarm, normally closed	9
Major alarm, normally open	4
Major alarm, common	5

Figure 10-7
RSM cabling overview



Alarms

Two Form-C dry contact relays are provided for connection to customer-provided alarms. Each relay contact is rated at 0.5 amperes and 150 V dc.

Alarms that show as critical or major on your administration terminal appear in the central office as minor. Alarms that show as minor on your administration terminal do not appear in the central office (see Table 10-6). These alarms are corrected by following the instructions in the SEER reports.

The critical and major alarm contacts can be triggered by the processor, a board reset, power off condition, or watchdog timeout (which has a fixed 128-second timeout interval).

Note: The major alarm to indicate a “system down” status is available only from the RSM card installed on the prime node (node 1).

Table 10-6
Software and hardware alarm status

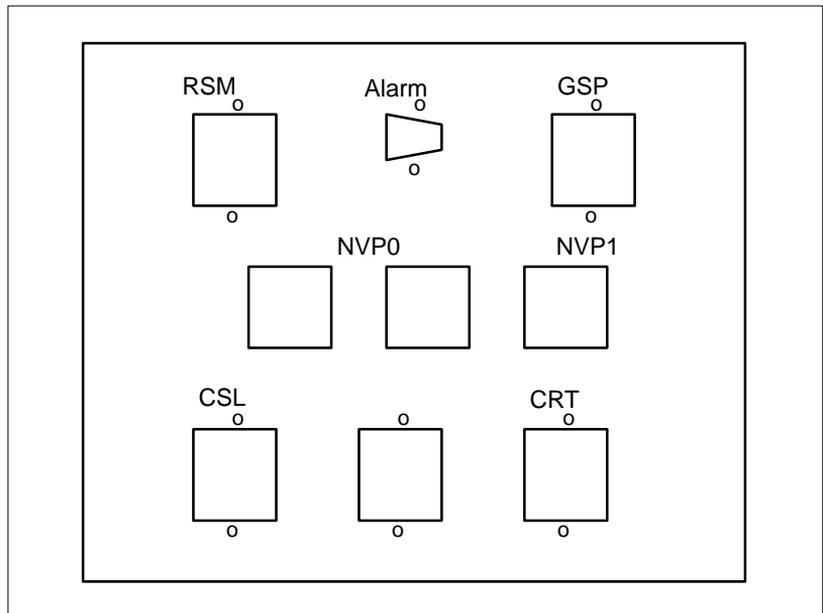
Software alarm	..translates into hardware alarm...
Critical	Minor
Major	Minor
Minor	not supported by Meridian Mail software

Procedure 10-13
Connecting the alarm

- 1 Connect the power monitor alarm cable (NT8D46BH) from the RSM J2 connector on the Meridian Mail I/O panel to the Main Distribution Frame (MDF). Refer to Figures 10-7 and 10-8.

The pin assignments are detailed in Table 10-5.

Figure 10-8
I/O panel



Installing a new RSM card and cabling

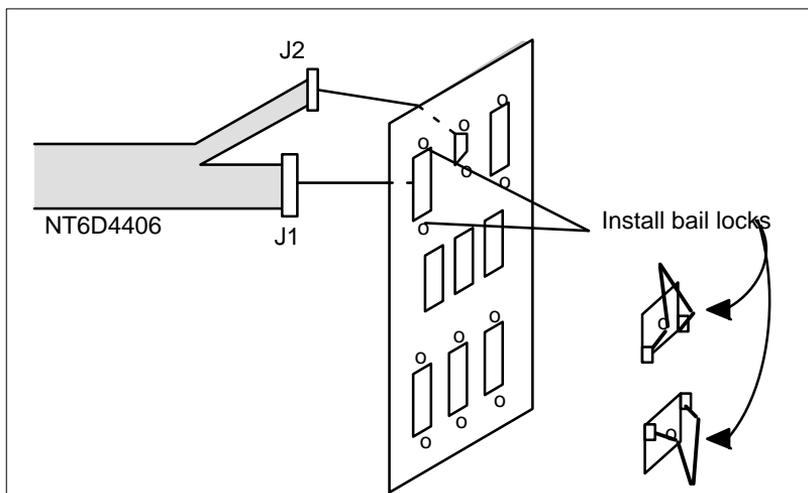
If you need more RS-232 ports than are available on your present system, you may install a new RSM card, either in an open VP/RSM slot or by replacing a VP in a VP/RSM slot.

- 1 Power down the system.
- 2 Remove front and rear covers from the module in which the RSM is to be installed.
- 3 Disconnect cabling at the front of the MMP40 card.
- 4 Disconnect cabling at the front of the GSP cards.
- 5 Remove the GSP cards, label them for the VP/GSP slot 1 to 3, or VP/RSM slot, and carefully put them aside.
- 6 Route the RSM cable (NT6D4406) along the inner panel (just to the right of the RSM card slot) to the rear of the shelf. (Clamps are provided to secure the cable along the panel.)
- 7 Go to the rear of the module and inspect the connector panel.

If the "Alarm" slot is the same size as the "RSM" slot and you are installing the alarm cable, go to the next step. If the "Alarm" slot is smaller than the "RSM" card, go to step 8.

- 8 Optional step: If you have the older-style connector panel, install the adapter plate over the "Alarm" slot. Short screws are provided to secure the plate at the top and bottom.
- 9 Mount the J1 connector onto the port marked "RSM." Secure the bail locks onto the connector. See Figure 10-9.

Figure 10-9
RSM cable to connector panel



- 10 Optional step: Mount the J2 connector onto the port marked "Alarm." Secure the connector with long screws.
- 11 Connect the RSM fanout cable (NT4R20AA) to the RSM connector, and route it to the RS-232 devices you require.
- 12 Install the RSM card in the appropriate slot.
- 13 Connect the RSM cable to the front of the RSM card.
- 14 Re-install the GSP cards and reconnect the cabling at the front of the cards.
- 15 Reconnect the cables to the front of the MMP40 card.
- 16 Inspect all cables and cards to ensure that they are seated properly.
- 17 Reinstall front and rear covers.
- 18 Power up the system.

- 19 See *System Installation and Modification Guide* (NTP 555-7001-215) for hardware modification to add the RSM card to the hardware database.
- 20 See *System Administration Tools* (NTP 555-7001-305) to assign data ports using “Modify Hardware” from the Tools Utility Menu.

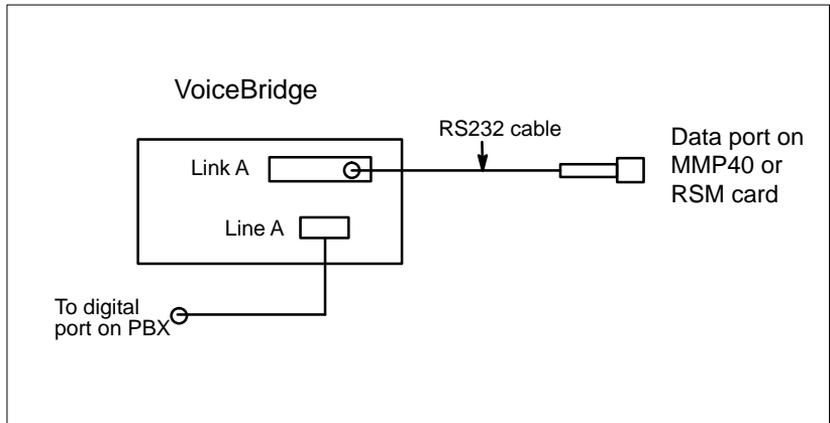
Table 10-1 shows recommended dataport usage and the correlation between the dataport connectors on the I/O panel and the dataports on the RSM and MMP40 packs in the Meridian Mail modules.

VoiceBridge integration unit

If you are using the Meridian Mail Connections package, one or more VoiceBridge units are required. The VoiceBridge units enable the PBX (connected to Meridian Mail) to emulate a Centrex switch. The SMDI interface is provided by the VoiceBridge. The cabling is shown in Figure 11-10. Each VoiceBridge unit requires an SMDI link. For details on VoiceBridge installation procedures, refer to

- *VoiceBridge Installation Procedures for AT&T switches* (NTP 555-7001-216),
- *VoiceBridge Installation Procedures for ROLM switches* (NTP 555-7001-217),
- *VoiceBridge Installation Procedures for NEC switches* (NTP 555-7001-218).

Figure 10-10
VoiceBridge Installation



Chapter 11: Configuring the DMS-100, SL-100, or PBX

The switch attached to Meridian Mail must be programmed to communicate to Meridian Mail both voice information and command and status information. The voice links carry voice transmissions to and from subscribers' mailboxes located in the Meridian Mail System. Command and status information is carried via the SMDI (simplified message desk interface).

Switch type

If the switch is a Northern Telecom DMS-100 or SL-100, see the instructions following the heading "DMS-100/SL-100" below.

If the switch is a Northern Telecom DMS-10, use the DMS-10 Installation Methods guide.

If the switch is manufactured by AT&T, NEC or ROLM, look under the heading "Connections" for references to the correct documentation to program your switch.

Connections

For the configuration procedures on PBXs supported by the Meridian Mail Connections package, refer to

- *VoiceBridge Installation Procedures for AT&T switches* (NTP 555-7001-216)
- *VoiceBridge Installation Procedures for ROLM switches* (NTP 555-7001-217)
- *VoiceBridge Installation Procedures for NEC switches* (NTP 555-7001-218)

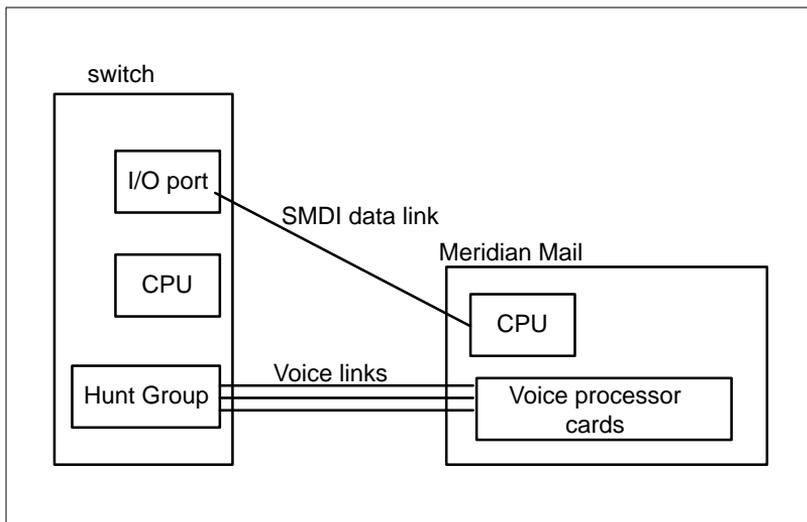
The rest of this chapter applies only to the Northern Telecom DMS-100 or SL-100 switch.

DMS-100/SL-100

You must be familiar with PBX or Centrex switch terminology, programming and installation in order to perform the configuration procedures. The procedures described here are for DMS-100/SL-100 installations.

Once the various hardware components have been installed, you need to configure the SMDI data link, define the UCD agents for each voice channel, and activate the SMDI link, and configure the voice channels to be used by Meridian Mail. You perform these tasks using the administration terminal attached to the switch. See Figure 11-1 for an overview of Meridian Mail connections to the switch.

Figure 11-1
Meridian Mail interface to the switch



SMDI data link on switch

For details on the SMDI configuration, refer to Service Order Procedure 0081 in *Service Order Procedures*, NTP 297-3401-311.

Meridian Mail systems with multiple SMDI links

The procedures described in the next few pages are applicable to systems with one SMDI link.

Procedure 11-1

Datafilling systems with multiple SMDI links

- 1 Determine the number of SMDI links required. See the *Site and Installation Planning Guide* (NTP 555-7051-200).
- 2 Follow the procedures in this chapter.

Note 1: Repeat input for Tables TERMDEV, MPC, and MPCLINK, SLLNKDEV, WRDN/DNROUTE and UCDGRP for each SMDI link. Datafill table LNINV for all the lines. In the Service Order section, complete LINE_NO and UCDGRP for each SMDI link.

Note 2: Table TERMDEV is required only for the NT1X67FA card. Tables MPC and MPCLINK are required only for NT1X89.

Table WRDN applies only to BCS releases lower than 33. Table DNROUTE applies only to BCS releases 33 and above.

Filling in the switch data tables

Configure the switch by filling in data tables and service orders as shown on the following pages. See *Simplified Message Desk Interface Set-up and Operation* (NTP 297-2001-104) for more information on the tables. See *Service Orders and Query System Reference Manual* (NTP 297-2101-310) for more information on service orders.

Note: All input is done at the maintenance administration position terminal (MAP).

Carry out the following procedures in the sequence indicated. Where input values are in upper case text, enter the values indicated. Where input values are indicated in lower case text, substitute the values specified in your DMS Data Form.

Note: Table TERMDEV is required only for the NT1X67 card. Tables MPC and MPCLINK are required only for NT1X89.

Procedure 11-2
Assigning terminal devices for NT1X67 card

- 1 Enter **table termdev** and press <Return>.
You are prompted to enter a command.
- 2 Respond to the prompts as indicated in Table 11-1.
- 3 Once you have entered the necessary responses, enter <\$> followed by <Return>.

The TERMDEV table is saved and you are returned to command level.

Table 11-1
Table TERMDEV

Prompt	Input	Comments
TABLE:	TERMDEV ADD	
TERMDIS	—	Device name of the SMDI link, used in SMDILNK (1-8 characters).
IOCNO	—	Input/Output controller number to which the terminal device is assigned.
CKTNO	—	Input/Output controller number to which the terminal device is assigned for outgoing and incoming datalinks.
TERMTYPE	SMDI	The terminal type.
BAUDRT	B1200	The baud rate of the terminal device.
GUARINTYP	EIA	Interface type—where the terminal type is equipped with a data set or modem, enter EIA.
EQPEC	1X67FA	Product Engineering code of the terminal controller pack.
PRTY	EVEN N	Parity of the terminal device. Guaranteed device.
MODEM	NONE	Type of modem which is connected to the corresponding port.
COMCLASS	ALL	Command classes allowed for the terminal.

Procedure 11-3
Assigning terminal devices for NT1X89 card

- 1 Enter **table mpc** and press <Return>.
You are prompted to enter a command.
- 2 Respond to the prompts as indicated in Table 11-2.
- 3 Once you have entered the necessary responses, enter <\$> followed by <Return>.
 The MPC table is saved and you are returned to command level.
- 4 Enter **table mpclink** and press <Return>.
You are prompted to enter a command.
- 5 Respond to the prompts as indicated in Table 11-3.
- 6 Once you have entered the necessary responses, enter <\$> followed by <Return>.
 The MPCLINK table is saved and you are returned to command level.

Table 11-2
Table MPC

Prompt	Input	Comments
TABLE:	MPC	
MPCNO	0-255	Enter the number of MPC used for SMDI.
MPCIOC	0-12	MPC input/output controller shelf; enter the number associated with the (MPC) SMDI card.
IOCCCT	0, 4, 8, 12, 16, 20, 24, 28, 32	IOC circuit number; enter the slot position on the IOC shelf multiplied by 4, from 0 to 32.
EQ	1X89AA OR 1X89BA	Enter the NT Product Engineering Code for the MPC card.
DLDFILE	MPCAxxyy	Enter the name of 8-character download file for SMDI. MPCA.

Table 11-3
Table MPCLINK

Prompt	Input	Comments
TABLE:	MPCLINK	
LINKKEY	See comments	This key field is composed of subfields MPCNO and LINKNO.
MPCNO	0-255	Enter the MPC number using the same value as in table MPC.
LINKNO	2, 3	Enter the MPC link number for SMDI application with ASYNC protocol.
PROTOCOL	ASYNC	Enter Link protocol. It must be consistent with the download file specified in table MPC.
LINKNABL	0-32765	Enter the number of minutes, in multiples of 5, a link is enabled before it is busied.
APLDEFN	SMDI	Enter the name of the application.

Procedure 11-4
Defining datalink characteristics

Use the SL-100 link device table SLLNKDEV to specify characteristics of datalinks used by the command interpreter LNKUTIL.

- 1 Enter **table sllnkdev** followed by <Return>.

You are prompted to enter a command.

- 2 Respond to the prompts as indicated in Table 11-4.

Note: Depending on your BCS load some prompts may differ. See *Simplified Message Desk Interface Set-up and Operation* (NTP 297-2001-104) if more information is required.

Note: If you use a release of the NT1X67 card earlier than the NT1X67FA part, the message waiting lamp may not go on.

- 3 Once you have entered the necessary responses, enter <\$> followed by <Return>.

The SLLNKDEV table is saved and you are returned to command level.

Table 11-4
Table SLLNKDEV

Prompt	Input	Comments
TABLE:	SLLNKDEV ADD	
DEVNAME	—	Device name entered in table TERMDEV.
DEVTYPE	—	Device type used. For BCS29 and earlier releases, use RS232 . For BCS30 and later releases, use HS1X67 (for the 1X67FA pack).
XLATION	NONE	No translation is used for outgoing and incoming datalinks.
PROTOCOL	NONE	No protocol is used by the datalink and the PBX/DMS for connecting and starting messages.
DIRECTION	INOUTLK	Direction that the data travels through the datalink.
XFERS	SMDIDATA	Report type currently allowed on the datalink. SMDIDATA is for SMDI I/O communication.

Procedure 11-5
Defining UCD group

The Uniform Call Distribution Group (UCDGRP) table defines the message desk number for the Voice Messaging and Express Messaging UCD group. Each voice channel has a corresponding UCD agent that is a member of the message desk.

- 1 Enter **table ucdgrp** followed by <Return>.
You are prompted to enter a command.
- 2 Respond to the prompts as indicated in Table 11-5.
- 3 Once you have entered the necessary responses, enter <\$> followed by <Return>.
The UCDGRP table is saved and you are returned to command level.

Table 11-5
Table UCDGRP

Prompt	Input	Comments
TABLE:	UCDGRP	
	ADD	
UCDNAME	_____	Name assigned to the UCD group (1-16 chars)
ACDN	N	Automatic call distribution is not supported.
CUSTGRP	_____	Name of the customer group to which the UCD group belongs (1-16 chars)
UCDRNGTH	30	Ringling threshold, in one-second intervals, after which an unanswered call to a UCD agent is forwarded to the route specified in the THROUT field (Range 0-63)
TABNAME	OFRT	Table to which translations are routed for overflow and time-outs, either IBNRTE or OFRT.
INDEX	_____	Number assigned to the route list in table IBNRTE or OFRT (1-1023).
TABNAME	OFRT	Table to which translations are routed if there are no active agents, either IBNRTE or OFRT.
INDEX	_____	Number assigned to the route list in table IBNRTE or OFRT (1-1023).
PRIOPRO	_____	Maximum time, in seconds, a call can wait in a queue (0-255).
MAXPOS	_____	Maximum number of the UCD agent positions that can be active at one time. Corresponds to the number of voice channels on the Meridian Mail system (0-1023).
DBG	Y	Set to "Y" if billing starts when the call is answered by a UCD agent. Set to "N" if billing starts when the caller receives a recorded announcement.
DEFPRIO	0	Default priority number applicable to local calls terminating on the primary UCD number (0-3).
RLSCNT	0	Maximum number of calls that terminate on a UCD station but are not answered (0-31).
-continued-		

Table 11-5
Table UCDGRP (continued)

Prompt	Input	Comments
MAXCQSIZ	_____	Maximum number of calls that can be in the incoming queue (0-511). Corresponds to the number of Meridian Mail channels.
MAXWAIT	_____	Maximum time, in seconds, that a call waits in the incoming call queue before being answered (0-1800).
OPTIONS	UCD_SMDI	Number is part of an SMDI UCD group.
SMDI_TERMDEV	_____	Terminal designation defined in tables TERMDEV and SLLNKDEV.
SMDI_DSK_NO	63	Message desk number (1-63). For the second UCD group on a datalink, the first or second UCD group must be 63.
-end-		

Procedure 11-6
Assigning a primary directory number in BCS 32 or lower

The primary directory number (Voice Messaging DN) for a UCD group is assigned in the WRDN table.

- 1 Enter **table wrdn** followed by <Return>.
You are prompted to enter a command.
- 2 Respond to the prompts as indicated in Table 11-6.
- 3 Once you have entered the necessary responses, enter <\$> followed by <Return>.
The WRDN table is saved and you are returned to command level.

Table 11-6
Table WRDN

Prompt	Input	Comments
TABLE:	WRDN ADD	
DNNM	—	SVGNPA, NNX and DEFGDIGS values.
DN_SEL	FEAT	DN selector FEAT.
FEATURE	UCD	Feature UCD.
UCDGRP	—	Name as entered in table UCDGRP, field name UCDNAME for this directory number.
DNTYPE	PRIM	Set to "PRIM" where the DN is the primary UCD DN for this UCD group.
TOLLPRIO	0	Priority of toll calls terminating on the primary UCD DN. The highest priority is 0.

Procedure 11-7
Entering feature activation codes

The feature activation codes required to set up and access message waiting are entered in this table.

- 1 Enter **table ibnxla** followed by <Return>.

You are prompted to enter a command.
- 2 Respond to the prompts as indicated in Table 11-7.
- 3 Once you have entered the necessary responses, enter <\$> followed by <Return>.

The IBNXLA table is saved and you are returned to the command level.

Table 11-7
Table IBNXLA

Prompt	Input	Comments
TABLE	IBNXLA	
	ADD	
KEY		Consists of subfields XLANAME and DGLIDX.
XLANAME	___	Name of the translator, 1-8 chars.
DGLIDX	___	Access code for special feature.
CONTMARK	+	Continuation mark.
RESULT		Consists of subfields TRSEL, ACR, SMDR, and FEATURE.
TRSEL	FEAT	The feature translation selector.
ACR	N	Account codes not required.
SMDR	N	Station Message Detail Recording off.
Note: Not all the features below are required		
FEATURE	CRA	Call request activate.
	CRR	Call request retrieve.
	CRDS	Call request delete specific.
	CRDA	Call request delete all.
	UCDD	Universal Call Distribution Deactivate
	UCDA	Universal Call Distribution Activate
	CFWP	Call Forward Park
	CFWC	Call Forward Clear

Procedure 11-8
Defining line location

The Line Circuit Inventory table contains the assignment for each card slot on the line or remote line module.

- 1 Enter **table l_{inv}** followed by <Return>.
- 2 Respond to the prompts as indicated in Table 11-8.
- 3 Once you have entered the necessary responses, enter <\$> followed by <Return>.

The LNINV table is saved and you are returned to the command level.

Table 11-8
Table LNINV

Prompt	Input	Comments
TABLE:	LNINV	
LEN	_____	Line equipment number.
CARDCODE	6X18nn	Product engineering code for the line card; either 6X18AA or 6X18AB.
PADGRP	STDLN	Name of the appropriate pad group in the PADDATA table.
STATUS	WORKING	Line inventory availability status should be "working".
GND	Y	Ground start line.
BNV	NL	Balanced network value is non-loaded.
MNO	Y	Manual override set to YES, so that onhook balance network tests don't update this field.

UCD agents

There must be one UCD agent for each Meridian Mail voice processor channel. The UCD agents are defined as standard sets using the following service order procedure (for ground start lines). Set option UCD to designate them as UCD agents. The DNs assigned to these agents must also be assigned in the Channel Allocation Table on Meridian Mail (see the *System Administration Guide*, (NTP 555-7001-301) for details).

When allocating line equipment numbers (LENs) to be used for the UCD agents, ensure that there are sufficient DS-30A links between the Line Group Controllers (LGCs) and the Line Concentrator Modules (LCMs) to support the additional Meridian Mail traffic. Refer to NTP 297-1001-103 for more information.

Procedure 11-9 Defining UCD agents

- 1 Enter **servord** followed by <Return>.
You are prompted to enter a command.

- 2 Respond to the prompts as indicated in Table 11-9.
- 3 Once you have entered the necessary responses, enter <\$> followed by <Return>.

The service order is saved and you are returned to command level.
- 4 Repeat steps 1 to 3 for each voice channel.

Table 11-9
Defining new ground start lines

Prompt	Input	Comments
SO	NEW	
SONUMBER	___\$	Current date and time followed by \$. e.g., 940413\$
DN	___	DN of the line.
LCC	IBN	Line class code of service.
GROUP	___	Name of the IBN customer group to which the line belongs.
SUBGRP	___	Subgroup number.
NCOS	___	Network class of service.
SNPA	___	Service Numbering Plan Area.
LATANAME	NILLATTA	Local Area Transport Access name.
LTG	___	Line treatment group.
LEN_OR_LTID	___	Line Equipment Number or Line Terminal ID.
OPTION	COD	Cut-off on disconnect.
OPTION	UCD	Uniform Call Distribution.
OPTION	DGT	Digitone.
OPTION	3WC	3-way conferencing.
OPTION	\$	

Procedure 11-10
Adding the SMDI option to voice channels

The following procedure adds the SMDI option to each agent of Meridian Mail. This procedure assigns the voice channels to a UCD group.

- 1 Enter **servord** followed by <Return>.

You are prompted to enter a command.
- 2 Respond to the prompts as indicated in Table 11-10.
- 3 Once you have entered the necessary responses, enter <\$> followed by <Return>.

The service order is saved and you are returned to command level.
- 4 Repeat steps 1 to 3 for each voice channel.

Table 11-10
Assigning SMDI option to ground start lines

Prompt	Input	Comments
SO	ADO	
SONUMBER	___\$	Current date and time.
DN_OR_LEN	___	DN or Line equipment number of the line.
OPTION	SMDI	Simplified Message Desk Interface.
SMDI_LINE_NO	1 (this number will increment with each additional voice channel)	Line number position in the UCD SMDI group.
SMDI_UCDGRP	___	Name of the UCD group to which the line belongs.
SMDI_AUTOLOG	Y	Autologon capability required.

Check table values

Procedure 11-11 Checking OFCENG values

The OFCENG table values must be large enough to support the Message Waiting Indicators for a broadcast message.

- 1 Enter **table ofceng** followed by <Return>.
- 2 Check existing values in table OFCENG as indicated in Table 11-11. Ensure they satisfy office requirements as per NTP 297-1001-455 provisioning rules.
- 3 If you make changes, be sure to follow the activation procedure for each change. Activation requirements are indicated in the first column of Table 11-11.

You are prompted to enter a command.

- 4 Change the values where required, as indicated in Table 11-11.
- 5 Once you have entered the necessary responses, enter <\$> followed by <Return>.

The OFCENG table is saved and you are returned to command level.

- 6 Do a warm restart on the PBX/DMS.

Table 11-11
Table OFCENG

Activation Requirements	Prompt	Input	Comments
	TABLE:	OFCENG	
		ADD	
Warm	POS	FTRQAGENTS	Specifies the number of agents that may have features active at any one time.
	CHA	_____	
Intermediate	POS	FTRQ2WAREAS	Specifies the number of data store blocks that may have the call forwarding option active.
	CHA	_____	
-continued-			

Table 11-11
Table OFCENG (continued)

Activation Requirements	Prompt	Input	Comments
Warm (increase); cold (decrease)	POS	FTRQ2WPERMS	Specifies the number of data store blocks allocated for the message waiting feature.
	CHA	_____	
Warm	POS	FTRQ8WAREAS	Specifies the number of data store blocks required for UCD and SMDI options.
	CHA	_____	
Warm (increase); cold (decrease)	POS	FTRQ8WPERMS	Specifies the number of data store blocks allocated for executive message waiting features.
	CHA	_____	
Cold	POS	CFD_EXT_BLOCKS	Specifies the number of extension blocks required for call forward busy and no answer.
	CHA	_____	
Cold	POS	CFW_EXT_BLOCKS	Specifies the number of extension blocks requested for the call forwarding option.
	CHA	_____	
Cold	POS	CFZ_EXT_BLOCKS	Specifies the number of extension blocks requested for POTS call answering package.
	CHA	_____	
-end-			

Procedure 11-12 Checking OFCVAR values

Make sure that the cutoff-on-disconnect-time in table OFCVAR is set to one second (100).

- 1 Enter **table ofcvar** followed by <Return>.

You are prompted to enter a command.
- 2 Position the cursor on cutoff-on-disc-time. Change as indicated in Table 11-12.

The values will take effect immediately.
- 3 Once you have entered the necessary responses, at the command line, enter: **<quit>**.

