555-7051-250

Meridian Mail Modular Option GP

Installation and Maintenance Guide

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Meridian Mail Modular Option GP
Installation and Maintenance Guide

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The *Meridian Mail Modular Option GP Installation and Maintenance Guide* is released as Standard 1.0. The Enhanced MMP40 card is introduced in this guide. This version documents Release 13 Meridian Mail installation and maintenance procedures for the Meridian Mail Modular Option GP. This edition makes all previous editions obsolete.

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The *Meridian Mail Modular Option GP Installation and Maintenance Guide* is released as Standard 1.0. This version documents Release 12 Meridian Mail installation and maintenance procedures for the Meridian Mail Modular Option GP. This edition makes all previous editions obsolete.

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The *Meridian Mail Modular Option GP Installation and Maintenance Guide* is released as Standard 1.0. This version documents Release 11 Meridian Mail installation and maintenance procedures for the Meridian Mail Modular Option GP. This edition makes all previous editions obsolete.

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The *Meridian Mail Modular Option GP Installation and Maintenance Guide* is released as Standard 1.0. This version documents Release 10 Meridian Mail installation and maintenance procedures for the Meridian Mail Modular Option GP system. This edition makes all previous editions obsolete.

April 1995

The *Meridian Mail Modular Option GP Installation and Maintenance Guide* is released as Standard 1.0. This version documents Release 9.5 Meridian Mail installation and maintenance procedures for the Meridian Mail Modular Option GP.

Contents

Preface

About this guide

In this chapter

Overview

Introduction

This guide describes the installation and maintenance procedures required to install and maintain Meridian Mail.

Installation section

This guide shows you how to install and configure a Meridian Mail system, how to connect cables between the switch and Meridian Mail, and how to expand a Meridian Mail system.

Troubleshooting

Chapter 12, “Troubleshooting operational problems,” provides tables to identify a problem and the procedures to correct the problem.

Hardware maintenance

Chapter 13, “Hardware maintenance,” describes how to install hardware parts that can be replaced in the field. The parts are

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

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

- 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

Programming the switch

There is also Chapter 9, “Configuring the DMS-100, SL-100, or PBX,” on how to program a Nortel Networks switch to recognize newly added loops and ports, and to communicate command and status information to Meridian Mail.

Troubleshooting and PBX integration unit

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)

Tools required

Overview

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	(1/4, 5/16, and 9/16 inch)
Multimeter	
9- to 25-pin adapter cable	NT product number NT4R60AA (for monitoring node expansion)
Electrostatic discharge (ESD) wrist strap	

Related documents

Other documents referenced in this guide

The following documents are referenced in this manual:

Document title	NTP number
SL-1 System Installation Procedures	553-3001-210
Circuit Card Installation and Testing	553-3001-211
Meridian Mail NTP Contents Overview	555-7001-000
Meridian Mail System Installation and Modification Guide	555-7001-215
Meridian Mail System Administration Guide	555-7001-307
Meridian Mail System Administration Guide for Multi-Customer Systems	555-7001-308
Meridian Mail System Administration Tools	555-7001-305
Meridian Mail Maintenance Messages (SEERs) Guide	555-7001-510
Meridian Mail Modular Option GP Site and Installation Planning Guide	555-7051-200
Simplified Message Desk Interface Set-up and Operation	297-2001-104
Service Orders and Query System Reference Manual	297-2101-310
SL-1 Fault Clearing	553-3001-510

Chapter 1

Preparing to install Meridian Mail

In this chapter

Overview

Introduction

This chapter summarizes the steps required to install a Meridian Mail system or expand an existing system by adding a node (refer to "Installation task list" on page 1-3). Because Meridian Mail is housed in a universal equipment module (UEM), you 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 2, "Installing a column or module."

Before you begin

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 is when you are installing a new system, in which case you skip Chapter 6, "Diagnostics."

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

Note: System installation must be performed only by qualified personnel.

DANGER

Risk of electrocution

Nortel Networks requires that a licensed electrician make all connections needed at an electrical service panel.

Installation task list

Introduction

The table below lists the procedures you must follow (and the chapters where they are found) when installing Meridian Mail.

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 2
Install the power supplies and disks.	Chapter 3
Prepare for system migration if necessary.	Chapter 4
Install the printed circuit packs and associated cables.	Chapter 5
Perform diagnostics and software expansion for node expansion.	Chapter 6
Install the Meridian Mail to PBX/DMS interface.	Chapter 7
Connect Meridian Mail to AT&T or ROLM PBXs.	For Voice Bridge installation procedures for the following switches, refer to these NTPs: AT&T: 555-7001-216 ROLM: 555-7001-217
Install and configure peripheral devices.	Chapter 8
Configure the Meridian 1.	Chapter 9
Start up, configure, and acceptance test Meridian Mail.	Chapter 10

Unpacking and inspecting the Meridian Mail equipment

Introduction

The following procedure 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 antistatic 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.

Unpacking and inspecting

When unpacking and inspecting the Meridian Mail equipment, follow these steps.

Step	Action
1	If the equipment is mounted on a shipping pallet, follow the unpacking instructions provided with the packaging material.
2	Cut any remaining strapping or tape.
3	Remove transport protection devices, and loosen any stretch-wrap film (if provided) from the equipment. The stretch-wrap film can be removed, but 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. **Note:** Components usually shipped in separate boxes include documentation, disk and tape units, power supply, cables, administration terminals, printer, and spares.

Step	Action
5	Check all items delivered against the order form and the packing slip. Report any errors or omissions to your supplier. Note: See Appendix A in *Meridian Mail Modular Option 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 modules in a safe, dry location in the equipment room close to the final location.
8	Remove the preinstalled printed circuit packs (PCPs) from each new module, following “Removing and reinstalling PCPs” on page 1-6, 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 it came from. Although the voice processor cards in the VP/GSP slots appear to be identical, they have different switch settings.

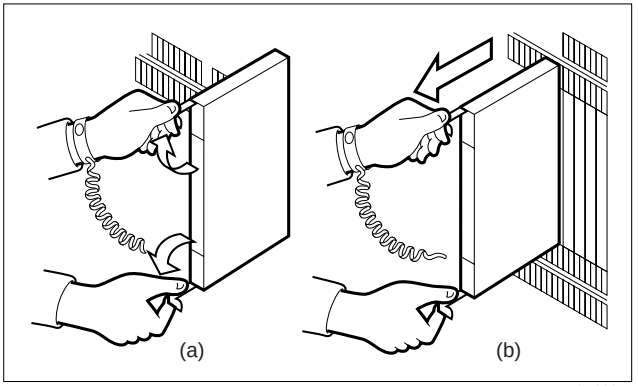
9	Inspect the remaining equipment for the following: • defects in the molded plastic covers • loose items remaining in the shipping cartons • obvious damage to the equipment
10	Using a flashlight, make sure there are no broken pins or shrouds on the backplane connectors.

Removing and reinstalling PCPs

Overview

To remove and reinstall PCPs, follow these steps.

Step	Action
1	Open the ejectors on the pack, and gently pull the pack toward you until it clears the shelf.



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Step	Action
2	Check the pack to make sure it is not bent and there are no loose parts.
3	Replace the pack in the module by 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.

Chapter 2

Installing a column or module

In this chapter

Overview

Introduction

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 switch, 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

Overview

When installing a column, you can find the necessary procedures in *SL-1 System Installation Procedures* (NTP 553-3001-210).

Procedure	Reference
Installing Meridian Mail columns	Chapter: "Introduction," section: "Equipment handling precautions" except for the part on Data disks
Installing earthquake protection, if needed	Chapter: "Installing earthquake bracing"
Positioning and levelling the equipment	Chapter: "Positioning and levelling equipment"
Installing DC grounding and power	Chapter: "Installing DC power"

Installing a module

Overview

To install a module, use the following procedure and reference.

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

Module doors, side panel, and safety panel

Introduction

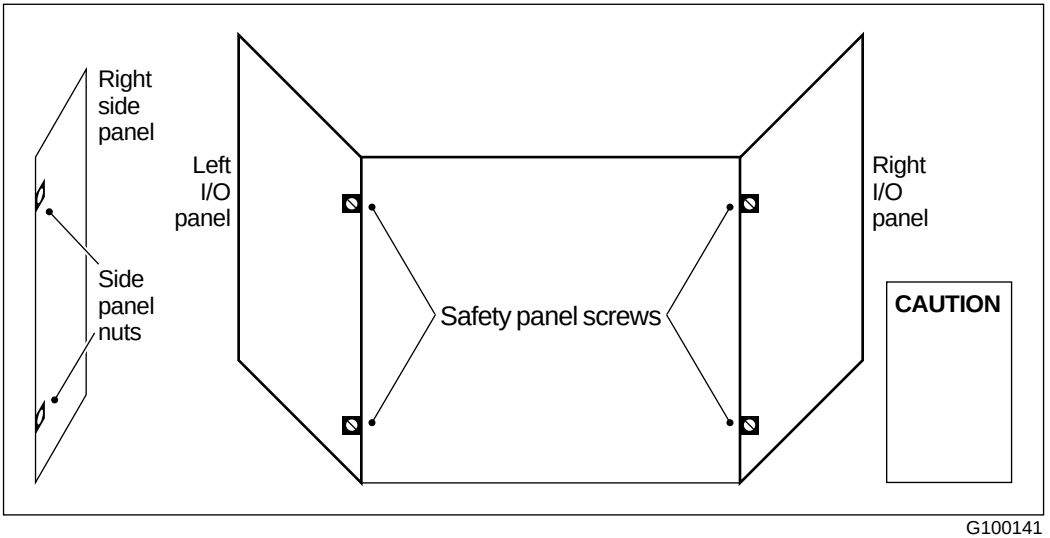
To install power supplies, disk drives, and tape drives, and to check the printed circuit packs, you need to open the front door of the module. To install cables between modules and between Meridian Mail and the switch, you need to open the rear door of the module. For this reason, you should leave the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

Removing side and safety panels

You also need to remove the right side panel (as seen from the rear) from each new module, and from each module on top of which you are adding a module. See the following illustration 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 counterclockwise. See the illustration for the location of the screws.

Safety panel and side panel screw locations—rear of module



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Identifying nodes

Introduction

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.

Installing nodes

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

Chapter 3

Inspecting and installing the power supplies and mass storage units

In this chapter

Overview

Introduction

This chapter contains procedures for installing the DC common equipment power supply (DCEPS) and how to verify the backplane configuration. This chapter also contains illustrations of the various disk and tape drives that are supported in Meridian Mail 13 for the Meridian Mail Modular Option GP.

Installing power supplies

Introduction

The following procedure describes how to install the power supplies.

Each node needs a power supply in the left common equipment power supply (CEPS) slot.

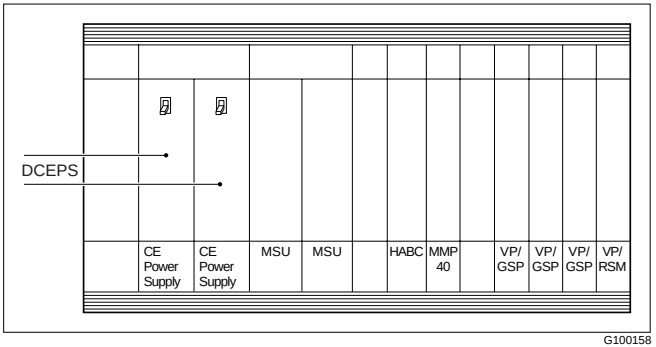
DANGER

Verify that the power supply switches are set to Off before installing power supplies.

Installing the DCEPS

To install the DC common equipment power supply (DCEPS), follow these steps.

Step	Action
1	Verify that the switches DCEPS are off.
2	Open the ejectors, and align the power supply with the appropriate CEPS slot in the module.



3	Gently slide the power supply into the module, pushing on the upper and lower edges until 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.
6	If the LEDs light, turn the power off again.

Step	Action
7	If the LEDs do not light, follow the procedures in Chapter 11, “Troubleshooting startup problems.”

Verifying the backplane configuration

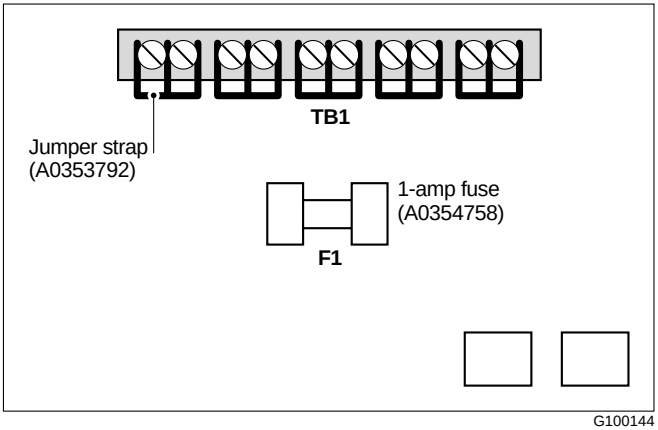
Introduction

Verify the backplane configuration of each new module as described in this procedure.

Verifying the backplane configuration

To verify the backplane configuration, follow these steps.

Step	Action
1	Verify that the power to the Meridian Mail module is off. Use the switches on the DCEPS shown in the illustration in “Installing the DCEPS” on page 3-3.
2	Ensure that the five jumper straps (A0353782) are installed on TB1 on the backplane. See the illustration that follows.



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.

Installing the disk/tape unit in node 1

Introduction

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

Installing the disk/tape unit in node 1

To install the disk/tape unit in node 1, follow these steps.

Step	Action
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 “Archive tape drive” on page 3-27 and “Archive tape drive jumper settings” on page 3-27. For the Tandberg TDC4220, this involves inserting jumpers on the header in position 0 and Parity as shown in “Front view of Tandberg tape drive connectors” on page 3-28 and “Tandberg tape drive connectors and jumper settings” on page 3-28. Terminating resistors must be installed in the Meridian Mail module prime node.
2	Continue with the disk installation procedures that follow.

Overview of disk drives

Introduction

The disk units used in Meridian Mail are shown in the following table. Each Meridian Mail disk drive is mounted in a mass storage unit (MSU) cage. The NT designation and the A0 product code apply 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.

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
NT6D47AA/CA	300-Mbyte hard disk unit	Seagate ST4376N	A0344453
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-Gbyte disk and 250-Mbyte tape	DEC DSP3105 or DSP3107	A0383809
		Seagate ST11200N	
		Maxtor MXT1240	
		Seagate ST31230N/ ST32430N	A0616792
		DEC DSP3107	

Assembly number/ common product code (CPC)	Title of assembly	Models included	Individual disk drive CPC
NT6D48BA/A0393284	1.2-Gbyte hard disk unit	DEC DSP3105 or DSP3107	A0383809
		Seagate ST11200N	
		Seagate MXT11200N	
		DEC DSP3107	A0616792
		Seagate ST31230N/ ST32430N	
NT6D48EA/A0629940	1.0-Gbyte disk and 2.5-Gbyte tape	Seagate ST31230N/ ST32430N	A0616792
		Seagate ST51080N	A0645393
NT6D48FA/A0658624	2.-Gbyte disk unit	Seagate ST32151N	A0658640
NT6D48GA/A0658625	2.0-Gbyte disk/tape unit	Seagate ST32151N	A0665539
NT6D48GA/A0658265	4.0-Gbyte disk unit	Seagate ST34573N	A0736160

Disk or disk/tape installation

Introduction

"Installing the disk or disk/tape unit" on page 3-11 explains 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.

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
L=Left 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 13.

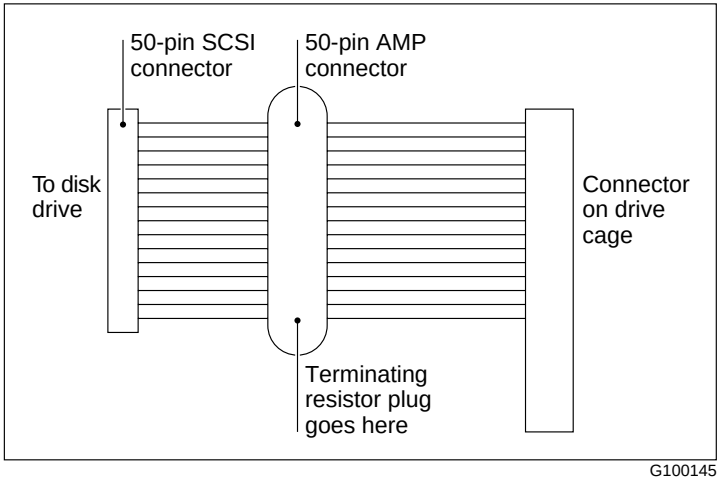
Note 1: There are slight variations on these disk drives, so your disk drive may not look exactly like the ones pictured in this chapter even though the model number is the same.

Note 2: Each disk or disk/tape unit is labeled to show the node number for which it is configured. The disk label for a shadowed node indicates whether the drive is primary or secondary. The single drive for an unshadowed node is a

primary drive. Check the label and install the disk or disk/tape unit in 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 the following illustration.

SCSI cable external terminating resistor plug



Installing the disk or disk/tape unit

To install the disk or disk/tape unit, follow these steps.

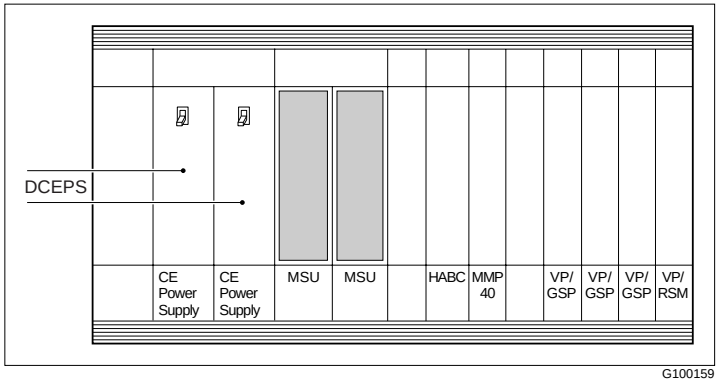
Step	Action
1	Verify that the disk or disk/tape unit has the correct product engineering code (PEC) including suffix. The code must be the same as the one on your packing slip.
2	Confirm the jumpers and terminators on the disk drive according to the disk drive illustrations that follow this procedure. See also the following table. ***Note:*** If you are installing a disk/tape unit in node 1, check the SCSI ID of the tape drive. Refer to “Installing the disk/tape unit in node 1” on page 3-6.
3	Verify that the power to the Meridian Mail module is off. For a DC system, use the switches on the DCEPS shown in “Verifying the backplane configuration” on page 3-5.
4	Open the locking levers and align the disk unit with the appropriate MSU slot in the module (see “MSU slot location” on page 3-12). Gently slide the unit into the slot, pushing on the upper and lower edges until the unit is fully seated in the module.
5	Close the locking levers.

For further information on disk shadowing, see page 10-11, “Enabling/disabling disk shadowing.”

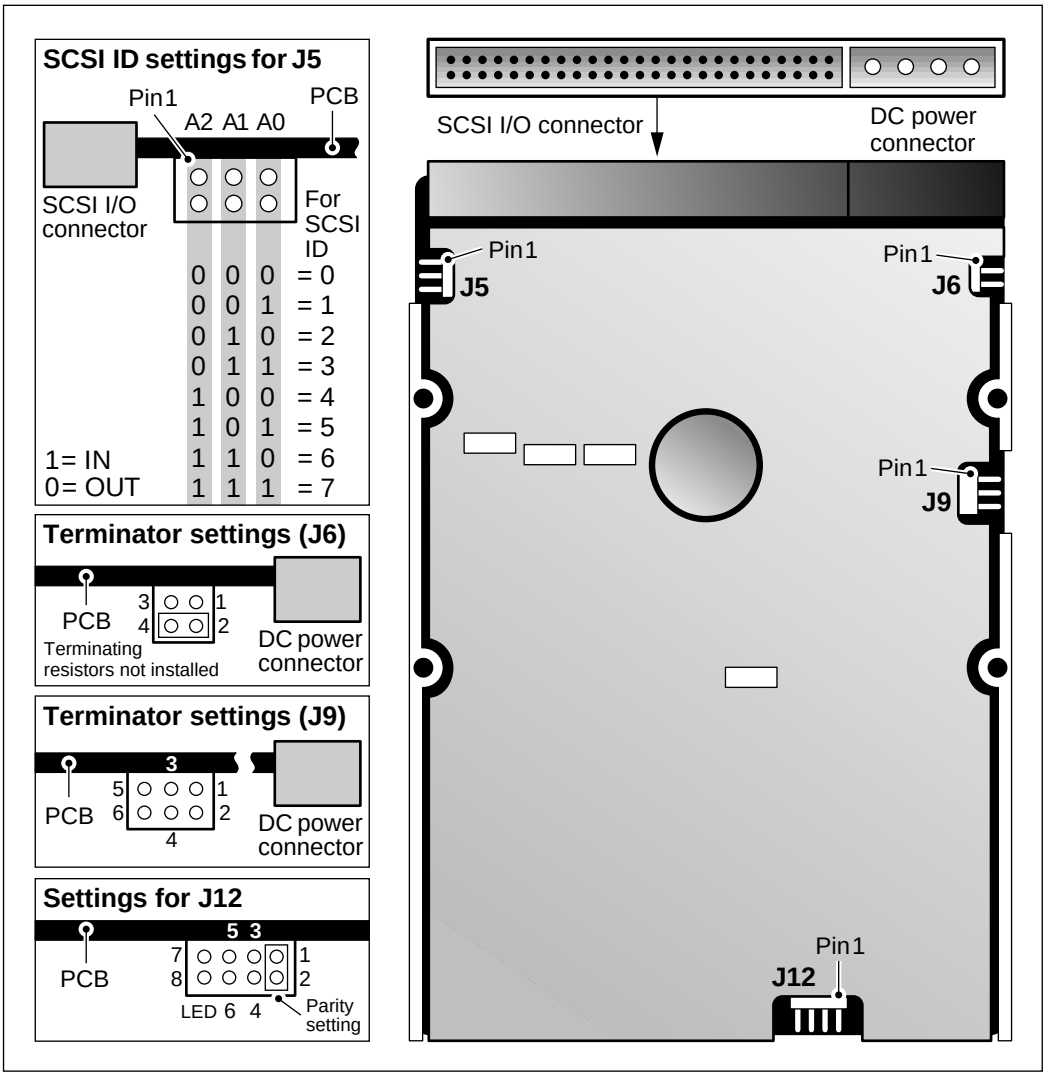
Disk slots, SCSI IDs, and terminators

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

MSU slot location



Seagate ST3390N disk drive connectors and jumper settings



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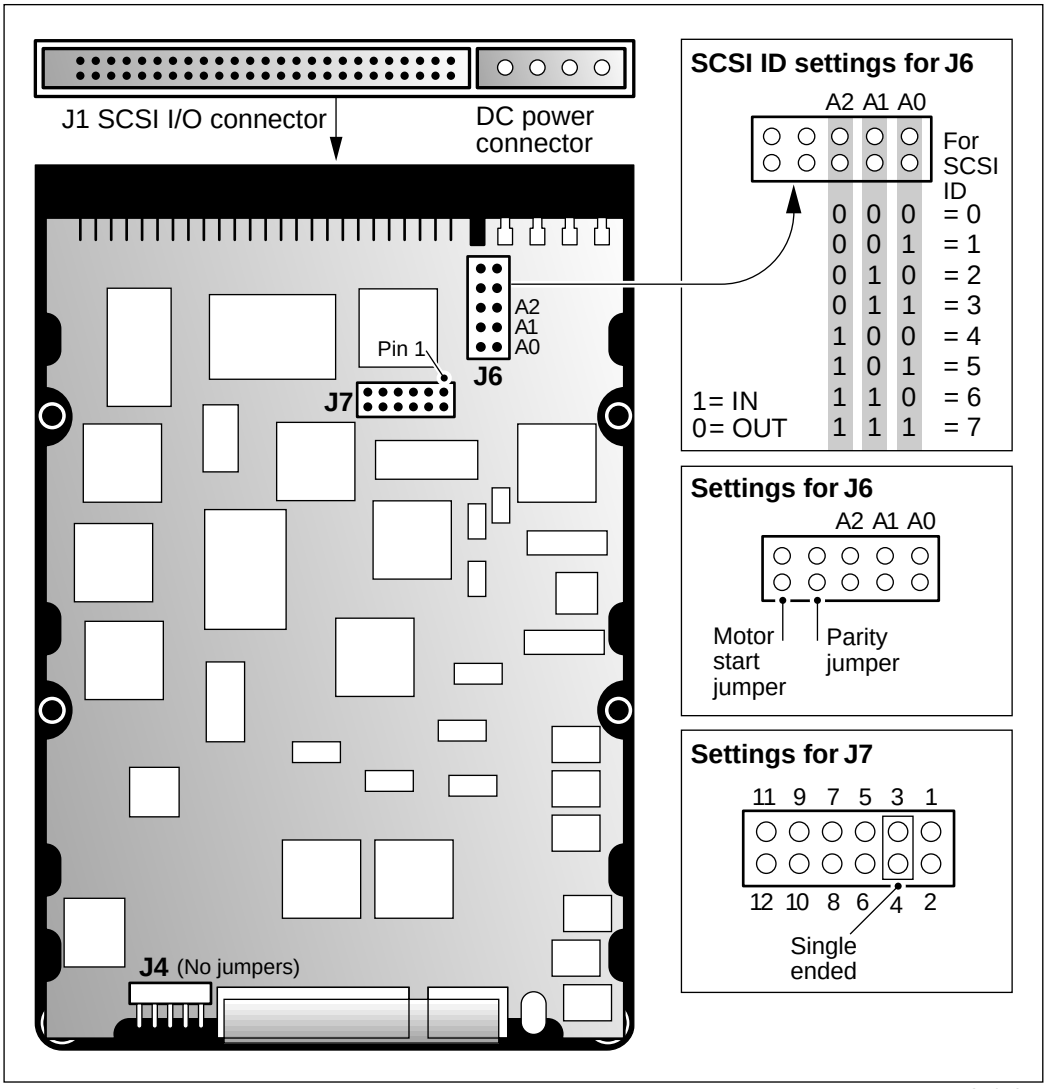
Maxtor LXT340SY disk drive connectors and jumper settings