Table 11-12
Table OFCVAR

Prompt	Input	Comments
TABLE:	OF CVAR	
POS	CUTOFF-ON-DISC-TIME	Check that the value is 100 (one second). If not, change the value to 100.
CHA	_____	
PARMVAL	100	Specifies cutoff-on-disconnect (COD) time for lines assigned the COD option.

Call routing options and features for user telephone sets

The following call routing options and features are available:

- **Three-way Calling**
- **Digitone**
- **Call Forward Don't Answer** Specify the Voice Messaging DN as the forwarded DN and call answering will be activated for the user when the user is not available to answer the call.
- **Call Forward Busy** Specify the Voice Messaging DN as the forwarded DN and call answering will be activated for the user when the user is on the phone.

- **Call Forward Universal** If Call Forward Universal is activated (this is controlled by the user at the telephone set), the call can be re-routed to the Voice Messaging DN.
- **Message Waiting** A user is notified of a new message by a lit message-waiting lamp, or an audible indication (interrupted dial tone).
Note: The Key-Short-Hunt (KSH) option is not compatible with Meridian Mail.

Procedure 11-13

Setting call routing options for user telephone sets

Set call routing options for each user's telephone set as shown in the following service order procedure.

- 1 Enter **SO** (for single line users) or **CI** for multi-line users) followed by <Return>.
You are prompted to enter a command.
- 2 Respond to the prompts as indicated in Table 11-13 (single line sets) or Table 11-14 (multi-line sets).
- 3 Once you have entered the necessary responses, enter <\$> followed by <Return>.
The service order is saved and you are returned to command level.
- 4 Repeat steps 1 to 3 for each user.

Table 11-13
Defining users of Meridian Mail for single line sets

Prompt	Input	Comments
SO	NEW	If the DN already exists, the ADO command can be used to add options to the existing line.
SONUM-BER	___\$	Current date and time.
DN	___	User's DN.
LCC	IBN	Line class code of service.
GROUP	___	Name of the IBN customer group to which the line belongs.
SUBGRP	___	Subgroup number.
NCOS	n	Network class of service.
SNPA	___	Serving NPA of the DN.
LEN	___	Line equipment number of the line.
OPTION	DGT	Digitone.
OPTION	CFU or CFI	Call Forward Universal or Call Forward Intergroup.
OPTION	CFB	Call Forward Busy.
CFBCNTL	N	(Normal assignment for CFB.)
CFBDN	___	Enter the Meridian Mail UCD DN.
OPTION	CFD	Call Forward Don't Answer.
CFDCNTL	N	(Normal assignment for CFD.)
CFDDN	___	Enter the Meridian Mail UCD DN.
OPTION	MWT	Message Waiting.
NOTICE	STD	Message waiting notification by stuttered dial tone.
CAR	N	No call request feature.
CRX	N	Not call request exempt.
OPTION	\$	

Table 11-14
Defining users of Meridian Mail for multi-line sets

Prompt	Input	Comments
CI:		
>	SERVORD	Request Service Order Utility.
SO	NEW or ADO	User's DN.
SONUMBER	<CR>	When to invoke service. <CR> = current date and time.
DN	XXXXXXXX	User's Directory Number.
LCC	XXXXX	Type of telephone set.
GROUP	XXXXXXXX	Name of customer group to which user belongs.
SUBGRP	0	N/A. (Normally used when stations are assigned to attendant consoles.)
NCOS	0	N/A. (Normally used to restrict dialing out.)
SNPA	XXX	Serving NPA of the DN.
KEY	1	Primary key (1).
RINGING	Y	Y=yes, key 1 is ringing line.
LEN	XX-X-XX-XX	Line Equipment Number of the DN.
OPTKEY	X	Key number for assigning forwarding options to use with Meridian Mail.
OPTION	CFI or CFU	Allow Call Forward Intragroup or Universal Call Forward.
KEYLIST	XXXXXXXX	DNs that Call Forward will apply to. Note: If SO=NEW, can define CF for Key 1 only at this time.
OPTKEY	X	Key number for assigning forwarding options to use with Meridian Mail. Same key as CFI.
OPTION	CFB	Allow Call Forward Busy.
CFBCNTL	N	N=No.
CFBDN	XXXXXXXX	Voice Messaging DN.
OPTKEY	X	Key number for assigning forwarding options to use with Meridian Mail. Same key as CFI/B.
OPTION	CFD	Allow Call Forward Don't Answer.
CFDCNTL	N	N=No.
CFDDN	XXXXXXXX	Voice Messaging DN.
OPTKEY	X	Key number for message waiting option.
OPTION	MWT	Allow Message Waiting.
CAR	N	N=No.
CRX	N	N=No.
OPTKEY	\$	End of input.

Using the link

Procedure 11-14

Starting up the link (for 1X67FA card only)

When you finish filling in the switch data tables, you can start up the link.

- 1 Put the IOC card into service by entering the following commands:
 - a. MAPCI
 - b. MTC
 - c. IOD
 - d. IOC c (where c is the circuit number, e.g., 0)
 - e. CARD n (where n is the card number, e.g., 5)
 - f. RTS
- 2 Once the IOC card has been put into service, enter the following commands to put the link into transferring state:
 - a. LNKUTIL
 - b. DEVCON termdes (where termdes is the device name entered in table TERMDEV)
 - c. DEVSTART termdes SMDIDATA
 - d. SMDILNK
 - e. SMDICON termdes
- 3 Once the datalink has been set up, the UCD lines (agents) must be put into service. Enter the following commands for each agent:
 - a. MAPCI
 - b. MTC
 - c. LNS
 - d. LTP
 - e. 2D dn (where dn is the UCD agent's DN)
 - f. RTS

Procedure 11-15

Disabling message transfer on the link

To shut down message transfer on the link, enter the following commands:

- 1 For BCS releases lower than 34, follow these steps:
 - a. LNKUTIL
 - b. SMDILNK
 - c. LNKSTAT ALL

- d. SMDIDISC <poolname> (where poolname is derived from the LNKSTAT ALL command)
 - e. DEVSTOP termdes SMDIDATA (where termdes is the device name entered in field 1 of Table SLLNKDEV)
 - f. DEVDISC termdes KILL
 - g. LNKSTAT ALL
 - h. QUIT
- or
- 2 For BCS release 34 or greater:
 - a. MAPCI
 - b. MTC
 - c. IOD
 - d. IOC c (where c is the circuit number, e.g., 0)
 - e. CARD n (where n is the card number, e.g., 5)
 - f. BUSY n (where n is the card number, e.g., 5)
 - g. RTS

Adjust the volume level

Should the volume of recorded messages on the lines prove to be unacceptable, make modifications to the SL-100/DMS-100 Gain/Loss settings. These changes are done through the PADATA program. The following settings are affected:

- Gain/Loss from the line card to Meridian Mail
- Gain/Loss from Meridian Mail to the line card

The values given to these Gain/Loss settings depends on your specific operating requirements. These settings will have the following appearance:

- STDLN customer_name x y

where customer_name is the customer name you have defined for your system in the Line Inventory table (LNINV)

For a loss, append L to the number. For example, 10L means a loss factor of 10.

Recommended settings

The PAD values used for the STDLN to STDLN settings are the recommended default values for lines connected to Meridian Mail NT4R04AB GSP cards. For lines connected to Meridian Mail NT4R04AA GSP cards, set the PAD value from the line card to Meridian Mail to 0. Also set the PADATA settings for modems used in networking to 10L 10L.

For more information on the PADATA program, refer to *SL-100 PADATA* (NTP 555-4001-305) or *DMS-100 PADATA* (NTP 297-1001-451).

Chapter 12: Starting up and configuring Meridian Mail

This chapter assumes that Meridian Mail software has already been installed on your system. If Meridian Mail has not already been installed, please do the installation before proceeding. Refer to the *System Installation and Modification Guide* (NTP 555-7001-215), for more information. Software tapes (Install/data tapes) are included with your system to allow you to reinstall Meridian Mail in case of problems, and to allow you to perform hardware modifications and other specialized functions. Do not load software from the tapes unless specifically instructed to do so.

Starting up Meridian Mail

Procedure 12-1 Starting up Meridian Mail

Note: If any problems occur during startup, see Chapter 13, "Troubleshooting startup problems."

- 1 Power on the administration terminal and other peripheral devices.
- 2 On the administration terminal, press <Ctrl> and W. Then wait for Logon/Status to appear. Press P to select printer.

The word "Aut" appears at the bottom of the terminal screen to indicate that automatic printing is turned on. The automatic printing allows you to capture a printout of the bootup messages when you power on the Meridian Mail system. The bootup messages that should appear are outlined in Chapter 13. If you encounter a problem starting up the Meridian Mail system, you can compare the bootup messages that appeared on your system to the proper messages described in that chapter.

12-2 Starting up and configuring Meridian Mail

- 3 Before you power up the Meridian Mail system, look at Table 12-1, and be prepared to verify the proper behavior of the LEDs visible at the front of each module.

Be prepared to observe the hexadecimal display on the front of the MMP40 card (see Figure 12-1).

- 4 Power up the Meridian Mail system by setting the main breaker switch for each column to ON and DCEPS switches to ON.

Table 12-1

Starting up Meridian Mailbehavior of LED indicators

Location of LED	Color	Behavior
MMP40 (hexadecimal display)	Red	Always on while power to node is on (Can display numbers 0 to 9 or letters A to F [representing a hexadecimal number], plus a dot to the left and/or right of the letter or number. See table 13-1 for more information.)
Power Supplies	Green	On while power switch (DC) is on
GSP	Red	On while power to node is on

If your system has more than one Meridian Mail module, power on module 1, then 2, 3, 4, and 5.

Switch on the left CEPS in each module before the right one.

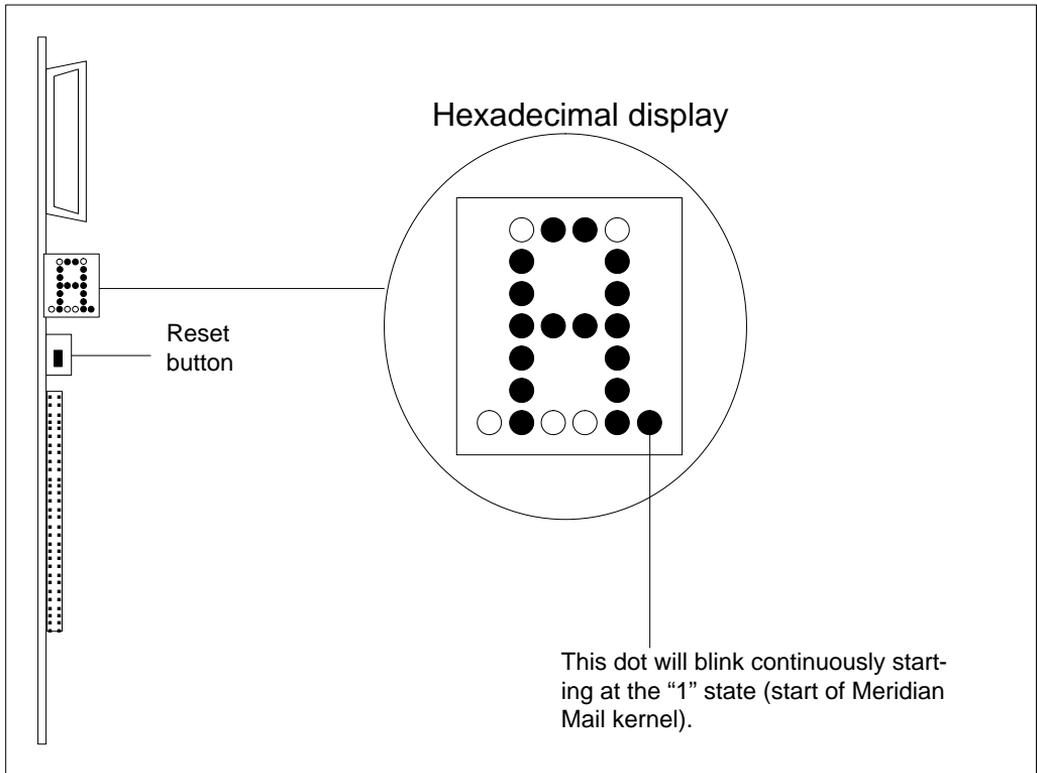
If these LEDs do not behave as described, consult Chapter 13 of this manual.

As part of the bootup process, the administrator's terminal displays a series of diagnostic and information messages.

- 5 Check for power problems:

LEDs on the power units at the base of the column indicate that power is on. You should hear the fans in the base of the column.

Figure 12-1
Hexadecimal display on MMP40 card



ATTENTION

To reduce stress on the system, use the RESET button on the faceplate of the MMP40 card to reboot the system instead of powering the cabinet off and on. Reset Node 1 first, then Nodes 2 through 5 in sequence as applicable.

However, if there is a question regarding the state of the system after the system reset, power the system off completely, then power back on to reboot.

- 6 On the MMP40 card, check that the hexadecimal display shows "A." The "A" indicates that the bootup was successfully completed on that node. If the hexadecimal display does not read "A" when bootup and bootROM diagnostics are completed, refer to Chapter 13. Table 13-1 in Chapter 13 provides a description of the usual progression of the hexadecimal display.
- 7 Check the hard copy of bootup messages. Compare the printout to that shown in Table 13-2 in Chapter 13. If the system stops at a point in the bootup or does not behave as expected, follow the troubleshooting procedure in that chapter.
- 8 On the administration terminal, press <Ctrl> and <Print Screen> to turn off the automatic printing. The word "Aut" should disappear from the bottom of the terminal screen.
- 9 Check the terminal display by pressing <Ctrl><w> simultaneously.
 - a. If information appears in a box with straight lines, close the window by pressing <s>.
 - b. If information appears in a box composed of letters or other characters, refresh the screen by pressing <i>, then <f>.
- 10 Perform the procedures in the Software Installation chapter of *System Installation and Maintenance (NTP 555-7001-215)*.

When you have completed these procedures and the software has loaded, the Logon screen appears. See Figure 12-2.

Figure 12-3
System Status screen

System Status and Maintenance											
System Status:		InService		Alarm Status:		Critical = Off		Major = Off		Minor = On	
Last Event:		41-97 VoiceBase Loading on Node 1							4/19 16:31		
Link Status:		1-7-2: InService									
Node	Type	Status	Active	Idle	DSP Port OutSv	Status Faulty	Pending	Others	Storage Voice	Used Text	
1	MSP	InService							1%	4%	
2	SPN	InService	0	16	0	0	0	0	1%	4%	
3	SPN	InService	0	16	0	0	0	0	1%	4%	
4	SPN	InService	0	16	0	0	0	0	1%	4%	
5	SPN	InService	0	16	0	0	0	0	1%	4%	

Select a softkey >

Exit

- 12 If the total number of ports for each node is incorrect, refer to the “Hardware modification” chapter in the *Meridian Mail System Administration Tools* (NTP 555-7001-305).
- 13 If all appears to be OK, press [Exit] to return to the Logon screen.
- 14 Logon to the system and change the default logon password.
- 15 Verify that remote login works by setting the A/B box switch to “Remote” and dialing in.

Note: If you are using a high-speed (9600 bps) modems (for example, theVentel 9600 Plus II), and the connection fails, wait 15 seconds before attempting to reconnect.
- 16 Reset the switch to “Local.”
- 17 Check that the customer number is correct on the General Options screen selected from the General Administration menu.

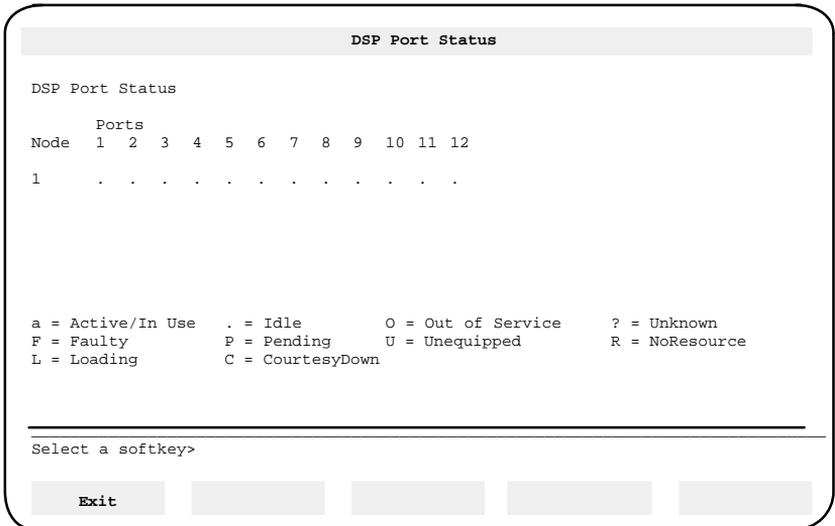
Note 1: Check that the UCD agent LENS and DNS, as well as the main voice messaging DN (as defined in the Voice System Administration menu, Channel Allocation Table) are correct. If the values shown on the status screen are missing or incorrect, see *Meridian Mail System Administration Tools* (NTP 555-7001-305) for hardware modification information.

Note 2: For details on Meridian Mail configuration, refer to the section on setting up the system in the *Meridian Mail System Administration Guide* applicable to your systems (NTP 555-7001-30x where “x” is 1 for single-customer systems or 2 for multi-customer systems).

- 18 Set up the voice service DNs (Voice Messaging, Express Messaging, and so on). Use the Voice Service DN Table screen accessed through the Voice Administration menu.
- 19 Check the system by adding some mailboxes and using some Meridian Mail features.
- 20 Logout.
- 21 Check the status of each DSP port to make sure they are all functional by selecting the [DSP Port Status] option. Port status should be Idle for all of your ports. See Figure 12-4.

Note: For a full description of this screen, see your system administration guide. This document also describes how to run out-of-service diagnostics for ports which do not come to idle status on bootup or to active status during the testing described in steps 22 to 25.

Figure 12-4
DSP Port Status screen



* This softkey is a toggle. When in Range Mode, the softkey is [Change to Single Mode].

- 22 While watching this screen, dial the voice mail access DN from a phone connected to the switch.
- 23 Verify the entries in the Voice Service Directory Number (VSDN) table.
- 24 Note which channels become active.
- 25 Ensure there is no noise on the line.
- 26 Release the line, and repeat steps 22 to 25 until all ports have been tested.
- 27 If all appears to be OK, press [Exit] to return to the Logon screen.
- 28 Replace the faceplates that cover the PCPs.
Note: Caution is required when folding and positioning the new SCSI cable. The cable has to be twisted to ensure proper lineup of the pins. Also ensure the cable is properly folded and positioned away from the edges, or it may become pinched when replacing the metal cover.
- 29 Install the I/O covers and the front and rear doors of the modules.

Configuring Meridian Mail

When the Meridian Mail logon screen appears, follow the instructions below.

Note: After any changes are made, the system must be rebooted. To reboot the system, power it down for 10, seconds then power it back on.

- 1 Once it has rebooted, verify that the system is working properly by adding some mailboxes and trying some Meridian Mail features.
- 2 Ensure that the customer number (as defined in the General System Administration menu, under system options) is correct.

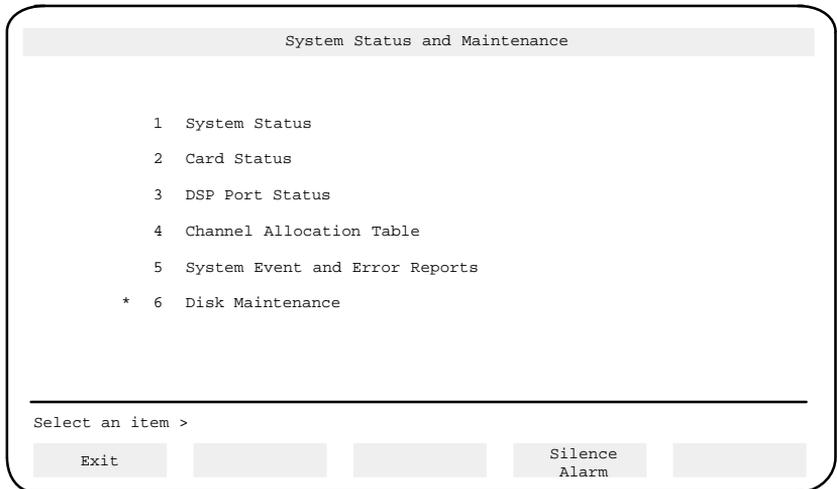
Enabling/disabling disk shadowing

If you have the disk shadowing feature, disks are added to Meridian Mail in pairs. When new data is written to disk, both drives in a pair are updated at the same time with the same information. If one of the drives in a pair fails, it can be removed from service and replaced without loss of data or interruption of service.

Procedure 12-2
Enabling/disabling disk shadowing

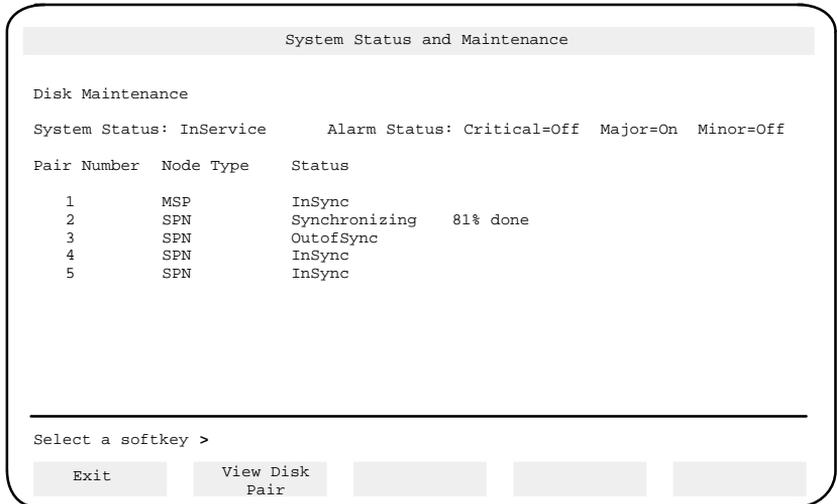
- 1 Log on to Meridian Mail.
- 2 Select System Status and Maintenance. (See Figure 12-5.)
- 3 Select Disk Maintenance. (See Figure 12-6.)
- 4 Press the [View Disk Pair] softkey.
You are prompted for the number of the disk pair you want to view.
- 5 Enter the number of the disk pair.
The Disk Pair Status screen appears.
- 6 If one disk in the pair is ReadWrite and the other is not, press the [Enable] softkey.
The system determines the source of the sync by choosing the disk that is in ReadWrite mode and attempts to sync the other disk.
If the sync is successful, both disks are shown as ReadWrite.

Figure 12-5
The System Status and Maintenance screen



*This item is available only if Disk shadowing is installed.

Figure 12-6
Disk Maintenance screen



The Disk Maintenance screen (Figure 12-6) shows the status of each disk pair in the system. The three possible states for a disk pair are “InSync”, “Syncing,” and “OutofSync.”

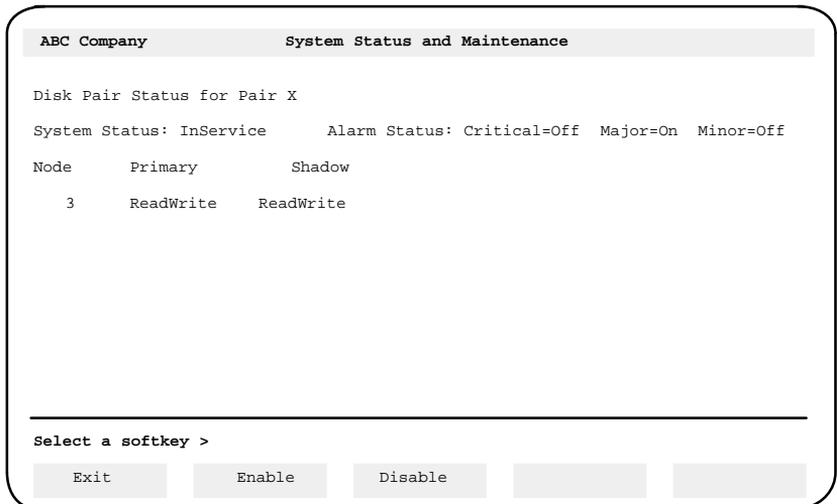
The following fields are displayed on the Disk Maintenance screen:

- **System Status** This field displays the current system status.
- **Alarm Status** This field indicates whether or not there are any Critical, Major, or Minor alarms.
- **Pair Number** This is the number of each disk pair in the system.
- **Node Type** This is the type of node on which the pair resides.
- **Status** This is the synchronization status. A disk pair can be in one of the following states:
 - **InSynch** Both disks are operational and in sync with each other.
 - **Synching** The disks are currently synching (that is, after pressing [Enable] in the Disk Pair Status screen).

- **OutofSynch** One of the disks is NoAccess and, consequently, out of sync with its shadowed pair. This happens if the system automatically puts a bad disk in No Access or if you disable the disk in order to replace or repair it.

If a SEER has alerted you to the fact that the system has automatically taken a disk out of service, check the Disk Pair Status by pressing the [View Disk Pair] softkey to determine which pair is out of synch. When you press [View Disk Pair], the Disk Pair Status screen appears (Figure 12-7).

Figure 12-7
The Disk Pair Status screen



The following fields are displayed on this screen:

- **System Status** This is the current system status.
- **Alarm Status** This field indicates whether there are any critical, major or minor alarms.
- **Node** This is the node on which the disks reside.
- **Primary** This field indicates the status of the primary disk.
- **Shadow** This field indicates the status of the shadowed disk. A disk may be in one of the following states:

- *ReadWrite* indicates that the disk is currently available to be read and written to. A disk that is in this state is operating normally.
- *NoAccess* indicates that the disk is not available to be read or written to. This indicates that the disk has been disabled automatically by the system or by the administrator with the [Disable] softkey.
- *SynchSource* during a disk sync, indicates that the disk is the source of a disk synchronization.
- *SynchDestination* during a disk sync, indicates that the disk is the destination of a disk synchronization.

Acceptance testing of Meridian Mail

Procedure 12-3

Acceptance testing of Meridian Mail

- 1 Check basic features by performing all functions outlined in the *Meridian Mail User Guide* (P0730459).
- 2 Test system and administrative features as described in the *Meridian Mail System Administration Guide* applicable to your system (NTP 555-7001-30x where “x” is either 1 for single-customer systems or 2 for multi-customer systems).
- 3 Test optional features using the appropriate NTP. See the *Meridian Mail NTP Contents Overview* (NTP 555-7001-000) for NTP listings.
- 4 Replace module side panels and front and rear doors.

Chapter 13: Troubleshooting startup problems

When following the procedures in this section, go to the next step as long as the fault persists. When the fault has cleared, reconnect or replace items as necessary, ensure that the power is on, and replace the panels (unless specifically instructed otherwise).

Several troubleshooting procedures recommend that you power down a node or the entire system. If you need to power down the entire system, it is recommended that you begin by performing a courtesy-down procedure on the system, then disable the node(s), and, finally, power down the system. This ensures that users do not experience abrupt termination of service.

For more information on how to courtesy down nodes and the system, refer to the *Meridian Mail System Administration Guide* (NTP 555-7001-30x) appropriate to your site.

If your system has more than one Meridian Mail module, power on module 1, followed by module 2, and so on. Power modules off in the opposite order.

Switch off the right DCEPS in each module before the left one. Switch DCEPS on in the opposite order.

Reference documents

- *Meridian Mail System Administration Guide* (NTP 555-7001-301) for single customer sites
- *Meridian Mail System Administration Guide for Multi-Customer Systems* (NTP 555-7001-302) for multi-customer sites

- *Meridian Mail Maintenance Messages (SEERs) Guide* (NTP 555-7001-510)

Normal startup sequence

When you power on Meridian Mail, the MMP40 single board computer must first initialize itself and perform self-diagnostics. Then it boots up the other system elements (non-prime nodes and the disk subsystem) and performs diagnostics on them. Finally, it loads the Meridian Mail operating system and the user interface. The MMP40 initialization phase can be monitored using the hexadecimal display on the edge of the card, while the bootup can usually be monitored using the text displayed on the terminal (although the two will overlap at some points). The following sections describe the hexadecimal display and the progression through bootup.