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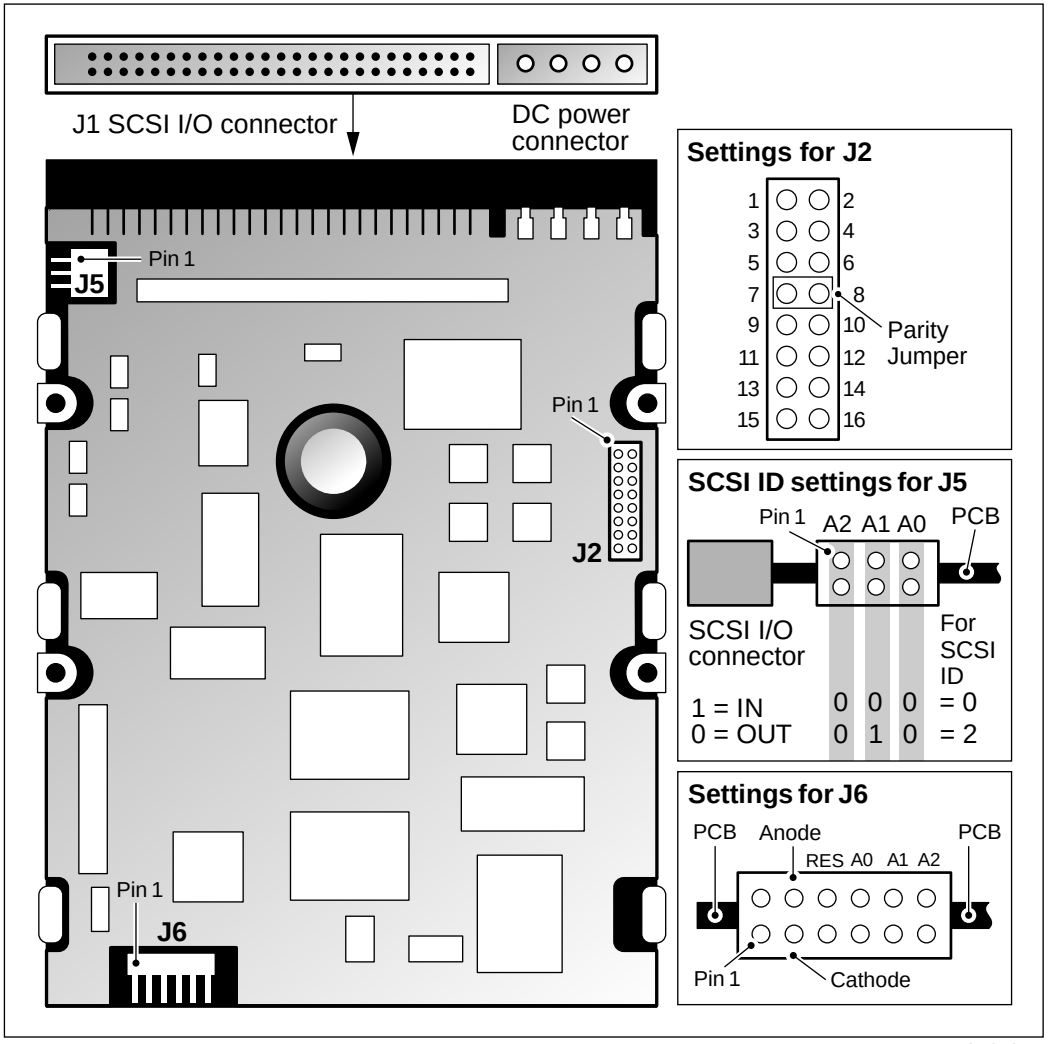
Seagate ST11200 disk drive connectors and jumper settings



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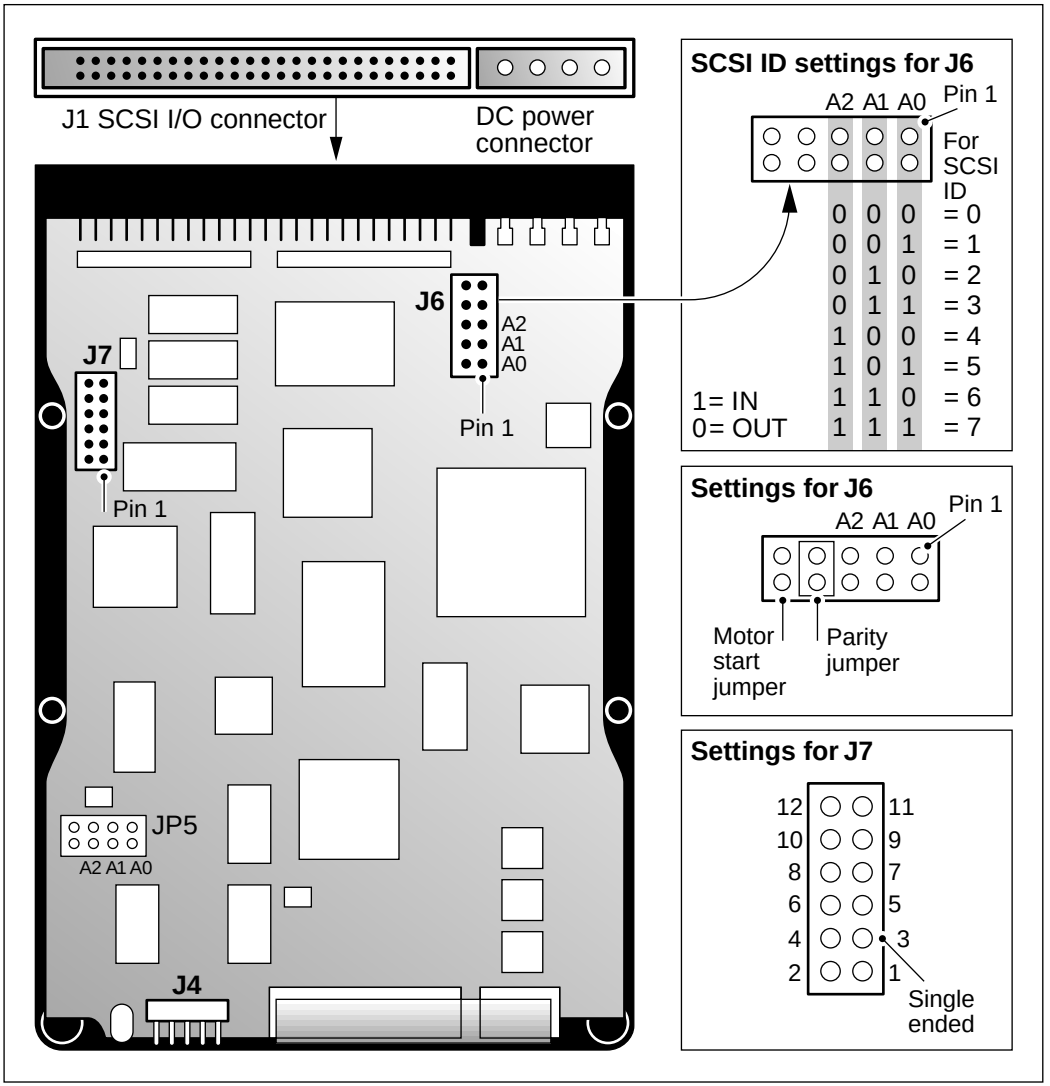
Maxtor MXT1240 disk drive connectors and jumper settings



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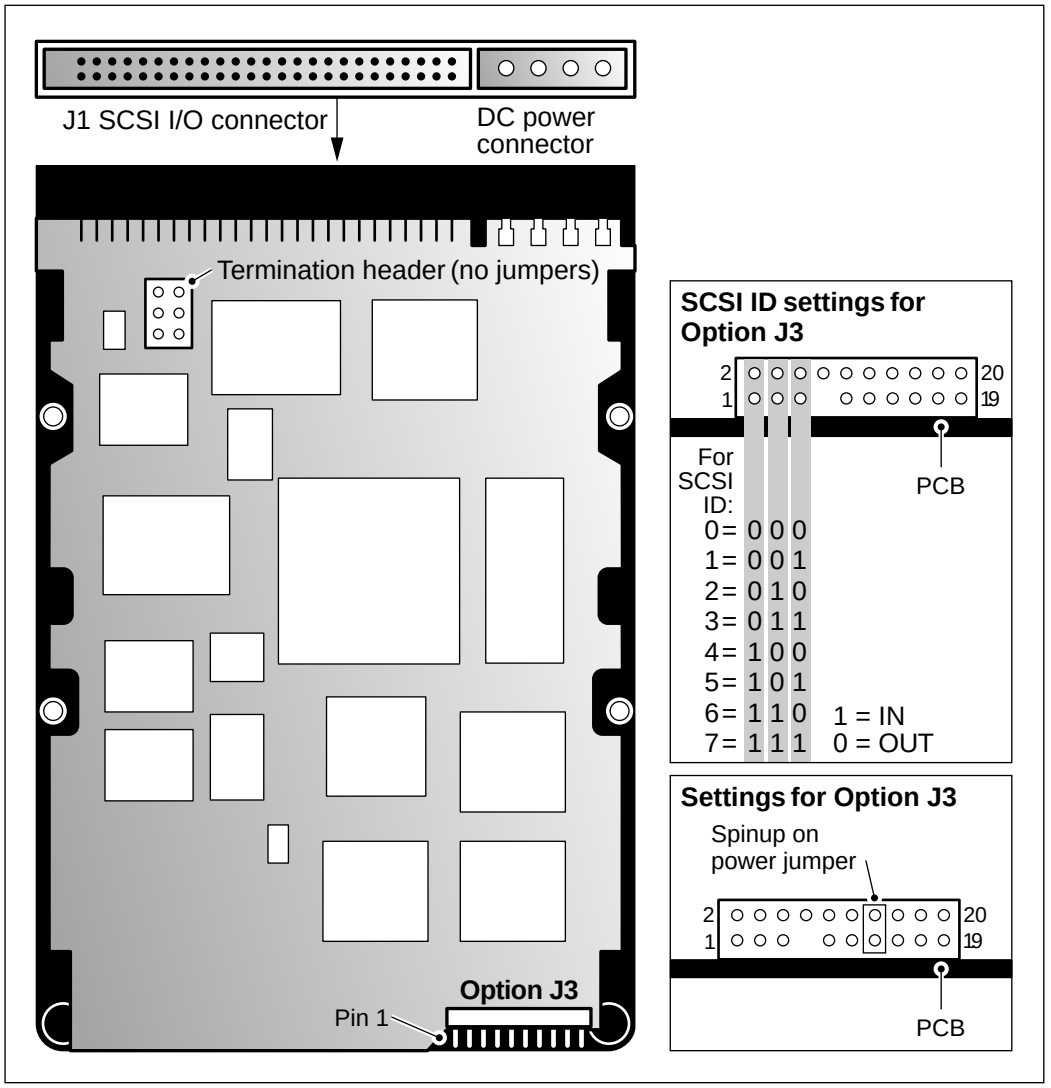
DSP 3105 and DSP3107L disk drive connectors and jumper settings



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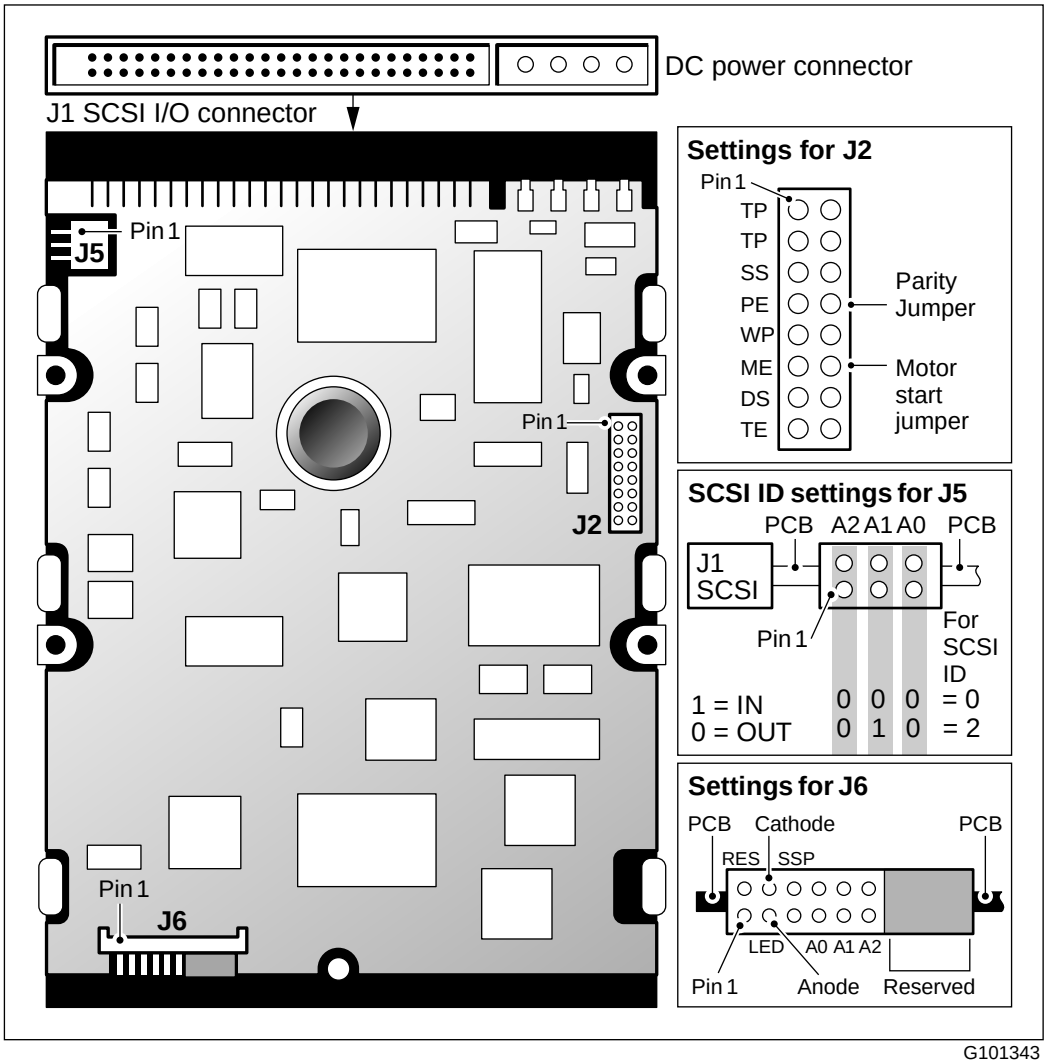
Seagate ST31230N and ST32430N disk drive connectors and jumper settings



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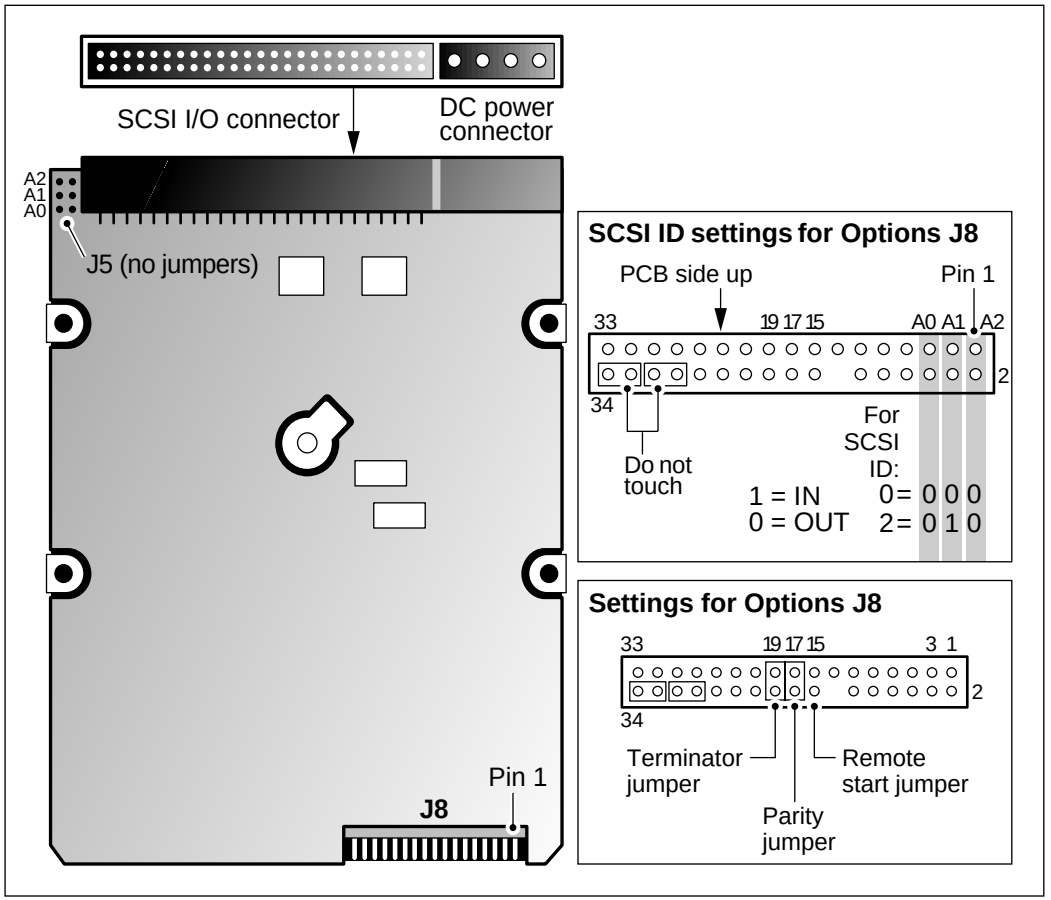
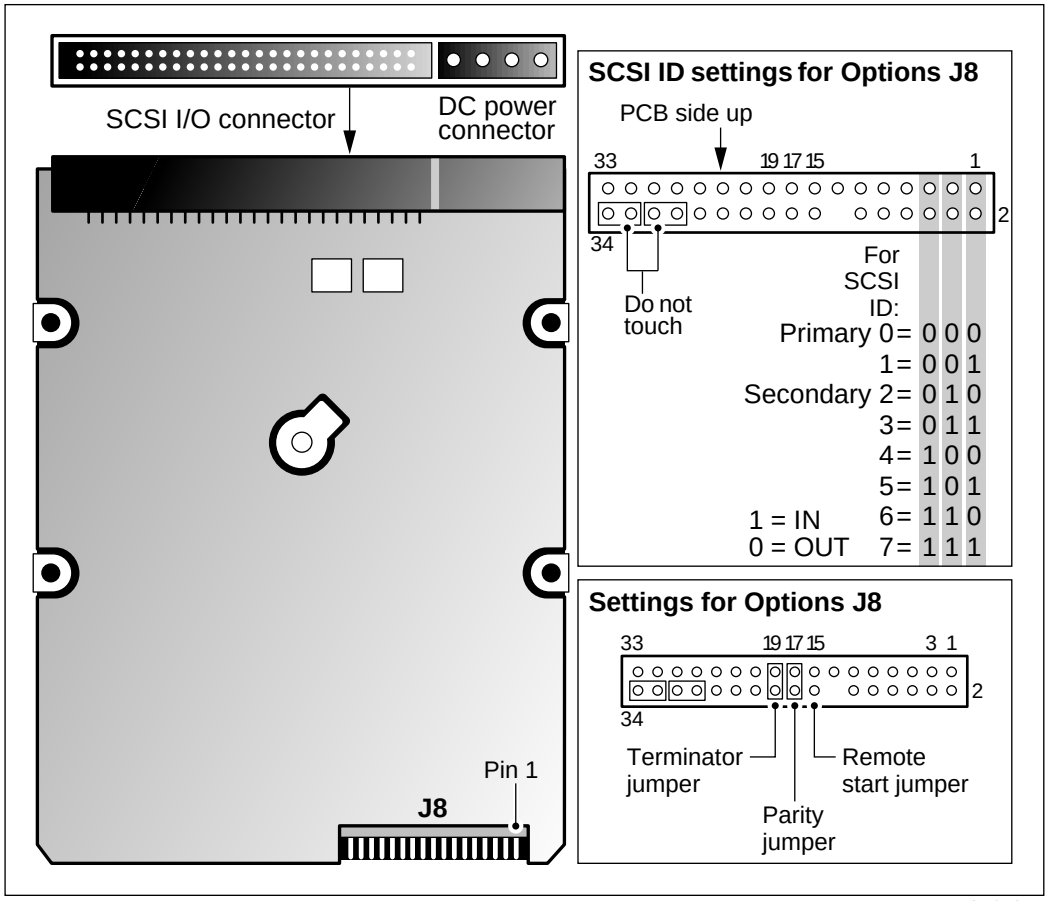
Seagate ST5660 disk drive



G101348

Seagate ST51080N disk drive and jumper settings



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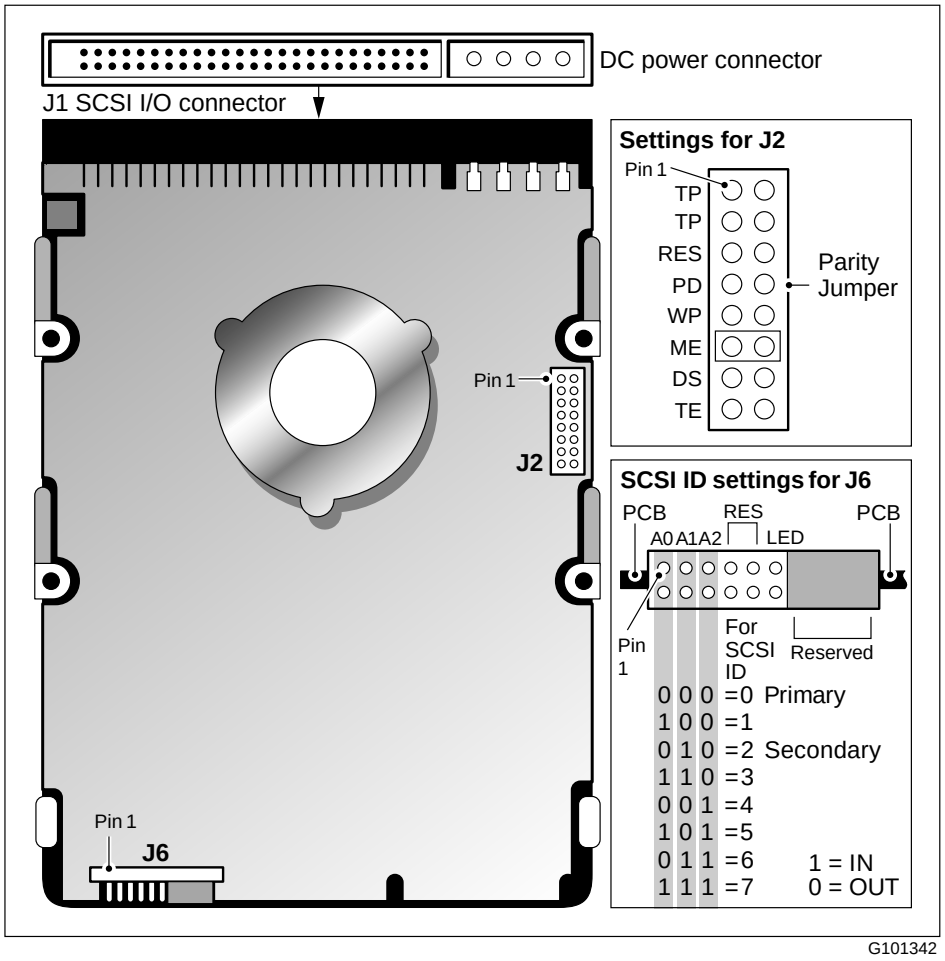
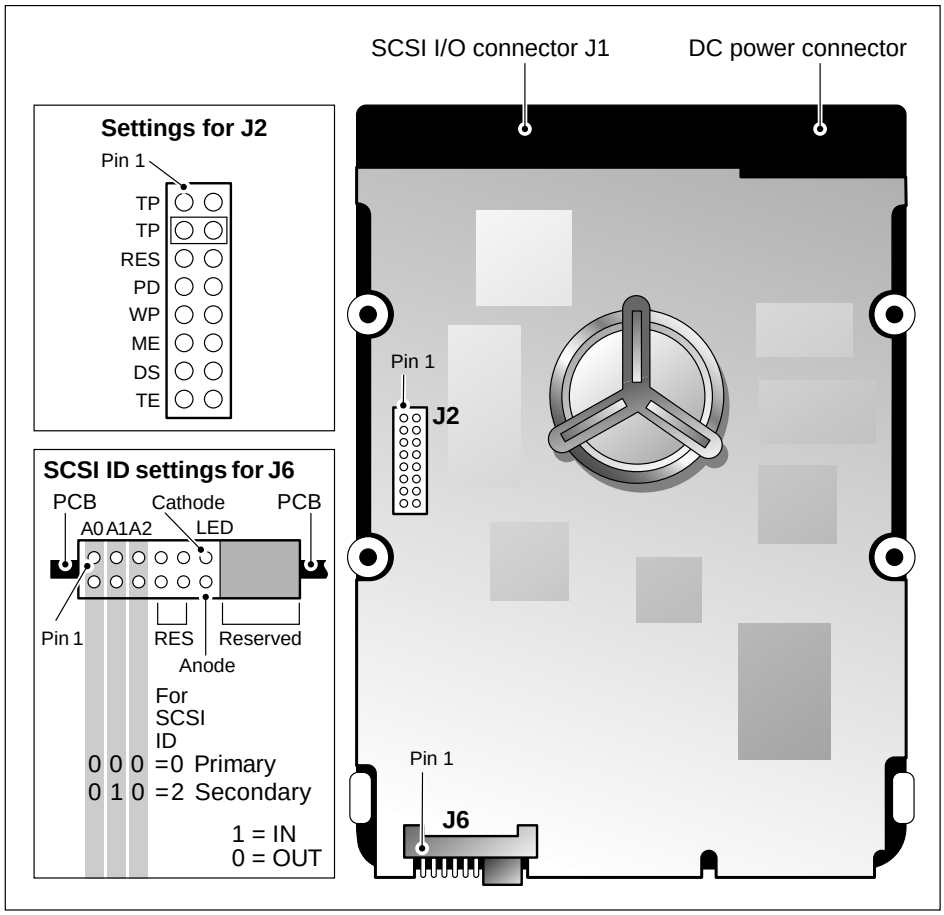
Seagate ST32151N disk drive and jumper settings



Seagate ST34573N disk drive and jumper settings



Overview of tape drives

Introduction

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

Nortel Networks ships customers appropriate backup tapes with the tape drive assembly. The following table lists some of the backup tapes:

CPC code	Description
A0369779	DC6150 backup tape
A0368760	DC6250 backup tape
A0630697	2.5-Gbyte Magnus backup tape (only for a Tandberg drive)

CAUTION

Risk of data errors

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.