ATTENTION

If you encounter difficulty during a normal startup sequence, refer to the MMP40 Troubleshooting Flowcharts in Appendix C to determine causes and solutions for potential problems with the MMP40 card.

Power on initialization—hexadecimal display description

On the upper-front edge of the MMP40 card is a hexadecimal display that can display a hex digit with an optional decimal point on either side of it. The display provides information for diagnosing some system problems in the field.

The hardware powers up in a state where both decimal points will be on, with the remainder of the display blank. This is a power on indication. On a normally functioning MMP40 board, this state will generally not be seen because of the very quick transition to the “.0” state.

Table 13-1 shows the typical progression of the startup indications on the hexadecimal display.

Table 13-1
Typical startup indications on hexadecimal display

Display shows	Description
. .	Power on (displays <i>very</i> briefly)
.0	Begin execution of BootROM
.1 to .4	Initialization progressing
During normal bootup, the terminal displays (described in the next section) occur simultaneously with the following hexadecimal displays	
.5	Initialization complete (if on prime node or standalone)
.6	Appears on non-prime node, waiting for direction from PRM
.0., .1., .2., ...	Running board-level diagnostics
.7 or .8	Load operating system from either local SCSI (.7) or bus tap (.8) depending on load mechanism.
.9	BootROM jumping to beginning of Meridian Mail kernel
1. (blinking dot)	Start of Meridian Mail kernel
2. (blinking dot)	Meridian Mail is jumping to operating system
3. (blinking dot)	Start of Meridian Mail operating system
4. (blinking dot)	Meridian Mail operating system functioning properly
A. (blinking dot)	Node is InService and application programs loaded (Logon screen should be displayed)

Normal bootup sequence—messages on terminal

Once the initialization is complete, the system will begin to boot up and a series of messages will appear on the terminal. In a normal bootup, the system will pass through several distinct stages as different elements of Meridian Mail are brought up.

Table 13-2 shows the key phrases that will appear on screen informing you that the various stages are proceeding normally. The intermediate text between these key phrases has been omitted, since its content is dependent upon your specific configuration.

You may set the printer to print out a hard copy of the bootup sequence as described in Procedure 13-1.

If bootup does not proceed as described in Table 13-2, look in the “Symptom” column of Table 13-3 to identify the problem, and then follow the corresponding steps in the “Possible causes and actions” column.

Procedure 13-1

Printing a hard copy of the bootup sequence

- 1 Restart the system.
- 2 Press <Ctrl> and <Printscreen> to turn on automatic printing.
The bootup messages begin printing on the printer and “AUT.” appears at the bottom of the terminal screen.
- 3 When you are finished printing, press <Ctrl> and <Printscreen> again to turn off automatic printing.
“AUT.” disappears from the bottom of the screen.
- 4 Compare the bootup printout to the information presented in Table 13-2.

Table 13-2
Bootup stages

Stage	Key phrases	Comments
1	<pre> Waiting for timer... . . . Copyright 19yy, Northern Telecom ***** * NT4R45aa Firmware * * MMP40FW * * Mmmm DD, 19YY * ***** . . . </pre>	<p>where "aa" can be any two letters and "Mmmm DD, 19YY" is the date of the firmware's release</p>
2	<pre> 1] Checksum Tests 1) 1st PROM 2) 2nd PROM 3) 3rd PROM 4) 4th PROM 2] DRAM Tests 1) 5 long words 2) Page walk 3) Burst read . . . </pre>	<p>Executing board level diagnosticse</p>
3	<pre> Performing SCSI Bus Reset...OK. . . . </pre>	
4	<pre> SCSI initialization complete. . . . </pre>	
<p>–continued–</p>		

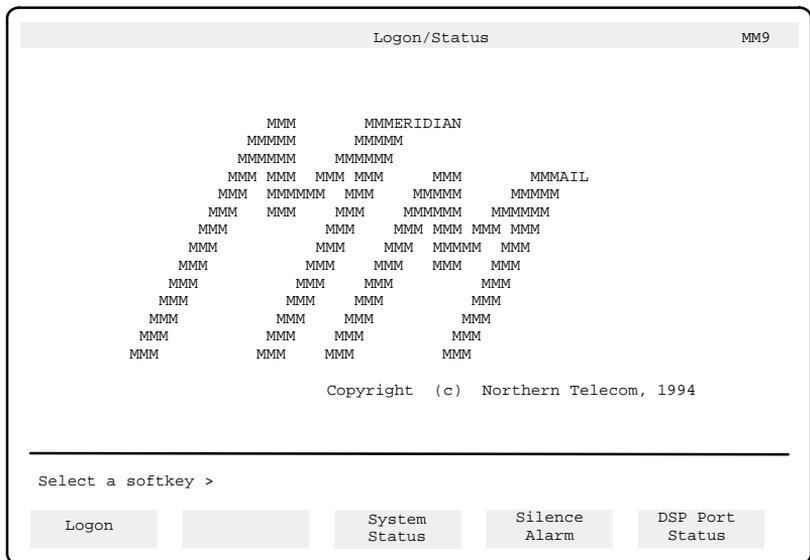
Table 13-2
Bootup stages (continued)

Stage	Key phrases	Comments
5	Meridian Mail Kernel Startup . .	
6	OSP successfully loaded . .	Terminal screen should clear. Operating system is loaded on the node.
7	Enter CI to Load CI Only (5 sec) . .	
8	Loading PRM . . Program Resource Manager Ver. x . .	where "x" can be a combination of characters or digits
9	PRM: Waiting for Seer Server to register . . PRM RebootNode: resetting node 2 waittime 0 . .	SEER output on the printer should be expected a few seconds after this message. If this is a multi-node system, then all the non-prime nodes will be reset here.
10	PRM Running startup diagnostics . . PRM: OSP is Up - node 2 . .	Diagnostic programs are run. On multi-node systems, operating system (OS) is loaded on non-prime nodes.
-continued-		

Table 13-2
Bootstrap stages (continued)

Stage	Key phrases	Comments
11	PRM: Startup diags finished, starting up system	Application programs are to be loaded.
12	The Logon screen comes up as shown in Figure 13-1.	
-end-		

Figure 13-1
The Logon screen



Check status

Check the system status to make sure the channels are functional and all links are up. Press the [System Status] softkey. Node Status should be InService for all of your nodes, link status should be InService, and DSP Port Status should be Idle for all of the voice ports you have installed. See Figure 13-2.

Note: Node status may be Loading when you first look at the screen, and port status may be something other than Idle, but the nodes should become InService and the ports should become Idle, one at a time, within a few minutes.

13-8 Troubleshooting startup problems

See the “System status and maintenance” chapter in the *System Administration Guide* for further information on the status of the system, link, nodes, and ports.

If bootup does not proceed as described above, look in the “Symptom” column of Table 13-3 to identify the problem, and then follow the corresponding steps in the “Possible causes and actions” column.

Figure 13-2
System Status screen

System Status and Maintenance

System Status: InService Alarm Status: Critical = Off Major = Off Minor = On

Last Event: 41-97 VoiceBase Loading on Node 1 4/19 16:31

Link Status: 1-7-2: InService

Node	Type	Status	DSP Port Status					Storage Used		
			Active	Idle	OutSv	Faulty	Pending	Other	Voice	Text
1	MSP	InService						1%	4%	
2	SPN	InService	0	16	0	0	0	0	1%	4%
3	SPN	InService	0	16	0	0	0	0	1%	4%
4	SPN	InService	0	16	0	0	0	0	1%	4%
5	SPN	InService	0	16	0	0	0	0	1%	4%

Select a softkey >

Exit

Table 13-3
Troubleshooting bootup problems

Symptom	Possible causes and actions
Admin terminal screen remains blank	Follow Procedure 13-2, "If terminal remains blank".
Messages stop appearing on the screen, but the Meridian Mail logon screen does not appear.	Follow the procedures described in the section entitled "System fails to boot completely" later in this chapter.
When the System Status screen is checked, a node is faulty.	<p>Check SEERs for failed hardware diagnostics. Follow the actions documented for the SEERs in the <i>Maintenance Messages (SEERS) Guide</i> (NTP 555-7001-510).</p> <p>If all non-prime nodes (type SPN) are faulty, check the system bus. Follow Procedure 13-17, "Diagnosing system bus problems."</p> <p>If only one node is faulty, run out-of-service diagnostics on that node's MMP40 card.</p>
Logon screen appears, but node status remains Loading.	Check SEERs for programs that could not be loaded. Follow the actions documented for the SEERs in the <i>Maintenance Messages (SEERS) Guide</i> (NTP 555-7001-510).
Node continually reboots.	<ol style="list-style-type: none"> 1 Replace the MMP40 card. 2 Perform the system bus checks. Follow Procedure 13-17, "Diagnosing system bus problems."
Logon screen appears, but not all voice channels come into service.	<p>Look at the DSP Port Status screen. Ports may be left Faulty or unconfigured due to hardware problems.</p> <p>Ports may be left Loading, Pending, or No Resources due to configuration or software problems.</p> <p>Run out-of-services diagnostics as described in your administration guide and then enable the voice card.</p>
There are disk errors on bootup—device sense key, or driver errors.	Refer to Procedures 13-10 and 13-11, and the section entitled "Common disk subsystem problems", in Chapter 16 of this manual. i
All nodes time-out while booting, or nodes unload while in service.	Perform the system bus checks. Follow Procedure 13-17, "Diagnosing system bus problems."
-continued-	

Table 13-3
Troubleshooting bootup problems (continued)

Symptom	Possible causes and actions
Only one node comes up.	Perform the system bus checks. Follow Procedure 13-17, "Diagnosing system bus problems."
One node will not come up.	Perform BootROM diagnostic check procedure for the node.
Hexadecimal display on MMP40 card shows B .	Indicates node is in-service standby. Minor software error. Contact your Northern Telecom support organization.
Hexadecimal display on MMP40 card shows C .	Indicates node is out of service. Enable the node from the MMI as described in the <i>System Administration Guide</i> , NTP 555-7001-301.
Hexadecimal display on MMP40 card shows D .	Indicates in-service trouble. While the MMP40 card is still healthy, a component such as an GSP card or a disk may be faulty. Check the GSP cards for that node and perform Procedures 13-10 and 13-11, and refer to Chapter 16.
On the MMP40 card hexadecimal display, the blinking dot (during states "1" and later) has stopped blinking.	Indicates a potential software problem or faulty display. Note the state at which the dot stopped blinking and whether or not the system is running normally. Reboot the system and observe the display. If the problem persists, contact your Northern Telecom support organization.
Hexadecimal display on MMP40 card flashes continuously.	Indicates a faulty MMP40 card. 1 Note the state at which the display began flashing. 2 Replace the MMP40 card.
Hexadecimal display on MMP40 card returns to ".0." state.	The system has detected an unrecoverable hardware fault and is attempting to restart the node. If the system is unable to reboot the node successfully, note the display immediately before the point at which the state reverts to ".0.", and contact your Northern Telecom support organization.
Hexadecimal display on MMP40 card stops at a particular bootup state.	Take note of the state at which the display stopped and reboot the system. If the problem persists, call your Northern Telecom support organization.
-end-	

Troubleshooting terminal problems

The procedures contained in the following sections should allow you to determine if there is a problem with your Meridian Mail terminal or the prime node MMP40 PCP. Follow each step in the troubleshooting procedure until you have solved the problem.

Procedure 13-2

If terminal remains blank

- 1 Reboot the system and observe the hexadecimal display on the prime node's MMP40 card. If the display increments past ".3", then there may be a problem with the terminal.

Go to step 2 if the terminal power light is not lit, or else go to step 3 if the MMP40 card's hexadecimal display is blank.
- 2 If the power light on the terminal is not lit, check for power problems as follows:
 - a. Check that the terminal power switch is ON.
 - b. Verify that there is power at the socket the terminal is plugged in to.
 - c. Check the power cord, and replace if necessary.
 - d. If all of the above tests are OK, replace the terminal.
 - e. Check the terminal cabling and setup as described in Procedure 13-3.
 - f. If the power LED remains unlit, replace the prime node's MMP40 card and restart the system.
- 3 If the hexadecimal display remains blank, proceed as follows:
 - a. Check for Meridian Mail power problems as described in Procedures 13-4 to 13-8.
 - b. Replace the prime node's MMP40 card and restart the system.
- 4 If the hexadecimal display is displaying information but the screen remains blank, there may be a problem with the MMP40 card or, with internal or external RS-232 cables. Check the RS-232 cables and replace the MMP40 card or cards, and restart the system.
- 5 If none of these steps succeeds in solving the problem, contact your Northern Telecom support organization.

Procedure 13-3

Check terminal cables and setup

- 1 Make sure your terminal is installed and configured as described in Appendix A of this manual.
- 2 If terminal was working previously, enter terminal setup and perform "Clear communications", then reset terminal.
- 3 If terminal was working previously and printer is printing SEER reports, enter terminal setup and verify that terminal is not in controller print mode.

Print mode should be "Normal Print Mode."

- 4 Ensure that the "Hold screen" key is not on. If the terminal indicates "Hold" (status area at bottom of screen or LED on keyboard), press <F1> to release the hold. This applies to all terminals except the HP700/32 where the user "Aux Mode" is set to "off."
- 5 Check all cable connections to terminal.
- 6 Replace cables and adapters one at a time.
- 7 Check printer setup and status.

Refer to Chapter 10 of this manual for correct printer setup.

- 8 Clear any printer faults (out of paper, paper jam), and put printer online.
- 9 To make sure the terminal is functional, enter setup mode, change the terminal setup to enable 'LOCAL ECHO' and, with the printer attached, enter text from the terminal keyboard.

The text you enter from the keyboard should echo on the terminal screen.

- 10 Disable 'LOCAL ECHO.'
- 11 Check terminal primary port using method described in the terminal owner's manual.
- 12 Add a null modem adapter if one was not installed between Meridian Mail and the terminal. Remove the null modem adapter if one was installed.
- 13 If all of the above tests are OK and none of the replacements fixes the problem, replace the terminal.

Procedure 13-4
Power problems

Before proceeding

- 1 Power off all modules.
- 2 Loosen and reseat all power supplies.
- 3 Power on all modules.

If the problem is not fixed, go to the section on DC system power problems.

Procedure 13-5
DC system power problems

- 1 Remove the front doors from all modules in the system.
- 2 If no LEDs are lit on any module, go to Procedure 13-6 and test the pedestal power supply.
- 3 If no LEDs are lit on any module above a certain module, go to Procedure 13-7 and test the power harness at the lowest module with no LEDs lit.
- 4 If no LEDs, including the LEDs on the DCEPS, are lit on a single module or on a single side of a module, go to Procedure 13-8 and test the DCEPS.

Note: A side of a module which contains a power supply but no PCPs or disk drives will give a DCEPS failure indicator.

Procedure 13-6
Test the pedestal power supply

- 1 Verify main DC voltage by measuring for -48 V DC to -52 V DC.
 - a. To measure this voltage, use a volt/ohm meter. Measure between each BAT and the corresponding BATRTN terminal lug designations. See Figures 13-3 (NT7D67CA PDU) and Figure 13-4 (NT6D53AA PDU).

Note: The voltage between BAT2 and BAT3 and their corresponding BATRTN terminals is zero unless you have three or four modules in the column.
 - b. If voltage measured is incorrect, there may be a problem with the UPS system.
- 2 If the voltage is correct, go to Procedure 13-7 and test the power harness at the lowest module with no LEDs lit.

Figure 13-3
Universal DC pedestal, NT7D67CA

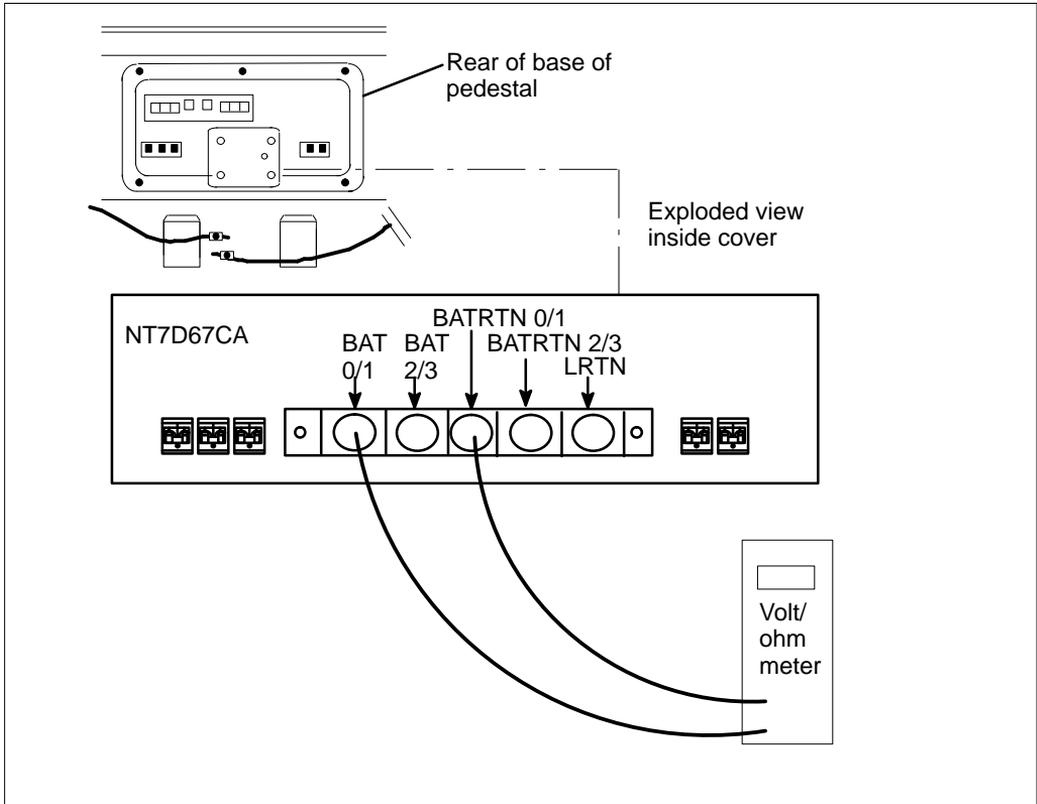
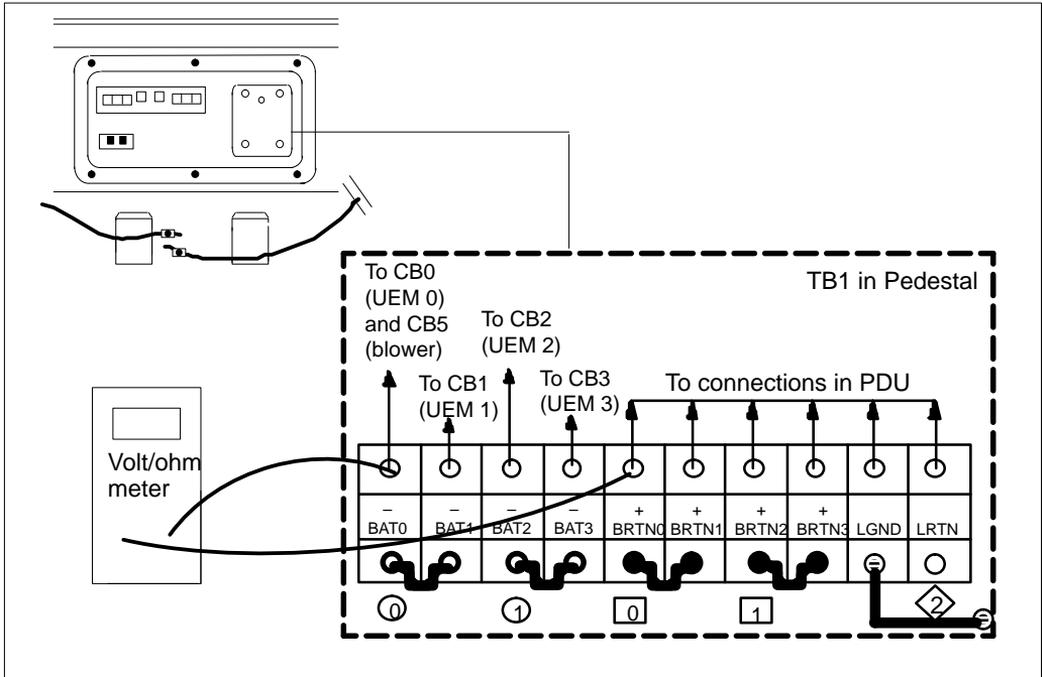


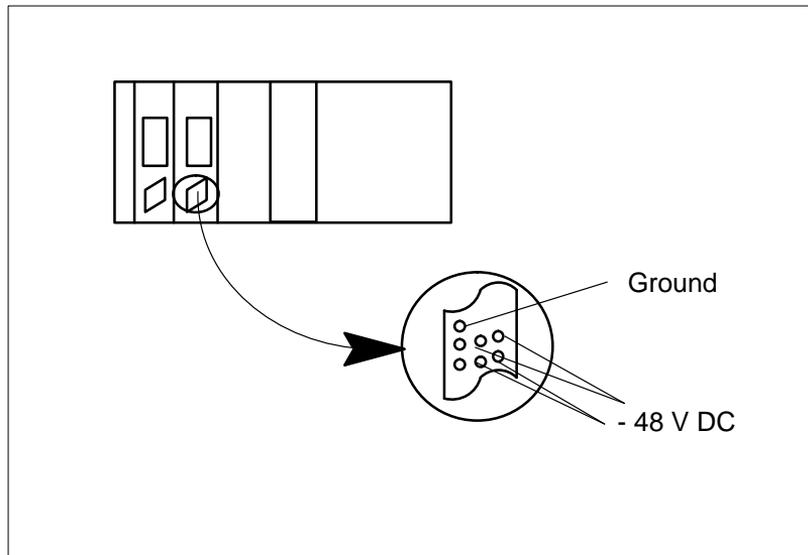
Figure 13-4
DC pedestal, NT6D53AA



Procedure 13-7
Test the power harness

- 1 Check DC voltage at DCEPS connectors (Figure 13-5).
 - a. Switch off both DCEPS on the module.
 - b. Remove both DCEPS.
 - c. Check the voltage at the pins shown in Figure 13-5.
 - d. If voltage is not in the range of -48 V DC to -52 V DC, refer to *SL-1 Fault Clearing* (NTP 553-3001-510).
- 2 If voltage is correct, continue with Procedure 13-8, Test the DCEPS.

Figure 13-5
Front view of module, DCEPS or CEPS removed



Procedure 13-8
Test the DCEPS

- 1 Power down the DCEPS if it is not already powered down.
- 2 Swap the DCEPS with a new one.
- 3 Reboot the system to full service.
- 4 Return the faulty DCEPS for service or replacement.
- 5 If system fails to boot, see the section entitled "System fails to boot completely."

System fails to boot completely

If the system stops during the process of booting up, refer to Table 13-2 to determine at which stage of the bootup the problem occurred. Determining the stage at which the boot process stopped will help in identifying the cause of the problem.

Before proceeding to troubleshooting the bootup, you must verify that the problem is not with either simple cabling errors or the terminal. Check that

- PCP installation and cabling conforms to the guidelines in Chapter 7 (meaning there are no loose or improperly installed cards or cables)
- there are no problems with the terminal (refer to the procedures in the section entitled “Troubleshooting terminal problems” earlier in this chapter)

If you have already completed the cable and terminal checks and found no problems, then you must determine at which stage of the bootup the system is stopping. It is easier to determine where the bootup has stopped if you print out a hard copy of the bootup sequence as described in Procedure 13-1.

Once you have determined which stage the system is stopping at, refer to Table 13-4 to find which procedure to follow.

Table 13-4
Troubleshooting bootup stages

Stage	Procedure
1 or 2	13-9
3	13-10
4	13-11
5, 6, or 7	13-12
8	13-13
9	13-14
10	13-15
11	13-16
12	Check the SEERs output. Follow the actions suggested in the <i>Maintenance Messages (SEERS) Guide</i> (NTP 555-7001-510).

After each of the following procedures, verify if the system is now rebooting properly by restarting the system.

If these procedures fail to correct the problem, contact your Northern Telecom support organization.

Procedure 13-9
Troubleshooting stage 1 or 2 bootup failure

If the terminal output stopped at stage 1 after the message “Time C tick OK,” but before the message “Enabling Instruction Cache,” or in stage 2 during the “BTGA tests...,” proceed as follows:

- 1 Replace the High Availability Bus Controller (HABC) card.
- 2 Replace the MMP40 card.
- 3 Check for Meridian Mail power problems as described in Procedures 13-4 to 13-8.
- 4 Check that the PCP switch settings are as described in Chapter 7.
- 5 Verify that the cabling between the shelves is correct.
- 6 Verify that all cards in the system are properly seated.
- 7 If the terminal output has stopped at some other point in the procedure, do the following:
 - a. Replace the MMP40 card.
 - b. Check for Meridian Mail power problems as described in Procedures 13-4 to 13-8.
 - c. Replace the HABC card.

Procedure 13-10
Troubleshooting stage 3 bootup failure—disk subsystem check

Failure during this stage of bootup could indicate problems with the SCSI subsystem. Proceed as follows:

- 1 Ensure that an incorrect Install/data tape has not been mistakenly left in the tape drive.
- 2 Check the SCSI cable installation, especially the connection to the backplane, and the jumper settings. Refer to the disk drive figures in Chapter 5 of this manual.
- 3 Check the voltage to disk and tape (+5 V, +12 V).
- 4 If on a non-prime node, replace the MMP40 board.
- 5 Replace disk as described in Chapter 5, “Disk Installation,” of this manual.

Procedure 13-11
Troubleshooting stage 4 bootup failure

If the bootup fails at this point, it could indicate that the system can initialize the SCSI disk but not boot from it. Proceed as follows:

- 1 Perform the checks in Procedure 13-10.
- 2 Check that the SCSI devices are terminated as described in the “Disk installation” section in Chapter 5 of this manual.
- 3 Check that the tape drive is unterminated as described in the “Replacement of tape drive” section in Chapter 15 of this manual.
- 4 If the bootup display shows error messages such as “bus error,” this can indicate a serious problem with your SCSI disk. Contact your Northern Telecom support organization.

Procedure 13-12
Troubleshooting stage 5, 6, or 7 bootup failure

Stages 5 and 6 should take up to five seconds each. Stage 7 should take up to two minutes. If the bootup fails at this point, it could indicate that the Mail programs have been read incorrectly from the disk, or the actual program on the disk is incorrect or corrupted. Proceed as follows:

- 1 Attempt to reboot the system.
If the problem persists (in other words, the bootup fails at the same point), this could indicate a serious problem with your SCSI disk.
- 2 Contact your Northern Telecom support organization.

Procedure 13-13
Troubleshooting stage 8 bootup failure

- 1 Check the terminal output during this stage.
- 2 If there is indication that the PRM failed to load, contact your Northern Telecom support organization.

Procedure 13-14
Troubleshooting stage 9 bootup failure

- 1 Check the terminal output during this stage.
- 2 If there is indication that SEERs may be lost, power down the system and power it back up to reset the system.
- 3 If the system has multiple nodes and the output has indication that some of the non-prime nodes are not responding, check the power supply for those nodes.

- 4 Power the system down, then power it back up to reset the system. If the boot still fails at the same point, replace the MMP40 cards of the affected nodes.
- 5 If the problem occurs on all the remote nodes, perform the system bus diagnostics (Procedure 13-17).

Procedure 13-15
Troubleshooting stage 10 bootup failure

This stage should normally take approximately five minutes. However, on a multinode system, if a remote node is having problems booting up, then this state can take as long as 20 minutes. Proceed as follows:

- 1 Check the SEER output from the printer for problems with remote nodes.
- 2 If one or more remote nodes (but not all) are having problems, then power down and up to reset the system.
- 3 If the problem persists, replace the MMP40 cards of the affected nodes.
- 4 If the problem is occurring on all nodes, then follow Procedure 13-17, "Diagnosing system bus problems."

Procedure 13-16
Troubleshooting stage 11 bootup failure

If the bootup fails during this stage, proceed as follows:

- 1 Check the SEERS for problems when loading programs. If any such SEERs are observed, then follow the actions suggested in the *Maintenance Messages (SEERS) Guide* (NTP 555-7001-510).
- 2 Observe the terminal output during stages 7, 8, and 9 for any indications that Node 1 is not InService. If there are indications that Node 1 is not InService, contact your Northern Telecom support organization.
- 3 If Node 1 is InService but the system will not progress past stage 10, proceed as follows:
 - a. Replace the MMP40 card in Node 1.
 - b. Check for Meridian Mail power problems as described in Procedures 13-4 to 13-8.
 - c. If the problem is occurring on all nodes, follow Procedure 13-17, "Diagnosing system bus problems."

System bus diagnostics and fault clearing

Procedure 13-17

Diagnosing system bus problems

The Meridian Mail system bus is controlled by the high availability bus controller (HABC) located in node 1 of a multi-node system. A fault on the system bus can cause all communication between nodes to be lost. If a system bus problem is suspected, perform the following steps:

- 1 Check the switch settings for all PCPs. Refer to Chapter 7 of this manual.
- 2 If the HABC card diagnostics were run, ensure that the diagnostics passed. If they did not pass, replace the HABC.
- 3 Verify the cabling between shelves is correct and secure.
- 4 Verify that all cards in the system are properly seated.
- 5 Verify bus terminators installed on HABC card of last node in the system.
- 6 Observe the BootROM diagnostics messages on node 1. If the Tap Register Test or the Tap Dataline Test fail or do not appear in the BootROM messages, replace the HABC. If the problem persists, replace the MMP40.
- 7 Replace the HABC.
- 8 Restart the system.

Procedure 13-18

Clearing system configuration faults

- 1 Check the switch settings on all printed circuit packs on the node.
- 2 Verify the switch settings on the MMP40.
- 3 Replace the MMP40 card.
- 4 Verify proper connection of terminators on multi-node systems at each end of the ribbon cable bus.

Note: The HABC card has a fuse that may blow if a terminator or cable (at HABC and MMP40 last node) is defective.

- 5 Replace bus terminators.

No SCSI addresses during bootup

ATTENTION

When a procedure step tells you to reseat power supplies and disk/tape drive packs, do so with power to the module off, and turn power on again afterwards.

Procedure 13-19

No SCSI address 0 during bootup of Meridian Mail

Use the following procedure if the system will not boot up from the disk drive.

- 1 With power on, verify voltages on TB1. See Table 13-5 and Figure 13-6 for correct voltages relative to ground.

Figure 13-6

Location of terminal block TB1

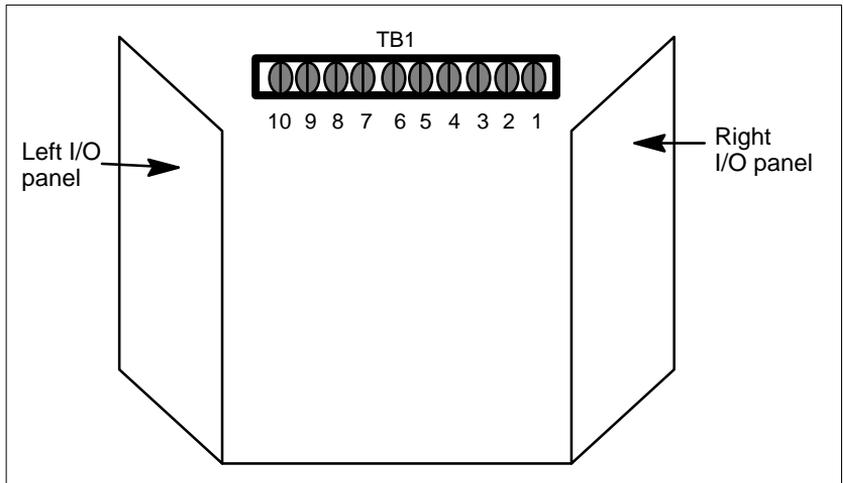


Table 13-5
DC voltage at TB1

Pin 1	-48 V	Pin 6	0 V
Pin 2	-48 V	Pin 7	+12 V
Pin 3	0 V	Pin 8	+12 V
Pin 4	0 V	Pin 9	+5 V
Pin 5	0 V	Pin 10	+5 V

- 2 Power system down.
- 3 Reseat power supply if voltages are not correct on TB1.
- 4 If the voltages are still not correct, the power supply may be defective. Verify by substituting with a new power supply.
- 5 Reseat disk, disk/tape drive packs.
- 6 Verify that the SCSI cable between the disk drive and the connector at the back of the MSU cage is securely connected at both ends. If the SCSI cable is suspected to be defective, substitute another disk drive pack.

Procedure 13-20

NO SCSI address 1 during bootup of Meridian Mail

- 1 With power on, verify voltages on TB1. See Table 13-5 and Figure 13-6 to verify DC voltages.
- 2 Power system down.
- 3 Reseat power supply if voltages are not correct on TB1.
- 4 If the voltages are still not correct, the power supply may be defective. Verify by substituting with a new power supply.
- 5 Reseat tape or disk/tape drive pack, and ensure it is firmly seated.
- 6 Verify that the SCSI cable between the tape drive and the connector at the back of the MSU cage is securely attached at both ends.

Procedure 13-21

NO SCSI address 2 during bootup of Meridian Mail

Note: This procedure applies only to shadowed systems and should be performed when the system will not boot up from the disk drive.

- 1 With power on, verify voltages on TB1. See Table 13-5 and Figure 13-6 to verify voltages.
- 2 Power system down.
- 3 Reseat power supply if voltages are not correct on TB1.
- 4 If the voltages are still not correct, the power supply may be defective. Verify by substituting with a new power supply.
- 5 Reseat disk drive pack and ensure it is firmly seated.
- 6 Verify that the SCSI cable between the disk drive and the connector at the back of the MSU cage is secure to the disk from the disk drive pack connector. If the SCSI cable is suspected to be defective, substitute another disk drive pack.
- 7 Swap the primary and secondary disk drive packs.

Note: 1 The left-hand power supply powers the primary disk and the printed circuit packs. The right-hand power supply powers the secondary disk.

Note: 2 The primary disk drive is normally installed adjacent to the power supplies. The secondary disk drive is normally installed to the right of the primary disk drive. In the first node, the secondary disk drive is replaced by a disk/tape assembly.

- 8 Power the system on.
- 9 If the TB1 voltages are correct, and one disk drive does not work in either slot but the other drive does work in both MSU slots, suspect a defective disk drive. Replace the drive.
- 10 If neither drive works in one MSU slot but both drives work in the other MSU slot, suspect an out-of-alignment connector or a defective backplane connector. Replace as required.

Chapter 14: Troubleshooting operational problems

This chapter contains troubleshooting information for problems that occur on a system that has successfully booted up. That is, when the system is powered on, all of the diagnostics are completed successfully and the Logon screen appears on the administration terminal.

Find the description of your problem in the “Symptom” column of Table 14-1, then refer to the procedure referenced in the “Procedure” column. If the system is producing SEERs related to your problem, you should also refer to the *Maintenance Messages (SEERs) Guide* (NTP 555-7001-510). If you cannot resolve the problem, contact your Northern Telecom support organization.

Table 14-1
Troubleshooting operational problems

Symptom	Procedure
<i>System level problems</i>	
System running; then goes down	14-1
System status remains FAULTY	14-2
“Service is unavailable” when calling Meridian Mail	14-3
<i>SMDI link problems</i>	
Problem disabling message transfer on SMDI links	14-4
System status shows “Faulty link to PBX”	14-5
–continued–	

Table 14-2
Troubleshooting operational problems (continued)

Symptom	Procedure
<i>Voice card/channel problems</i>	
GSP faulty after diagnostics run	14-6
Channel status is "faulty" or "out of service"	14-7
Channel status remains "Loading"	14-8
Silent channel – calls have no voice and produce a SEER	14-9
Channel status IDLE, but cannot be acquired	14-10
<i>Administration problems</i>	
Cannot logon remotely	14-11
Terminal responds, yet logon is unsuccessful	14-12
Optional feature purchased, but unavailable	14-13
Voice services—sub-menu revert DN doesn't work	14-14
Problems backing up the system (disk to tape or tape to disk)	14-15
<i>User-reported problems</i>	
User hears "Your mailbox is full ... your mailbox is empty" after a node is rebooted	14-16
Message Waiting Indicator (MWI) does not light on any telephone sets	14-17
Call Sender doesn't work for any calls	14-18
Revert DN does not work	14-19
-end-	

System-level Problems

Procedure 14-1

System running; then goes down

- 1 Check your SEER printouts.

Take appropriate action as described in Meridian Mail Maintenance Messages (555-7001-510).

- 2 Power the system off, wait 90 seconds, and then power on again.

Observe the diagnostic messages that generate (from BootROM) on the administration terminal.

Note: If any of the diagnostic tests fail, the word FAILED is printed on the same line. If the messages are looping back, note the last message before the restart action.

- 3 Replace the MMP40 card.
- 4 If the system reboots with no hardware faults but remains out of service, refer to the SEERs to identify operational problems.

Procedure 14-2

System status remains FAULTY

- 1 Check that the server(s) have loaded correctly.
- 2 Check SEER printout for related messages.

Take appropriate action. Refer to Meridian Mail Maintenance Messages (NTP 555-7001-510).

- 3 Verify correct database programming for the IOC/MPC in the PBX/DMS.
- 4 Make sure the PBX/DMS contains the software options and ROM card to support the SMDI options.
- 5 Disable and reseat the IOC/MPC card.
- 6 Replace the following card, one at a time: IOC/MPC card and cable, MMP40 card, any intermediate cables or filter connectors.
- 7 Determine if any nodes show FAULTY or OUT-OF-SERVICE status.

If any nodes do show FAULTY or OUT-OF-SERVICE status, follow these fault clearing procedures:

- System fails to boot completely, Chapter 13
- Common disk subsystem problems, Chapter 16
- No SCSI address 0, 1, or 2, Chapter 13

- 8 Determine if any of the voice cards show FAULTY or OUT-OF-SERVICE status.

If a voice card shows FAULTY or OUT-OF-SERVICE status:

- a. Disable the card. For detailed instructions on disabling the card, refer to the *Meridian Mail Administration Guide* (NTP 555-7001-301) if you are servicing a non multi-customer site, or *Meridian Mail Multi-customer Systems Administration Guide* (NTP 555-7001-302) if you are servicing a multi-customer site.
- b. Perform out-of-service diagnostics.
- c. Re-enable the card.

Procedure 14-3

“Service is unavailable” when calling Meridian Mail

- 1 Verify that the Meridian Mail DN is properly configured in the VSDN table.

See the System Administration Guide (NTP 555-7001-30x) for configuration details.

SMDI link problems

Procedure 14-4

Problem disabling message transfer on SMDI links

- 1 If you are having difficulty disabling message transferring on SMDI links, enter the following commands at the PBX/DMS maintenance terminal:

MAPCI; NTC; IOD; IOC #; CARD #

BUSY # RTS

Procedure 14-5

System status shows “Faulty link to PBX”

- 1 Ensure that the SMDI link cable is in place.
- 2 Check that the PBX/DMS has been properly configured. Refer to Chapter 11 of this manual for details on PBX/DMS setup.
- 3 Make sure the LENS and DNs are correct.

Voice card/channel problems

Procedure 14-6

GSP faulty after diagnostics run

Note 1: Do not remove the GSP card before powering down the node containing the card you are removing. Refer to *Meridian Mail System Administration Guide*, NTP 555-7001-301, for instructions on powering down the node.

Note 2: This procedure should be performed with the lines in-service and during off-hours. Repeat these steps for each affected card—do not restart all the cards at once.

- 1 Verify the switch settings on the card. Refer to Chapter 7 of this manual for details on GSP card switch settings.
- 2 Remove the 9-pin voice cables from the front of the affected GSP card.
- 3 Wait for the PBX/DMS to release the permanent lockout condition from the lines.
- 4 Plug the voice cables back into the front of the affected GSP card.
- 5 Run the diagnostics for the card immediately after re-inserting the cables.

If the diagnostics pass, re-enable the card. If the diagnostics fail, check the SEERs and ensure that the voice lines are correctly configured for ground start operation and have the correct polarity between Tip (positive) and Ring (negative) when off hook.

Procedure 14-7

Channel status is “faulty” or “out of service”

- 1 Perform the procedure above, GSP faulty after diagnostics run, to verify that the GSP card is not faulty.
- 2 Check the SEER printout for any VSS load errors for that channel.
- 3 Check the SEER printout for any driver fault messages (software messages) for that channel. Refer to the Maintenance Messages manual for interpretation of these SEERs and take corrective measures.

If VPH complains about too many driver restarts for a particular channel, re-enable the channel online simply by disabling and then re-enabling that specific channel.

- 4 Ensure that the voice cards are properly seated.
- 5 Verify that the voice card cable connections are secure.

- 6 Check voice card switch settings. Refer to Chapter 7 of this manual for details on GSP card switch settings.
- 7 Replace the voice card.

Procedure 14-8

Channel status remains “Loading”

- 1 Verify that the Meridian Mail channels have a corresponding UCD agent programmed in the PBX/DMS.
- 2 Verify that the voice cable is connected properly on both the Meridian Mail and PBX sides.
- 3 The Channel Allocation Table data must match the Agent DN of each UCD agent, as follows:

Meridian Mail	PBX/DMS configuration
Primary (Voice Messaging) DN	Primary UCD queue
Routing Address	UCD agent LEN
Channel DN	Agent DN

Procedure 14-9

Silent channel – calls have no voice and produce a SEER

- 1 Check that the terminator plug on the network loop terminator is installed. Refer to Chapter 7 of this manual for more details.
- 2 Check the status of channels to ensure they are idle or acquirable.
If not, check SEER printout for any messages related to that channel, and take the appropriate action for that SEER.
- 3 Disable/re-enable the channel on the PBX/DMS.
If these procedures are unsuccessful, record detailed information and contact the appropriate personnel.
- 4 Power down the node (refer to *Meridian Mail System Administration Guide* (NTP 555-7001-301) and verify that the GSP card has the correct switch settings (refer to Chapter 7 of this manual for details on GSP card switch settings).

Procedure 14-10

Channel status IDLE, but cannot be acquired

- 1 Check the status of the channels.
- 2 Check datafill on Meridian Mail and PBX/DMS.
- 3 Check SEER printout for messages related to that channel.
- 4 Take the appropriate action for that SEER.

- 5 Disable/re-enable the channel on the PBX/DMS.
If these procedures are unsuccessful, record detailed information and contact the appropriate personnel.
- 6 Verify correct DN entry for the VSDN table and CAT data entry.

Administration problems

Procedure 14-11 **Cannot logon remotely**

- 1 See “Terminal fails to respond or locks up” section located in this chapter.
Verify that the local administration terminal, printer, modem and remote administration terminal are all set up correctly, according to Chapter 10 of this manual.

Procedure 14-12 **Terminal responds, yet logon is unsuccessful**

- 1 Check that you are entering the correct password.
- 2 Check to ensure timestamp has been issued. Look for a SEER with a timestamp.
- 3 If this is your fourth failed logon attempt, wait ten minutes before trying again.
- 4 Check that DNs are correct.

Procedure 14-13 **Optional feature purchased, but unavailable**

- 1 Verify the installed features from the General System Administration.
- 2 Perform Expand feature procedure as outlined in the chapter “Feature Expansion” in the *System Installation and Modification Guide* (NTP 555-7001-215). If the procedure fails, check SEER printout for any incorrect data entries such as keycode number or serial number.
- 3 Verify the features were ordered correctly.

Procedure 14-14 **Voice services—sub-menu revert DN doesn’t work**

- 1 By default, sub-menus revert to their parent menu. To revert to a specific DN, program the delayed response and initial no-response for that sub-menu as a calling function (CL) to the intended revert DN.

Procedure 14-15

Problems backing up the system (disk to tape or tape to disk)

- 1 Ensure that you are using the correct disk or tape for backup.
Not all disks and tapes are appropriate for all system configurations. See the *System Administration Guide* (NTP 555-7001-301) for details.
Additional units can be purchased from your sales representative. If you do not receive tapes with a new system, report the problem to your representative.
- 2 Examine SEER printouts for information on where the error is occurring.
Consult the *Maintenance Messages manual* (NTP 555-7001-510) for each relevant SEER and the appropriate action to take for that SEER.
- 3 Verify that all SCSI cable connections are secure.
- 4 Verify that the DC voltage is correct at the MDCEPS connectors. See Chapter 13 of this manual.
- 5 If the backup was unsuccessful, substitute a replacement tape drive or disk drive and attempt the backup again.
Note: Verify the full or partial backup was successful before system cutover.

User-reported problems

Procedure 14-16

Recover from user hears “Your mailbox is full ... your mailbox is empty” after a node is rebooted “mailbox full ... mailbox empty”

If a user node is shut down without being disabled first, for example, due to unexpected loss of power, user disk space usage may be incorrect. When the node comes back up, some users may hear the prompt, “Your mailbox is full ... your mailbox is empty” when logging in to their mailboxes.

- 1 Run “Audit all volumes” from the tools menu to correct the disk space usage information:
- 2 If the problem is wide-spread or urgent, and the extra load on the system can be tolerated, run the audit immediately
- 3 If the problem is not wide-spread or urgent, run the audit during non-busy hours

- 4 If it is possible to keep the node out of service after it is restarted, run the audit before bringing the node back into service. This will avoid the occurrence of this problem.

Note: For details, refer to *Meridian Mail System Administration Tools* (NTP 555-7001-305).

Procedure 14-17

Message Waiting Indicator (MWI) does not light on any telephone sets

- 1 Ensure that all Meridian Mail users have Message Waiting Allowed for the telephone sets on their PBX/DMS. Ensure that all Meridian Mail users have Message Waiting Indicator configured for the telephone sets on their PBX/DMS system.
- 2 Increase user's storage limit if the limit is exceeded frequently and the user is complaining of delayed messages.
- 3 Send a broadcast message and verify that all users receive MWI.
- 4 Run set MWI utility from Tools level and verify all users receive MWI.

Procedure 14-18

Call Sender doesn't work for any calls

- 1 Confirm that the customer number in the "System General Options" screen (under General System Administration) matches the customer number on the *Meridian 1*.

If the number doesn't match, edit the customer number on Meridian Mail.

- 2 Verify that the sender DN is valid. Check any dialing restrictions that may apply. See "Class of service administration" in your system administration guide.
- 3 Verify correct PBX/DMS programming of the Meridian Mail UCD agents.
Check configuration against Chapter 11 of this manual.
- 4 Verify that all Meridian Mail users have a Conference capability programmed for their telephone set.
- 5 Verify correct programming of the Meridian Mail Channel Allocation Table (CAT).
- 6 Verify that the Call Sender is a valid DN that can be called by the Meridian Mail agents.
 - a. Open the user's profile

- b. Move cursor to "Personal Verification Recorded" field
- c. Press the [Voice] softkey
- d. When the system prompts you for the DN, enter the Call Sender DN under test.
- e. If call is unsuccessful, check Meridian 1 and Meridian Mail databases for dialing restrictions.

Procedure 14-19

Revert DN does not work

- 1 Verify that the Meridian Mail UCD agents have proper programming in the PBX/DMS.
Check configuration against Chapter 11 of this manual.
- 2 Verify that a Night Call Forward (NCFW) DN has been programmed in the UCD queue for Meridian Mail.
- 3 Verify that the correct revert DN appears in the user mailbox profile.
Use the Modify User command to check the mailbox setup.
- 4 Verify that the user is correctly performing custom revert feature. Refer to the *Meridian Mail User Guide*.
- 5 Verify that the Revert DN is a valid DN that can be called by the Meridian Mail agents.
 - a. Open the user's profile
 - b. Move cursor to "Personal Verification Recorded" field
 - c. Press the [Voice] softkey
 - d. When the system prompts you for the DN, enter the Revert DN under test.
 - e. If call is unsuccessful, check Meridian 1 and Meridian Mail databases for dialing restrictions.

Chapter 15: Hardware maintenance

This section provides procedures for the following:

- power supply replacement
- printed circuit pack (PCP) replacement
- disk unit replacement
- enabling and disabling disk shadowing
- tape drive assembly replacement
- tape drive maintenance

**CAUTION****Risk of equipment damage**

Disconnect power from the Meridian Mail module before removing any components. The PCPs and other components are **NOT** designed for insertion with the power on (“hot” insertion).

Shut off the power to the Meridian Mail shelf using the switches on the power supplies (DC system). See Figure 15-1.



CAUTION
Risk of equipment damage

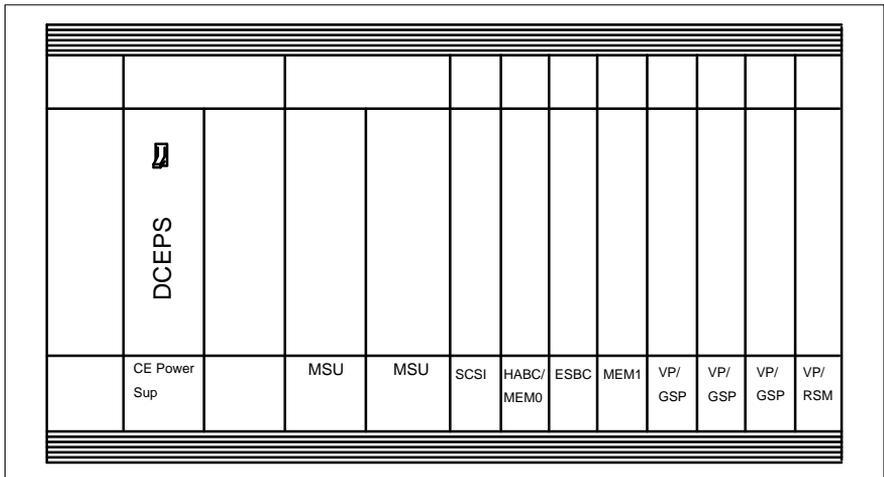
The PCPs and other components are susceptible to static damage. Wear a wrist strap connected to a grounding point. This precaution protects components against damage caused by static electricity.

Disk units are susceptible to damage from rough handling.

If you need to perform maintenance on a working system, “courtesy down” the system before taking it out of service. For more information on courtesy-down procedures, refer to the *System Administration Guide* (NTP 555-7001-301).

Power supply removal and replacement

Figure 15-1
Location of DCEPS



Procedure 15-1
Removing and replacing a power supply

See the handling precautions at the beginning of the chapter.

- 1 Power off the affected module.
- 2 Pull out the power supply unit to be replaced.
- 3 Insert the replacement unit and lock it in place.
- 4 Prior to turning the power back on, make sure the packs are securely locked in place and no other components have been disturbed.
- 5 Turn power back on at the circuit breakers or power supply switches.

Printed circuit packs

The following printed circuit packs PCPs are used in Meridian Mail:

- General-purpose Signal voice Processor (GSP)
- Meridian Mail Processor 68040 (MMP40) single board computer
- High Availability Bus Controller (HABC) on prime node of systems with multiple nodes
- RS-232 Service Module (RSM)

Refer to Chapter 7 of this manual for switch and jumper locations and settings for the PCPs, and for an explanation of which packs belong in which slots.

The printed circuit pack slot positions are shown in Figure 15-2.

Disk or disk/tape units

Procedure 15-3

Replacing a disk or disk/tape unit in an unshadowed node

- 1 See the handling precautions at the beginning of the chapter.
- 2 Power off the affected module.
- 3 Remove the Mass Storage Unit (MSU) by opening the ejectors and then carefully sliding the unit out.
- 4 Ensure that the replacement unit has the same part number, including suffix, as the one on your packing slip.
- 5 Verify the jumper settings and placement or removal of terminators on the replacement disk drive and/or tape drive (see Chapter 7 of this manual). If the disk being replaced is on the prime node, see Procedure 15-12, "Replacement of tape drive."
- 6 Carefully slide the replacement unit in, and lock the ejectors in place.

Replacing a disk or disk/tape unit in a shadowed system

Procedure 15-4

Primary (left side) disk replacement

- 1 See the handling precautions at the beginning of the chapter.
- 2 Disable disk shadowing (See procedure 12-2, Enabling/Disabling disk shadowing).
- 3 Power off the affected module.
- 4 Ensure the new primary disk or disk/tape unit has the same part number, including suffix, as the one shown on the packing slip.
- 5 Verify the jumper settings and placement or removal of terminators on the replacement disk drive and/or tape drive (see Chapter 7 of this manual) **but** address the new primary disk as SCSI ID=0. See the section "Replacement of tape drive" later in this chapter, for tape drive jumpers and terminators.
- 6 Install the unit in the prime disk location (the same MSU slot as the disk you are replacing) by carefully sliding the unit in and locking the ejectors in place.
- 7 Reboot the system.
- 8 Synchronize the disks. Refer to the *Meridian Mail System Administration Guide* (NTP 555-7001-301).

Procedure 15-5
Secondary disk replacement

- 1 Disable disk shadowing (See Procedure 12-2, Enabling/Disabling disk shadowing).
- 2 Power off the affected module.
- 3 Remove the disk unit by opening the ejectors and then carefully sliding the unit out.
- 4 Ensure the new disk unit has the same part number, including suffix, as the one shown on the packing slip.
- 5 Verify the jumper settings and removal of terminators on the replacement disk drive (see Chapter 7 of this manual).
- 6 If this is the prime node, see the "Replacement of tape drive" section later in this chapter for tape drive jumpers and terminators.
- 7 Install the disk in the same MSU slot as the disk you are replacing by carefully sliding the unit in and locking the ejectors in place.
- 8 Reboot the system.
- 9 Synchronize the disks. Refer to *System Administration Guide* (NTP 555-7001-30x).

Tape drive units

The tape unit used with Meridian Mail Options is either the high density Tandberg (TDC4220) tape drive assembly or the Archive (Viper) tape drive assembly (NT4R28AC).

Northern Telecom will ship the customer the appropriate backup tape with the tape drive assembly. The following table lists some of the backup tapes.

Table 15-1
Tape media

CPC code	Tape
A0369779	DC6150 backup tape
A0368760	DC6250 backup tape
A0630697	2.5 Gbyte Magnus backup tape

**WARNING****Risk of data errors**

If you are using the DC6250 tape media, you should not revert back to the DC6150 media as this may cause data errors when reading from the tape.

Tape drive maintenance

Preventive maintenance of the tape drive involves periodic cleaning (after every four to six hours of use). To ensure reliable tape drive performance, you should establish a regular cleaning schedule and observe the following precautions:

- Maintain a clean, dust-free environment within the temperature and humidity limits listed in the specifications of the Meridian Mail system.
- Keep all liquids away from the drive and tapes to prevent spills into the equipment.
- Exercise reasonable care when using and storing tape cartridges. Do not place cartridges on the Meridian Mail or Meridian 1 cabinets or on the monitor of the system administrator's terminal.
- When a stored tape is moved to an environment with a greatly different temperature, allow the tape to slowly reach room temperature before using it.
- Do not open the cartridge access door to touch the tape.

Cleaning the tape drive

The tape drive should be replaced when you receive repeated errors when attempting to write to tape. You should also consider replacing the tape drive if the light on the front of the tape drive is out or you cannot hear or see the tape spinning.

The tape cartridge cavity should be cleaned

- after an initial pass with a new tape cartridge
- after eight hours of normal use
- whenever dust or debris is visible inside the cartridge cavity

To clean the Archive or Tandberg tape drive, you need the following supplies:

- low pressure aerosol air
- tapehead cleaning fluid or reagent grade chemically-pure isopropyl alcohol
- tape drive cleaning kit including a tape drive cleaning cartridge OR tapehead cleaning pads, lint-free cotton swabs, or any industry-acceptable head-cleaning swabs, six inches or longer

Note: If you have a Tandberg tape drive, do not use Procedures 15-6 and 15-7 as they apply only to Archive tape drives.

The tape drive cleaning kits are listed in Table 15-2.

Table 15-2
Tape drive cleaning kits

Type of tape drive	Tape drive cleaning kit CPC code
Archive Viper	A0378220
Tandberg TDC 4220	A0633585

Procedure 15-6**Cleaning the Archive tape drive with the cleaning kit**

Follow the steps in this procedure if you are cleaning the Archive tape drive with the cleaning kit. If you have a Tandberg tape drive, refer to Procedure 15-8.