Procedures

The procedures that follow describe

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

Removing the mass storage unit

Introduction

To remove the mass storage unit, follow these steps.

Step	Action
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 on pages 3-27 and 3-28.
3	If the node is shadowed, see “Replacing a disk or disk/tape unit in a shadowed system—primary (left side) disk replacement” on page 13-6.
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.

Installing the mass storage unit

Set the SCSI ID for the tape drive

To set the SCSI ID for the tape drive, follow these steps.

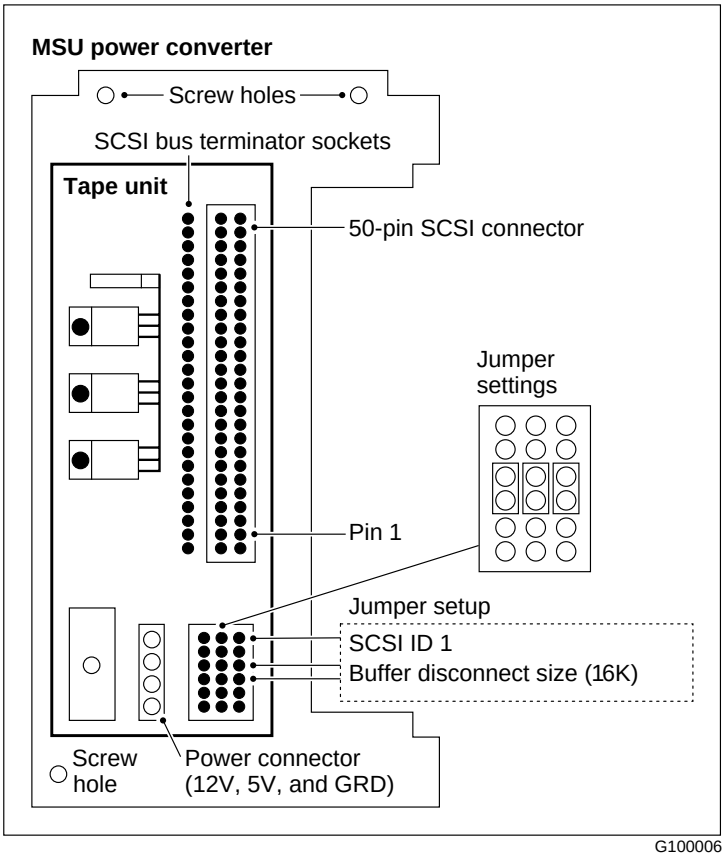
Step	Action
1	Locate the header beside the SCSI connector. Archive—This is the 3-by-6 header (see “Archive tape drive” on page 3-27” and “Archive tape drive jumper settings” on page 3-27). Tandberg—This is the 2-by-10 header (see “Front view of Tandberg tape drive connectors” on page 3-28 and “Tandberg tape drive connectors and jumper settings” on page 3-28.
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 “Archive tape drive” on page 3-27 and “Archive tape drive jumper settings” on page 3-27. Tandberg—This involves inserting jumpers on the header in position 0 and Parity as shown in “Front view of Tandberg tape drive connectors” on page 3-28 and “Tandberg tape drive connectors and jumper settings” on page 3-28. Terminating resistors must be installed in the Meridian Mail module prime node. ***Note:*** Refer to the illustrations 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 on pages 3-27 and 3-28.
4	Verify the other jumpers. See the tape drive illustrations that follow on pages 3-27 and 3-28.

Installing a mass storage unit

To install a mass storage unit, follow these steps.

Step	Action
1	Check that the jumper settings are correct as per the tape drive illustrations that follow.
2	Make sure no SCSI bus terminator is mounted on the tape drive. See the tape drive illustrations that follow.
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 to 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. (The shorter version of the SCSI cable was shipped only for a brief period of time, so you may not need to replace it.)
5	Make sure the MSU is mounted securely. Tighten the mounting screws.
6	Insert the power converter pack (QPC585). ***Note:*** DC6150 and DC6250 tapes are recommended for backup. Use only one type of tape for backups to reduce tape drive wear.

Archive tape drive



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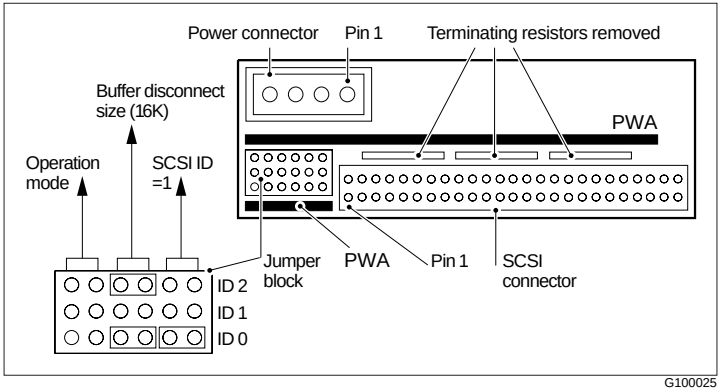
Archive tape drive jumper settings



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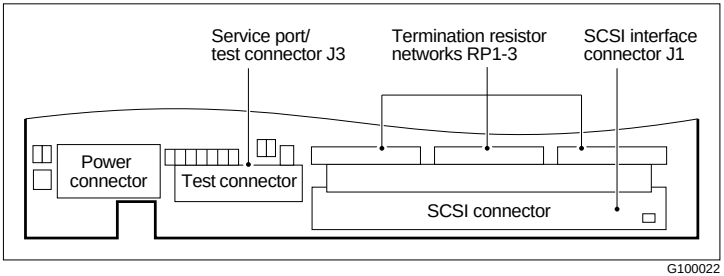
Front view of Tandberg tape drive connectors



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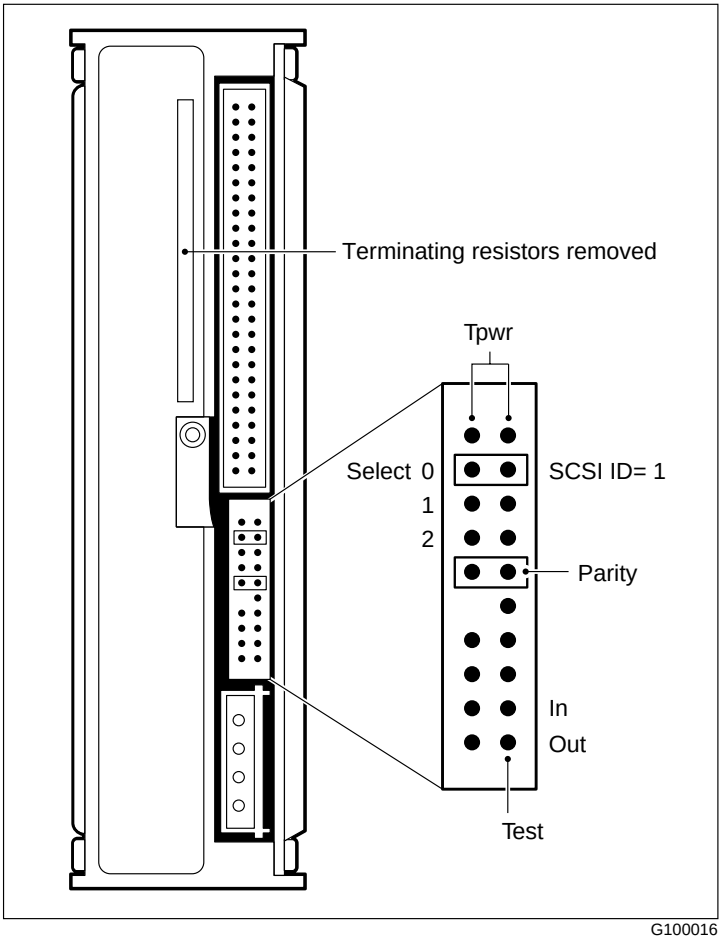
Tandberg tape drive connectors and jumper settings



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Chapter 4

Converting to Meridian Mail Release 13

In this chapter

Overview

Introduction

If you are converting from an existing Meridian Mail system, then any hardware installation or modification has 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 you begin

Before beginning the system installation and modification procedures, unpack and inspect the new hardware as described in Chapter 1. Then refer to the *System Installation and Modification Guide* to begin the conversion to Release 13.

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.

Setting system speed

For Release 13 of Meridian Mail, an Enhanced MMP40 card or an MMP40 card is required on all nodes. Either one of the MMP40 CPU cards allows the system to be upgraded to run at 9600 bps. This upgrade is optional, as the system will run at 2400 bps. Ensure that the console/terminal and modems are set to match the speed of the installed BootROM.

Note: Meridian Mail 13 will accept a system that has an MMP40 card, Enhanced MMP40 card, or a combination of both.

To facilitate the conversion, a speed change utility is available either through the Install/data tape during installation, or through the TOOLS level.

Converting to Release 13

Introduction

The following table shows the equipment that needs to be replaced when installing an Enhanced MMP40 node.

Converting from ESBC to Enhanced MMP40 node

Equipment	Replacment
ESBC card	Enhanced 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

ATTENTION

MMP40 cards (MMP40 or Enhanced MMP40) 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 Enhanced MMP40 (or MMP40) and the A/B switch box with a straight RS-232 cable (NTND91AA/AB). Refer to “Meridian Mail peripherals” on page 8-3 for proper cable configurations.

Note: The ESBC configuration will *not* support Meridian Mail 9 or later. To upgrade from Meridian Mail Release 8 or earlier, you must perform the Enhanced MMP40 hardware upgrade.

Hardware conversion requirements

Hardware conversion requirements 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). The following table lists the hardware requirements for each conversion scenario.

Hardware requirements

Hardware	Current configuration	After conversion	Hardware change required
CPU card	68K card in any node	Enhanced MMP40 card in each node	Insert Enhanced MMP40 card in every node. See " Replacing the 68K card" on page 4-5.
	MMP40 card in each node	Enhanced MMP40 or 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 "Installing 9600 bps modems" on page 4-8.
Tape drive	Archive Viper	Archive Viper	No change.
	Archive Viper	Tandberg TDC4220	Install Tandberg tape drive. See "Installing a mass storage unit" on page 13-14.

Modem speed

All Enhanced 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 either have to configure your modems to higher speeds or install new high-speed modems. When the Enhanced MMP40 cards have been installed, with high-speed modems if required, complete the system conversion to the Meridian Mail Release 13 software.

The Install/data tape is used to convert the existing Modular Option GP system to Release 13.

System conversion

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 to complete the software conversion to Release 12.

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 succcessfully completed.

For a system that 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. See the *System Installation and Modification Guide* (NTP 555-7001-215) for details.

Note: Run the utility after the conversion so 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

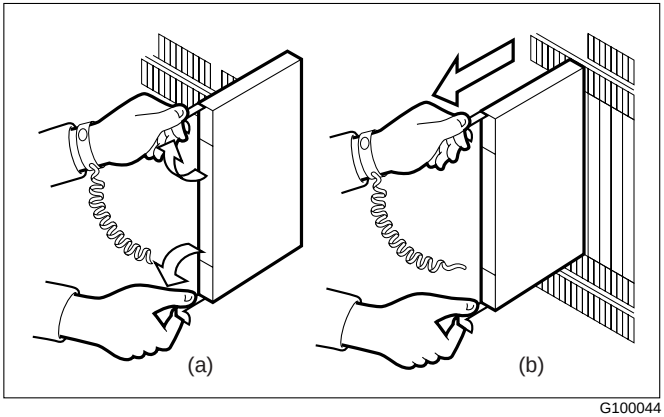
Wear an antistatic wrist strap when handling components. As an additional safety measure, handle components by the edges and, whenever possible, with the loosened packing material still around the component.

Replacing the 68K card

If your existing system currently uses 68K cards, replace them with Enhanced MMP40 cards.

To replace a 68K card, follow the steps on the next page.

Step	Action
1	Unpack and inspect the hardware as described in Chapter 1.
2	Refer to the *System Installation and Modification Guide* (NTP 555-7001-215, Chapter 4, “Conversion”), and follow the instructions. This involves 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 of this procedure.
4	Open the ejectors on the 68K card you are replacing, and gently pull the card toward you until it clears the shelf. Store the 68K card in a safe place. You will need this card if you need to reinstall the old system.



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5	Insert the Enhanced MMP40 card in the module by aligning it with the slots from which the 68K card was removed. 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 until the card is fully seated in the module. b. Close the ejectors.

Step	Action
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 “Installing 9600 bps modems” on page 4-8. 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 of the necessary hardware changes.

Installing 9600 bps modems

If you decide to upgrade your terminal baud rate to 9600 bps, you can install new high-speed modems or configure your existing modems for 9600 bps operation. Refer to Appendix B, "Modem configurations," to ensure that the modems are supported for 9600 bps operation.

To install a 9600 bps modem, follow these steps.

Step	Action
1	Unpack and inspect the new modem.
2	Install the external modems as outlined in Chapter 8, "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 5

Inspecting and installing PCPs and cables

In this chapter

Overview

Introduction

This chapter describes and illustrates various printed circuit packs (PCPs), provides switch settings, and illustrates cabling for various numbers of nodes.

Printed circuit packs

Introduction

The following printed circuit packs (PCPs) are used in Meridian Mail with Enhanced MMP40 (or MMP40) cards installed. See the following table.

Meridian Mail PCPs

PCP	Slot	NT code
HABC—High Availability Bus Controller (prime node of a multinode system only)	HABC	NT4R08AA
Enhanced MMP40—Meridian Mail Processor 68040	MMP40	NT6R14AA
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 the switch settings are correct.

Changes to PCPs during node expansion

When you are expanding a system by adding one or more nodes, you may need to move PCPs from one node to another, and change switch or jumper settings. The following table summarizes the changes you need to make.

Summary of changes to PCPs for node expansion

Original # of nodes	New # of nodes	Pack	Changes
1	2	GSP	If three GSPs are present in node 1, move one GSP to node 2. Reset switches on the GSPs you move.
		MMP40	Attach the terminator to the Enhanced MMP40 (or MMP40) in node 2.
		HABC	Attach the HABC terminator. Install the pack in the HABC slot, node 1.

2	4 or 5	NVP	Remove the GSPs from node 1. Reset the switches on the GSPs you move.
any	any	MMP40	If the original number of nodes is not 1, remove the terminator from Enhanced MMP40 (or MMP40) in the original last node. Attach the terminator to the MMP40 in the last node.

CAUTION

Risk of equipment damage

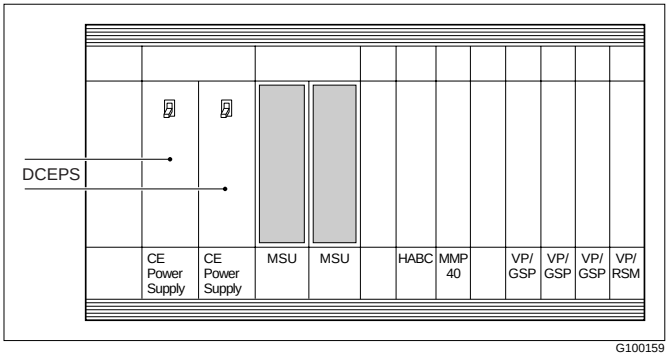
Wear a wrist strap connected to the grounding point while handling PCPs to protect the packs against damage from static electricity.

Printed circuit pack inspection

Inspecting PCPs

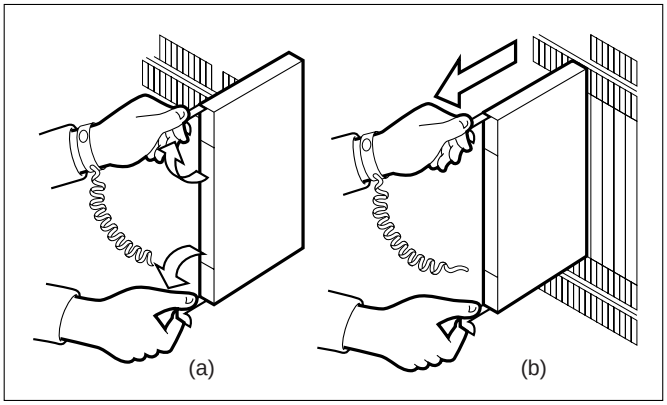
To inspect PCPs, follow these steps.

Step	Action
1	Locate the PCP slot area in the Meridian Mail module to the right of the MSU slots.



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 the 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 front of the packs.

Step	Action
5	Open the locking levers on each pack, and gently pull the pack toward you until it clears the shelf.



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ATTENTION

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

Although the voice processor cards in the VP/GSP and VP/RSM slots appear to be identical, they have different switch settings.

6 Check the pack to make sure it is not bent and there are no loose parts.

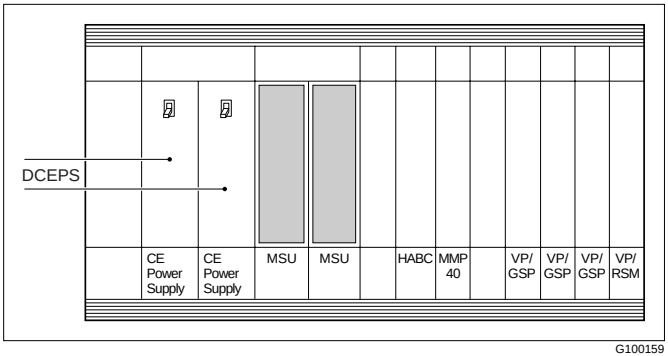
7 If you are not placing the pack back in the shelf immediately, put it in an electrostatic discharge (ESD) protective container labeled with the number of the node it came from and the card type from the designation strip.

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 Verify that the switch settings are correct. Refer to “PCP switch locations and settings” on page 5-8 for the locations of switches and jumpers on each pack, and the tables that show the settings for each switch and jumper.

Note: Set the switches on each NVP pack to match the TNs selected for that pack.

Step	Action
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 location of each pack.



10	Seat and lock the pack. a. Push on the upper and lower front edges of the pack until it is fully seated in the shelf. It is particularly important that PCPs that have only one locking lever be seated firmly (for example, the Enhanced MMP40). b. Close the locking levers.

PCP switch locations and settings

Printed Circuit Pack	Switch locations	Switch settings
HABC	"HABC switch locations" on page 5-9	"HABC switch settings" on page 5-10
MMP40	"Enhanced MMP40 (or MMP40) switch location" on page 5-11	"Enhanced MMP40 (or MMP40) switch settings" on page 5-11
GSP (NT4R04AB	"GSP switch locations for NT4R04AB" on page 5-13	"GSP switch settings for NT4R04AB" on page 5-14
GSP (NT4R04AA	"GSP locations for NT4R04AA" on page 5-15	"GSP switch settings for NT4R04AA" on page 5-16
RSM	"RSM switch locations" on page 5-17	"RSM switch settings" on page 5-17

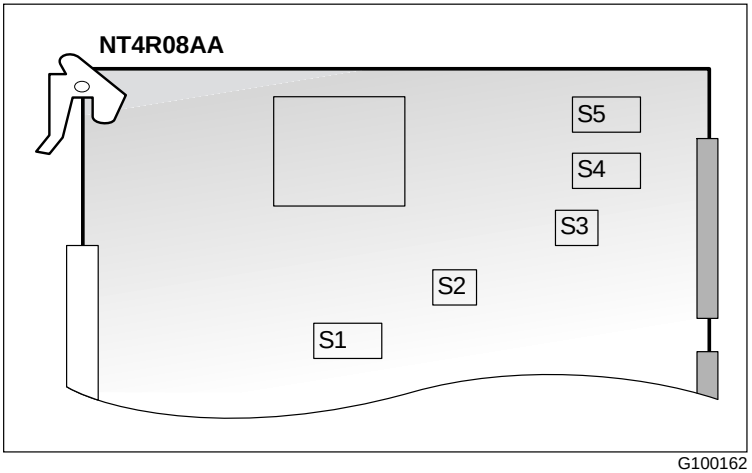
High availability bus controller

Introduction

The high availability bus controller (HABC) pack is used in the HABC slot of the first node of a multi-node system. See the following illustration for switch locations and “HABC switch settings” on page 5-10 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 Enhanced MMP40 (or MMP40) card in each node, and ends on the terminator daughterboard on the Enhanced MMP40 (or MMP40) in the last node.

HABC switch locations



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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				

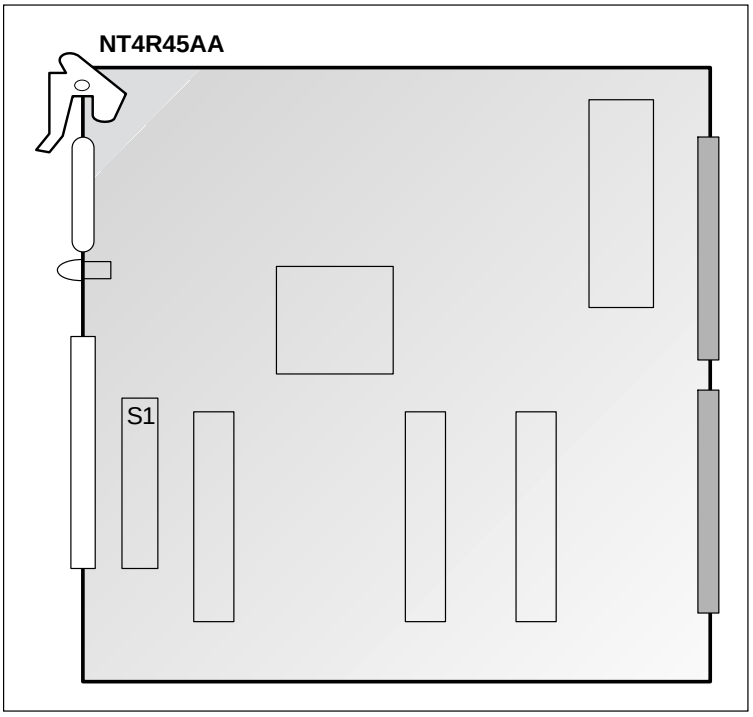
Enhanced MMP40 card

The Enhanced MMP40 (or MMP40) card contains an MC68040 microprocessor, 16 Mbytes of memory, a SCSI interface, two programmable serial ports, and a BootROM that includes system diagnostics.

"Enhanced MMP40 (or MMP40) switch location" on page 5-11 shows the locations of the switches. The settings are listed in "Enhanced MMP40 (or MMP40) switch settings" on page 5-11.

Note: In a multi-node system, the Enhanced MMP40 (or 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 Enhanced MMP40 (or MMP40) card in each node, and ends on the terminator daughterboard on the Enhanced MMP40 (or MMP40) in the last node.

Enhanced MMP40 (or MMP40) switch location



Enhanced MMP40 (or MMP40) switch settings

Switch settings—S1								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Single-node systems								
Node 1	On	On	On	On	On	On	On	On
Multiple-node systems								
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

JTAG/XChecker switch settings

All Enhanced MMP40 boards have a JTAG/XChecker switch which must be set for correct loading of the board, as per the following table.

Board	Switch	S1	S2	
NT6R14AA	S3	OFF	ON	
NT6R15AA	S2		OFF	ON
NT6R16AA	S2		ON	OFF
NT6R17AA	S2		ON	OFF

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 (for example, AT&T or 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 the following table.