- 1 If there is a tape cartridge in the tape drive, remove the cartridge.
- 2 Push the head loading lever down into the load position.
- 3 Carefully blow out dust from the sensor hole and tape cartridge cavity with aerosol air.
- 4 Release the head loading lever.
- 5 Obtain the appropriate tape drive kit for your tape drive, as described in Table 15-2.
- 6 Moisten the flexible pad of the cleaning cartridge with 4 drops of the Streaming Tape Head Cleaning Fluid.
- 7 Insert the cleaning cartridge into the tape drive in the same way as a normal tape cartridge and lock into position.
- 8 Move the moistened pad using 4 strokes of the guide rod, moving the rod as far as it will go each time.
- 9 Remove the cleaning cartridge from the tape drive.
- 10 Remove the flexible pad by sliding it out of the holder. Discard the pad.
- 11 Insert a new, dry pad into the holder by sliding it into place.
- 12 Insert the cleaning cartridge into the tape drive and lock into place.
- 13 Move the dry pad using 4 strokes of the guide rod, moving the rod as far as it will go each time.
- 14 Remove the cleaning cartridge. Store it with the dry pad in its original carton until next use.

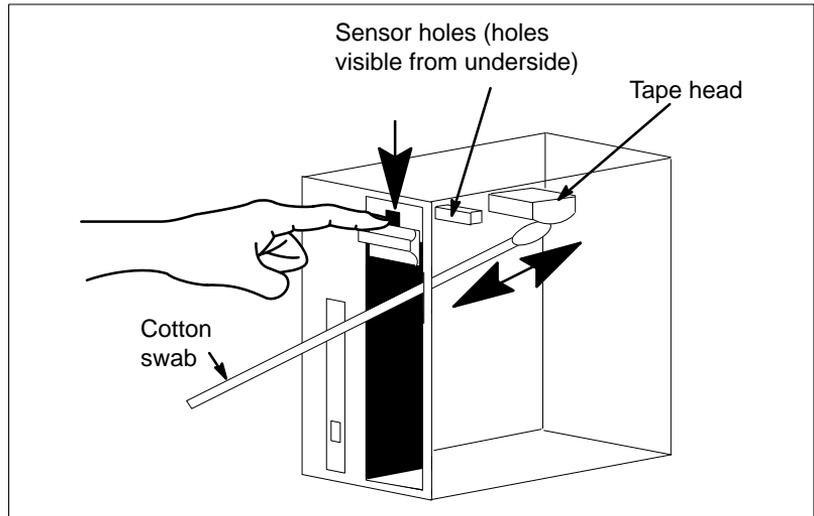
Procedure 15-7**Cleaning the Archive tape drive with swabs and fluid**

This procedure should only be used if you have a Archive tape drive. If you have a Tandberg tape drive, refer to Procedure 15-8.

- 1 If there is a tape cartridge in the tape drive, remove the cartridge.
- 2 Push the head loading lever down into the load position.
- 3 Carefully blow out dust from the sensor hole and tape cartridge cavity with aerosol air. (Refer to Figure 15-3.)

- 4 Moisten a pad or swab with the head-cleaning fluid until it is saturated but not dripping.

Figure 15-3
Archive tape drive cleaning



- 5 Carefully wipe the head in the direction that the tape travels. (Refer to Figure 15-3).



WARNING
Risk of equipment damage

Do not wipe perpendicularly or use a circular scrubbing motion as this could seriously damage the tape heads.

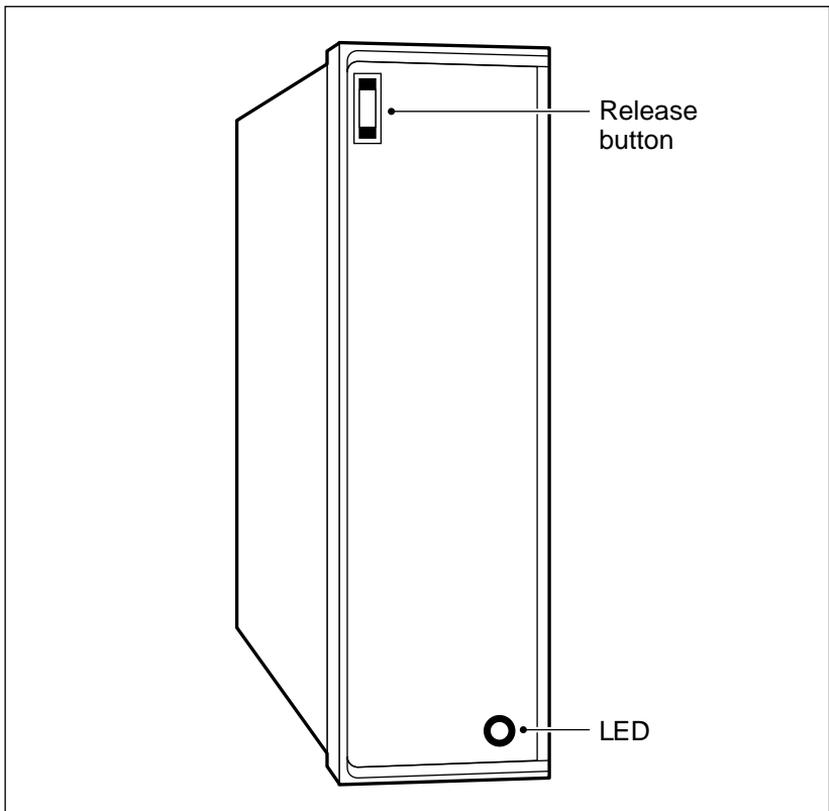
- 6 Discard the used swab and repeat steps 4 and 5 with new swabs until the swab shows no signs of dirt.
- 7 Use a new, dry swab to remove any remaining cleaning fluid from the head.
- 8 Allow 2 minutes for the tape head to dry before inserting a tape.
- 9 Release the head loading lever away from the load position.
- 10 If there was a tape cartridge in the tape drive, reinsert it.

Procedure 15-8
Cleaning the Tandberg tape drive

Follow the steps in this procedure if you are cleaning the Tandberg tape drive. If you have an Archive tape drive, refer to Procedure 15-6 or 15-7.

- 1 Press the release button on the tape drive (see Figure 15-4).
The tape drive door will spring open.

Figure 15-4
Tandberg tape drive



- 2 If there is a tape cartridge in the tape drive, remove the cartridge.
- 3 Prepare the cleaning cartridge as per the manufacturer's instructions.
- 4 Carefully blow out dust from the tape cartridge cavity with aerosol air.
- 5 Insert the cleaning cartridge into the tape drive.

- 6 Close the door to engage the cartridge.
The tape drive will start to spin.
- 7 After a suitable period (that is, several minutes), press the release button to disengage the cartridge.
The door will spring open and the tape drive will stop running.
- 8 Remove the cartridge and store it in its original container.
The cleaning cartridge should be stored in its original container and put away until its next use.
- 9 Wait a couple of minute for the tape heads to dry before using the tape drive.

Installation of Mass Storage Unit

Procedure 15-9

Setting the SCSI ID for the Archive tape drive

- 1 Find the 3-by-6 header beside the SCSI connector. See Figure 15-6 and 15-7 for the header location.
- 2 Remove any jumpers on the header in positions A1 and A2. Insert a jumper on the header in position A0.
This sets the SCSI ID of the tape drive to 1.
- 3 Ensure that the Archive Viper tape drive terminator resistor packs are removed as indicated in the figure.
- 4 Verify the other jumpers as shown in Figures 15-6 and 15-7 .

Procedure 15-10

Setting the SCSI ID for the Tandberg tape drive

- 1 Find the 2-by-10 header beside the SCSI connector. See Figures 15-8 and 15-9 for the header location.
- 2 Insert jumpers on the header in position 0 and Parity as shown in the figure.
This sets the SCSI ID of the tape drive to 1.
- 3 Ensure that tape drive terminator resistor packs are removed.
- 4 Verify the other jumpers as shown in Figures 15-8 and 15-9.

Procedure 15-11

Installing a mass storage unit

- 1 Check the jumper settings are correct. Refer to Figures 15-6 to 15-9 appropriate.

- 2 Make sure no SCSI bus terminator is mounted on the tape drive. Refer to Figures 15-6 to 15-9 appropriate.
- 3 Slowly insert the MSU.
- 4 At the rear side, connect the SCSI interface cable with the red stripe in pin #1, and connect the harness cable into the power connector (12 V, 5 V, and ground) of the tape.

Note: There are two power harness cables. One is extra. Secure it for safety.

Note: A longer SCSI cable is included because the connector on the Archive Viper drive requires the longer SCSI cable in order to complete the installation. As the shorter version of the SCSI cable is shipped only for a brief period of time, you may not need to replace this.

- 5 Make sure the MSU is mounted securely. Tighten mounting and screws.
- 6 Insert power converter pack (QPC585).

Note: DC6150 and DC6250 tapes are recommended for backup. Keeping one type helps to reduce tape drive wear.

Replacement of tape drive

See the handling precautions at the beginning of the chapter.

Procedure 15-12 **Replacement of tape drive**

- 1 Power off the prime node.
- 2 Remove the disk/tape unit by opening the ejectors and then carefully sliding the unit out.
- 3 Look on the replacement unit for the tape drive jumper settings, and ensure that they are configured as shown in Figures 15-6 to 15-9, as appropriate.
- 4 If the node is shadowed, see Procedure 15-4, "Primary (left side) disk replacement."
- 5 If the node is unshadowed, see Procedure 15-3, "Replacing a disk [or disk/tape unit] in an unshadowed node."
- 6 Install the new unit in the same MSU slot as the unit you are replacing by carefully sliding the unit in and locking the ejectors in place.
- 7 Reboot the system.

Figure 15-5
Mass storage unit (MSU) (NT4R28AC – Archive Viper tape drive)

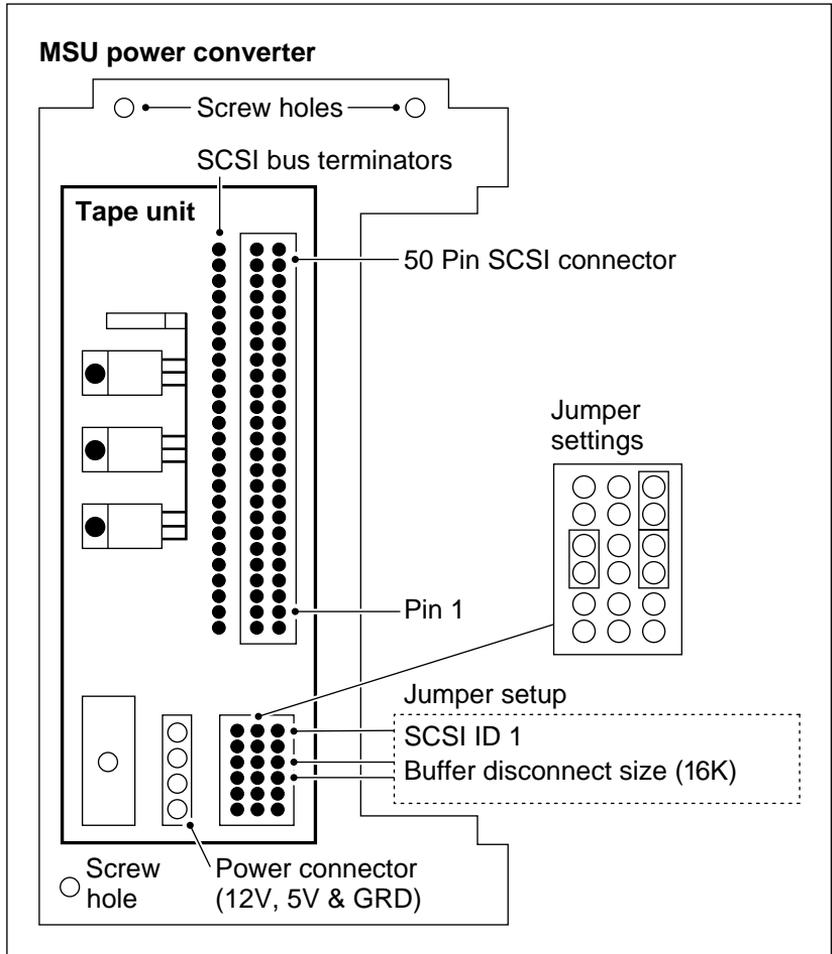


Figure 15-6
Archive Viper tape drive connectors and jumper settings

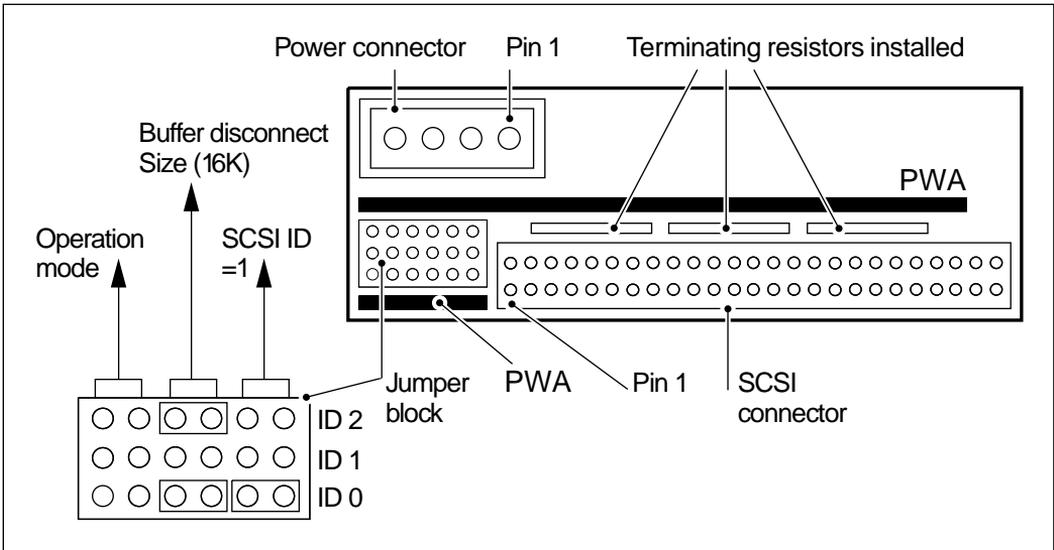


Figure 15-7
Rear of Archive Viper tape drive showing location of SCSI ID

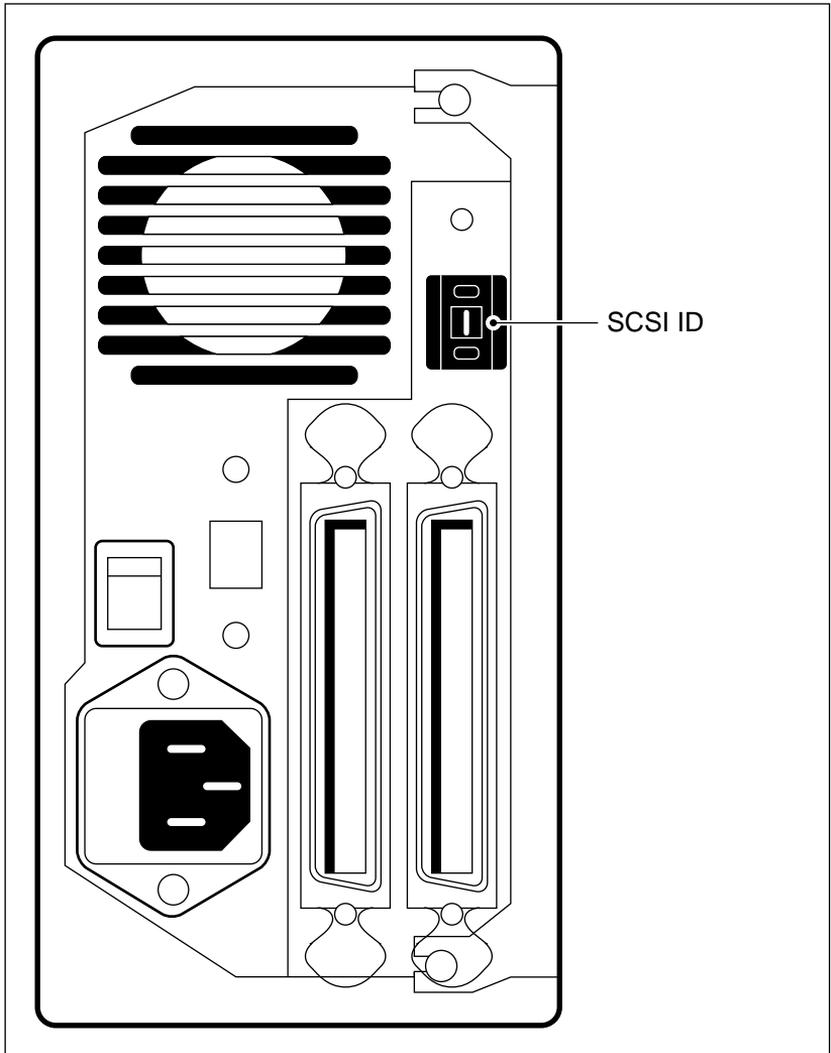


Figure 15-8
Tandberg tape drive connectors and jumper settings

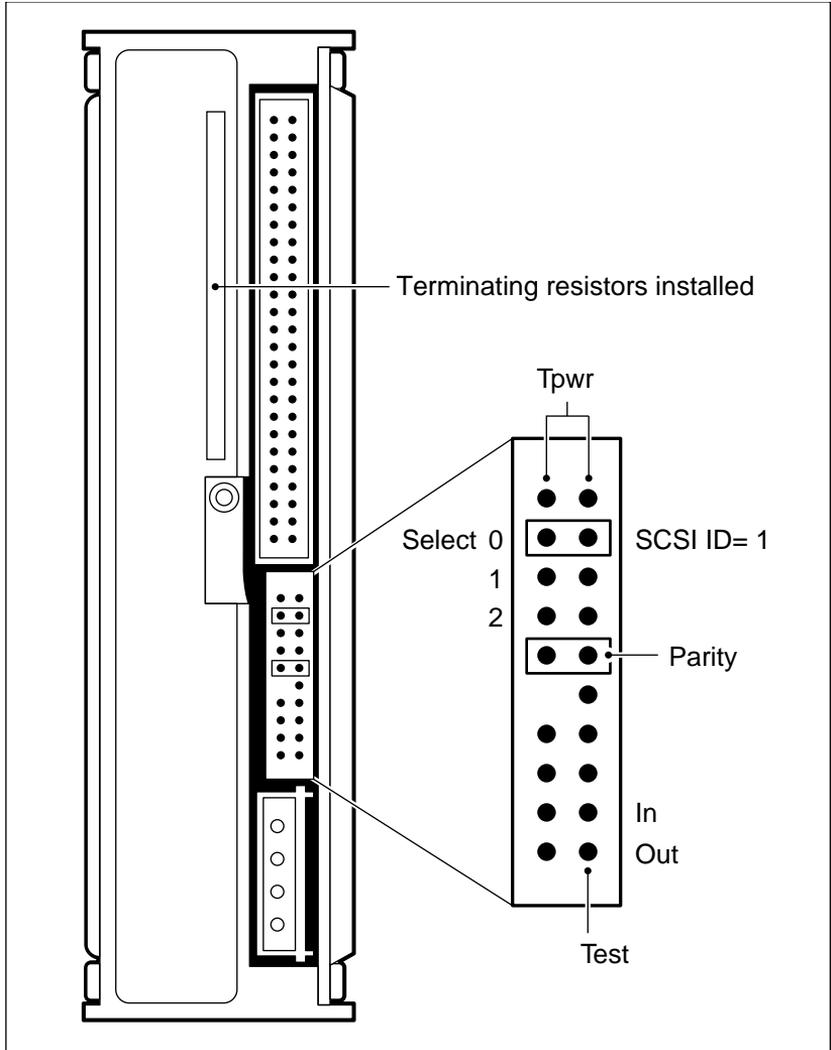
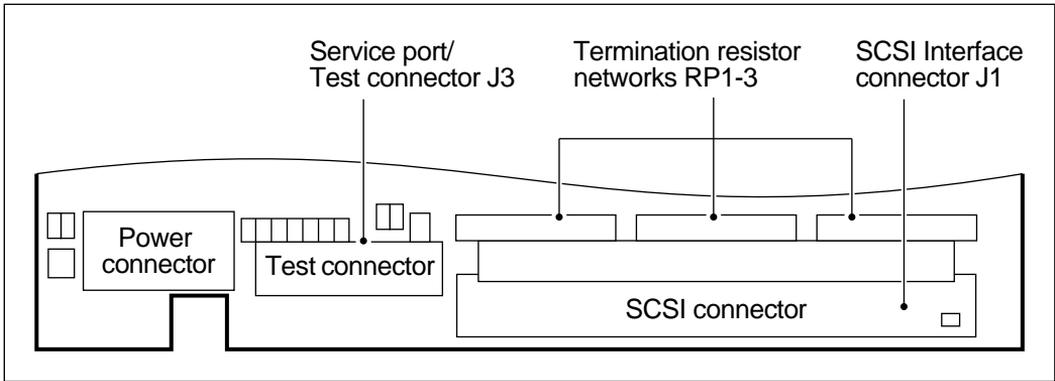


Figure 15-9
Tandberg tape drive connectors



Note: Terminator resistors are installed.

Chapter 16: Common disk subsystem problems

When checking the disk sub-system problems, the following diagnostic checklist should be followed:

- device jumpers
- bus cabling
- bus termination
- power
- SCSI device sanity test
- relevant SEER messages, especially Maintenance Actions, and SEERs of classes 11 to 14, 31, 66

Device jumpers

Jumpers are used to set the SCSI ID as well as a number of options on the disk and tape drives. The actual settings on these devices should be checked against the figures and descriptions in Chapter 7 of this manual.

Bus cabling

A SCSI bus runs from the card cage to the disk and tape drives. Check the following:

- Tape unit is securely seated in node 1
- Disk units are securely seated in each node
- SCSI pack is securely seated in each node.

- SCSI connector firmly connected to the backplane.
- SCSI connector is firmly connected to the front of the MMP40 card in each node.

Bus termination

There should be exactly one set of terminating resistors attached to the SCSI devices in a node on the disk drive which is installed in the left MSU slot. The resistor pack is plugged into the AMP socket on the SCSI cable in the MSU cage. All inboard terminating resistors must be removed from all the SCSI devices.

Power

Disk and tape drives are fed by one or more DC power converters and may behave erratically when there are power problems. Follow the procedures in the Meridian Mail power problems section in Chapter 13.

SCSI sanity test

Perform a quick sanity check of the SCSI bus by testing tape and disk drives using Procedures 16-1 and 16-2.

Procedure 16-1

Tape drive sanity test

- 1 Power off the module that contains the tape drive.
- 2 Put a tape in the tape drive.
- 3 Power on the module.

The tape drive should make a series of clicking noises as it loads the tape. The message "TAPE RETENSION" appears on the administration terminal, followed by "CI to be loaded."

The System Installation & Modification menu returns.

Procedure 16-2

Disk drive sanity test

- 1 Power on each module.

As power is applied, the LED on each disk drive should come on briefly and go off. It should not remain continuously lit.

Disk problems identified by SEERs

Disk problems are reported by the disk manager in a Class 66 SEER. The complete list of these SEERs can be found in the *Meridian Mail Maintenance Messages (SEERs) Guide* (NTP 555-7001-510). The purpose of this section is to give further details of the most common ones.

A SEER in the form

```
6603/6605 node # disk #> sense key? # error code: # [block: #]
```

is produced when a disk reports a problem. The sense key describes the general nature of the problem and is standardized. The error code describes the exact problem but is often drive-dependent. There may be an optional disk block number associated with the problem report. Look for the following sense keys:

- *Sense key 2* indicates the disk is not ready to accept commands. One possible cause is that the drive is not spinning up. If this appears during regular operation, the disk should be replaced.
- *Sense key 3* normally indicates a medium error. Disk controller problems can also cause this sense key to come out. A block number is provided with this problem report, and the “scsi_pkg” verify command should be used to check that the block is indeed bad. The disk should be replaced.
- *Sense key 4* indicates a disk hardware failure.
- *Sense key 5* indicates an invalid command was sent to the drive. If this appears during regular operation, contact Nortel support.
- *Sense key 6* indicates the SCSI bus has been reset. If this appears during regular operation, contact Nortel support.

A SEER in the form

```
6604/6606 node # disk #> driver error #
```

is produced when there is a problem talking to a disk.

Driver error 129 indicates the disk cannot even be seen and is the most common. It is usually caused by incorrect SCSI ID jumpering on the drive itself or by a bad connection along the SCSI bus.

Procedure 16-3

Disk or disk/tape drive connection integrity test

- 1 Ensure that the disk or disk/tape drive is firmly seated.
- 2 Check the jumpers on the drive. See Chapter 15 for details.
- 3 Ensure that the SCSI cable and power cable from the drive to the drive cage connectors are firmly attached to both ends.

Data loss and disk replacement

When a disk fails and needs to be replaced, a number of mechanisms exist to limit data loss:

- A tape backup may have been performed prior to the failure.
- A tape backup can often be made after the failure.

A system relies on tape backups to reduce data loss during disk replacement.

If the disk to be replaced is still readable, perform a tape backup to capture as much of the current data as possible.



CAUTION

Risk of data loss/corruption

When backing up a disk you think may have failed, never back up over an existing good backup, as the data on the disk may now be corrupted, and you may destroy useful information.

The backup utility attempts to run to completion in spite of disk errors. It is likely that the contents of a number of disk blocks are unrecoverable.

The loss of a small number of blocks usually does not result in serious operational problems (for example, several corrupted messages or mailboxes) for Meridian Mail. However, damage to critical areas can cause a system malfunction.

Replace the disk and restore the backup onto the new disk. If the system malfunctions afterwards, restore the data from the most recent backup done prior to the disk failure.

Appendix A: Terminal configuration

Several different models of administration terminal can be used with Meridian Mail. Chapter 10 shows how to cable these terminals to the printer and the A/B switchbox.

This appendix describes how to configure the following terminals for proper data communications with Meridian Mail:

- HP700/22 terminal (see Procedure 17-1)
- HP700/32 terminal (see Procedure 17-2)
- NT220 terminal (see Procedure 17-3)
- VT220 terminal (see Procedure 17-4)
- VT320 terminal (see Procedure 17-5)
- VT420 terminal (see Procedure 17-6)

Note: The VT420 has been discontinued by the manufacturer and is superseded by the VT520.

- VT520 terminal (see Procedure 17-7)

You configure a terminal by entering setup mode.



CAUTION
Risk of data loss

You can enter setup mode at any time, but it is recommended that you do so only while logged off from Meridian Mail.

Field types in terminal setup screens

There are three types of fields in terminal setup screens: action, read only and parameter entry, or selection. Most of the fields on the screens, and almost all the fields you need to use for setup, are parameter entry or selection fields.

Action fields are indicated by underscores in the figures illustrating setup screens. Action fields cause an action such as clearing the display to take place. Unless instructed otherwise, you do not need to use action fields.

Note: The underscores do not appear on the terminal screen.

Parameter entry or selection fields are used to enter or select terminal parameter values.

Configuring HP700/22 and HP700/32 terminals

Procedure 17-1

Configuring an HP700/22 terminal

- 1 Power on the terminal.
- 2 Enter setup mode by pressing the <SETUP> key located on the top row of function keys. If no key is marked <SETUP>, press the third key from the left on the top row.

The General setup screen is displayed with the current setup values.

Note: There may be minor differences between what you see in this chapter and the contents of the setup screens on your terminal. This is due to improvements made to the terminal by the manufacturer. Follow the setup documented here as closely as possible.

- 3 Change the values in each parameter field (on each setup screen) as necessary so that they match those shown in Figure 17-1.

Use the following keys to view and change setup values:

Key	Description
Arrow keys	Move from field to field
<Enter>	Scroll through possible values which are displayed in the field, or cause requested action to take place (depends on type of field)
<NextScreen>	Move to next setup screen
<PrevScreen>	Move to previous setup screen

- 4 Save changes by returning to the *General Setup* screen, moving the cursor to the *Save* field, and pressing <Enter>.
- 5 Exit setup mode by pressing the <SETUP> key.

Figure 17-1
HP700/22 setup screens

General Setup			
	Clear Display	Clear Communications	Reset Terminal
	Recall	Save	Default
			Setup = English
Terminal Mode	EM200, 7 Bit Ctrls		EM100 ID
On Line	YES		Interpret Control Mode
Columns	80		User Features Locked
Smooth Scroll	YES		User Defined Keys Locked
Block Cursor	YES		Numeric Mode Keypad
Cursor OFF	NO		Normal Mode Cursor Keys
Light Background	NO		National Character Set
Inhibit Auto Wrap	NO		Frame Rate
New Line	NO		Display OFF After (min)
MultiPage	NO		
Status Line	Indicator		

Communications Setup			
Host			
Xmit Baudrate	2400	XON/XOFF	@ 64
Recv Baudrate	=Xmit	Disconnect Delay	2 s
DataBits/Parity	8/None	Stop Bits	1
Check Parity	NO	Local Echo	NO
Port Selection	EIA, Data Leads Only	Unlimited Xmit	NO
Printer			
Baudrate	9600	Print Mode	Normal
DataBits/Parity	8/None	Print Scroll Region	NO
Stop Bits	1	Terminator	None
Character Set	National Only		

17-4 Terminal configuration

Figure 17-1
HP700/22 setup screens - continued

Keyboard Setup			
Keyboard Language	North American	Data Processing Keys	NO
Keyclick	YES	Shift Lock	NO
Margin Bell	YES	Break	YES
Warning Bell	YES	Auto Repeat	YES
Answerback =		Auto Answerback	NO
<input type="text"/>			
Conceal Answerback	Clear All Tabs	Set 8 Column Tabs	
<input type="text"/> T T T T T T T T T			
12345678901234567890123456789012345678901234567890123456789012345678901			
23			
<input type="text"/> T T T T T T			
4567890123456789012345678901234567890123456789012			

Programmable Function Key Setup		
Function Key	F6	<u>Clear Key</u>
Qualifier Key	Shift	<u>Clear All Keys</u>
Key Definition	<input type="text"/>	

Procedure 17-2**Configuring an HP700/32 terminal**

- 1 Power on the terminal.
- 2 Enter setup mode by pressing the <SETUP> key located on the top row of function keys. If no key is marked <SETUP>, press the third key from the left on the top row.

The Global setup screen is displayed with the current setup values.

Note: There may be minor differences between what you see in this chapter and the contents of the setup screens on your terminal. This is due to improvements made to the terminal by the manufacturer. Follow the setup documented here as closely as possible.

- 3 Change the values in each parameter field (on each setup screen) as necessary so that they match those shown in Figure 17-2.

Use the following keys to view and change setup values:

Key	Description
Up and down arrow	Move from field to field.
Left and right arrow	Scroll through possible values for a parameter. The values are displayed in a window at the bottom of the screen.
<Enter>	Cause the requested action to take place in an action field.
<NextScreen>	Move to next setup screen.
<PrevScreen>	Move to previous setup screen.

- 4 Save changes by pressing <F6-SaveMenu> on *each screen* on which you make changes you want to save.
- 5 Exit setup mode by pressing the <SETUP> key.

Figure 17-2
HP700/32 setup screens

GLOBAL	USER	EMULATION	PORT 1	PORT 2	KEYBRD	PROGRAM
		Host Port	1			
		Background	Dark			
		Screen Saver	10 Min			
		Refresh Rate	72 Hz			
		Key Click	Yes			
		Keyboard	U.S.			
		Message Translations	English			
		Setup Translations	English			
		<u>Clear Display</u>				
		<u>Clear Comm</u>				
		ROM Revision	C1017-80004-2948			

GLOBAL	USER	EMULATION	PORT 1	PORT 2	KEYBRD	PROGRAM
		Smooth Scroll	Jump	Display Width	80	
		Cursor Type	Blink Line	Display Width Allowed	80 or 132	
		Cursor	Off	Char Cell Height	16 Dots	
		2nd Message Line	On	Clr on Width Change	Yes	
		Message Line	On	Aux Mode	Off	
		Status Line	On	Aux To Host	No	
		On Line	Yes	Print Terminator = FF	No	
		Local Echo	Off	Logical Page Size	24	
		Auto Wrap	Off	Number of Pages	1	
		Auto Linefeed	Off			
		Display Ctrl Codes	Off			

Figure 17-2
HP700/32 setup screens - continued

GLOBAL	USER	EMULATION	PORT 1	PORT 2	KEYBRD	PROGRAM
Emulation		VT320				
Terminal Id		VT220				
Control Codes		7-Bit				
Characters Mode		8-Bit				
Preferred Char Set		DEC Supplemental				
Keypad Mode		Application				
Cursor Keys		Normal				
Print Scroll Region		Off				
User Features Locked		No				
User Keys Locked		No				
Data Processing Keys		No				

GLOBAL	USER	EMULATION	PORT 1	PORT 2	KEYBRD	PROGRAM
Communications		Full Duplex		CD		Ignore
Data Length		8-Bits		Break Duration		170ms
Parity		None		Disconnect Delay		Never
Stop Bits		1		Aux Printer Type		National
Xmit Baud		2400				
Recv Baud		=Xmit				
Xmit Pace		Xon/Xoff				
Recv Pace		Xoff at 128				
Limited Transmit		Off				
DSRI		No				
CTS		Ignore				

17-8 Terminal configuration

Figure 17-2
HP700/32 setup screens - continued

GLOBAL	USER	EMULATION	PORT 1	PORT 2	KEYBRD	PROGRAM
Communications	Full Duplex					
Data Length	8-Bits					
Parity	None					
Stop Bits	1					
Xmit Baud	9600					
Recv Baud	=Xmit					
Xmit Pace	DSR/Xon/Xoff					
Recv Pace	Xoff at 128					
Limited Transmit	Off					
Break Duration	170ms					
Aux Printer Type	National					

GLOBAL	USER	EMULATION	PORT 1	PORT 2	KEYBRD	PROGRAM
Lock Key	Caps Lock			Tab setting		
Kbd Lock Enable	Yes					
Save Tabs	Yes					
Auto Repeat	Yes					
Margin Bell	Yes					
Warning Bell	Yes					
Auto AnswerBack	Yes					
Answerback =						
Conceal Answerback	No					
<u>Clear all Tabs</u>						
<u>Set 8 Column Tabs</u>						

Configuring an NT220 terminal

Procedure 17-3

Configuring an NT220 terminal

- 1 Power on the terminal.
- 2 Enter setup mode by pressing the <SETUP> key located on the top row of function keys. If no key is marked <SETUP>, press the third key from the left on the top row.

The General Set-Up screen is displayed with the current setup values.

Note: There may be minor differences between what you see in this chapter and the contents of the setup screens on your terminal. This is due to improvements made to the terminal by the manufacturer. Follow the setup documented here as closely as possible.

- 3 Change the values in each parameter field (on each setup screen) as necessary so that they match those shown in Figure 17-3.

Use the following keys to view and change setup values:

Key	Description
Arrow keys	Move from field to field.
<Enter>	Scroll through possible values, or cause requested action to take place (depends on type of field),

To move to the next setup screen, select *To Next Set-Up Screen* on any setup screen.

- 4 Save changes by returning to the *General Set-Up* screen, moving the cursor to the *Save Current Values* field, and pressing <Enter>.
- 5 Exit setup mode by pressing the <SETUP> key.

Figure 17-3
NT220 setup screens

GENERAL SET-UP

To Next Set-Up Screen	NT220 Mode, 7 Bit Controls
On Line	
Clear Display	User Defined Keys Unlocked
Clear Communications	User Features Unlocked
Reset Terminal	Application Keypad
Recall Saved Values	Normal Cursor Keys
Save Current Values	No New Line
Default Values	Set-Up = English
Refresh Rate = 60 Hz	North American Keyboard

Printer Comm. Set-Up	Host Comm. Set-Up
To Next Set-Up Screen	Transmit = 2400
Speed = 9600	Receive = Transmit
Normal Print Mode	XOFF at 64
8 Bits, No Parity	8 Bits, No Parity
1 Stop Bit	1 Stop Bit
Print Full Page	No Local Echo
Print National Only	EIA Port, Data Leads Only
No Terminator	Disconnect, 2 s Delay
Bidirectional Off	Limited Transmit

Figure 17-3
NT220 setup screens - continued

Display Set-Up	Keyboard Set-Up
To Next Set-Up Screen	Typewriter Keys
80 Columns	Caps Lock
Interpret Controls	Auto Repeat
Auto Wrap	Keyclick
Jump Scroll	Margin Bell
Light Text, Dark Screen	Warning Bell
Cursor	Break
Block Cursor Style	Multinational
Flip Off	DEL = DEL; Shift/DEL = BS

Answerback/Tab Set-Up	Enhance/Block Mode Set-Up
To Next Set-Up Screen	CRT Saver Enabled
No Auto Answerback	Clear Screen after Size Change
Not Concealed	Define Function Key
Answerback =	COMPOSE Key Enabled
	Transmit Line
Clear All Tabs	End Of Line Char = CR/CRLF
Set 8 Column Tabs	No End Of Block Char

Configuring VT220, VT320, VT420, and VT520 terminals

Note: The VT420 terminal has been discontinued by the manufacturer and is superseded by the VT520.

Procedure 17-4

Configuring a VT220 terminal

- 1 Power on the terminal.
- 2 Enter setup mode by pressing the <SETUP> key located on the top row of function keys. If no key is marked <SETUP>, press the third key from the left on the top row.

The Setup Directory screen is displayed with the current setup values.

Note: There may be minor differences between what you see in this chapter and the contents of the setup screens on your terminal. This is due to improvements made to the terminal by the manufacturer. Follow the setup documented here as closely as possible.

- 3 Change the values in each parameter field (on each setup screen) as necessary so that they match those shown in Figure 17-4.

Use the following keys to view and change setup values:

Key	Description
Arrow keys	Move from field to field.
<Enter>	Scroll through possible values, or cause requested action to take place (depends on type of field).

To move to another setup screen, select a screen from the top line of the *Setup Directory* screen and press <Enter>. To move to the next setup screen, select *To Next Set-Up* on any other setup screen.

- 4 Save changes by returning to the *Setup Directory* screen, moving the cursor to the *Save* field, and pressing <Enter>.
- 5 Exit setup mode by pressing the <SETUP> key.

Figure 17-4
VT220 setup screens

Set-Up Directory

Display General Comm Printer Keyboard Tab
 On Line Clear Display Clear Comm Reset Terminal Recall Save
 Set-up=English North American Keyboard Default Exit

Display Set-Up

To Next Set-Up To Directory 80 Columns Interpret Controls
 Auto Wrap Jump Scroll Light Text, Dark Screen
 Cursor Block Cursor Style

General Set-up

To Next Set-Up To Directory VT200 Mode 7 Bit Controls
 User Defined Keys Unlocked User Features Unlocked Multinational
 Application Keypad Normal Cursor Keys No New Line

Communications Set-Up

To Next Set-Up To Directory Transmit=2400 Receive=Transmit
 Xoff at 128 8 Bits, No Parity 1 Stop Bit No Local Echo
 EIA Port, Data Leads Only Disconnect, 2 s Delay Limited Transmit

Printer Set-Up

To Next Screen To Directory Speed=9600
 Normal Print Mode 7 Bits, Odd Parity 1 Stop Bit
 Print Full Page Print National Only No Terminator

Keyboard Set-Up

To Next Set-Up To Directory Typewriter Keys Caps Lock
 Auto Repeat Keyclick Margin Bell Warning Bell Break
 No Auto Answerback Answerback = Not Concealed

Procedure 17-5
Configuring a VT320 terminal

Note: The VT420 has been discontinued by the manufacturer and is superseded by the VT520.

- 1 Power on the terminal.
- 2 Enter setup mode by pressing the <SETUP> key located on the top row of function keys. If no key is marked <SETUP>, press the third key from the left on the top row.

The Setup Directory screen is displayed with the current setup values.

Note: There may be minor differences between what you see in this chapter and the contents of the setup screens on your terminal. This is due to improvements made to the terminal by the manufacturer. Follow the setup documented here as closely as possible.

- 3 Change the values in each parameter field (on each setup screen) as necessary so that they match those shown in Figure 17-5.

Use the following keys to view and change setup values:

Key	Description
Arrow keys	Move from field to field.
<Enter>	Scroll through possible values, or cause requested action to take place (depends on type of field).

To move to another setup screen, select a screen from the top line of the *Setup Directory* screen and press <Enter>. To move to the next setup screen, select *To Next Set-Up* on any other setup screen.

- 4 Save changes by returning to the *Setup Directory* screen, moving the cursor to the *Save* field, and pressing <Enter>.
- 5 Exit setup mode by pressing the <SETUP> key.

Figure 17-5
VT320 setup screens

Set-Up Directory

Display General Comm Printer Keyboard Tab
 On Line Clear Display Clear Comm Reset Terminal Recall Save
 Set-up=English North American Keyboard Default Exit

Display Set-Up

To Next Set-Up To Directory 80 Columns Interpret Controls
 Auto Wrap Jump Scroll Light Text, Dark Screen
 Cursor Block Cursor Style Indicator Status Display

General Set-up

To Next Set-Up To Directory VT300 Mode, 7 Bit Controls VT220 ID
 User Defined Keys Unlocked User Features Unlocked 8-bit characters
 Application Keypad Normal Cursor Keys No New Line
 UPSS DEC Supplemental

Communications Set-Up

To Next Set-Up To Directory Transmit=2400 Receive=Transmit
 Xoff at 128 8 Bits, No Parity 1 Stop Bit No Local Echo
 DEC 423, Data Leads Only Disconnect, 2 s Delay Limited Transmit
 No Auto Answerback Answerback = Not Concealed

Printer Set-Up

To Next Set-Up To Directory Speed=9600 Printer to Host
 Normal Print Mode NO XOFF 8 Bits, No Parity 1 Stop Bit
 Print Full Page Print National Only No Terminator

Keyboard Set-Up

To Next Set-Up To Directory Typewriter Keys Caps Lock
 Auto Repeat Keyclick Margin Bell Warning Bell Break
 Compose <X] Delete
 , , and . . Keys < > Key ` ~ Key

Procedure 17-6

Configuring a VT420 terminal

- 1 Power on the terminal.
- 2 Enter setup mode by pressing the <SETUP> key located on the top row of function keys. If no key is marked <SETUP>, press the third key from the left on the top row.

The Setup Directory screen is displayed with the current setup values.

Note: There may be minor differences between what you see in this chapter and the contents of the setup screens on your terminal. This is due to improvements made to the terminal by the manufacturer. Follow the setup documented here as closely as possible.

- 3 Change the values in each parameter field (on each setup screen) as necessary so that they match those shown in Figure 17-6.

Use the following keys to view and change setup values:

Key	Description
Arrow keys	Move from field to field.

To move to another setup screen, select a screen from the top line of the *Setup Directory* screen and press <Enter>. To move to the next setup screen, select *To Next Set-Up* on any other setup screen.

- 4 Save changes by returning to the *Setup Directory* screen, moving the cursor to the *Save* field, and pressing <Enter>.
- 5 Exit setup mode by pressing the <SETUP> key.

Figure 17-6
VT420 setup screens

Set-Up Directory

Global Display General Comm Printer Keyboard Tab
Clear Display Clear Comm Reset Session Recall Save
Set-up = English Canadian (English) Keyboard Default
Enable Sessions Disable Sessions Exit Screen Align

Global Set-Up

To Next Set-Up To Directory
On Line Sessions on Comm1 CRT Saver
Comm1=RS-232 70Hz Printer shared

Display Set-Up

To Next Set-Up To Directory 80 Columns Interpret Controls
Auto Wrap Jump Scroll Dark Screen
Cursor Block Style Cursor Indicator Status Display
Cursor Steady 6x24 pages 24 Lines/Screen
Vertical Coupling Page Coupling Auto Resize Screen

General Set-up

To Next Set-Up To Directory VT400 Mode, 7 Bit Controls
User Defined Keys Unlocked User Features Unlocked 8-bit Characters
Application Keypad Normal Cursor Keys No New Line
UPSS DEC Supplemental VT220 ID
When Available Update

Communications Set-Up

To Next Set-Up To Directory Transmit=2400 Receive=Transmit
Xoff @ 64 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

Printer Set-Up

To Next Set-Up To Directory Speed=9600 Printer to Host
Normal Print Mode NO XOFF 8 Bits, No Parity 1 Stop Bit
Print Full Page Print National Only No Terminator

Keyboard Set-Up

To Next Set-Up To Directory Typewriter Keys Caps Lock
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

Procedure 17-7

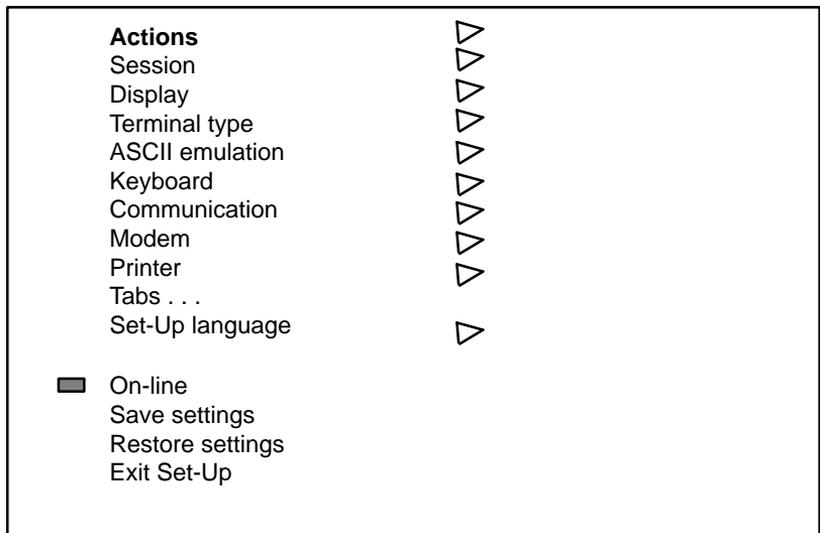
Configuring a VT520 terminal

- 1 Power on the terminal.
- 2 Enter setup mode by pressing the <SETUP> key located on the top row of function keys. If no key is marked <SETUP>, press the third key from the left on the top row.

The Main Set-Up window is displayed (see Figure 17-7).

Figure 17-7

VT520 terminal Main Set-Up window



- 3 Use the up and down arrow keys to highlight the setup feature which is to be changed (for example, **Actions**).

- 4 When the setup feature is highlighted, use one of the following methods to select the appropriate settings:

Table 17-1
Navigating the setup windows

If	then
a solid triangle appears beside the setup feature	use the right arrow key to automatically display the pop-up window of associated settings. See Figure 17-8 for an example.
a box appears beside the setup feature	press <Enter> to toggle the setting for the selected feature on or off. A diagonal line appears in the box when the setting is on.
three dots (. . .) appear beside the setup feature	press <Enter> to display the associated pop-up window. When all fields have been completed, move the cursor to [OK] or [Cancel], and press <Enter> again to activate your choice.

Figure 17-8
VT520 terminal - sample feature pop-up window

<p>Actions</p> <ul style="list-style-type: none"> Session Display Terminal type ASCII emulation Keyboard Communication Modem Printer Tabs . . . Set-Up language <p>■ On-line</p> <ul style="list-style-type: none"> Save settings Restore settings Exit Set-Up 	<ul style="list-style-type: none"> Clear Display Clear communications Reset this session Restore factory defaults <ul style="list-style-type: none"> Clock Calculator Show character sets Banner message . . .
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Note: Features shown in parentheses are grayed out on the window.

17-20 Terminal configuration

- 5 Configure the terminal to match mandatory settings in Table 17-2. If no setting is specified, select the parameter which best suits your environment.
- 6 Press <SETUP> again to exit setup mode.

Table 17-2
VT520 setup values

Setup feature	First level	Mandatory setting or description
Actions	Clear Display	Press <Enter> to clear the display.
	Clear Communications	Press <Enter> to clear communications.
	Reset this session	Press <Enter> to reset this session.
	Restore factory defaults	Press <Enter> to restore the factory default.
	Clock	Press <Enter> to set the VT520 clock.
	Calculator	Press <Enter> to use the VT520 calculator.
	Show character sets	Press <Enter> to display character sets.
	Banner message . . .	Press <Enter> to set the banner message.
Session	Select Session	Select Session 1
	Session name . . .	Optional user text
	Pages per session . . .	04 pages maximum
	Soft char sets/session	Two each S1 and S2
	Save settings for all	
	Restore settings for all	
	Copy settings from	
	Update session	At regular intervals
Display	Lines per screen	24, 25, or 26
	Lines per page	24 lines X 01 pages
	Review previous lines	ON
	Columns per page	80 columns, Clear on change
	Status display	Local status
-continued-		

Table 17-2
VT520 setup values - continued

Set-up Feature	First level	Mandatory setting or description
Display (continued)	Scrolling mode	Jump
	Screen background	Dark
	Cursor display	Enable cursor, Block, Blink
	Cursor coupling	Set to "Vertical" and "Page"
	Cursor direction	Left to right
	Copy direction	Left to right
	Zero	Select style of zero you want to display.
	Auto Wrap	ON
	New line mode	
	Lock user preferences	
	Show control characters	
	CRT saver	
	Energy saver	
	(Overscan)	
	Framed windows	ON (Set to OFF to enable Overscan.)
	Screen alignment	
Terminal type	Emulation mode	VT520
	Terminal ID to host	VT520
	VT default char set	DEC Multinational - See user documentation as well.
	PC Term character set	DEC Multinational - See user documentation as well.
	(7-bit NCRS characters)	
	Transmit 7-bit cable	ON
(ASCII emulation)		
Keyboard	VT Keyboard language	Select appropriate language—Canadian English
-continued-		

Table 17-2
VT520 setup values - continued

Set-up feature	First level	Mandatory setting or description
Keyboard (continued)	(PC Keyboard language)	
	Define key . . .	Use Define Key Editor screen to set the following: F1=Hold Ignore Alt F2=Print ,< and .> Keys F3=Setup <> Key F4=Session ' ~ Key F5=Break
	Save key definitions	
	Recall key definitions	
	Lock key definitions	
	Caps lock function	Caps lock
	Keyclick volume	High
	Warning bell volume	High
	Margin bell volume	OFF
	Keyboard encoding	Character (ASCII)
	Auto Repeat	
	Data processing keys	
	Application cursor keys	
	Application keypad mode	
	(Map PC keyboard to VT)	
Ignore missing keyboard		
Communication	Port select . . .	See Figure 17-9.
	Word size	8 bit
	Parity	None
	Stop bits	1 bit
	Transmit speed	2400 baud
	Receive speed	Transmit speed
-continued-		

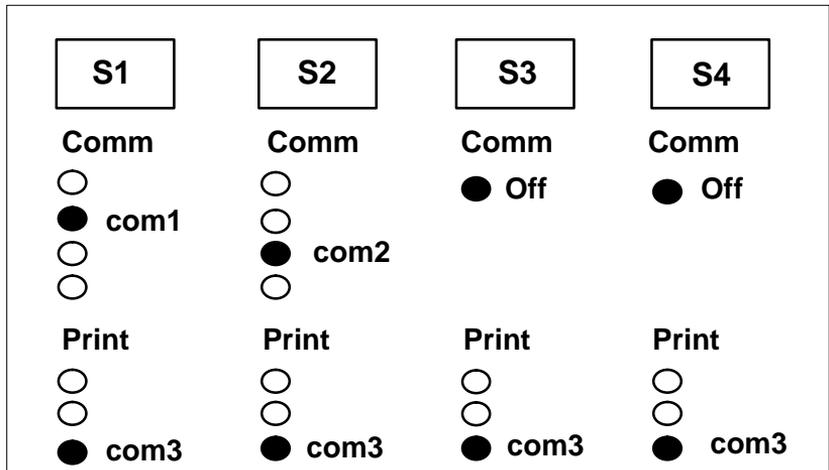
Table 17-2
VT520 setup values - continued

Set-up Feature	First level	Mandatory setting or description
Communication (continued)	Transmit flow control	XON/XOFF
	Receive flow control	XON/XOFF
	Flow control threshold	Low
	Transmit rate limit	150 cps
	Fkey rate limit	150 cps
	Ignore Null character	ON
	Local echo	
	Half duplex	
	Auto answerback	ON
	Answerback message . . .	Enter the answerback message.
	Answerback concealed	
Modem	Enable modem control	
	(Disconnect delay)	
	(Modem high speed)	
	(Modem low speed)	
Printer	Port select . . .	See Figure 17-9.
	Print mode	Normal
	Printer type	DEC ANSI
	DEC/ISO char sets	Country dependent setting
	(PC character sets)	
	Print extent	Full page
	Print terminator	None
	Serial print speed	9600 baud
	2-way communication	XON/XOFF
-continued-		

Table 17-2
VT520 setup values - continued

Set-up Feature	First level	Mandatory setting or description
Printer (continued)	Transmit flow control	ON
	Receive flow control	XON/XOFF
	Word size	8 bits
	Parity	None
	Stop bits	1 bit
Tabs	Tabs Set-Up Screen	
Set-Up language		User dependent
On-line		ON
Save settings		When settings are complete, push <Enter> to save.
Restore settings		
Exit Set-Up		
-end-		

Figure 17-9
Port selection for VT520



Appendix B: Configuration of modems for Remote Access

Each modem supplied with Meridian Mail needs to be configured before use. Configure the modem by connecting it to a VT220 compatible terminal and sending commands to it as described in this chapter.

Offsite personnel can access Meridian Mail by dialing in through a remote modem connected to a terminal. Before this can be done, the A/B switch needs to be set to disconnect the local administration terminal from Meridian Mail and attach the local modem in its place.

All modems, with the exception of UDS, need to be connected to a terminal for configuration. If you wish, you can connect it temporarily to the Meridian Mail administration terminal for configuration, and move it to its permanent location afterwards.

Configuration of modems may vary slightly from one model to the next. Refer to the manual that accompanies the modem as well as the procedures in this chapter when configuring the modem.

Note: Before configuring the modem, the terminal must first be configured to the desired speed. This determines the modem's default speed when resetting or powering up

- For modem 2400 bps access, set the terminal to 2400 bps.
- For modem 9600 bps access, set the terminal to 9600 bps.

Supported modems

In Meridian Mail Release 10.0, the baud rate of the CPU can be set at either 2400 bps or 9600 bps. Modems must be configured so the baud rate matches that of the terminal and the CPU's NVRAM (non-volatile memory).

To determine the appropriate configuration method for your modem, refer to Table 18-1 for terminals set at 9600 bps, or Table 18-2 for terminals set at 2400 bps.

Note: UDS modems can be configured manually using the front-panel buttons or through the administration terminal.

Table 18-1
Local modem setups for 9600 bps operations

Modem type	Configuration method	Refer to
UDS 2440	Front panel	Procedure 18-1
UDS 2440	Terminal	Procedure 18-2
Ven-Tel 2400-33/ 2400 Plus II	Terminal	Procedure 18-3
Ven-Tel 9600 Plus/ 9600 Plus II	Terminal	Procedure 18-4

Table 18-2
Local modem setups for 2400 bps operations

Modem type	Configuration method	Refer to
Ven-Tel EC2400-33/ 2400 Plus II	Terminal	Procedure 18-6
Ven-Tel EC2400-33/ 2400 Plus II	Terminal	Procedure 18-10
UDS 2440	Terminal	Procedure 18-7
UDS 2440	Front panel	Procedure 18-8
UDS EC 224 A/D	Terminal	Procedure 18-9

Table 18-3
Remote modem setups for 2400 bps modems

Modem type	Refer to
Ven-Tel 2400-33/2400 Plus II	Procedure 18-10
UDS 2440	Procedure 18-11
UDS 224 A/D	Procedure 18-12

Table 18-4
Remote modem setups for 9600 bps modems

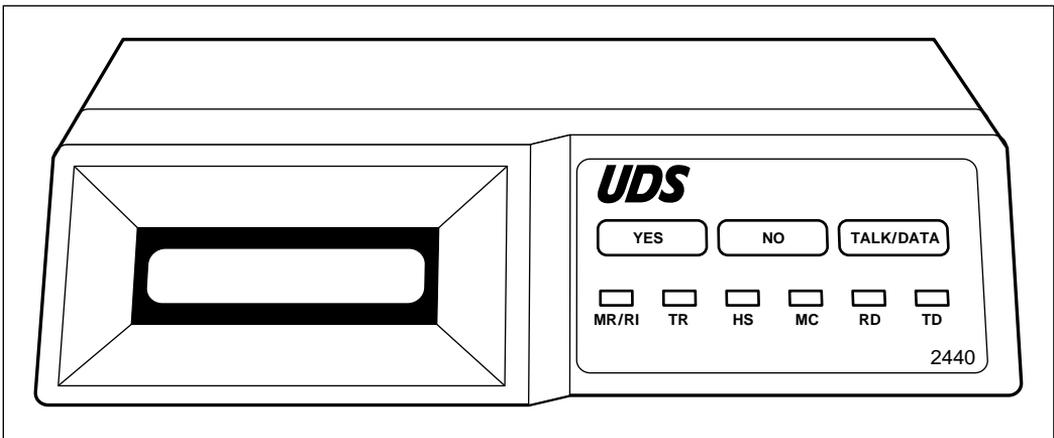
Modem type	Refer to
Ven-Tel 9600/9600 Plus II	Procedure 18-13

Local modem setups for 9600 bps operations

UDS 2440 modem for 9600 bps operation

The UDS 2440 modem can be configured for 9600 bps operation using either the administration terminal or the front panel on the modem. The front panel of the modem contains a small display and several buttons (YES, NO, and TALK) which are used to configure the modem (see Figure 18-1).