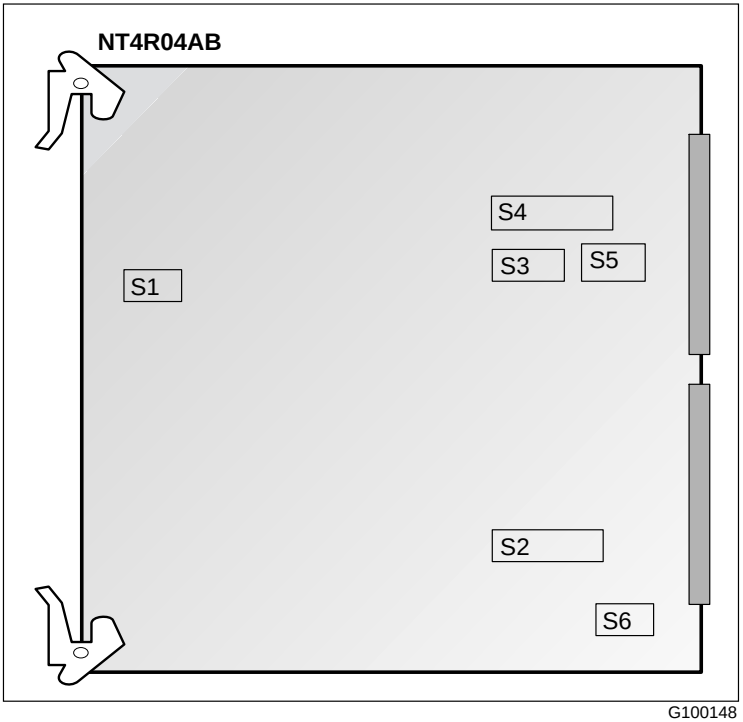
Number of GSPs in node 1

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

GSP version NT4R04AB

See the illustration below and “GSP switch settings for NT4R04AB” on page 5-14 for switch settings.

GSP switch locations for NT4R04AB



GSP switch settings for NT4R04AB

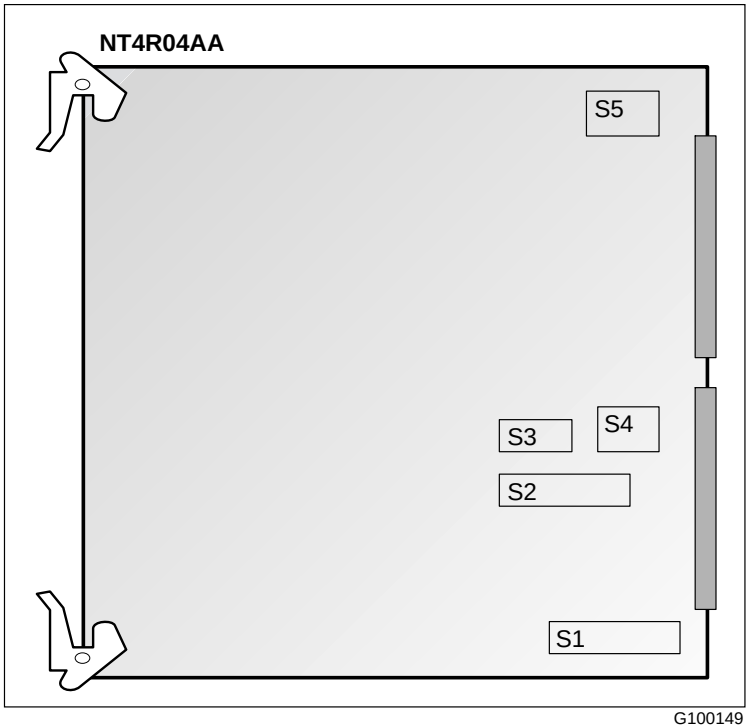
Switch	GSP 1	GSP 2	GSP 3	GSP 4
S1-1	On	On	On	On
S1-2	On	On	On	On
S1-3	On	On	On	On
S1-4	On	On	On	On
S2-1	On	On	On	On
S2-2	On	On	On	On
S2-3	On	On	On	On
S2-4	On	On	On	On
S2-5	On	On	On	On
S2-6	On	On	On	On
S2-7	On	Off	Off	On
S2-8	Off	On	Off	On
S3-1	Off	Off	Off	Off
S3-2	Off	Off	Off	On
S3-3	Off	On	On	Off
S3-4	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

Note:
Ground start lines: All S5 switches On
Loop start lines: All S5 switches Off
On=Closed
Off=Open

GSP version NT4R04AA

See “GSP locations for NT4R04AA” on page 5-15 and “GSP switch settings for NT4R04AA” on page 5-16.

GSP locations for NT4R04AA



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

Note:
Ground start lines: All S5 switches On
Loop start lines: All S5 switches Off
On=Closed
Off=Open

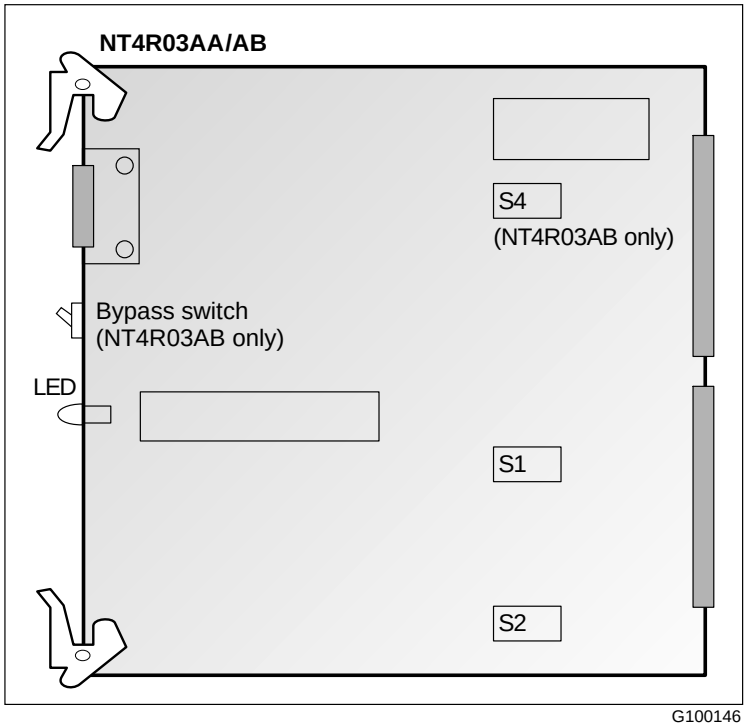
RS-232 service module

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 that allows you to operate the system in bypass mode during recovery from such problems as hardware and link failures. Unless otherwise instructed by Nortel Networks support, leave the card set to normal mode (the switch down). The LED is on when the card is in normal mode.

See the illustration below and “RSM switch settings” on page 5-17.

Note: Hospitality services requires the NT4R03AB version of the pack.

RSM switch locations



G100146

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

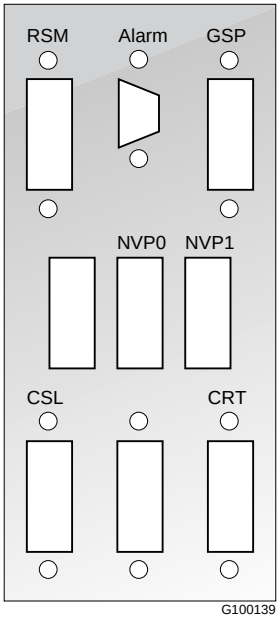
Introduction

The cabling from 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. Apart from the SCSI cable, cabling runs from the front of the packs through the right cable channel (looking from the front) to the rear. You normally need to remove all the cables from the fronts of the PCPs to remove the voice processor cards to check or change switch settings.

This section provides a cabling reference.

The illustration below shows the I/O panel which is at the left of the rear of each module

Meridian Mail I/O panel



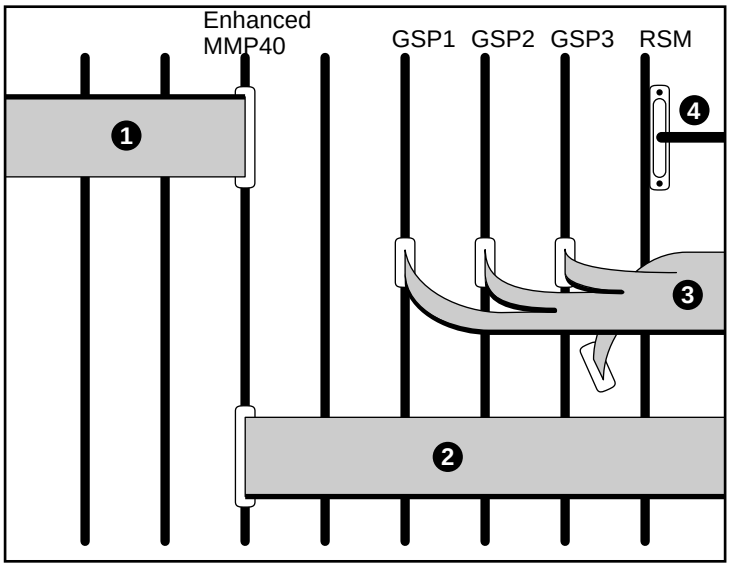
The illustrations on pages 5-20, 5-21, and 5-22 illustrate the cables at the circuit packs. The table “Cable routing” on page 5-19 describes how they are routed.

Cable routing

	NT code	Cable	Routing information
Cable 1	NT6D4417 (A0618621)	SCSI	From front of Enhanced MMP40 card to rear of shelf, between the Enhanced MMP40 card and the metal plate (a clip is provided to hold the cable in place). Attach to 50-pin connector on the front of the backplane. ***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 be pinched when you replace the metal cover.
Cable 2*	NT6D4419 (A0618623)	Serial communications cable	From the bottom connector at the front of Enhanced 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	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. See “Connecting cables to GSP cards” on page 5-22.
Cable 4	NT6D4408 (A0363747)	NVP	From front of NVP 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 Meridian Mail connector panel—the end connector to NVP1 and the other connector to NVP0.
Cable 5	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 6	NT6D441*n* where *n* is 1, 2, or 5 (A0367987) (A0368070) (A0364039)	Bus	Systems with two or more nodes only—from HABC terminator on node 1 HABC to the middle connector at the front of the Enhanced 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. Two-node system: Connect to Enhanced MMP40 terminator, node 2. Multi-node system: Connect to the middle connector at the front of the Enhanced MMP40 card on node 2 and route (as from node 1 to node 2) to the next node. Continue to each Enhanced MMP40 card until the Enhanced MMP40 terminator is reached on final node. Daisy-chain cables as needed.

*****The combined AML/CRT cables each have a brown wire on the inside edge that is intentionally not used.

PCP cables for a single-node system

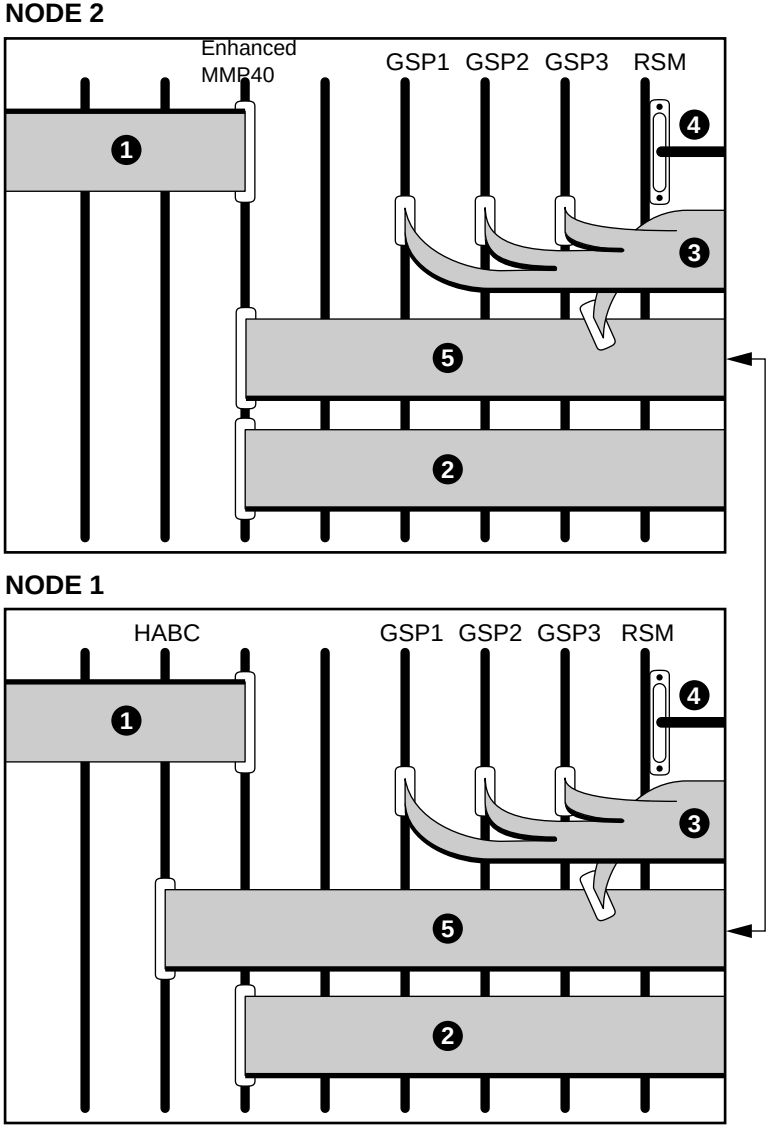


1. SCSI cable NT6D4417
2. Serial communications cable NT6D4419 (for Entopia MMP40 or MMP40)
3. GSP cable NT6D4407
4. RSM cable NT6D4406

Note: Cables have a colored edge to designate pin 1, which is illustrated here by a heavy line at the appropriate edge of the cable.

G101357

PCP cables for a 2-node system

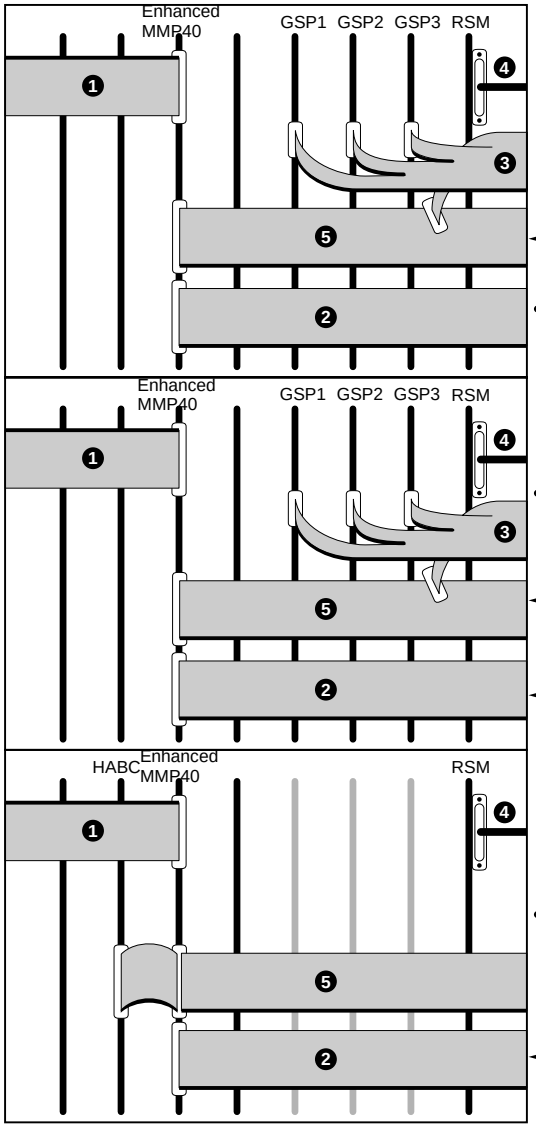


1. SCSI cable NT6D4417
2. Serial communications cable NT6D4419 (for Enhanced MMP40)
3. GSP cable NT6D4407
4. RSM cable NT6D4406
5. Bus cable NT6D4411, NT6D4412, or NT6D4415

Note: Cables have a colored edge to designate pin 1, which is illustrated here by a heavy line at the appropriate edge of the cable.

G101356

PCP cables for a multi-node system



1. SCSI cable NT6D4417
2. Serial communications cable NT6D4419 (for Enhanced MMP40)
3. GSP cable NT6D4407
4. RSM cable NT6D4406
5. Bus cable NT6D4411, NT6D4412 or NT6D4415

The configuration of this node applies to the last node of a multi-node system.

The configuration of this node applies to the following:
- Nodes 2 and 3 of a 4-node system.
- Nodes 2, 3, and 4 of a 5-node system.

The configuration of this node applies to the first node of a multi-node system.

Note: Cables have a colored edge to designate pin 1, which is illustrated here by a heavy line at the appropriate edge of the cable.

G101355

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 6

Diagnostics

In this chapter

Overview

Introduction

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.

Performing diagnostics

Introduction

Depending on the changes made to the system, the following procedure may not test 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 tests features such as the functionality of the Enhanced 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 cannot determine if 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.

Sanity testing

To perform diagnostics on each module, follow these steps.

Step	Action
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 11. If it does not, follow the troubleshooting procedures in “System fails to boot completely” on page 11-19.
2	For multi-node systems, observe the HABC message displayed early in stage 1 of “Bootup stages” on page 11-7. 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 the diagnostics failed, refer to Chapter 11.
4	For single-node systems, testing is complete. For multi-node systems, continue with step 5.

Step	Action
5	Power up the system and observe the hexadecimal display on the Enhanced 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 Enhanced MMP40 card and return to step 5. If the problem is not corrected, refer to the troubleshooting procedures in Chapter 11 to verify the installation.
7	Refer to “Performing hardware modification for Modular Option GP 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 7

Installing the Meridian Mail to PBX/DMS interface

In this chapter

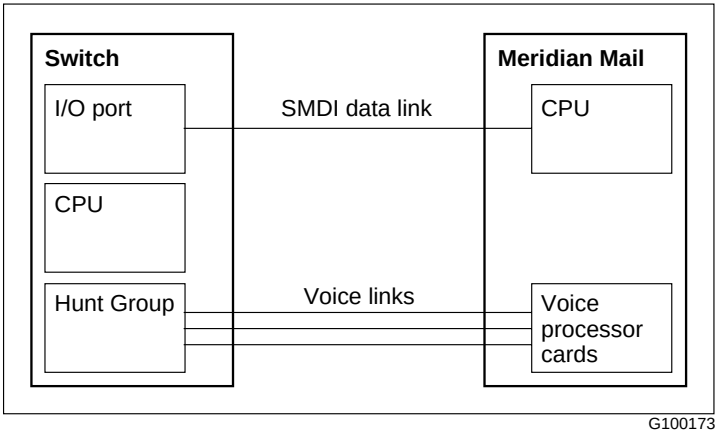
Overview

Introduction

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

The following illustration is an overview of Meridian Mail connections to the switch.

Meridian Mail interface to the switch



Installing the voice cable

Introduction

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* (NTP 555-7051-200) before its connection to Meridian Mail. The cable should already be installed between the appropriate PBX/DMS cards and the main distribution frame (MDF) panel.

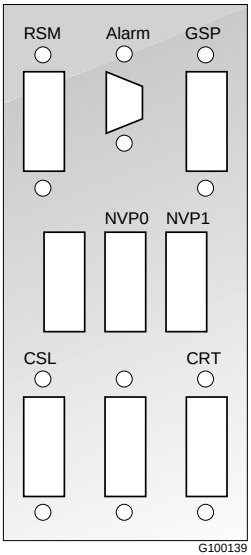
Further information about the MDF BIX connector and cable terminations can be found in the following documents:

- *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)

Installing the voice cable from Meridian Mail to the MDF

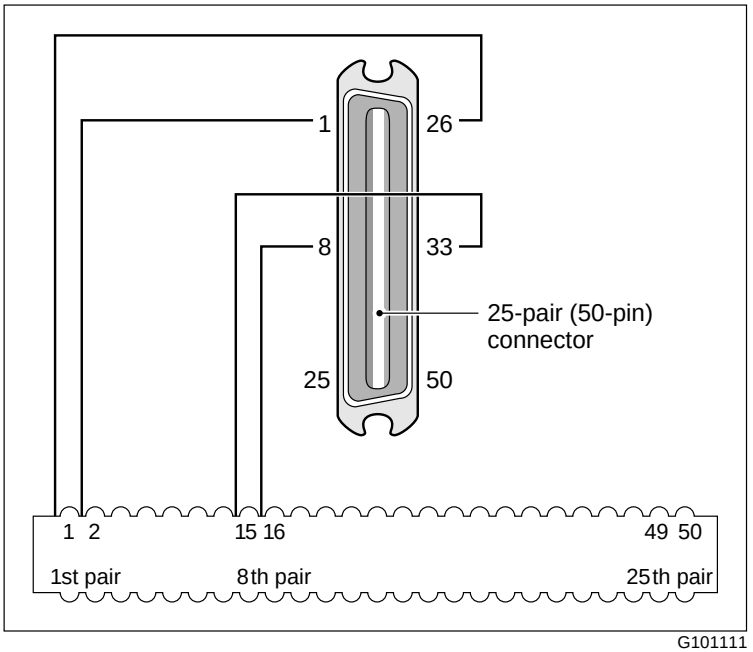
To install the voice cable, follow these steps.

Step	Action
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 the following illustration.



2	Attach the male end of a voice cable to the GSP port on each node.
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 step 1. “MDF wiring detail on the BIX strip” on page 7-5 shows the voice pair breakout pattern from the GSP 50-pin connector to the MDF BIX strip.

MDF wiring detail on the BIX strip



G101111

Connecting voice pairs from Meridian Mail to PBX/DMS

The table “Voice pair descriptions” on page 7-6 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.)

Voice pair descriptions

	Voice channels		Connectors		Color code		
Card	**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 Nortel Networks DMS-100 or SL-100, see the instructions "DMS-100/SL-100" below.

If the switch is a Nortel Networks DMS-10, use the *DMS-10 Installation Methods* guide.

If the switch is manufactured by AT&T or ROLM, see "Connections" below 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)

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

DMS-100/SL-100

The SMDI data link is a 2400 baud full duplex 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.

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

Hardware required

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

- SMDI link cable—the 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 the table on page 7-9 and "SMDI cable for remote connection" on page 7-10 so that a craftsperson can create the cable.

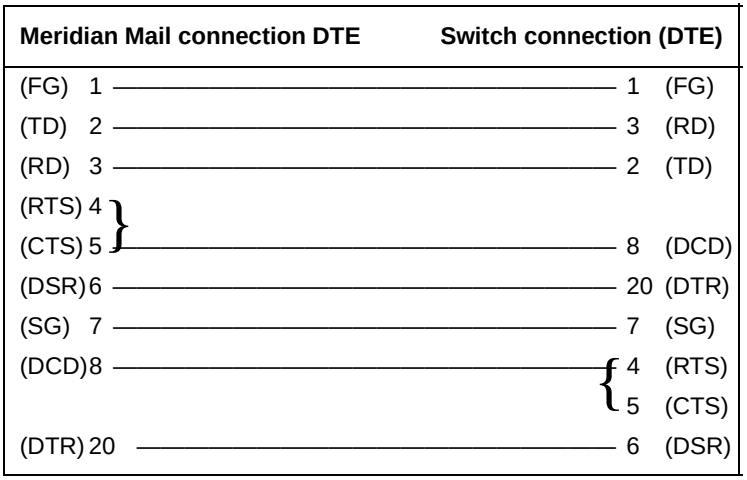
If the switch is within 15.24 m (50 ft) of Meridian Mail, you can cable the switch directly to Meridian Mail (local connection) using a null-modem cable. If the switch is between 15.24 and 1219.2 m (50 and 4000 ft) from Meridian Mail, you can cable the switch to Meridian Mail using short-haul modems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

You can select any unused RS-232 port on Meridian Mail, subject to the restrictions in "Data ports and their I/O panel connectors" on page 8-6. 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

To set up a local connection, follow these steps.

Step	Action
1	Use an RS-232 null modem cable (for example, NT0X26PJ) for the SMDI link. See the table below 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 can be made via the I/O panel on the switch.

Remote connection

To set up a remote connection, follow these steps.

Step	Action
1	Create the RS-232 cable (straight-thru) for the SMDI link according to the table on the next page.
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.

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 8

Installing and configuring peripheral devices

In this chapter

Overview

Introduction

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

Note: To get full support from Nortel Networks, you must install an A/B switchbox and local modem. These devices allow Nortel Networks support personnel to dial in to the system to provide diagnosis and maintenance. The facility is under the control of an on-site technician. This technician must put the A/B switch in the Remote position to connect the modem to Meridian Mail.