Figure 18-1
UDS 2440 modem — front panel



Procedure 18-1

Configuring the UDS 2440 modem through the front panel

- 1 Press the NO button to advance to "OPTIONS?" prompt.
- 2 Respond to the appropriate prompt as outlined in Table 18-5 below.

Table 18-5
UDS 2440 front panel prompts

Display window prompt	Press
OPTIONS?	YES
FACTORY?	YES
Factory 3?	YES
Data OPTS?	YES
DTE OPTS?	YES
DTE RATE?	9600
DTE ECHO?	YES
ECHO d?	YES
AT' CMDS?	YES
AT' CMDS d?	YES
OPTIONS?	YES
PIN OPTS?	YES
CD OPTS?	YES
CD Normal?	YES
SAVE?	YES

- 3 Advance to the next prompt by pressing NO.
- 4 To save the configuration, press YES at the "SAVE?" prompt.

Note: If you have entered incorrect information at a prompt, you need to restart your entry from the beginning. To do this, press NO for all remaining prompts. The "OPTIONS" prompt will reappear and you can continue your entries.

If you have already saved the configuration, start over from step 1.

Procedure 18-2**Configuring the UDS 2440 modem through the terminal**

- 1 Enter the commands on Table 18-6 on the administration terminal to configure the modem.

Table 18-6**UDS 2440 modem configuration commands**

Enter the following command	System response
<code>at&f3 <Return></code>	OK
<code>at&c1 <Return></code>	OK
<code>ats0=1 <Return></code>	OK
<code>at e0 s14=140 <Return></code>	No response is seen on the terminal after this command
<code>at&w <Return></code>	

Ven-Tel modems for 9600 bps operation

The Ven-Tel modems can be configured for 9600 bps operation through the administration terminal.

Procedure 18-3**Configuring the Ven-Tel 2400-33/2400 Plus II modem**

- 1 Enter the commands on Table 18-7 on the administration terminal to configure the modem.

Table 18-7**Ven-Tel 2400-33/2400 Plus II modem configuration commands**

Enter the following command	System response
<code>at&f <Return></code>	OK
<code>at&c1<Return></code>	OK
<code>at&d0 <Return></code>	OK
<code>at\n3 <Return></code>	OK
<code>at\j0 <Return></code>	OK
<code>at\q1\l1 <Return></code>	OK
–continued–	

Table 18-7
Ven-Tel 2400-33/2400 Plus II modem configuration commands –
continued

Enter the following command	System response
ats0=1 <Return>	OK
ats64=1 <Return>	OK
at e0 s14=12 <Return>	No response is seen on the terminal after this command
at&w <Return>	
–end–	

Procedure 18-4
Configuring the Ven-Tel 9600 Plus/9600 Plus II modem

- 1 Enter the commands on Table 18-8 on the administration terminal to configure the modem.

Table 18-8
Ven-Tel 9600 Plus/9600 Plus II modem configuration commands

Enter the following command	System response
at&f <Return>	OK
at&c1 <Return>	OK
at\n3 <Return>	OK
at\q0 <Return>	OK
at%f2 <Return>	OK
at\fo <Return>	OK
ats0=1 <Return>	OK
ate0 q1 <Return>	No response is seen on the terminal after this command
at&w <Return>	

Local modem setups for 2400 bps operation

Ven-Tel modems for 2400 bps operation

The following versions of Ven-Tel modems are supported for 2400 baud terminals in Release 10.0 of Meridian Mail:

- EC2400-33, rev. 5.2 or 6.0
- EC2400-33 Plus II

Procedure 18-5

Setting the Ven-Tel modem switches

You need to set switches on both models of the Ven-Tel modem. The switch settings are the same for both local and remote use.

- 1 Remove the modem cover and verify that the E-PROM label shows version 5.2 or higher.
- 2 Locate the modem switch block, which may be labeled S2. Set the switch as follows:

S2-1	ON	Modem assumes data terminal ready (DTR) is on.
S2-2	OFF	Not used.
S2-3	OFF	Not used.
S2-4	OFF	Not used.
S2-5	OFF	Not used.
S2-6	OFF	Not used.
S2-7	ON	Speaker enabled.
S2-8	ON	Modem will respond to commands.
S2-9	ON	NVRAM Model command set enabled.
S2-10	OFF	Not used.

Procedure 18-6

Configuring the Ven-Tel local modem

- 1 Connect the modem to a terminal using a straight-through cable.
- 2 Enter `at&f &d3 \j1 \n3 s0=1 s64=1 s14=12 <Return>` .
The cursor returns to "A" on the same line.

Note: This step disables the echo of the modem. Enter the following command carefully because you will no longer see your input on the terminal screen.

- 3 Enter `ate0 &w <Return>`.
- 4 Turn off the modem for 10 seconds and then turn back on.

UDS modems for 2400 bps operation

Procedure 18-7

Configuring the UDS 2440 modem through the terminal

- 1 Connect the modem to a terminal using a straight-through cable.
- 2 Enter **at&f s14=140** <Return> from the terminal.
- 3 Enter **at&w** <Return>.

The cursor returns to "A" on the same line.

Note: This step disables the echo of the modem. Enter the following commands carefully because you will no longer see your input on the terminal screen.

- 4 Turn the modem off, wait ten seconds, then turn it back on.

Procedure 18-8

Configuring UDS 2440 modem using the front panel method

The front panel of the modem contains a small display and several buttons (YES, NO, and TALK) which are used to configure the modem.

- 1 Plug in the modem and turn it on.
- 2 Press the YES button until OFFLINE appears in the display window.
- 3 Press NO in response to the OFFLINE prompt.
- 4 Press NO to advance to the next desired prompt.
- 5 Enter the appropriate response for each prompt listed on Table 18-9 to configure the modem.

Table 18-9

UDS 2440 modem configuration (front panel method)

Prompt	Response
OFFLINE	NO
DIAL?	NO
TEST	NO
AUTO ANS	NO
DATA OPTS?	NO
OPTIONS?	YES
RESET?	YES
-continued-	

Table 18-9
UDS 2440 modem configuration (front panel method)– continued

Prompt	Response
LOADING (appears for one second)	
RESET	NO
FACTORY?	YES
FACTORY 0?	YES
LOADING (appears for one second)	
FACTORY?	NO
SPKR OPTS?	NO
TELE OPTS?	NO
PIN OPTS?	NO
MSG OPTS?	NO
SECURITY?	NO
DISC OPTS?	NO
SREGS?	NO
OPTIONS?	NO
PROTOCOL?	NO
If this configuration is different from the stored configuration, SAVE appears; otherwise OFFLINE is displayed.	
If SAVE? appears	YES
SAVING (appears for two seconds)	
OFFLINE?	NO
DIAL?	NO
TEST?	NO
AUTO ANS?	YES
AUTO ANS E?	YES
RINGS?	YES
RING= 001?	YES
AUTO ANS	NO
DATA OPTS?	NO
–continued–	

Table 18-9
UDS 2440 modem configuration (front panel method)– continued

Prompt	Response
OPTIONS?	YES
RESET?	NO
FACTORY?	NO
SPKR OPTS?	NO
TELE OPTS?	NO
PIN OPTS?	YES
DTR OPTS?	YES
DTR OPTS 0?	NO
dtr opt 1	NO
dtr opt 2	NO
dtr opt 3	YES
DTR OPTS?	NO
DSR OPTS?	YES
DSR FORCED?	NO
DSR normal	YES
DSR OPTS?	NO
CD OPTS?	YES
CD FORCED?	NO
lo at disc	NO
cd normal	YES
CD OPTS?	NO
CTS OPTS?	NO
P 21 OPTS?	NO
P 23 OPTS?	NO
P 25 OPTS?	NO
PIN OPTS?	NO
MSG OPTS?	NO
SECURITY?	NO
–continued –	

Table 18-9
UDS 2440 modem configuration (front panel method)– continued

Prompt	Response
DISC OPTS?	NO
SREGS?	NO
OPTIONS?	NO
PROTOCOL?	NO
If this configuration is different from the stored configuration, SAVE appears; otherwise OFFLINE is displayed.	
SAVE?	YES
SAVING (appears for two seconds)	
OFFLINE	
–end–	

Procedure 18-9

Configuring the UDS 224 A/D through the terminal

- 1 Put the front panel rotary switch in the “Data” position.
- 2 Connect the modem to a terminal using a straight-through cable.
- 3 Enter **at&f s14=140** and press <Return>.

The cursor returns to “A” on the same line.

Note: This step disables the echo of the modem. Enter the following commands carefully because you will no longer see your input on the terminal screen.

- 4 Enter **at&w** <Return>.
- 5 Turn the modem off, wait ten seconds, then turn it back on.

Table 18-10
UDS EC 224 A/D modem hardware configuration

Front Panel Switches		
Rotary Switch:		
– DATA position when using terminal to dial		
– TALK position when using TELSET to dial. Switch to DATA position once connected.		
3 position toggle switch: HI position 2400 bps Speed Select		
Circuit Board Mount DIP Switches		
Switch 1 (S1)		
S1-1	On	Attempt MNP error correction protocol
S1-2	Off	Disable DCE independent speed
S1-3	Off	Switched network
S1-4	On	Private line originate
S1-5	On	Enable auto-answer
S1-6	Off	Operate in 224 A/D mode
S1-7	Off	Disable TX space disconnect
S1-8	Off	Disable RX space disconnect
Switch 2 (S2)		
S2-1	On	8 bits no parity, 1 start, 1 stop
S2-2	Off	
S2-3	Off	
S2-4	Off	CTS DTE flow control
S2-5	On	
S2-6	Off	No DCE flow control
S2-7	Off	
S2-8	Off	Bell 212A @ 1200 bps
Switch 3 (S3)		
S3-1	Off	DTR disconnect disabled
S3-2	On	Carrier disconnect = 100mS
S3-3	Off	Disable use of CH pin
S3-4	Off	Disable DTE Analog loopback

Remote modem setups for 2400 bps modems

Procedure 18-10

Configuring the Ven-Tel 2400-33/2400 Plus II

- 1 Connect the modem to a terminal using a straight-through cable.
- 2 Enter **at&f** <Return> .
- 3 Enter **at&f ln3 &c1 s14=170** <Return> .
The response on the terminal is "OK".
- 4 Enter **at&w** <Return>.
- 5 Turn off the modem for 10 seconds and then turn back on.

Procedure 18-11

Configuring the UDS 2440

- 1 Connect the modem to a terminal using a straight-through cable.
- 2 Enter **at&f s14=140** <Return> from the terminal.
- 3 Enter **at&w** <Return>.
The cursor returns to "A" on the same line.

Note: This step disables the echo of the modem. Enter commands carefully because you will no longer see your input on the terminal screen.

- 4 Turn the modem off, wait ten seconds, then turn it back on.

Procedure 18-12

Configuring the UDS 224 A/D

- 1 Put the front panel rotary switch in the "Data" position.
- 2 Connect the modem to a terminal using a straight-through cable.
- 3 Enter **at&f &w** <Return>.

Factory default jumper settings are used for the UDS modem. For reference, see Table 18-10.

Remote modem setups for 9600 bps modems

Procedure 18-13

Configuring the Ven-Tel 9600/9600 Plus II

- 1 Connect the modem to a terminal using a straight-through cable.
- 2 Enter **at&f** <Return> .

18-14 Configuration of modems for Remote Access

- 3 Enter **at&f ln3 &c1 s14=170** <Return> .
The response on the terminal is "OK".
- 4 Enter **at&w** <Return>.
- 5 Turn off the modem for 10 seconds and then turn back on.

Appendix C: MMP40 troubleshooting flowcharts

The following charts can be used to determine causes and solutions for potential problems for the MMP40 card. Start from the first chart, and follow through the others until you have localized the problem. When directed to the double-letter options (AA, BB, CC, etc.), refer to the tables following the flowcharts.

Figure 19-1
MMP40 troubleshooting flowcharts

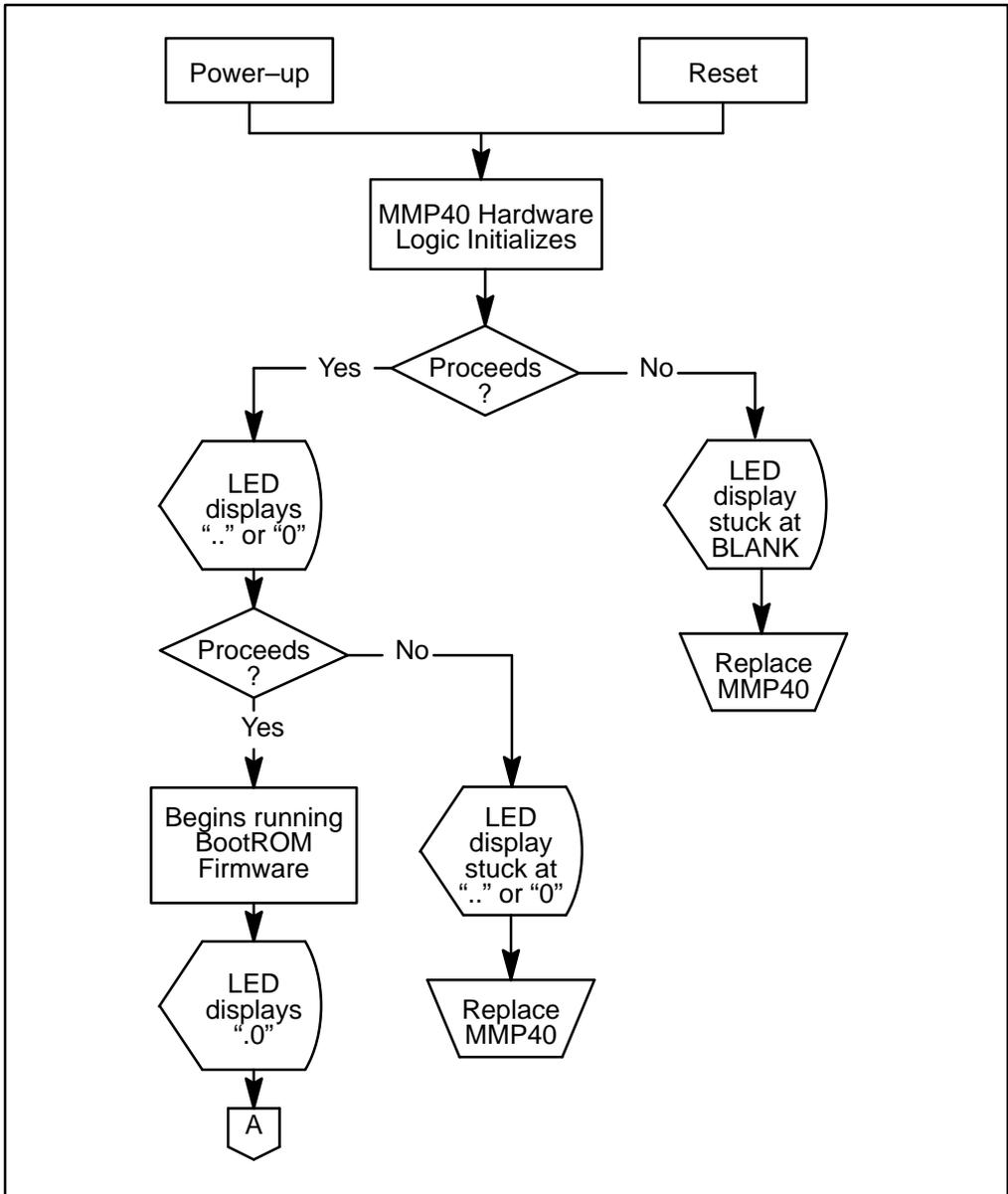


Figure 19-1 (continued)
 MMP40 troubleshooting flowcharts

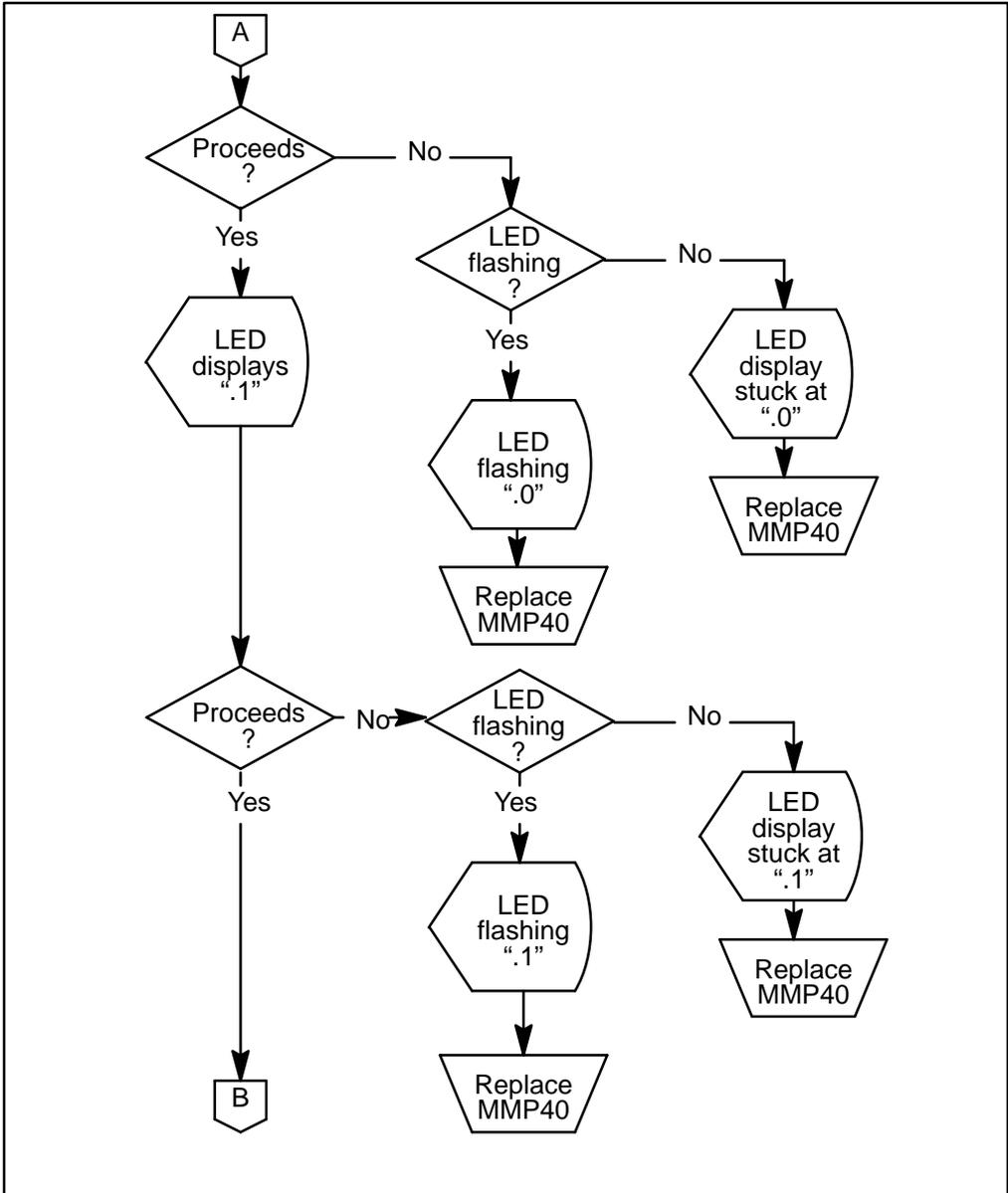


Figure 19-1 (continued)
MMP40 troubleshooting flowcharts

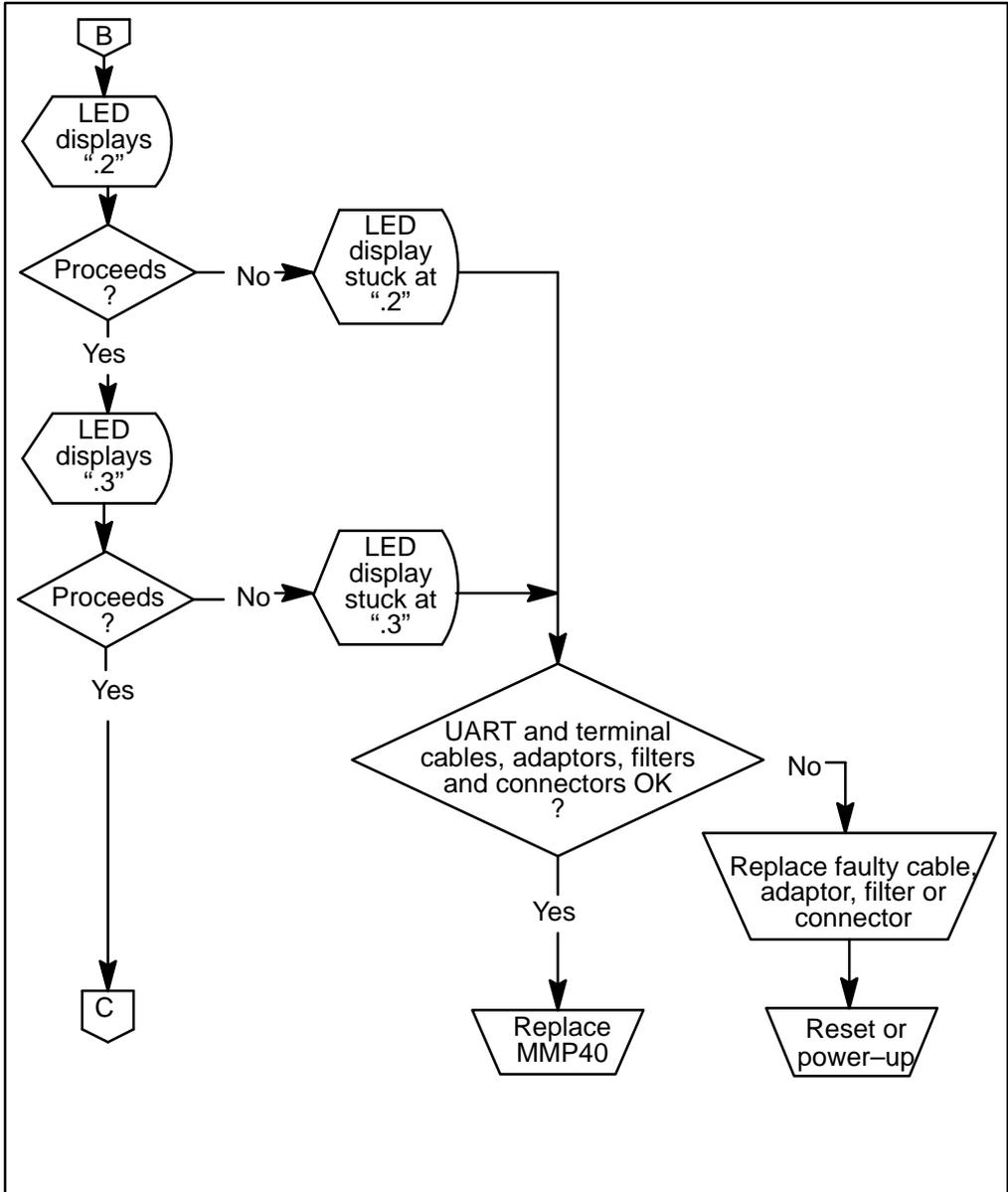


Figure 19-1 (continued)
MMP40 troubleshooting flowcharts

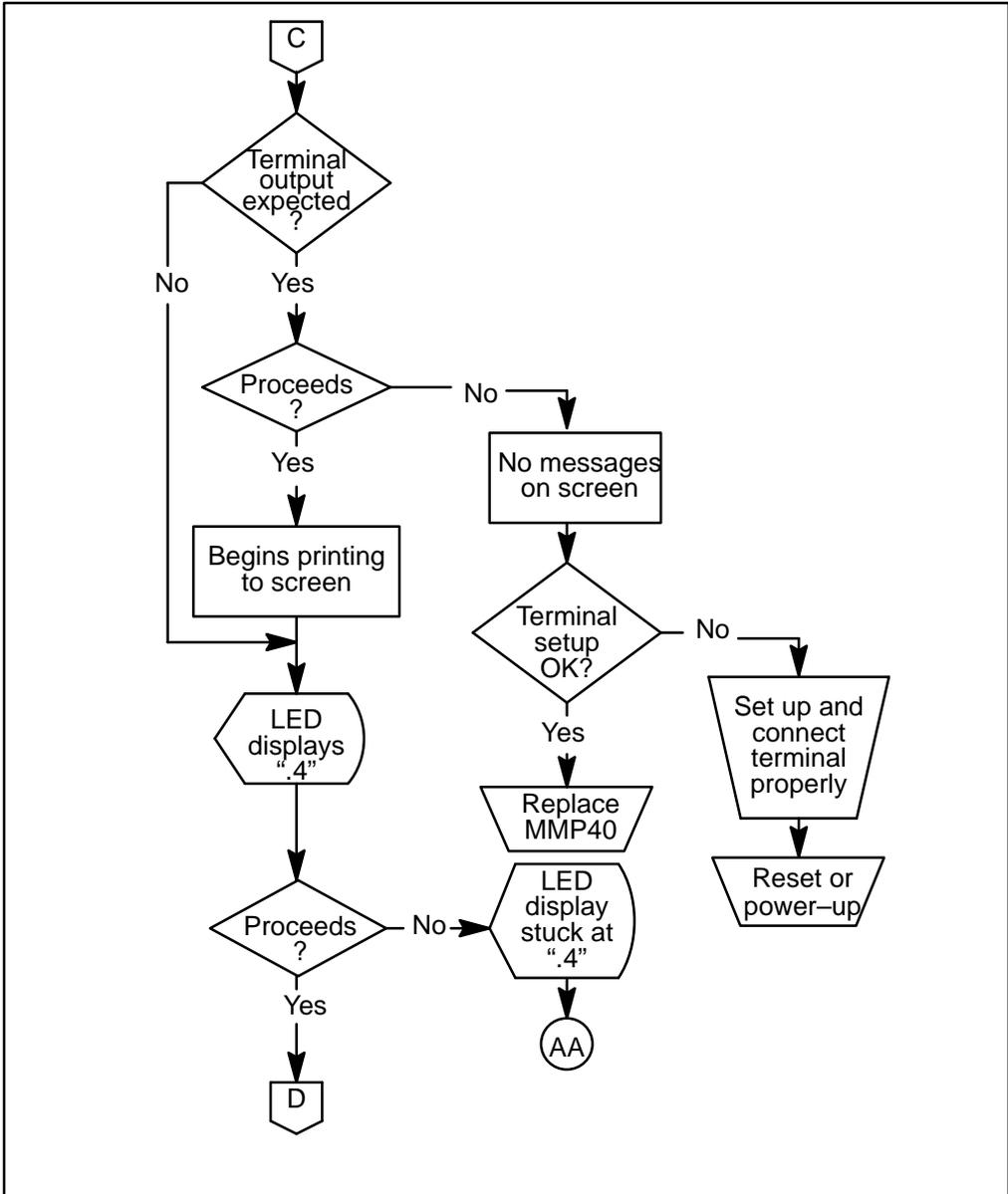


Figure 19-1 (continued)
MMP40 troubleshooting flowcharts

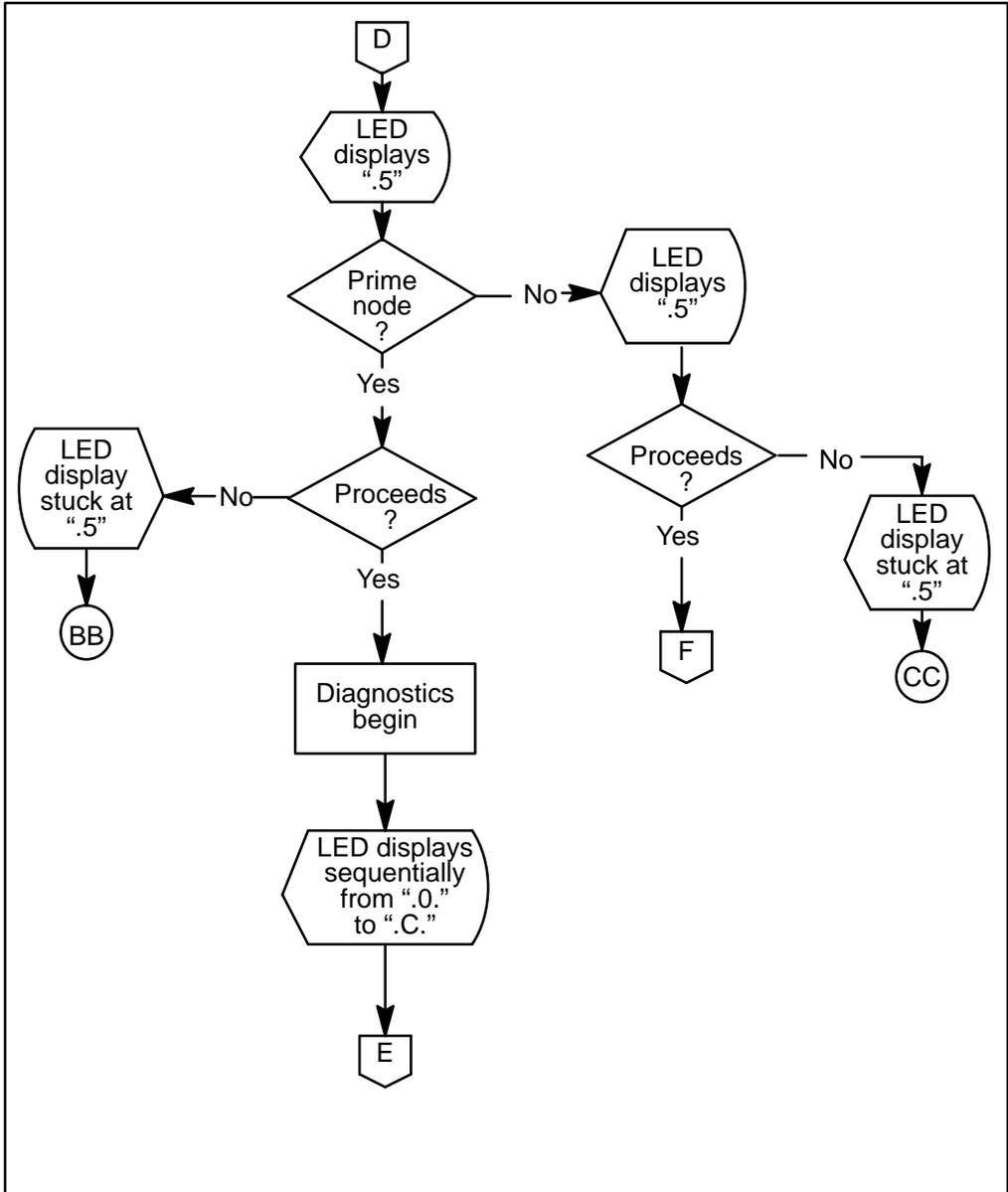


Figure 19-1 (continued)
MMP40 troubleshooting flowcharts

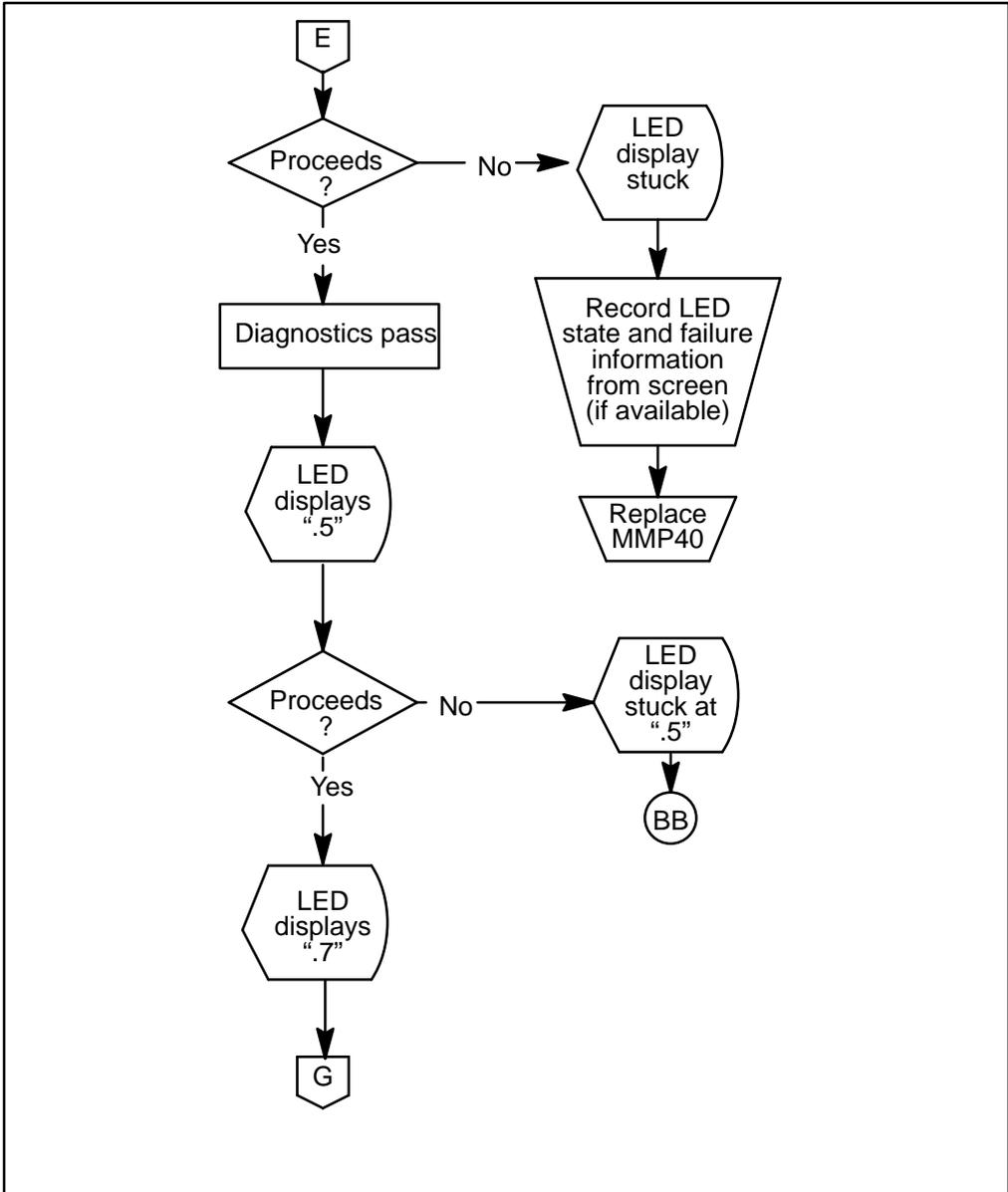


Figure 19-1 (continued)
MMP40 troubleshooting flowcharts

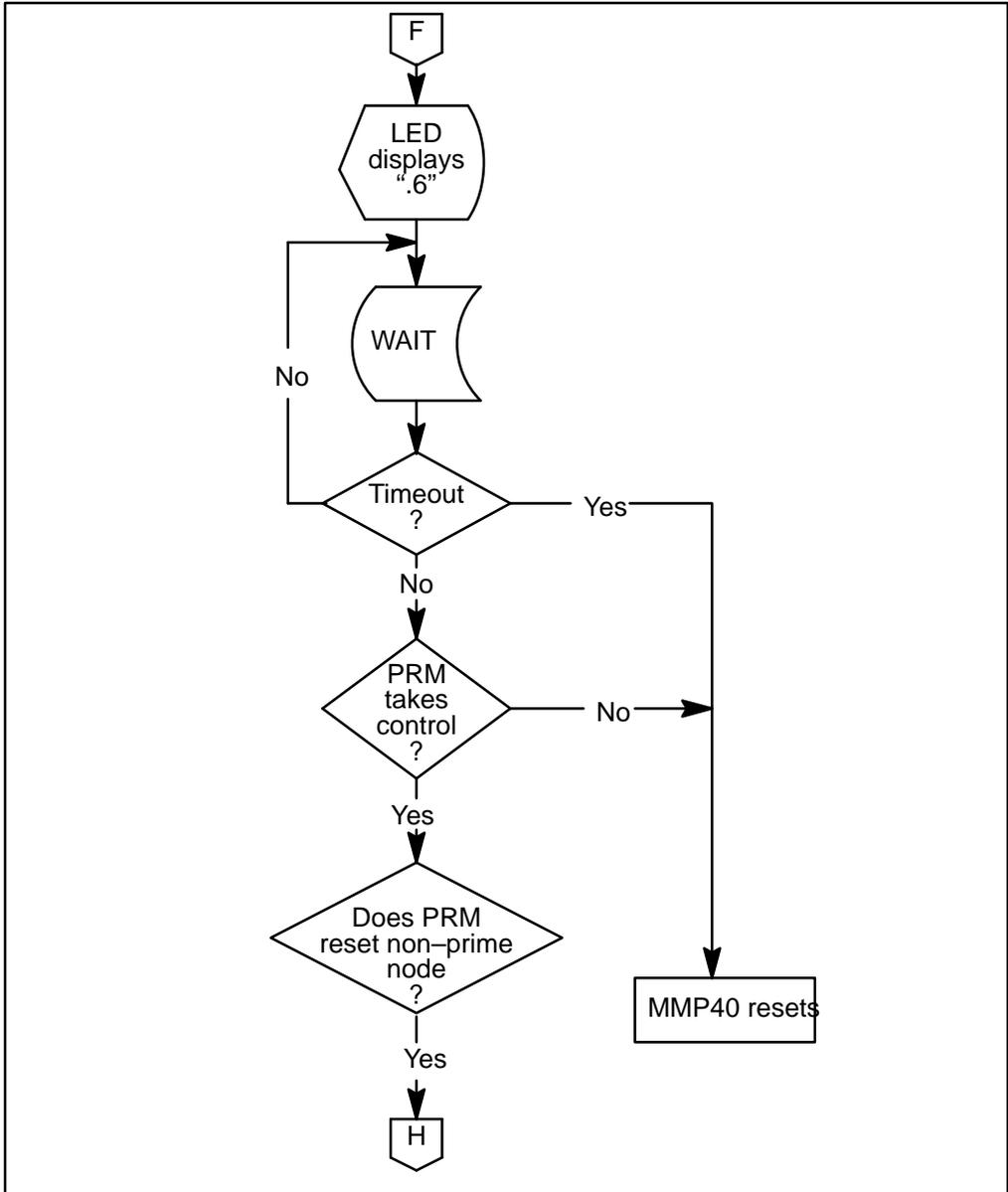


Figure 19-1 (continued)
MMP40 troubleshooting flowcharts

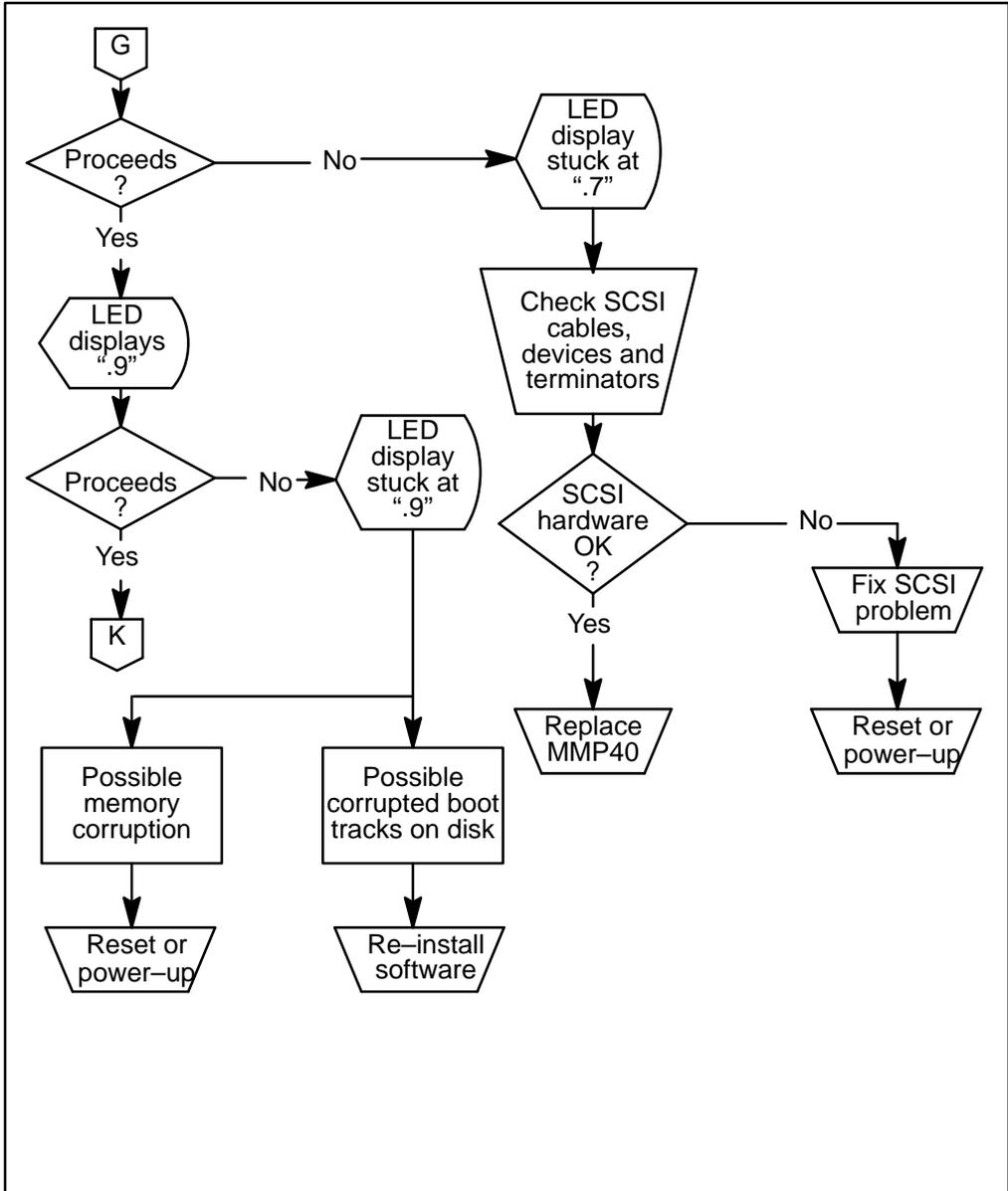


Figure 19-1 (continued)
MMP40 troubleshooting flowcharts

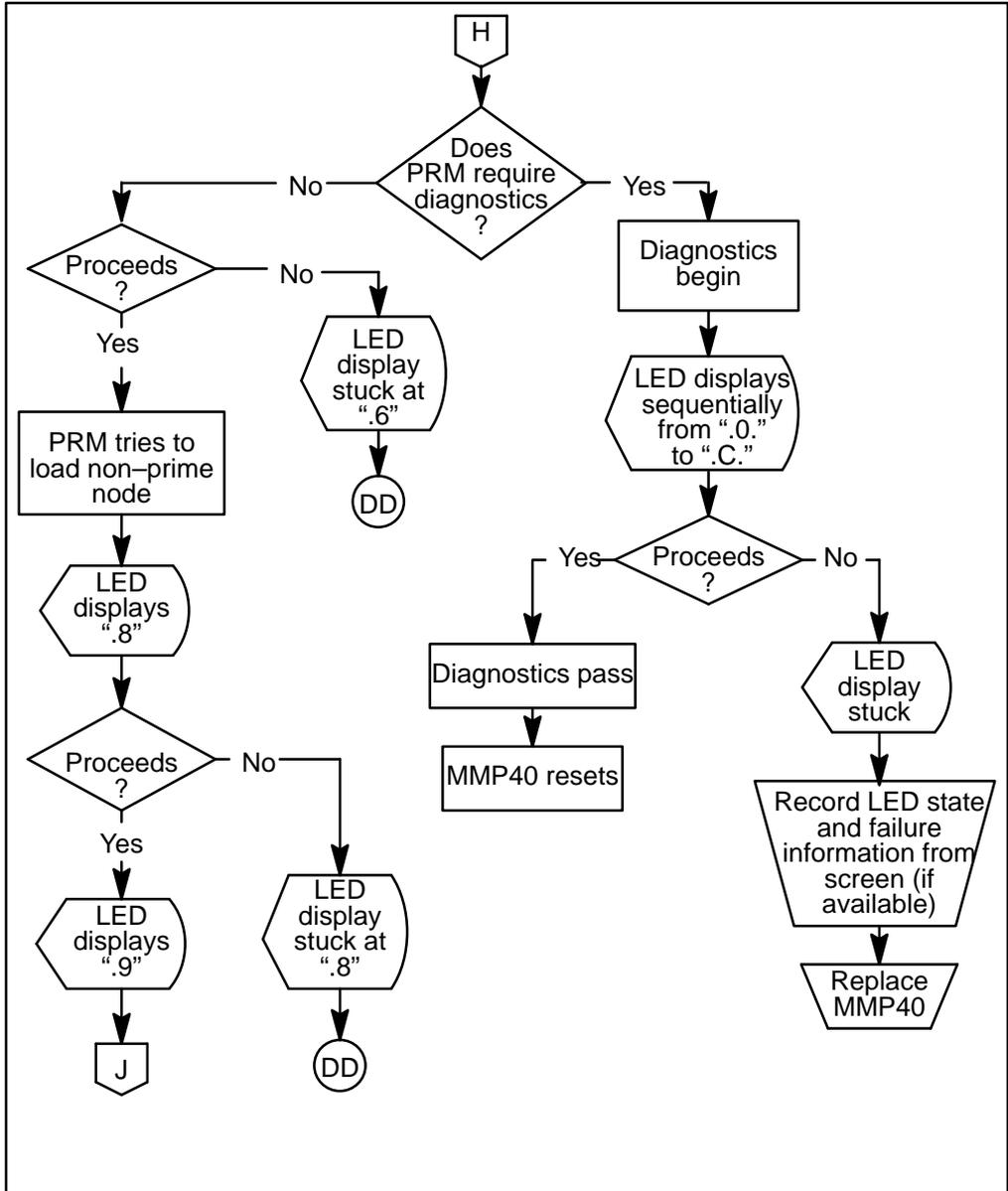


Figure 19-1 (continued)
MMP40 troubleshooting flowcharts

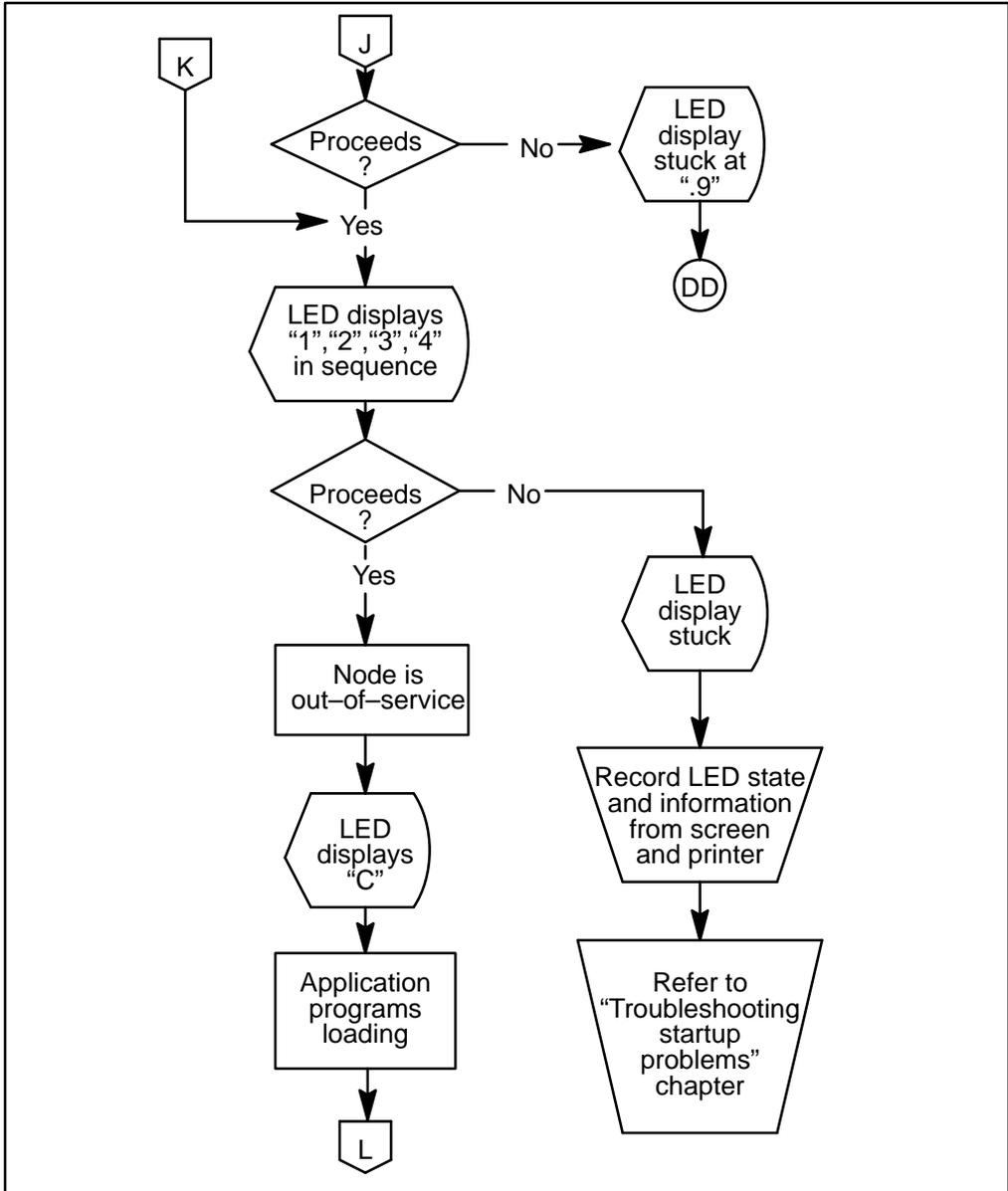


Figure 19-1 (continued)
MMP40 troubleshooting flowcharts

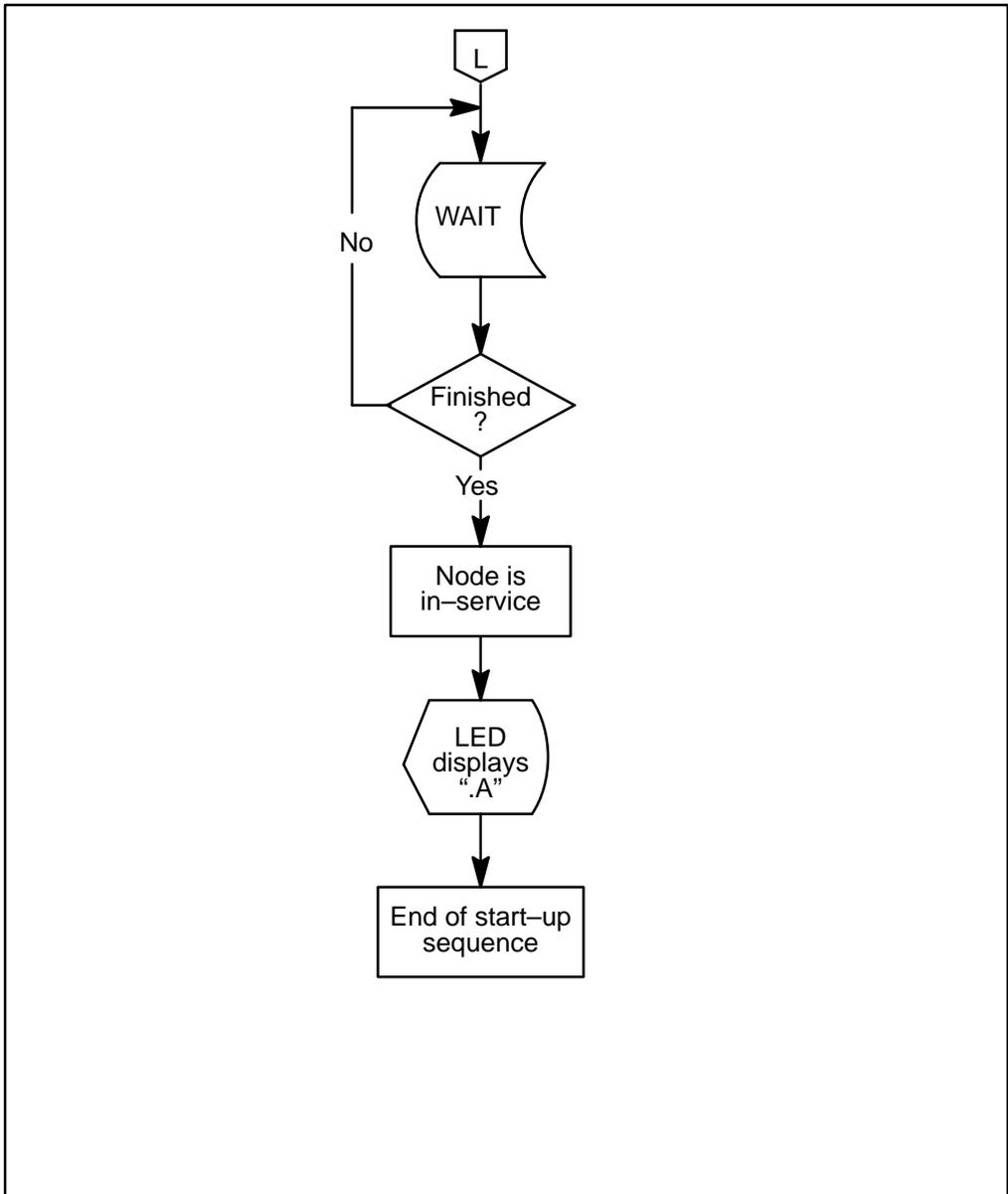


Table 19-1
AA – LED stuck at “.4”

Possible Causes	Recovery Action
Ctrl-B or BREAK key was pressed, or terminal was powered up during start-up sequence.	Reset or power-up node again.
A peripheral card such as a VP or Utility card on the same node is faulty.	Replace the faulty card.
MMP40 card may be faulty.	Record messages on screen. Replace MMP40 card.

Table 19-2
BB – LED stuck at “.5” (prime node)

Possible Causes	Recovery Action
Ctrl-B or BREAK key was pressed, or terminal was powered up during start-up sequence.	Reset or power-up node again.
MMP40 card may be faulty.	Record messages on screen. Replace MMP40 card.

Table 19-3
CC – LED stuck at “.5” (non-prime node)

Possible Causes	Recovery Action
Ctrl-B or BREAK key was pressed, or terminal was powered up during start-up sequence.	Reset or power-up node again.
No bus clocks.	Check that the utility card is installed.
Prime node powered off or prime node CPU absent.	Install/power-up prime node.
MMP40 card may be faulty.	Record messages on screen. Replace MMP40 card.

Table 19-4
DD – LED stuck at “.6”, “.8”, or “.9” (non–prime node)

Possible Causes	Recovery Action
Prime node MMP40 may be faulty.	Record LED state and any SEERs. Replace prime node MMP40.
MMP40 card on non–prime node may be faulty.	Record LED state and any SEERs. Replace non–prime node MMP40.
Utility card may be faulty.	Replace faulty card.

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Meridian Mail Modular Option GP

Installation and Maintenance Guide

Customer Documentation
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