Meridian Mail Reporter

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

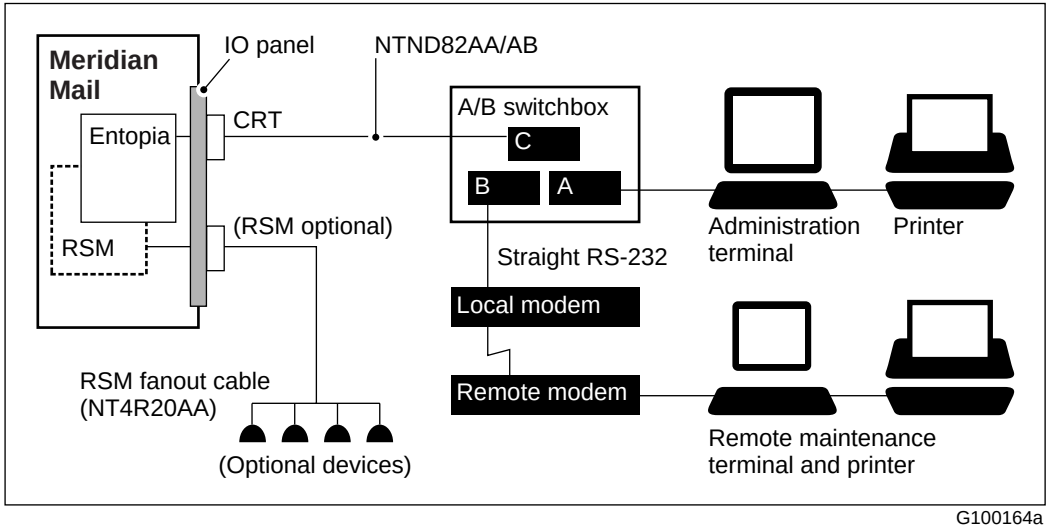
Installing peripheral devices

Introduction

Install peripheral devices as follows (see the illustration below):

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

Meridian Mail peripherals



G100164a

Installing the A/B switchbox

Introduction

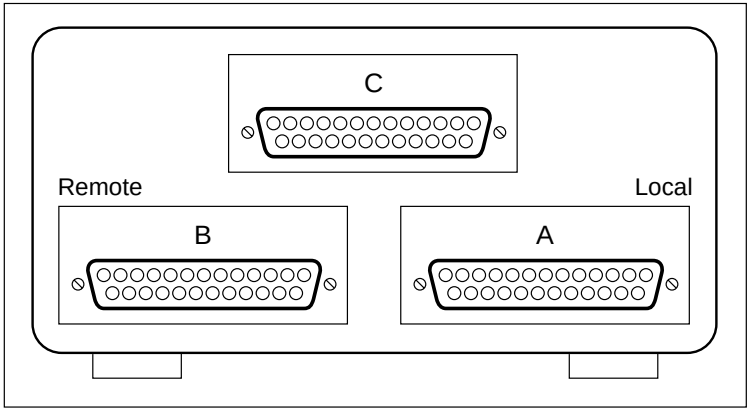
The A/B switchbox permits remote administration and maintenance.

A/B switchbox

To install the A/B switchbox, follow these steps.

Step	Action
1	Place the A/B switchbox in a suitable location near Meridian Mail. ***Note:*** 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.

A/B switchbox (rear view)



G100060

Installing the RSM fanout cable

Introduction

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

RSM fanout cable

To install the RSM fanout cable, follow these steps.

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

"Data ports and their I/O panel connectors" on page 8-6 shows recommended data port usage and the correlation between the data port connectors on the I/O panel and the data ports on the RSM and Enhanced MMP40 packs in the Meridian Mail modules.

In the Connectors column, Module 1 RSM fanout A means the connector labeled A on the RSM fanout cable attached to the I/O panel of module 1. 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 Ports Location on the Hardware Administration—Data Port Configuration screen at the Tools level.

Data ports and their I/O panel connectors

Ports	Connectors	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	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, ACCESS link
Node 2 MMP40 port 2	Module 2 I/O panel CSL	Maintenance, ACCESS link
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, printer, SMDI
Node 3 MMP40 port 2	Module 3 I/O panel CSL	Maintenance ACCESS link
Node 3 RSM port 1	Module 3 RSM fanout A	MAT, network modem, printer, SMDI
Node 3 RSM port 2	Module 3 RSM fanout B	MAT, network modem, printer, SMDI
Node 3 RSM port 3	Module 3 RSM fanout C	MAT, network modem, printer, SMDI
Node 3 RSM port 4	Module 3 RSM fanout D	MAT, network modem, printer, SMDI
Node 4 MMP40 port 1	Module 4 I/O panel CRT	MAT, printer, ACCESS link, SMDI
Node 4 MMP40 port 2	Module 4 I/O panel CSL	Maintenance, ACCESS link
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, ACCESS link, SMDI
Node 5 MMP40 port 2	Module 5 I/O panel CSL	Maintenance ACCESS link
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

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

Introduction

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

Installing the primary administration terminal

To install the primary administration terminal, follow these steps.

Step	Action
1	Place the administration terminal in a suitable location. The administration terminal should be installed within 15.24 m (50 ft) of the Meridian Mail system. If the cable distance is greater than 15.24 m, asynchronouslimited distance modems (LDMs) must be used.
2	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 that 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 “Meridian Mail peripherals” on page 8-3), proceed as follows: a. Connect the other end of the null modem cable to the connector labeled 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.

Step	Action
6	Plug the terminal power cord into an AC receptacle.
7	Power on the terminal.
8	Configure the terminal as described in Appendix A, “Terminal configuration,” for your type of terminal.

Installing a MAT

To install a MAT, follow these steps.

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.

Step	Action
1	Place the terminal in a suitable location within 15.24 m (50 ft) 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 (NTND82AA/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 that 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. ***Note:*** This connector must correspond to a port that has been configured for a MAT. See “Data ports and their I/O panel connectors” on page 8-6 for the correspondence between fanout cable connector labels and ports configured during system installation or modification, and for recommended data port usage.

Step	Action
5	Plug the terminal power cord into an AC receptacle.
6	Power on the terminal.
7	Configure the terminal as described in Appendix A, “Terminal configuration,” for your type of terminal. ***Note:*** A port should have been configured at software installation for each MAT. If this was not done, you 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 digital printers

Introduction

The LA75 Plus Companion printer and LA30^{N} Companion printer are supported.

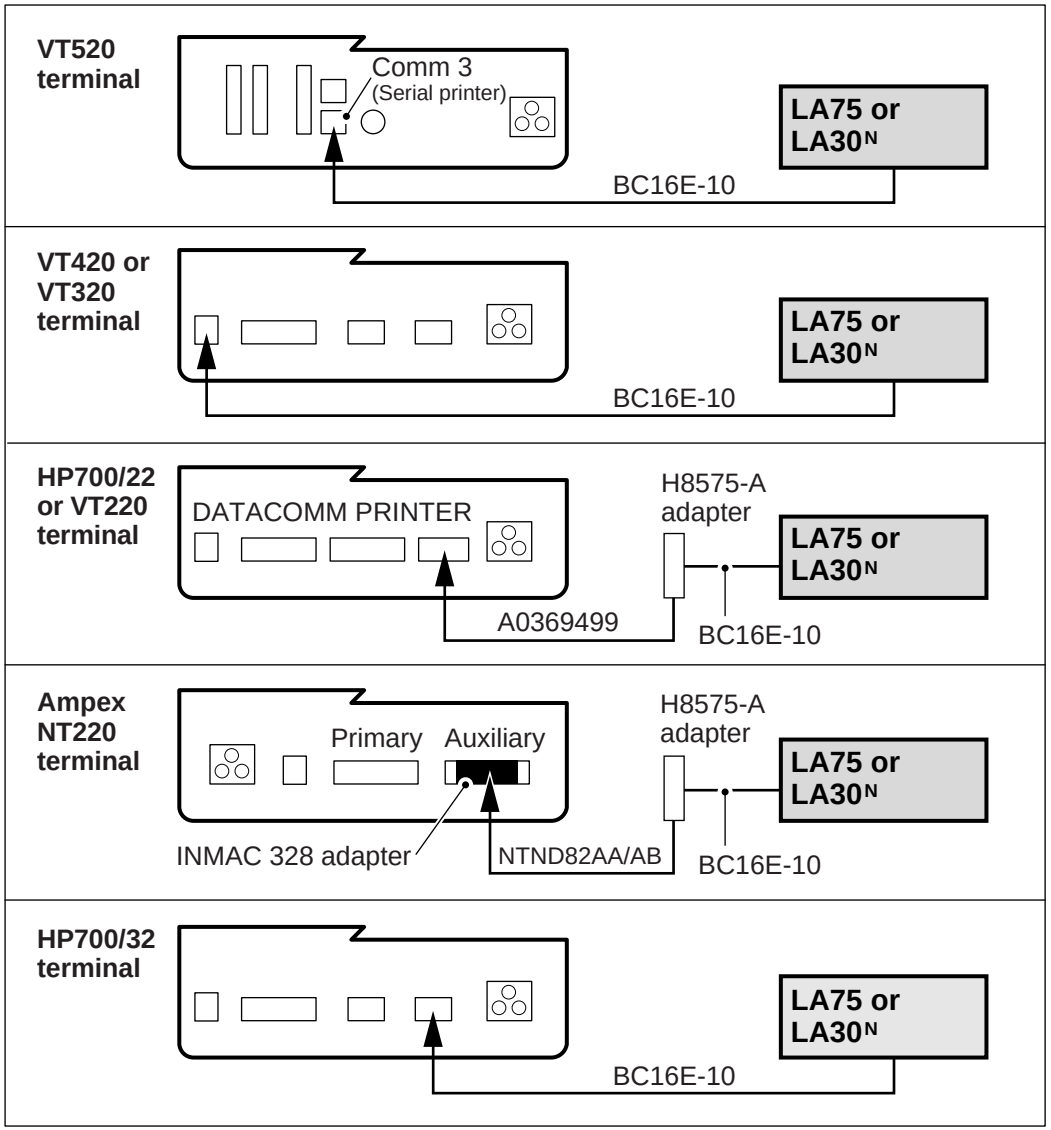
Install the LA75 Plus Companion or LA30^{N} Companion printer as described in the following procedure. Configure the printer as described in " Configuring the LA75 Plus Companion printer" on page 8-12 or " Configuring the LA30^{N} Companion printer"on page 8-13. Note that cables and adaptors needed vary with the type of terminal you are using.

Installing the LA75 Plus Companion or LA30^{N} Companion printer

To install the printer, follow these steps.

Step	Action
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 the illustration on page 8-11.
4	Connect the other end of the interface cable, using adapters and cables as needed, to the terminal. See the illustration on page 8-11 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 in "Configuring the LA75 Plus Companion printer" on page 8-12, " Configuring the LA30^{N} Companion printer" on page 8-13.

LA75 Plus Companion and LA30^{N} Companion printer connections to administration terminals



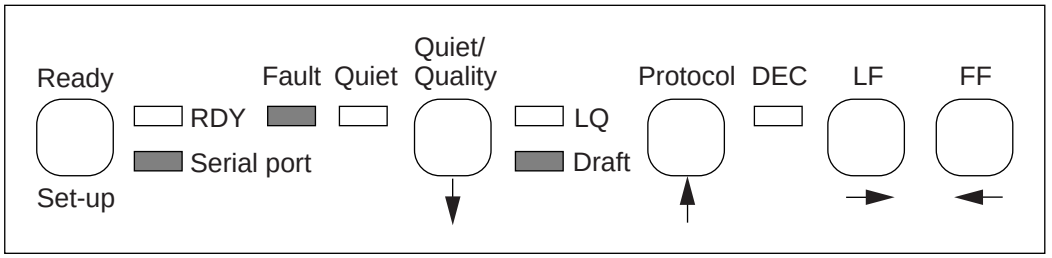
G100619

Configuring the LA75 Plus Companion printer

To configure the printer, follow these steps.

Step	Action
1	Turn off the printer.
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.
3	Release the Set-up button one to two seconds after powering on. See “Front control panel on LA75 Plus Companion printer” on page 8-13 for the layout of the front panel. The printer automatically prints out a list of the default settings. When the list is complete, the printer 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).
4	If you want to change the value of the current setting, press the left arrow key on the front of the printer. See “LA75 printer default settings” on page 8-13 for the required values. The current feature number is printed again with the new value.
5	If this is not the value you require, press the left arrow key again to print the next value for that feature number. Refer to the user manual that is provided with the printer for the list of values available for each feature.
6	Repeat step 5 until the value that you want for this feature is printed. Press the Down arrow key to move on to the next feature.
7	Repeat step 5 and step 6 until you have selected the required values for all of the features.
8	Press the Set-up button on the front of the printer to save the settings.

Front control panel on LA75 Plus Companion printer



G100076

LA75 printer default settings

Feature number	Name	Required value	Meaning
Generic 1	Protocol at Powerup	3	Port dependent
Generic 2	Form length	9	27.94 cm (11 inches) (A)
Generic 3	Vertical pitch	4	6 lines per 2.54 cm (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
Generic 10	Error beep	1	One beep
Generic 11	Typestyle	1	Internal
Generic 12	Input buffer size	1	8K
Generic 13	Disconnect on fault	1	Not selected
DEC 1	Horizontal pitch	7	10 char. per 2.54 cm (inch) (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

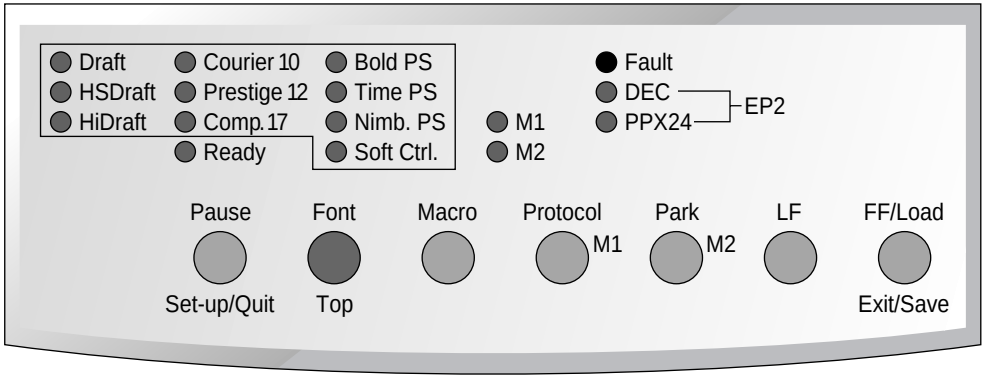
Configuring the LA30^{N} Companion printer

The LA30^{N} Companion printer is shipped with default settings

that permit it to be used with terminals configured according to Appendix A of this manual. To configure the printer if the factory defaults have been changed, follow these steps.

Step	Action
1	Verify that the administration terminal is configured as follows: Speed=9600 Receive=Transmit Databit=8 bits Parity=None Stop=1 stop bit
2	Load the printer with continuous paper, and set the paper select lever to the backward position.
3	Turn the printer off.
4	Turn the printer on while holding the Set-Up/Quit button until the printer beeps. See the illustration below for the layout of the front panel.

Control Panel



G100620

5 To see the printed text, remove the printer's acoustic cover.

When the printer enters Set-up mode, it prints a header menu, help menu, and <Functions> menu, and the M1 and M2 indicators flash alternately.

The header menu tells you that the printer is in Set-up mode; the help menu provides a quick summary of how to use the buttons in set-up mod; and the <Functions> menu lists all of the available functions in this mode. Refer to the following table for a listing of the available functions.

Function	Description
MACRO 1 and MACRO 2	Assigns print features to MACRO 1 and MACRO 2.
PRINT	Prints a list of all currently selected options.
INSTALL	Changes the Set-up menu language, computer interface, and paper-feed control options.
ADJUST	Changes the top-of-form find adjustment options.
TESTS	Runs the printing test and hex dumps.
RCALL-FACT	Resets factory settings in MACRO 1 and MACRO 2.
MENU-ACCESS	Restricts access to Set-up functions from the control panel.
SETUP/QUIT	Exits the Set-up mode and saves any changes made while in Set-up mode.

6 To recall (or reset) the factory settings, select the RCALL-FACT function and press the down button or the up button.

Options under the MACRO, INSTALL, and ADJUST functions are initialized to the factory settings. See " LA30^{N} printer default settings" on page 8-16 for a listing of the factory settings.

7 To exit the Set-up mode with the settings saved, select the SAVE&EXIT function and press the down button or the up button.

Any new settings changed while in Set-Up mode are saved as the new power-on defaults for the printer.

LA30^{N} printer default settings

Print feature	Factory setting
Protocol	Port dependent
Protocol serial	DEC
Port parallel	EPSON
Font	Draft
Horizontal pitch	10 cpi
Vertical pitch	6 Ipi
Form length	27.94 cm (11 inches) (A)
Left margin	1 column
Top of form*	0/60 2.54 cm (inch)
Top margin	1 line
Bottom margin	66 lines
Line mode	LF=LF, CR=CR
Paper source¤	Tractor
Print direction	Soft control
DEC mode	
DEC printer ID	PPL2
Auto wrap	Wrap
EOT disconnect	No disconnect on EOT
Initial report	No
Auto answerback	No
Answerback on ENQ	No
DEC GO character set	US ASCII
DEC user preference character set	DEC supplemental
IBM and Epson mode	
Default character set	CP 437
IBM mode	
IBM set 1 or 2	IBM set 1
IBM double height	No
IBM AGM	No
Epson mode	
Epson national character set	USA

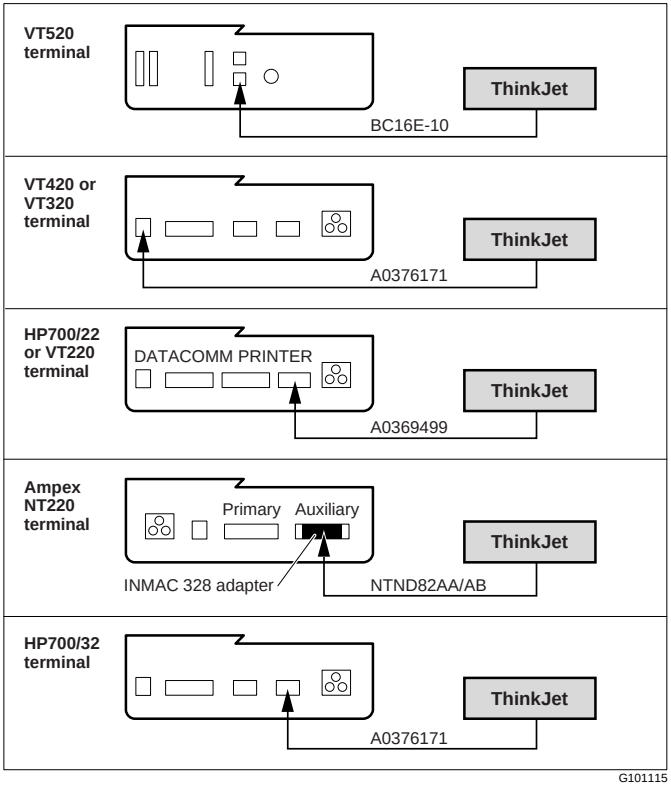
* When you change the Macro selection and the new Top-of-Form value is different, paper is automatically fed to the next page using the new Top-of-Form value.
¤ When you change the Macro selection and the paper source selection is different, the printer automatically parts the continuous forms (in Push-Feed mode only) or ejects the cut sheet. The Fault indicator blinks, indicating that you should change the position of the paper select lever.

Installing and configuring the HP Thinkjet printer

HP Thinkjet printer

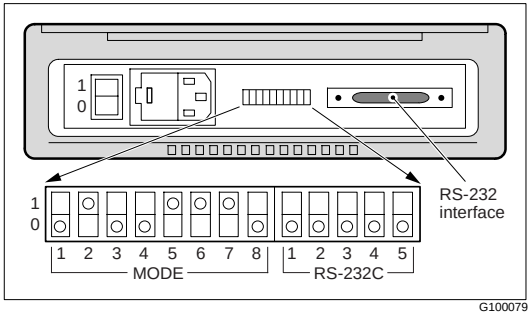
To install and configure the Thinkjet printer, follow these steps.

Step	Action
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 below.



4	Connect the other end of the cable, using an adapter if needed, to the terminal. See above for details of the required cables and adapters.

Step	Action
5	Set the printer switches as shown in two following tables. The illustration below shows the location of the switches.



6	Plug the printer power cord into an AC receptacle.
7	Power on the printer.

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

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

Installing and configuring modems for remote administration

Introduction

The modem configuration procedures that follow 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" on page B-1.

Installing the local modem

To install the local modem, follow these steps.

Step	Action
1	Connect one end of a straight RS-232 cable (NTND91AA/AB) to the modem connector labeled • RS-232/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.

Configuring the local modem—AT command method

To configure the local modem, follow these steps.

Step	Action
1	Set all of the required switches for the modem. 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 to configure 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.

Step	Action
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 phone line.

Installing the remote terminal and modem

To install the remote modem and terminal, follow these steps.

Step	Action
1	Set all of the required switches for the modem. Refer to Appendix B, “Modem configuration,” 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 that 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 configuration procedures for your modem type.

Configuring the remote modem using the administration terminal (optional)

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

To configure the modem from the administration terminal, follow these steps.

Step	Action
1	Set all of the required switches for the modem. Refer to Appendix B, “Modem configuration.”
2	Connect one end of a straight RS-232 cable (NTND91AA/AB) to the modem connector labeled • RS-232/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 to configure the modem.
7	Configure the modem. Refer to Appendix B, “Modem configuration,” 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.

Installing a networking modem

To install a network modem, follow these steps.

Step	Action
1	Configure the modem as described in the chapter “Installing the hardware” in the appropriate *Networking Installation and Administration Guide* (NTP 555-7001-24x) for your type of networking (AMIS, Meridian, Enterprise Network Message Service, Virtual Node AMIS). 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 “Data ports and their I/O panel connectors” on page 8-6 for the correspondence between fanout cable connector labels and ports configured during system installation or modification, and for recommended data port usage. See *System Administration Tools* (NTP 555-7001-305) for information on configuring a data port.
3	Connect the other end of the cable to the RS-232/EIA connector on the modem.

RSM card and cabling installation

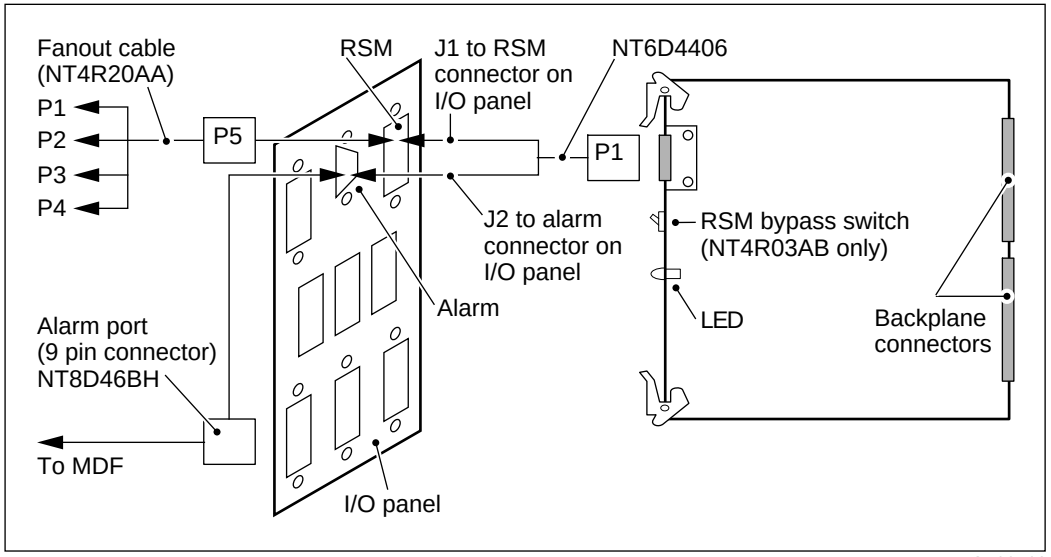
Introduction

The RS-232 service module (RSM) provides four RS-232 ports and alarm capabilities. The illustration below shows the cabling involved in these functions. The following table lists the alarm port and ground cable connections.

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

RSM cabling



G100163

Alarms

Introduction

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.

Critical, major, and minor alarms

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 the following table). 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, a power off condition, or watchdog time-out (which has a fixed 128-second time-out interval).

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

Software and hardware alarm status

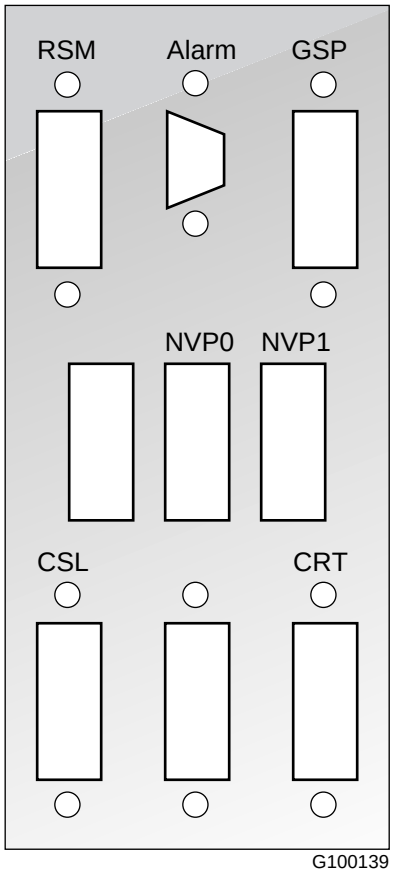
Software alarm	Translates into hardware alarm
Critical	Minor
Major	Minor
Minor	Not supported by Meridian Mail software

Connecting the alarm

To connect the alarm, follow this step.

Step	Action
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 “RSM cabling” on page 8-23 and “I/O panel” on page 8-25. The pin assignments are detailed in “RSM alarm, ground, and power monitor connections” on page 8-23.

I/O panel



Installing a new RSM card and cabling

Introduction

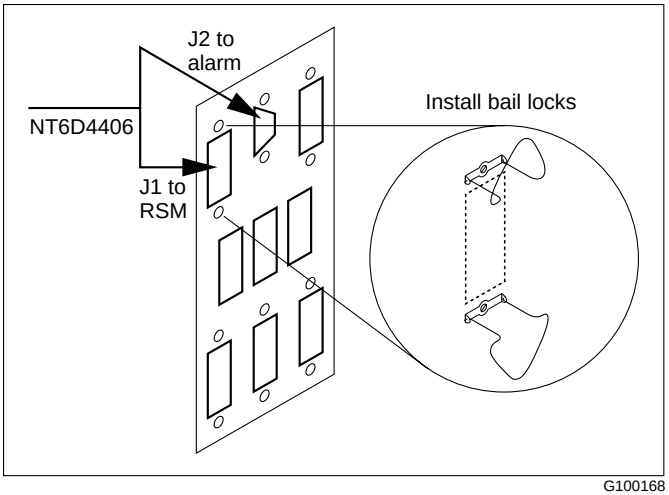
If you need more RS-232 ports than are available on your present system, you can install a new RSM card either in an open VP/RSM slot or by replacing a VP in a VP/RSM slot.

Installing the RSM card and cabling

To install the RSM card and cabling, follow these steps.

Step	Action
1	Power down the system.
2	Remove the front and rear covers from the module where you are installing the RSM.
3	Disconnect the cabling at the front of the MMP40 card.
4	Disconnect the cabling at the front of the GSP cards.
5	Remove the GSP cards, label them for the VP/GSP slots 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	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.

Step	Action
9	Mount the J1 connector on the port marked RSM. Secure the bail locks on the connector.



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	Reinstall 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 the front and rear covers.
18	Power up the system.
19	See the *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.

"Data ports and their I/O panel connectors" on page 8-6 shows the recommended data port usage and the correlation between the data port connectors on the I/O panel and the data ports on the RSM and Enhanced MMP40 packs in the Meridian Mail modules.

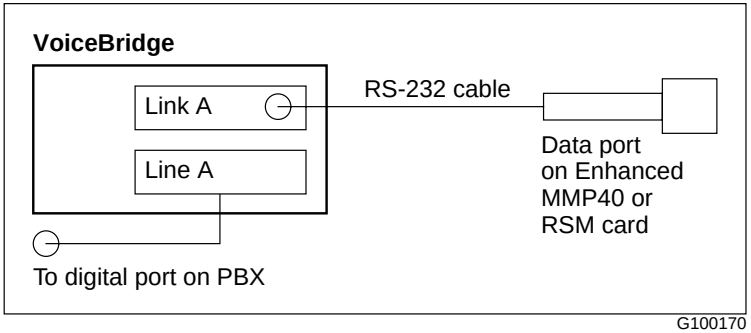
VoiceBridge integration unit

Overview

If you are using the Meridian Mail Connections package, you need one or more VoiceBridge units. 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 the illustration below. 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)



Chapter 9

Configuring the DMS-100, SL-100, or PBX

In this chapter

Overview

Introduction

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 simplified message desk interface (SMDI).

Switch type

If the switch is a Nortel Networks DMS-100 or SL-100, see page 9-3.

If the switch is a Nortel Networks DMS-10, use the *DMS-10 Installation Methods* guide.

If the switch is manufactured by AT&T or ROLM, see below 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)

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

DMS-100/SL-100

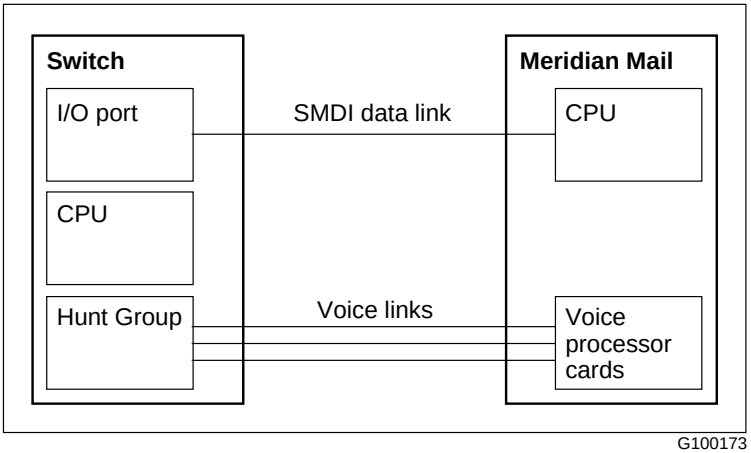
Introduction

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

Configuration

Once the various hardware components have been installed, you need to configure the SMDI data link, define the UCD agents for each voice channel, 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. The following figure is an overview of Meridian Mail connections to the switch.

Meridian Mail interface to the switch



Meridian Mail systems with multiple SMDI links

Introduction

The procedures described in the next few pages also apply to systems with one SMDI link.

SMDI data link on switch

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

Datafilling systems with multiple SMDI links

To datafill systems with multiple SMDI links, follow these steps.

Step	Action
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

Introduction

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 uppercase text, enter the values indicated. Where input values are in lowercase 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.

Assigning terminal devices for the NT1X67 card

To assign the terminal devices, follow these steps.

Step	Action
1	Enter **table termdev** and press <Return>. You are prompted to enter a command.
2	Respond to the prompts as indicated in “Table TERMDEV” on page 9-6.
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 TERMDEV

Prompt	Input	Comments
TABLE:	TERMDEV	
	ADD	
TERMDES		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	Parity of the terminal device
	N	Guaranteed device
MODEM	NONE	Type of modem that is connected to the corresponding port
COMCLASS	ALL	Command classes allowed for the terminal

Assigning terminal devices for the NT1X89 card

To assign the terminal devices, follow these steps.

Step	Action
1	Enter **table mpc** and press <Return>. You are prompted to enter a command.
2	Respond to the prompts as indicated in “Table MPC” on page 9-7.
3	Once you have entered the necessary responses, enter <**$**> followed by <Return>. The MPC table is saved, and you are returned to command level.

Step	Action
4	Enter **table mpclink** and press <Return>. You are prompted to enter a command.
5	Respond to the prompts as indicated in “Table MPCLINK” on page 9-8.
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 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 the 8-character download file for SMDI and MPCA.

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 the 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.

Defining datalink characteristics

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

Step	Action
1	Enter **table sllnkdev** followed by <Return>. You are prompted to enter a command.
2	Respond to the prompts as indicated in “Table SLLNKDEV” on page 9-9. ***Note 1:*** 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 2:*** 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 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.

Defining the 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.

To define a UCD group, follow these steps.

Step	Action
1	Enter **table ucdgrp** followed by <Return> You are prompted to enter a command.
2	Respond to the prompts as indicated in “Table UCDGRP” on page 9-10.
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 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	Ringing 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 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)
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.

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.

Step	Action
1	Enter **table wrdn** followed by <Return>. You are prompted to enter a command.
2	Respond to the prompts as indicated below in Table WRDN.
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 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.

Entering feature activation codes

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

Step	Action
1	Enter **table ibnxla** followed by <Return>. You are prompted to enter a command.
2	Respond to the prompts as indicated below in Table IBNXLA.
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 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

Defining line location

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

To define line location, follow these steps.

Step	Action
1	Enter **table lninv** followed by <Return>.
2	Respond to the prompts as indicated below in Table LNINV.
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 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 nonloaded
MNO	Y	Manual override set to YES, so that onhook balance network tests do not update this field

UCD agents

Introduction

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 555-7001-307] 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.

Defining UCD agents

To define UCD agents, follow these steps.

Step	Action
1	Enter **servord** followed by <Return>. You are prompted to enter a command.
2	Respond to the prompts as indicated in “Defining new ground start lines” on page 9-15.
3	Once you have entered the necessary responses, enter <**$**> followed by <Return>. The service order is saved, and you are returned to the command level.
4	Repeat steps 1 to 3 for each voice channel.

Defining new ground start lines

Prompt	Input	Comments
SO	NEW	
SONUMBER	$	Current date and time followed by $ (for example, 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	three-way conferencing
OPTION	$	

Adding the SMDI option to voice channels

To add the SMDI option to each agent of Meridian Mail, follow these steps. This procedure assigns the voice channels to a UCD group.

Step	Action
1	Enter **servord** followed by <Return>. You are prompted to enter a command.
2	Respond to the prompts as indicated in “Assigning the SMDI option to ground start lines” on page 9-16.
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.

Assigning the 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

Checking table values

Introduction

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

Checking OFCENG values

To check OFCENG values, follow these steps.

Step	Action
1	Enter **table ofceng** followed by <Return>.
2	Check the existing values as indicated in “Table OFCENG” on page 9-18. 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 on page 9-18. You are prompted to enter a command.
4	Change the values where required, as indicated in the table on page 9-18.
5	Once you have entered the necessary responses, enter <**$**> followed by <Return>. The OFCENG table is saved, and you are returned to the command level.
6	Do a warm restart on the PBX/DMS.

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		
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		

Checking OFCVAR values

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

Step	Action
1	Enter **table ofcvar** followed by <Return>. You are prompted to enter a command.
2	Position the cursor on cutoff-on-disc-time. Change the time as indicated in the table below. The values take effect immediately.
3	Once you have entered the necessary responses, at the command line, enter <**quit**>.

Table OFCVAR

Prompt	Input	Comments
TABLE:	OFCVAR	
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 phonesets

Introduction

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 Answer 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 Answer 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 rerouted 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.

Setting call routing options for user telephone sets

To set call routing options for each user's telephone set, follow these steps.

Step	Action
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 "Defining users of Meridian Mail for single line sets" on page 9-21 or "Defining users of Meridian Mail for multi-line sets" on page 9-22.
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.

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	$	

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	XXXXXXX	User's Directory Number
LCC	XXXXX	Type of phoneset
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	XXXXXXX	DNs to which Call Forward will apply
		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	XXXXXXX	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	XXXXXXX	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

Introduction

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

Starting up the link (for 1X67FA card only)

To start up the link, follow these steps.

Step	Action
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, for example, 0) e. **CARD n** (where **n** is the card number, for example, 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. DEVSMDILNK** **d. START termdes SMDIDATA** **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**

Disabling message transfer on the link

To shut down message transfer on the link, follow these steps.

Step	Action
1	For BCS releases lower than 34, enter the following commands: **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, for example, 0) e. **CABUSY n** (where n is the card number, for example, 5) f. **RD n** (where n is the card number, for example, 5) **g. RTS**

Adjusting the volume level

Introduction

If the volume of recorded messages on the lines proves to be unacceptable, make modifications to the SL-100/DMS-100 Gain/Loss settings. These changes are done through the PADDATA 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 depend 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 PADDATA settings for modems used in networking to 10L10L.

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

Chapter 10

Starting up and configuring Meridian Mail

In this chapter

Overview

Introduction

This chapter assumes that Meridian Mail software has already been installed on your system. If not, 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 perform hardware modifications and other specialized functions. Do not load software from the tapes unless you are instructed to do so.

Starting up Meridian Mail

Introduction

If any problems occur during startup, see Chapter 11, "Troubleshooting startup problems."

> **ATTENTION**
>
> To reduce stress on the system, use the RESET button on the faceplate of the Enhanced MMP40 (or 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 you are unsure of the state of the system after the system reset, power the system off completely, then power back on to reboot.

To start up Meridian Mail, follow these steps.

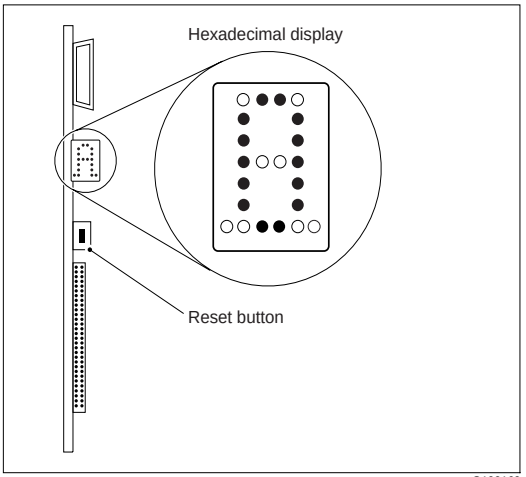
Step	Action
1	Power on the administration terminal and other peripheral devices.
2	On the administration terminal, press <Ctrl> and **W**. Then wait for Logon/Status to appear. Press **P** to select printer. The word "Aut" appears at the bottom of the terminal screen to indicate that automatic printing is turned on. The automatic printing gives a printout of the bootup messages when you power on the Meridian Mail system. The bootup messages that should appear are outlined in Chapter 12. 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.

Step	Action

3 Before you power up the Meridian Mail system, use the following table to verify the proper behavior of the LEDs at the front of each module.

Location of LED	Color	Behavior
Power supplies	Green	On while power switch (DC) or shelf breaker (AC) is on.
VP	Red	On while power to node is on.
Enhanced 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 "Typical startup indications on hexadecimal display" on page 11-5 for more information.
Power supplies	Green	On while power switch (DC) is on.
GSP	Red	On while power to node is on.

Hexadecimal display on Enhanced MMP40 card



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

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

5 In an AC system, switch on the upper breaker in each module before the lower breaker. In a DC system, switch on the left DCEPS in each module before the right one.

If these LEDs do not behave as described, consult Chapter 11 of this manual.

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

6 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.

7 On the Enhanced MMP40 (or 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 11. The table "Typical startup indications on hexadecimal display" on page 11-5 describes the usual progression of the hexadecimal display.

8 Check the hard copy of bootup messages. Compare the printout to that shown in “Bootup stages” on page 11-7. If the system stops at a point in the bootup or does not behave as expected, follow the troubleshooting procedure in that chapter.

9 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.

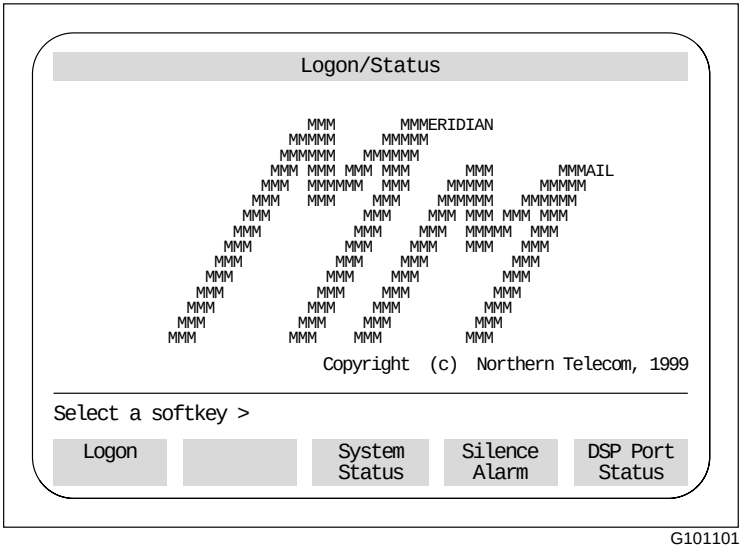
10 Check the terminal display by pressing <Ctrl> + <**w**> at the same time.

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**>.

11 Perform the procedures in the “Software installation” chapter of the *System Installation and Modification Guide* (NTP 555-7001-215).

When you have completed these procedures and the software has loaded, the Logon screen appears.



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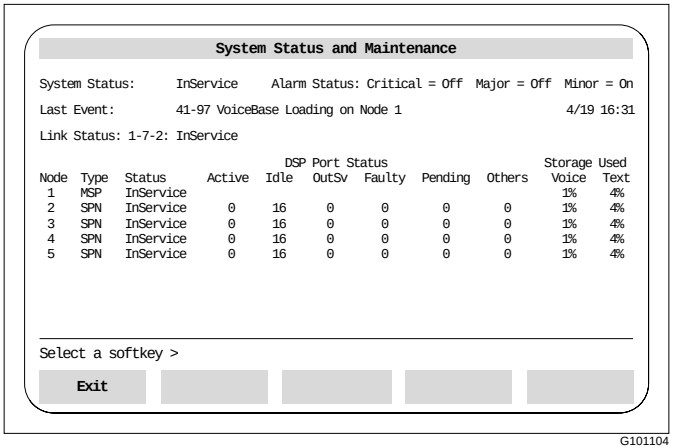
12 To check the system status to make sure the channels are functional and all links are up, press the [System Status] softkey.

Node Status should be InService for all of your nodes, and DSP Port Status should be idle for all of the voice ports you have installed. See the following illustration. For a full description of this screen, see your system administration guide.



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Note 1: Some components will go through transitional states, such as loading, before becoming Idle or InService. It may take a few minutes before these final states are displayed.

Note 2: If you power up Meridian Mail without the switch connected, the diagnostics run and the software loads, but the channels time out and fail, and error messages appear.

13 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).

14 If all appears to be OK, press [Exit] to return to the Logon screen.

15 Log on to the system and change the default user ID and logon password. See the *What’s New in Meridian Mail 13* guide for more information.

16 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 (over 2400 bps) modem (for example, the U.S. Robotics Sportster 14.4), and the connection fails, wait 15 seconds before attempting to reconnect.

17 Reset the switch to Local.

18 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, Channel Allocation Table) are correct. If the values shown on the status screen are missing or incorrect, see the *Meridian Mail System Administration Tools* (NTP 555-7001-305) for hardware modification information.

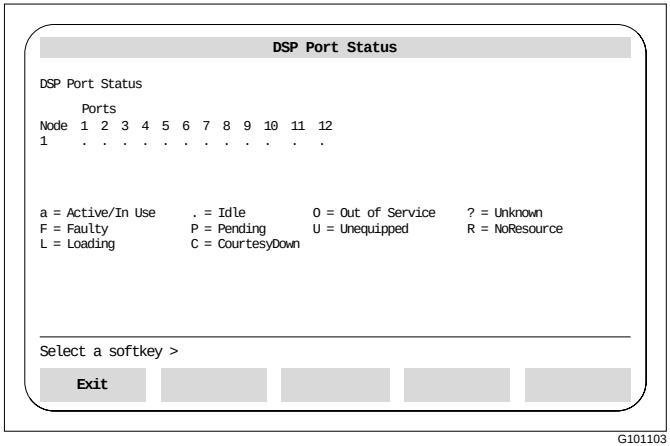
Note 2: For details on Meridian Mail configuration, refer to the section on setting up the system in the *Meridian Mail System Administration Guide* applicable to your system.

19 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.

20 Check the system by adding some mailboxes and using some Meridian Mail features.

21 Log off.

22 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.



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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 that do not come to idle status on bootup or to active status during the testing described in steps 13 to 16.

23 While watching this screen, dial the voice mail access DN from a phone connected to the switch.

24 Verify the entries in the Voice Service Directory Number (VSDN) table.

25 Note which channels become active.

26 Ensure there is no noise on the line.

27 Release the line, and repeat steps 13 to 16 until all ports have been tested.

28 If all appears to be OK, press [Exit] to return to the Logon screen.

29 Replace the faceplates that cover the PCPs.

Note: Take care 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.

30 Install the I/O covers and the front and rear doors of the modules.

Configuring Meridian Mail

Configuring Meridian Mail

When the Meridian Mail logon screen appears, follow these steps.

Step	Action
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. ***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.

Enabling/disabling disk shadowing

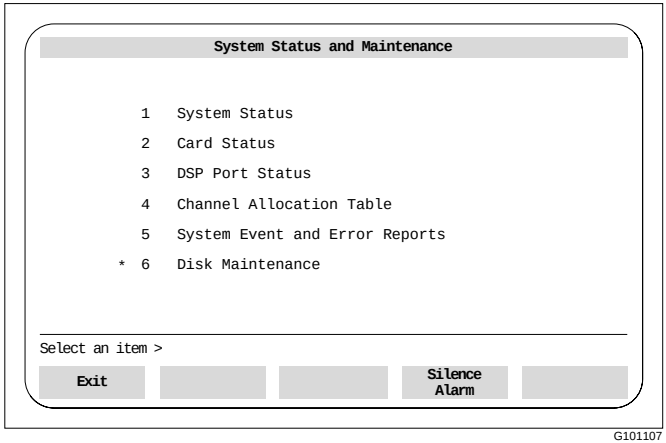
Introduction

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.

Enabling or disabling disk shadowing

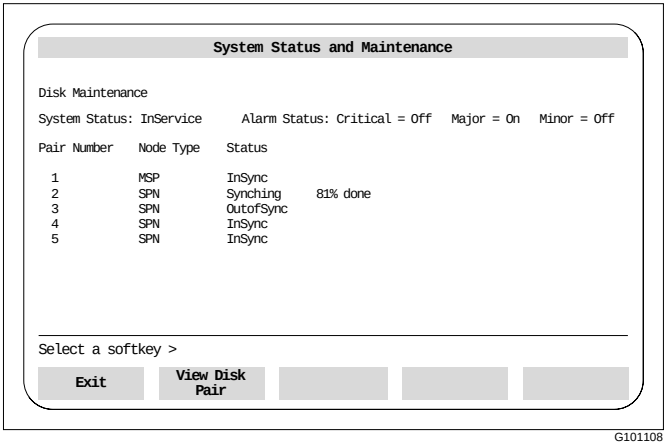
To enable or disable disk shadowing, follow these steps.

Step	Action
1	Log on to Meridian Mail.
2	Select System Status and Maintenance.



G101107

Step	Action
3	Select Disk Maintenance.



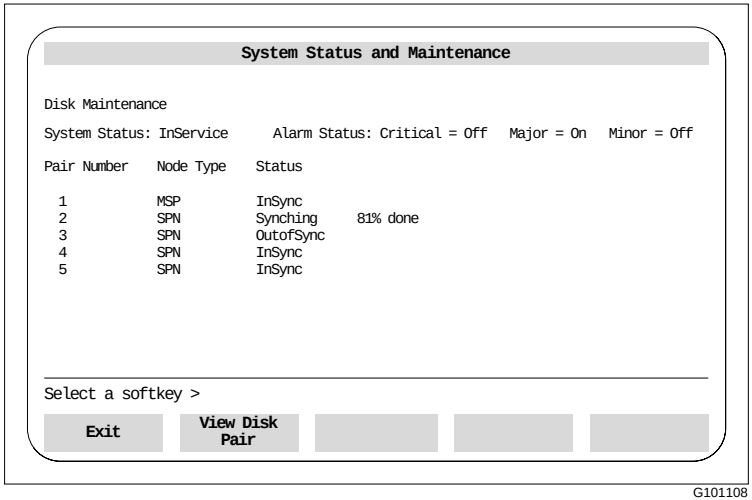
G101108

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. (See “Disk Pair Status screen” on page 10-15.”)
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.

Disk Maintenance screen

Introduction

The Disk Maintenance screen below shows the status of each disk pair in the system. The three possible states for a disk pair are InSync, Synching, and OutofSync.



G101108

Disk Maintenance fields

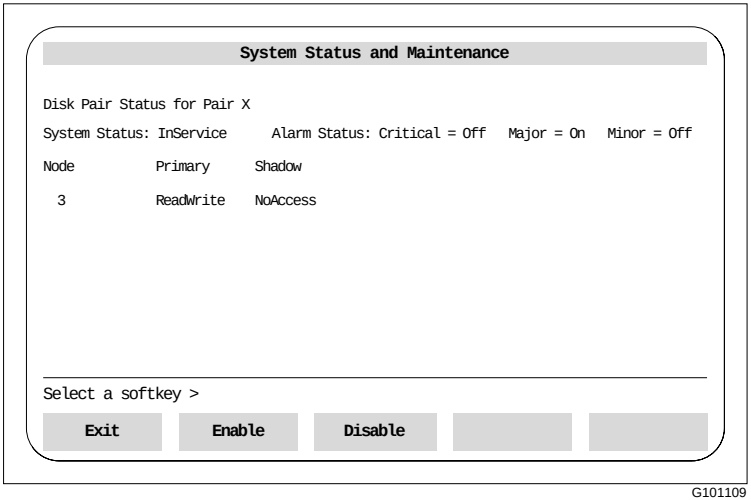
The following fields are displayed on the Disk Maintenance screen:

- ***System Status*** This field displays the current system status.
- ***Alarm Status*** This field indicates whether 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*** A disk pair can be in one of the following synchronization 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” on page 10-15 appears.

Disk Pair Status screen



G101109

Disk pair status fields 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 can 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, this indicates that the disk is the source of a disk synchronization.
  - ***SynchDestination*** During a disk sync, this indicates that the disk is the destination of a disk synchronization.

Acceptance testing of Meridian Mail

Performing acceptance testing

To perform acceptance testing on Meridian Mail, follow these steps.

Step	Action
1	Check basic features by performing all the functions outlined in the *Voice Messaging User Guide* (P0839942 or P0839950).
2	Test system and administrative features as described in the *Meridian Mail System Administration Guide* that applies to your system (NTP 555-7001-30x).
3	Test optional features using the appropriate NTP. See the *Meridian Mail NTP Contents Overview* (NTP 555-7001-000) for NTP listings.
4	Replace the module side panels and front and rear doors.

Chapter 11

Troubleshooting startup problems

In this chapter

Overview

Introduction

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).

Powering down

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 nodes, 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 the 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

Refer to the following documents for additional information:

- *Meridian Mail System Administration Guide* (NTP 555-7001-307) for single customer sites
- *Meridian Mail System Administration Guide for Multi-Customer Systems* (NTP 555-7001-308) for multi-customer sites
- *Meridian Mail Maintenance Messages (SEERs) Guide* (NTP 555-7001-510)

Normal startup sequence

Introduction

When you power on Meridian Mail, the Enhanced MMP40 (or 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 Enhanced MMP40 (or 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 Appendix C, “Enhanced MMP40 troubleshooting flowcharts” to determine causes and solutions for potential problems with the Enhanced MMP40 (or MMP40) card.

Power on initialization—hexadecimal display description

On the upper-front edge of the Enhanced MMP40 (or 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 Enhanced MMP40 (or MMP40) board, this state is generally not seen because of the very quick transition to the “.0” state.

The following table shows the typical progression of the startup indications on the hexadecimal display.

Typical startup indications on hexadecimal display

Display shows	Description
. .	Power on (displays *very* 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 stand-alone)
.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 are loaded (Logon screen should be displayed)

Bootup sequence

Introduction

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

Normal bootup sequence—messages on terminal

"Bootup stages" on page 11-7 shows the key phrases that appear on screen informing you that the various stages are proceeding normally. The intermediate text between these key phrases has been omitted, since it depends upon your specific configuration.

You can set the printer to print out a hard copy of the bootup sequence as described below.

If bootup does not proceed as described on page 11-7, look in the Symptom column of "Troubleshooting bootup problems" on page 11-11 to identify the problem, and then follow the corresponding steps in the "Possible causes and actions" column.

Printing a hard copy of the bootup sequence

To print a hard copy of the bootup sequence, follow these steps.

Step	Action
1	Restart the system.
2	Press <Ctrl> and <Printscreen> to turn on automatic printing. The bootup messages print 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 in "Bootup stages" on page 11-7.

Bootup stages

Stage	Key phrases	Comments
1	Waiting for timer... . . . Copyright YYYY, Northern Telecom ********** * NT4R45aa Firmware * * MMP40FW * * Mmmm DD, YYYY * ********** . . .	where *aa* can be any two letters and *Mmmm DD, YYYY* is the date of the firmware's release
2	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 . . .	Executing bootROM diagnostics DRAM testing
3	Performing SCSI Bus Reset...OK. . . .	Executing SCSI controller tests
4	SCSI initialization complete. . . .	

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)` . . .	

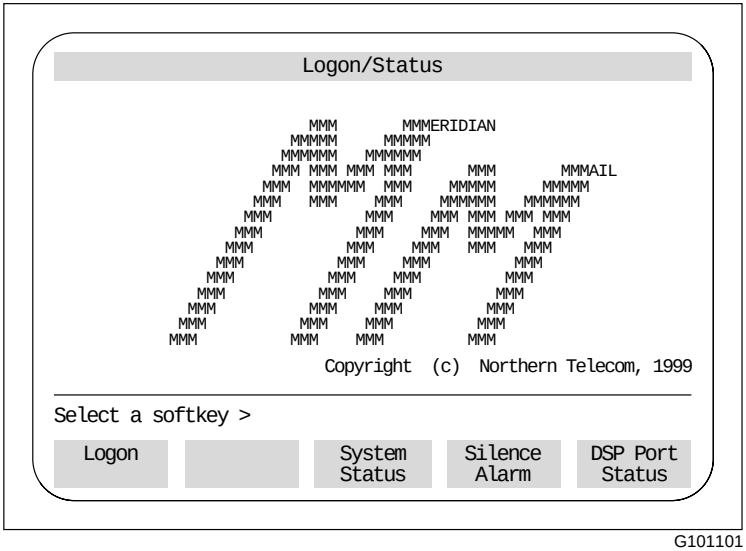
8	`Loading PRM`
	.
	.
	.
	`Program Resource Manager Ver. x`
	.
	.
	.
		where *x* can be a combination of characters or digits

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.

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 below.	

The Logon screen



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Check status

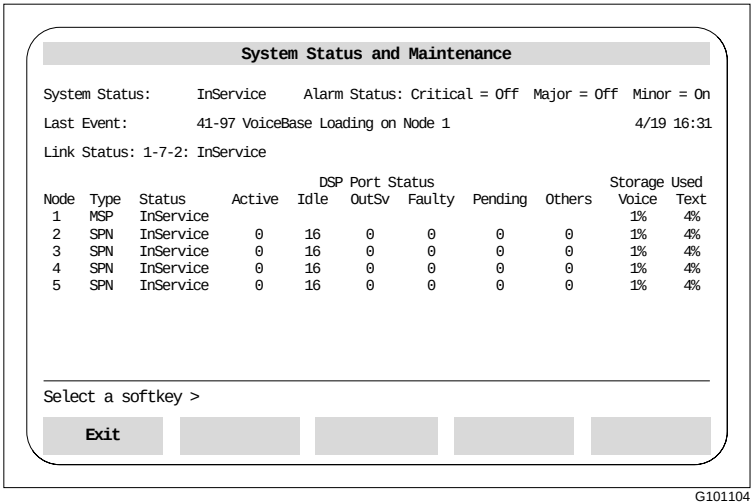
Check the system status to make sure the channels are functional and all links are up. Press the [System Status] softkey. Node status should be InService for all of your nodes, link status should be InService, and DSP port status should be Idle for all of the voice ports you have installed. See “Bootup stages” on page 11-7.

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.

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 previously, see the Symptom column of " Troubleshooting bootup problems" on page 11-11 to identify the problem, and then follow the corresponding steps in the "Possible causes and actions" column.

System Status screen



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Troubleshooting bootup problems

Symptom	Possible causes and actions
The administration terminal screen remains blank.	Follow “Terminal remains blank” on page 11-13.
Messages stop appearing on the screen, but the Meridian Mail logon screen does not appear.	Follow the procedures in “System fails to boot completely” on page 11-19.
When the System Status screen is checked, a node is faulty.	Check SEERs for failed hardware diagnostics. Follow the actions documented for the SEERs in the *Maintenance Messages (SEERs) Guide* (NTP 555-7001-510). If all non-prime nodes (type SPN) are faulty, check the system bus. Follow “Diagnosing system bus problems” on page 11-25. If only one node is faulty, run out-of-service diagnostics on that node’s Enhanced MMP40 (or MMP40) card.
The 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 *Maintenance Messages (SEERs) Guide* (NTP 555-7001-510).
A node continually reboots.	1 Replace the Enhanced MMP40 (or MMP40) card. 2 Perform the system bus checks. Follow “Diagnosing system bus problems” on page 11-25.
The logon screen appears, but not all voice channels come into service.	Look at the DSP Port Status screen. Ports may be left Faulty or Unconfigured due to hardware problems. Ports may be left Loading, Pending, or No Resources due to configuration or software problems. Run out-of-services diagnostics as described in your administration guide and then enable the voice card.
There are disk errors on the bootup device sense key, or driver errors.	Refer to “Troubleshooting stage 3 bootup failure—disk subsystem check” on page 11-21 and “Troubleshooting stage 4 bootup failure” on page 11-22. Also refer to Chapter 14, “Common disk subsystem problems.”
All nodes time-out while booting, or nodes unload while in service.	Perform the system bus checks. Follow “Diagnosing system bus problems” on page 11-25.
Only one node comes up.	Perform the system bus checks. Follow “Diagnosing system bus problems” on page 11-25.
One node will not come up.	Perform BootROM diagnostic check procedure for the node.
The hexadecimal display on Enhanced MMP40 (or MMP40) card shows **B.**	Indicates node is in-service standby. Minor software error. Contact your Nortel Networks support organization.

Symptom	Possible causes and actions
The hexadecimal display on Enhanced MMP40 (or MMP40) card shows **C.**	Indicates node is out of service. Enable the node from the MMI as described in the *System Administration Guide* (NTP 555-7001-30x).
The hexadecimal display on Enhanced MMP40 (or MMP40) card shows **D.**	Indicates in-service trouble. While the Enhanced MMP40 (or MMP40) card is still healthy, a component such as an NVP card or a disk may be faulty. Check the GSP cards for that node, and perform "Troubleshooting stage 3 bootup failure—disk subsystem check" on page 11-21 and "Troubleshooting stage 4 bootup failure" on page 11-22, and refer to Appendix C.
The hexadecimal display on the Enhanced MMP40 (or MMP40) card shows 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 the system is running normally. Reboot the system and observe the display. If the problem persists, contact your Nortel Networks support organization.
The hexadecimal display on Enhanced MMP40 (or MMP40) card flashes continuously.	Indicates a faulty Enhanced MMP40 (or MMP40) card. 1 Note the state at which the display began flashing. 2 Replace the Enhanced MMP40 (or MMP40) card.
The hexadecimal display on Enhanced MMP40 (or 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 Nortel Networks support organization.
The hexadecimal display on Enhanced MMP40 (or 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 Nortel Networks support organization.

Troubleshooting terminal problems

Introduction

The procedures in the following sections should help you determine if there is a problem with your Meridian Mail terminal or the prime node Enhanced MMP40 (or MMP40) card. Follow each step in the troubleshooting procedure until you have solved the problem.

Terminal remains blank

If the terminal remains blank, follow these steps.

Step	Action
1	Reboot the system and observe the hexadecimal display on the prime node's Enhanced MMP40 (or MMP40) card. If the display stops at .3, then there may be a problem with the terminal or its connection.
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 it if necessary. d. If all of the above tests are OK, replace the terminal. e. Check the terminal cabling and setup as described in "Check terminal cables and setup" on page 11-14. f. If the power LED remains unlit, replace the prime node's Enhanced MMP40 (or MMP40) card and restart the system.

Step	Action
3	If the hexadecimal display remains blank, proceed as follows: a. Check for Meridian Mail power problems as described in "Power problems" on page 11-15 "DC system power problems" on page 11-16 "Testing the pedestal power supply" on page 11-16 "Testing the power harness" on page 11-18, "Testing the DCEPS" on page 11-18. b. Replace the prime node's Enhanced MMP40 (or 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 Enhanced MMP40 (or MMP40) card or with internal or external RS-232 cables. Check the RS-232 cables and replace the Enhanced MMP40 (or MMP40) card or cards, and restart the system.
5	If none of these steps succeeds in solving the problem, contact your Nortel Networks support organization.

Check terminal cables and setup

To check the terminal cables and setup, follow these steps.

Step	Action
1	Make sure your terminal is installed and configured as described in Appendix A of this manual.
2	If the terminal was working previously, enter terminal setup and perform "Clear communications," then reset the terminal.
3	If the terminal was working previously and the printer is printing SEER reports, enter terminal setup and verify that the terminal is not in controller print mode. The print mode should be Normal Print Mode.
4	Ensure that the Hold screen key is not on. If the terminal indicates Hold (in the status area at the bottom of the screen or LED on the 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 the cable connections to the terminal.
6	Replace the cables and adapters one at a time.

Step	Action
7	Check the printer setup and status. Refer to Chapter 8 of this manual for the correct printer setup.
8	Clear any printer faults (out of paper, paper jam), and put the 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 the terminal primary port using the 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.

Power problems

Before proceeding to the AC or DC section, follow these steps.

Step	Action
1	Power off all modules.
2	Loosen and reseat all power supplies.
3	Power on all modules.
4	If the problem is not fixed, go to the section on DC system power problems on the next page.

DC system power problems

To locate DC system power problems, follow these steps.

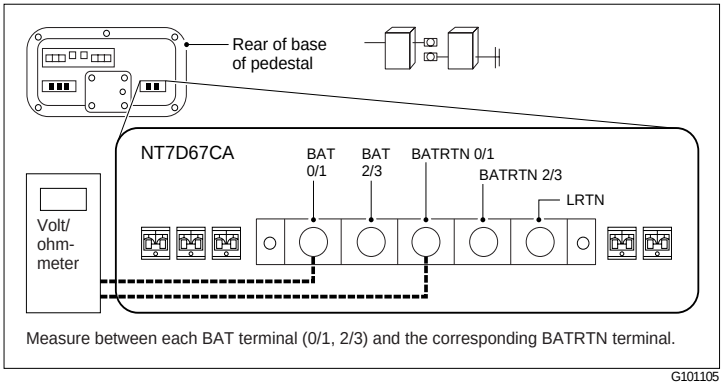
Step	Action
1	Remove the front doors from all modules in the system.
2	If no LEDs are lit on any module, go to " Testing the pedestal power supply." a. If no LEDs are lit on any module above a certain module, go to "Testing the power harness" on page 11-18 and test the power harness at the lowest module with no LEDs lit. b. 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 "Testing the DCEPS" on page 11-18. ***Note:*** Any side of a module that contains a power supply but no PCPs or disk drives will give a DCEPS failure indicator.

Testing the pedestal power supply

To test the pedestal power supply, follow these steps.

Step	Action
1	Verify the main DC voltage by measuring for –48 V DC to –52 V DC. To measure this voltage, use a volt/ohmmeter. Measure between each BAT and the corresponding BATRTN terminal lug designations. See "Universal DC pedestal, NT7D67CA" and "DC pedestal, NT6D53AA" on page 11-17. ***Note:*** The voltage between BAT2 and BAT3 and their corresponding BATRTN terminals is zero unless you have three or four modules in the column. If the voltage measured is incorrect, there may be a problem with the UPS system.
2	If the voltage is correct, go to "Testing the power harness" on page 11-18 and test the power harness at the lowest module with no LEDs lit.

Universal DC pedestal, NT7D67CA



Measure between each BAT terminal (0/1, 2/3) and the corresponding BATRTN terminal.

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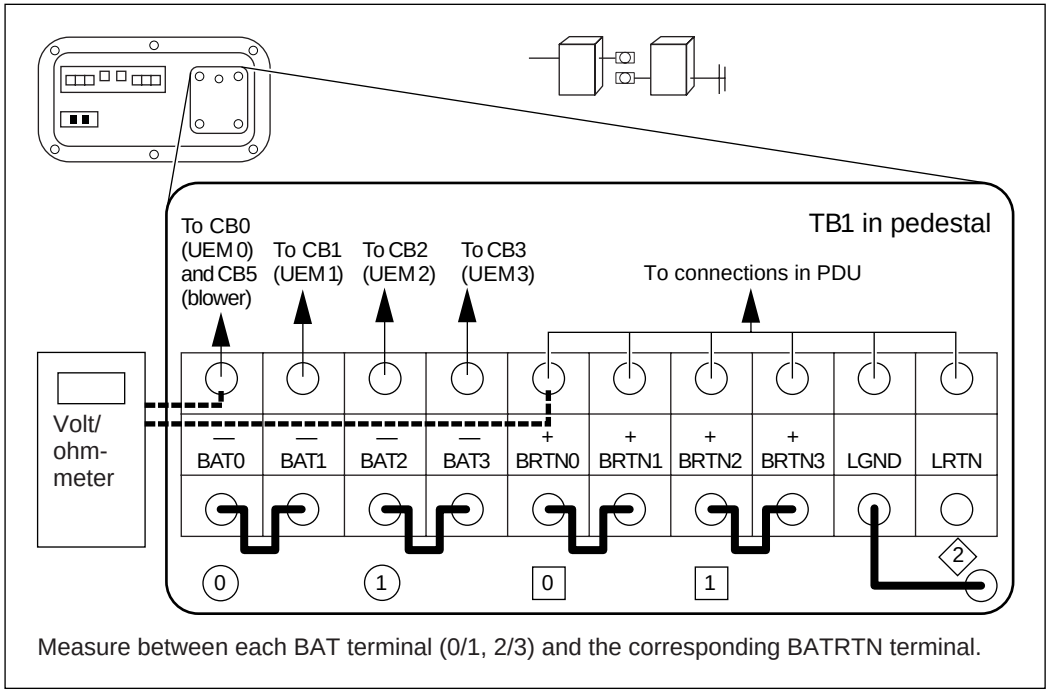
DC pedestal, NT6D53AA



Measure between each BAT terminal (0/1, 2/3) and the corresponding BATRTN terminal.

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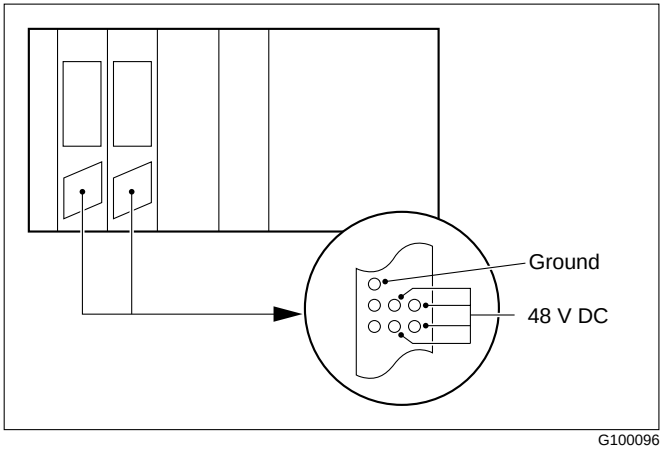
Testing the power harness

To test the power harness, follow these steps.

Step	Action
1	Check the DC voltage at the DCEPS connectors. **Front view of module, DCEPS or CEPS removed**  G100096 a. Switch off both DCEPS on the module. b. Remove both DCEPS. c. Check the voltage at the pins shown in the illustration. 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 " Testing the DCEPS" below.

Testing the DCEPS

To test the DCEPS, follow these steps.

Step	Action
1	Power down the DCEPS if it is not already powered down.
2	Replace the DCEPS with a new one.
3	Reboot the system to full service.
4	Return the faulty DCEPS for service or replacement.
5	If the system fails to boot, see "System fails to boot completely" on page 11-19.

System fails to boot completely

Introduction

If the system stops during the process of booting up, refer to "Bootup stages" on page 11-7 to determine at which stage the problem occurred. The stage at which the boot process stopped will help you identify the cause of the problem.

Cabling

Before proceeding to troubleshoot the bootup, you must verify that the problem does not involve simple cabling errors or the terminal. Check that

- PCP installation and cabling conform 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 "Troubleshooting terminal problems" on page 11-13)

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. (Refer to "Printing a hard copy of the bootup sequence" on page 11-6.)

Troubleshooting

Once you have determined at which stage the system is stopping, refer to "Troubleshooting bootup stages" on page 11-20.

Troubleshooting bootup stages

Stage	Procedure
1 or 2	Troubleshooting stage 1 or 2 bootup failure below
3	“Troubleshooting stage 3 bootup failure—disk subsystem check” on page 11-21
4	“Troubleshooting stage 4 bootup failure” on page 11-22
5, 6, or 7	“Troubleshooting stage 5, 6, or 7 bootup failure” on page 11-22
8	“Troubleshooting stage 8 bootup failure” on page 11-22
9	“Troubleshooting stage 9 bootup failure” on page 11-23
10	“Troubleshooting stage 10 bootup failure” on page 11-23
11	“Troubleshooting stage 11 bootup failure” on page 11-24
12	Check the SEERs output. Follow the suggestions in the *Maintenance Messages (SEERs) Guide* (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 Nortel Networks support organization.

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...,” follow these steps.

Step	Action
1	Replace the high availability bus controller (HABC) card.
2	Replace the Enhanced MMP40 (or MMP40) card.
3	Check for Meridian Mail power problems as described in the following procedures: “Power problems” on page 11-15 “DC system power problems” on page 11-16 “Testing the pedestal power supply” on page 11-16 “Testing the power harness” on page 11-18 “Testing the DCEPS” on page 11-18

Step	Action
4	Check that the PCP switch settings are as described in Chapter 5.
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 Enhanced MMP40 (or MMP40) card. b. Check for Meridian Mail power problems as described in the following procedures: "Power problems" on page 11-15, "DC system power problems" on page 11-16, "Testing the pedestal power supply" on page 11-16, "Testing the power harness" on page 11-18 "Testing the DCEPS" on page 11-18 c. Replace the HABC card.

Troubleshooting stage 3 bootup failure—disk subsystem check

Failure during this stage of bootup can indicate problems with the SCSI subsystem. Follow these steps.

Step	Action
1	Verify 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 3.
3	Check the voltage to disk and tape (+5 V, +12 V).
4	If on a non-prime node, replace the Enhanced MMP40 (or MMP40) board.
5	Replace the disk as described in Chapter 13.

Troubleshooting stage 4 bootup failure

If the bootup fails at this point, it can indicate that the system can initialize the SCSI disk but not boot from it. Follow these steps.

Step	Action
1	Perform the checks in “Troubleshooting stage 3 bootup failure—disk subsystem check” on page 11-21.
2	Check that the SCSI devices are terminated as described in “Disk or disk/tape installation” in Chapter 3.
3	Check that the tape drive is unterminated as described in “Replacing the tape drive” in Chapter 13. If the bootup display shows error messages such as bus error, this can indicate a serious problem with your SCSI disk. Contact your Nortel Networks support organization.

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 can indicate that the Mail programs have been read incorrectly from the disk, or the actual program on the disk is incorrect or corrupted. Follow these steps.

Step	Action
1	Attempt to reboot the system. If the problem persists (the bootup fails at the same point), this could indicate a serious problem with your SCSI disk.
2	Contact your Nortel Networks support organization.

Troubleshooting stage 8 bootup failure

To troubleshoot stage 8 bootup failure, follow these steps.

Step	Action
1	Check the terminal output during this stage.
2	If there is indication that the PRM failed to load, contact your Nortel Networks support organization.

Troubleshooting stage 9 bootup failure

To troubleshoot stage 9 bootup failure, follow these steps.

Step	Action
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 indicates 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 Enhanced MMP40 (or MMP40) cards of the affected nodes.
5	If the problem occurs on all the remote nodes, perform “Diagnosing system bus problems” on page 11-25.

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. Follow these steps.

Step	Action
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 Enhanced MMP40 (or MMP40) cards of the affected nodes.
4	If the problem is occurring on all nodes, then follow “Diagnosing system bus problems” on page 11-25.

Troubleshooting stage 11 bootup failure

If the bootup fails during this stage, follow these steps.

Step	Action
1	Check the SEERs for problems when loading programs. If any such SEERs are observed, follow the suggestions 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 Nortel Networks support organization.
3	If node 1 is InService but the system will not progress past stage 10, proceed as follows: a. Replace the Enhanced MMP40 (or MMP40) card in Node 1. b. Check for Meridian Mail power problems as described in the following procedures: “Power problems” on page 11-15 “DC system power problems” on page 11-16 “Testing the pedestal power supply” on page 11-16 “Testing the power harness” on page 11-18 “Testing the DCEPS” on page 11-18 c. If the problem is occurring on all nodes, follow “Diagnosing system bus problems” on page 11-25.

System bus diagnostics and fault clearing

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, follow these steps:.

Step	Action
1	Check the switch settings for all PCPs. Refer to Chapter 5 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 that the cabling between shelves is correct and secure.
4	Verify that all cards in the system are properly seated.
5	Verify the bus terminators installed on the HABC card of the last node in the system.
6	Observe the BootROM diagnostics messages on node 1. a. If the Tap Register Test or the Tap Dataline Test fails or does not appear in the BootROM messages, replace the HABC. b. If the problem persists, replace the Enhanced MMP40 (or MMP40).
7	Replace the HABC.
8	Restart the system.

Clearing system configuration faults

To clear system configuration faults, follow these steps.

Step	Action
1	Check the switch settings on all printed circuit packs on the node.
2	Verify the switch settings on the Enhanced MMP40 (or MMP40).

Step	Action
3	Replace the Enhanced MMP40 (or 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 Enhanced MMP40 (or MMP40) last node is defective.
5	Replace the bus terminators.

No SCSI addresses during bootup

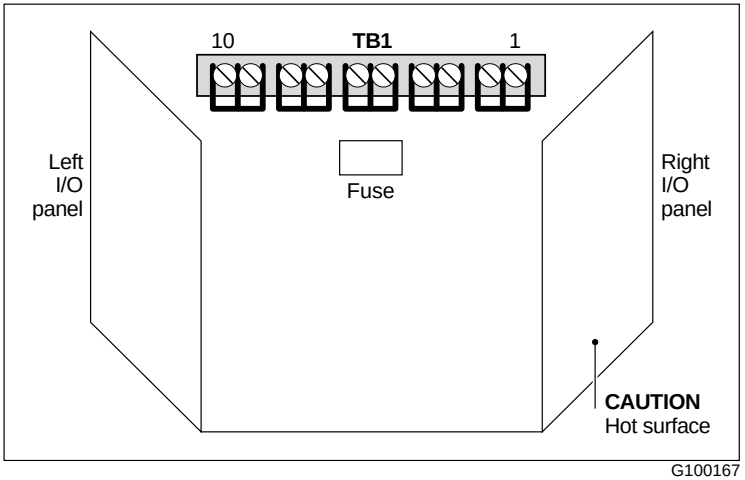
> **ATTENTION**
>
> When a procedure step tells you to reseat power supplies and disk/tape drive packs, do so with power to the module turned off. Turn the power on again after you have completed the procedures.

No SCSI address 0 during bootup of Meridian Mail

If the system will not boot up from the disk drive, follow these steps.

Step	Action
1	With power on, verify voltages on TB1. See “Location of terminal block TB1” and “DC voltage at TB1” on page 11-28 for correct voltages relative to ground.
2	Power the system down.
3	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.
4	If the SCSI cable is suspected to be defective, substitute another disk drive pack.
5	Reseat the power supply if the voltages are not correct on TB1.
6	If the voltages are still not correct, the power supply may be defective. Verify by substituting with a new power supply.
7	Reseat the disk and disk/tape drive packs.

Location of terminal block TB1



DC voltage at TB1

Pin	Voltage	Pin	Voltage
Pin 1	–48 V N/A	Pin 6	0 V
Pin 2	–48 V N/A	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

No SCSI address 1 during bootup of Meridian Mail

When there is no SCSI address 1 during bootup, follow these steps.

Step	Action
1	With the power on, verify the voltages on TB1. See the figures above.
2	Power the system down.
3	Reseat the power supplies if the voltages are not correct on TB1.

Step	Action
4	If the voltages are still not correct, the power supplies may be defective. Verify by substituting with a new power supply.
5	Reseat the 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.

No SCSI address 2 during bootup of Meridian Mail

When there is no SCSI address 2 during bootup, follow these steps.

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

Step	Action
1	With the power on, verify the voltages on TB1. See “DC voltage at TB1” and “Location of terminal block TB1” on page 11-28 to verify voltages.
2	Power the system down.
3	Reseat the power supplies if the voltages are not correct on TB1.
4	If the voltages are still not correct, the power supplies may be defective. Verify by substituting them 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 power supply on the left powers the primary disk and the printed circuit packs. The power supply on the right powers the secondary disk. ***Note 2:*** The primary disk drive is normally installed beside 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.

Step	Action
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, the disk drive is probably defective. Replace the drive.
10	If neither drive works in one MSU slot but both drives work in the other MSU slot, a connector is probably out of alignment or a backplane connector is defective. Replace as required.

Chapter 12

Troubleshooting operational problems

In this chapter

Overview

Introduction

This chapter contains troubleshooting information for some problems that can occur on a system that has successfully booted up. That is, the system is powered on, all 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 the following table, then refer to the page in the second 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 Nortel Networks support organization.

Troubleshooting operational problems

Symptom	Refer to page
System-level problems	
System runs, then goes down	12-4
System status remains FAULTY	12-4
“Service is unavailable” when calling Meridian Mail	12-5
SMDI link problems	
Problem disabling message transfer on SMDI links	12-6
System status shows “Faulty link to PBX”	12-6
Voice card/channel problems	
GSP faulty after diagnostics run	12-7
Channel status is Faulty or Out Of Service	12-8
Channel status remains Loading	12-8
Silent channel—calls have no voice and produce a SEER	12-9
Channel status IDLE, but cannot be acquired	12-9

Symptom	Refer to page
Administration problems	
Cannot log on remotely	12-10
Terminal responds yet logon is unsuccessful	12-10
Optional feature purchased, but unavailable	12-10
Voice services—submenu revert DN does not work	12-11
Problems backing up the system (disk to tape or tape to disk)	12-11
User-reported problems	
User hears “Your mailbox is full…your mailbox is empty” after a node is rebooted	12-12
Message Waiting Indicator (MWI) does not light on any phonesets	12-12
Call Sender does not work for any calls	12-13
Revert DN does not work	12-14

System-level problems

System runs, then goes down

If the system runs normally and then goes down, follow these steps.

Step	Action
1	Check your SEER printouts. Take appropriate action as described in *Meridian Mail Maintenance Messages (SEERs) Guide* (555-7001-510).
2	Power the system off, wait 90 seconds, and then power on again.
3	Observe the diagnostic messages that generate (from BootROM) on the administration terminal. 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.
4	Replace the Enhanced MMP40 (or MMP40) card.
5	If the system reboots with no hardware faults but remains out of service, refer to the SEERs to identify operational problems.

System status remains FAULTY

If your administration terminal indicates that the system status is faulty despite a successful bootup, follow these steps. If the FAULTY status occurs during bootup, refer to the previous chapter.

Step	Action
1	Check that the servers have loaded correctly.
2	Check your SEERs printout for related messages. Take appropriate action as described in *Meridian Mail Maintenance Messages (SEERs) Guide* (NTP 555-7001-510).
3	Verify the 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.

Step	Action
6	Replace the following cards one at a time: IOC/MPC card and cable, Enhanced MMP40 (or 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" on page 11-19 • Chapter 14, "Common disk subsystem problems" • "No SCSI addresses during bootup" on page 11-27
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 System Administration Guide* (NTP 555-7051-307) if you are servicing a non multi-customer site, or *Meridian Mail Systems Administration Guide for Multi-customer Systems* (NTP 555-7051-308) if you are servicing a multi-customer site. b. Perform out-of-service diagnostics. c. Reenable the card.

"Service is unavailable" when calling Meridian Mail

If the system has booted up and appears to be running normally, but there is no connection to Meridian Mail when you try to place a call, follow these steps.

Step	Action
1	Verify that the Meridian Mail DN is properly configured in the VSDN table. See the *System Administration Guide* (NTP 555-70x1-30x) for configuration details.

SMDI link problems

Problem disabling message transfer on SMDI links

When there is a problem disabling message transfer, follow this step.

Step	Action
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**

System status shows "Faulty link to PBX"

When the system status shows "Faulty link to PBX," follow these steps.

Step	Action
1	Ensure that the SMDI cable is in place and secure.
2	Check that the PBX/DMS has been properly configured. Refer to Chapter 9 of this manual for details on PBX/DMS setup.
3	Make sure that the LENs and DNs are correct.

Voice card/channel problems

GSP faulty after diagnostics run

Note: Do not remove the GSP card before powering down the node containing the card you are removing. Refer to the *Meridian Mail System Administration Guide* (NTP 555-7051-307 or 555-7051-308) for instructions on powering down the node.

Note: 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.

Step	Action
1	Verify the switch settings on the card. Refer to Chapter 5 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 reinserting the cables.
6	If the diagnostics pass, reenable 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.

Channel status is Faulty or Out Of Service

When the channel status is Faulty or Out Of Service, follow these steps.

Step	Action
1	Perform “GSP faulty after diagnostics run” on page 12-7 to determine if the GSP card is 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 (SEERs) Guide* (NTP 555-7001-510) to interpret these SEERs, and take corrective measures. If VPH complains about too many driver restarts for a particular channel, reenable the channel online simply by disabling and then reenabling that specific channel.
4	Ensure that the voice cards are properly seated.
5	Verify that the voice card cable connections are secure.
6	Check the voice card switch settings. Refer to Chapter 5 for details on these switch settings.
7	Replace the voice card.

Channel status remains Loading

When the channel status remains Loading, follow these steps.

Step	Action
1	Verify that the Meridian Mail channel has 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	Meridian 1 configuration
Primary (Voice Messaging) DN	Primary UCD queue
Routing Address	UCD agent LEN
Channel DN	Agent DN

Silent channel—calls have no voice and produce a SEER

When there is a silent channel where calls have no voice and produce a SEER, follow these steps.

Step	Action
1	Check that the terminator plug on the network loop terminator is installed. Refer to Chapter 5 for more details.
2	Check the status of channels to ensure they are idle or acquirable. If not, check the SEER printout for any messages related to that channel, and take the appropriate action for that SEER.
3	Disable/reenable the channel on the PBX/DMS.
4	If these procedures are unsuccessful, record detailed information and contact the appropriate personnel.
5	Power down the node (refer to *Meridian Mail System Administration Guide* (NTP 555-70x1-30x) and verify that the GSP card has the correct switch settings (refer to Chapter 5).

Channel status IDLE, but cannot be acquired

When the channel status is IDLE but cannot be acquired, follow these steps.

Step	Action
1	Check the status of the channels.
2	Check datafill on Meridian Mail and PBX/DMS.
3	Check the SEER printout for messages related to that channel.
4	Take the appropriate action for that SEER.
5	Disable/reenable the channel on the PBX/DMS.
6	Verify the correct DN entry for the VSDN table and CAT data entry.

Administration problems

Cannot log on remotely

If you cannot log on remotely, follow this step.

Step	Action
1	Verify that the local administration terminal, printer, modem, and remote administration terminal are all set up correctly, according to Chapter 8 of this manual.

Terminal responds yet logon is unsuccessful

When the terminal responds yet logon is unsuccessful, follow these steps.

Step	Action
1	Check that you are entering the correct password.
2	Verify that the timestamp has been issued. Look for a SEER with a timestamp.
3	If this is your fourth failed logon attempt, wait 10 minutes before trying again.
4	Check that DNs are correct.

Optional feature purchased, but unavailable

When an optional feature has been purchased but is unavailable, follow these steps.

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

Voice services—submenu revert DN does not work

When the voice services submenu revert DN does not work, follow this step.

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

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

When there are problems backing up the system, follow these steps.

Step	Action
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 555-70x1-30x) for details.
2	Examine SEER printouts for information on where the error is occurring. Consult the *Maintenance Messages (SEERs) Guide* (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 11.
5	If the backup was unsuccessful, substitute a replacement tape drive or disk drive, and attempt the backup again. ***Note:*** Verify that the full or partial backup was successful before system cutover.

User-reported problems

User hears "Your mailbox is full…your mailbox is empty" after a node is rebooted

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. Follow this step.

Step	Action
1	Run "Audit all volume" from the TOOLS menu (see *System Administration Tools*, NTP 555-7001-305) to correct the disk space usage information. ***Note 1:*** The audit is run automatically at night, so the problem should be cleared by the next day. However, if the problem is widespread or urgent and the extra load on the system cannot be tolerated, run the audit immediately. If the problem is not widespread or urgent, run the audit during non-busy hours. ***Note 2:*** If it is possible to keep the node out of service after it is restarted, run the audit before reenabling the node. This will avoid the reoccurrence of this problem.

Message Waiting Indicator (MWI) does not light on any phonesets

When the MWI does not light on any telephone, follow these steps.

Step	Action
1	Verify that all Meridian Mail users have Message Waiting Allowed for the phonesets on their PBX/DMS. Ensure that all Meridian Mail users have Message Waiting Indicator configured for the phonesets on their PBX/DMS system.
2	Increase the 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 the set MWI utility from the Tools level and verify that all users receive MWI.

Call Sender does not work for any calls

When the Call Sender does not work for any calls, follow these steps.

Step	Action
1	Confirm that the customer number in the System General Options screen (under General System Administration) matches the customer number on the Meridian 1.
2	If the number does not match, edit the customer number on Meridian Mail.
3	Verify that the sender DN is valid. Check any dialing restrictions that may apply. See “Class of service administration” in your *System Administration Guide*.
4	Verify correct PBX/DMS programming of the Meridian Mail UCD agents. Check the configuration against Chapter 9 of this manual.
5	Verify that all Meridian Mail users have a Conference key programmed for their phonesets.
6	Verify correct programming of the Meridian Mail Channel Allocation Table (CAT).
7	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 the cursor to the 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 the call is unsuccessful, check the Meridian 1 and Meridian Mail databases for dialing restrictions.

Revert DN does not work

When the revert DN does not work, follow these steps.

Step	Action
1	Verify that the Meridian Mail UCD agents have proper programming in the PBX/DMS. Check the configuration against Chapter 9 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 the 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 the cursor to the 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 the call is unsuccessful, check the Meridian 1 and Meridian Mail databases for dialing restrictions.

Chapter 13

Hardware maintenance

In this chapter

Overview

Introduction

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.

Shut off the power to the Meridian Mail shelf using the switches on the power supplies. See “Location of DCEPS—DC system” on page 13-3.

CAUTION
Risk of equipment damage

The PCPs and other components are susceptible to damage from static electricity. Wear a wrist strap connected to a grounding point.

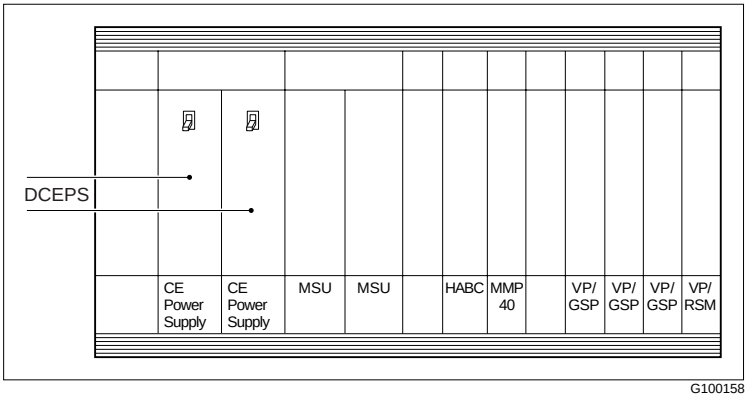
Disk units are susceptible to damage from rough handling.

Courtesy down

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 555-7051-30x).

Power supply removal and replacement

Location of DCEPS—DC system



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Removing and replacing a power supply

To remove and replace a power supply, follow these steps.

Note: See the handling precautions at the beginning of this chapter.

Step	Action
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	Before turning the power back on, make sure the packs are securely locked in place and no other components have been disturbed.
5	Turn the power back on at the circuit breakers or power supply switches.

Printed circuit packs

Introduction

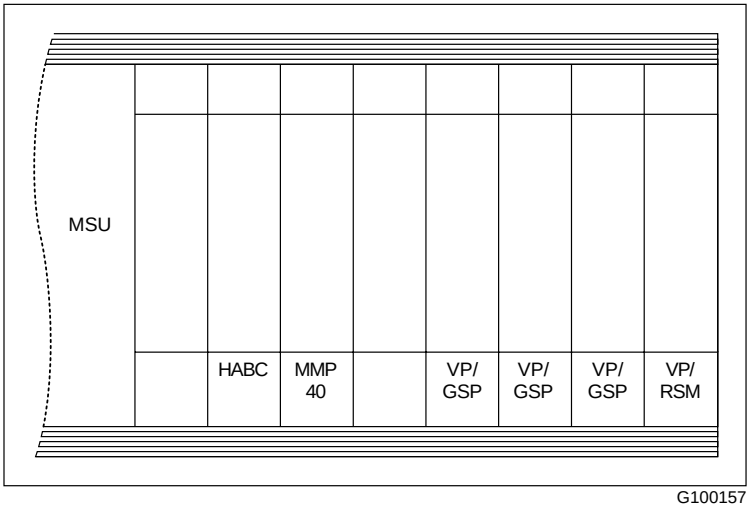
The following printed circuit packs (PCPs) are used in Meridian Mail:

- general-purpose signal processor (GSP)
- Meridian Mail Processor 68040 (Enhanced MMP40 or MMP40) single board computer
- high availability bus controller (HABC) on the prime node of systems with multiple nodes
- RS-232 service module (RSM)

Refer to Chapter 5 for switch and jumper locations and settings for the PCPs, and for an explanation of which packs belong in which slots.

The following illustration shows the printed circuit pack slot positions.

Printed circuit pack positions



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PCP removal and replacement

To remove and replace PCPs, follow these steps.

Note: See the handling precautions at the beginning of the chapter.

Step	Action
1	Power off the affected module.
2	Disconnect the cables attached to the front of packs as needed.
3	Use the card ejectors to remove each PCP to be replaced or checked. The designation strip at the bottom rail of the shelf identifies the locations of each pack. Circuit pack locations depend on system size.
4	Verify the switch and jumper settings on the replacement PCP. See Chapter 5 of this manual for switch and jumper locations, and settings for the PCPs.
5	Slide the replacement PCP into the correct slot and lock the ejectors.
6	Reconnect any cables you disconnected.

Disk or disk/tape units

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

To replace a disk or disk/tape unit in an unshadowed node, follow these steps.

Step	Action
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 3 of this manual). If the disk being replaced is on the prime node, see “Replacing the tape drive” on page 13-16.
6	Carefully slide the replacement unit in, and lock the ejectors in place.

Replacing a disk or disk/tape unit in a shadowed system—primary (left side) disk replacement

To replace the primary (left side) disk in a shadowed system, follow these steps.

Step	Action
1	See the handling precautions at the beginning of the chapter.
2	Disable disk shadowing. (See Enabling/disabling disk shadowing on page 10-11.)
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.

Step	Action
5	Verify the jumper settings and placement or removal of terminators on the replacement disk drive and/or tape drive, but address the new primary disk as SCSI ID=0. See "Replacing the tape drive" on page 13-16 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 555-7001-30x).

Replacing a disk or disk/tape unit in a shadowed system—secondary disk replacement

To replace a secondary disk in a shadowed system, follow these steps.

Step	Action
1	Disable disk shadowing. (See "Enabling/disabling disk shadowing" on page 10-11.)
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 5 of this manual).
6	If this is the prime node, see "Replacing the tape drive" on page 13-16 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 the *System Administration Guide* (NTP 555-7051-30x).

Tape drive units

Introduction

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

Nortel Networks ships the customer the appropriate backup tape with the tape drive assembly. The following table lists some of the backup tapes.

Tape media

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

CAUTION

Risk of data errors

If you are using the DC6250 tape media, do not revert back to the DC6150 media, as this can 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, 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 any monitor.

- 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

Replace the tape drive if 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.

Clean the tape cartridge cavity

- 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 that are at least 15.24cm (six inches) long

Note: If you have a Tandberg tape drive, do not use the cleaning procedures for Archive tape drives.

Tape drive cleaning kits

Tape drive	Cleaning kit CPC code
Archive Viper	A0378220
Tandberg TDC 4220	A0633585

Cleaning the Archive tape drive with the cleaning kit

Follow these steps if you are cleaning the Archive tape drive with the cleaning kit. If you have a Tandberg tape drive, refer to “Cleaning the Tandberg tape drive” on page 13-12.

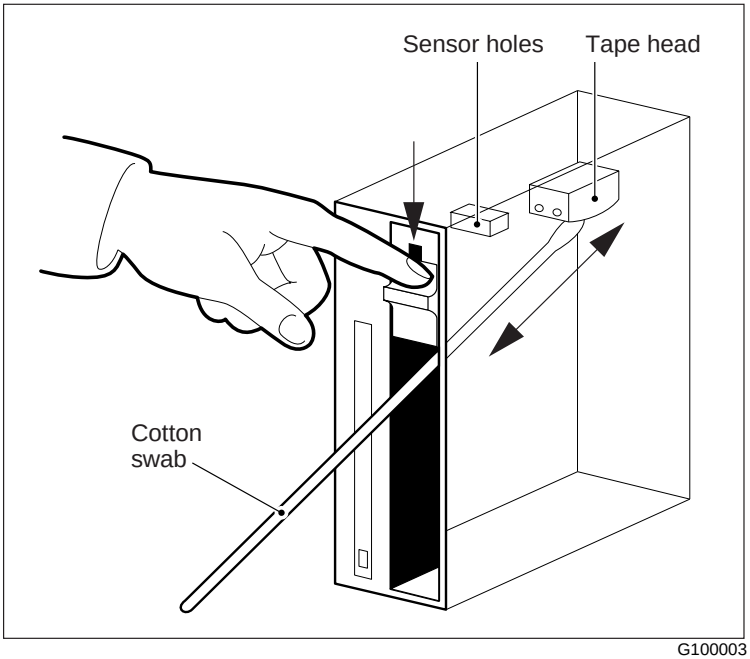
Step	Action
1	If there is a tape cartridge in the tape drive, remove it.
2	Push the head–loading lever down into the load position.
3	Carefully blow dust from the sensor hole and tape cartridge cavity with aerosol air.
4	Release the head loading lever.
5	Obtain the appropriate tape drive kit for your tape drive, as described in “Tape drive cleaning kits” on page 13-9.
6	Moisten the flexible pad of the cleaning cartridge with four 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 it into position.
8	Move the moistened pad using four 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 it into place.
13	Move the dry pad using four 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 the next use.

Cleaning the Archive tape drive with swabs and fluid

This procedure should be used only if you have an Archive tape drive. If you have a Tandberg tape drive, refer to “Cleaning the Tandberg tape drive” on page 13-12.

Step	Action
1	If there is a tape cartridge in the tape drive, remove it.
2	Push the head–loading lever down into the load position.
3	Carefully blow dust from the sensor hole and tape cartridge cavity with aerosol air. (See the following illustration.)

Archive tape drive cleaning



G100003

4	Moisten a pad or swab with the head-cleaning fluid until it is saturated but not dripping.
5	Carefully wipe the head in the direction that the tape travels. (Refer to the illustration.)

CAUTION

Risk of equipment damage

Do not wipe across the head 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 two minutes for the tape head to dry before inserting a tape.

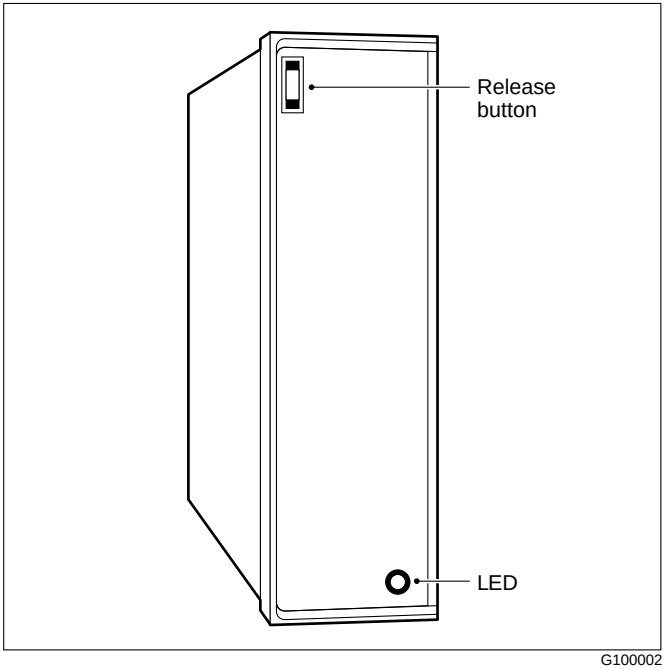
9 Release the head–loading lever away from the load position.

10 If there was a tape cartridge in the tape drive, reinsert it.

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 “Cleaning the Archive tape drive with the cleaning kit” on page 13-10 or “Cleaning the Archive tape drive with swabs and fluid” on page 13-11.

Step	Action
1	Press the release button on the tape drive.



The tape drive door opens.

2 If there is a tape cartridge in the tape drive, remove it.

3 Prepare the cleaning cartridge as per the manufacturer's instructions.

4 Carefully blow 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 starts to spin.

7 After several minutes, press the release button to disengage the cartridge.

The door springs open and the tape drive stops running.

8 Remove the cartridge and store it in its original container.

9 Wait a few minutes for the tape heads to dry before using the tape drive.

Installing a mass storage unit

Setting the SCSI ID for the Archive tape drive

To set the SCSI ID for the Archive tape drive, follow these steps.

Step	Action
1	Find the 3-by-6 header beside the SCSI connector. See “Archive Viper tape drive—NT4R28AC” on page 13-17 and “Archive Viper tape drive connectors and jumper settings” on page 13-18 for the header location.
2	Remove any jumpers on the header in positions A1 and A2.
3	Insert a jumper on the header in position A0. This sets the SCSI ID of the tape drive to 1.
4	Ensure that the Archive Viper tape drive terminator resistor packs are removed as indicated in “Archive Viper tape drive connectors and jumper settings” on page 13-18.
5	Verify the other jumpers as shown on pages 13-17 and 13-18.

Setting the SCSI ID for the Tandberg tape drive

To set the SCSI ID for the Tandberg tape drive, follow these steps.

Step	Action
1	Find the 2-by-10 header beside the SCSI connector. See pages 13-19 and 13-20 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 the tape drive terminator resistor packs are removed.
4	Verify the other jumpers as shown on pages 13-19 and 13-20.

Installing the mass storage unit

To install the mass storage unit (tape drive), follow these steps.

Step	Action
1	Verify that the jumper settings are correct. Refer to the illustrations on the following pages.
2	Make sure no SCSI bus terminator is mounted on the tape drive. Refer to the illustrations on the following pages.
3	Slowly insert the MSU.
4	At the rear side of the MSU, connect the SCSI interface cable with the red stripe in pin #1, and connect the harness cable to 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.
5	Make sure the MSU is mounted securely. Tighten the mounting screws.
6	Insert the power converter pack (QPC585). ***Note:*** DC6150 and DC6250 tapes are recommended for backup. When you keep only one of the two types, you reduce tape drive wear.

Replacing the tape drive

Introduction

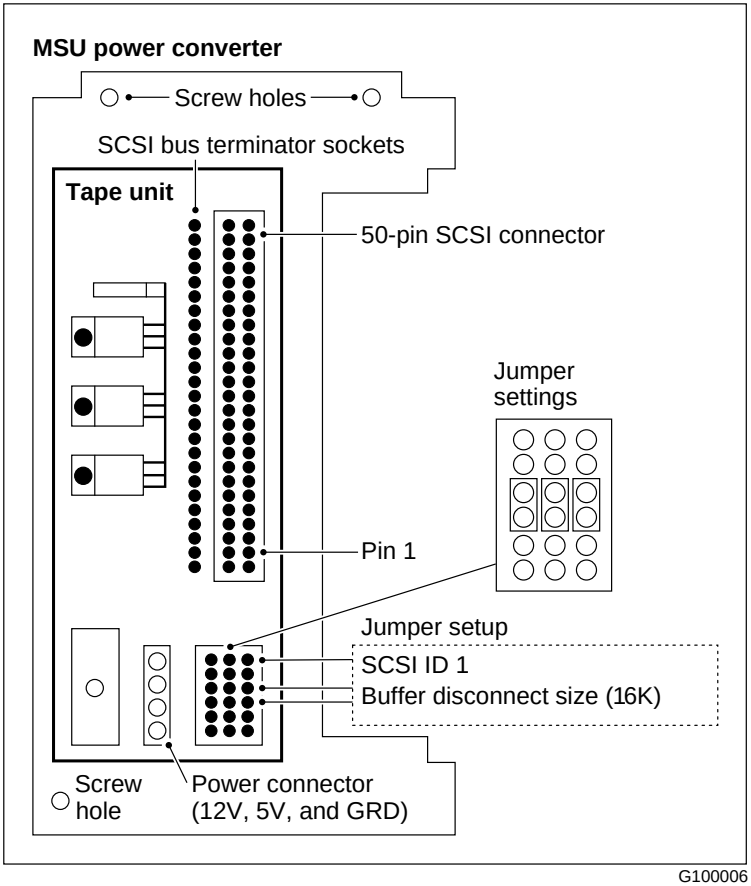
See the handling precautions at the beginning of the chapter.

Replacing the tape drive

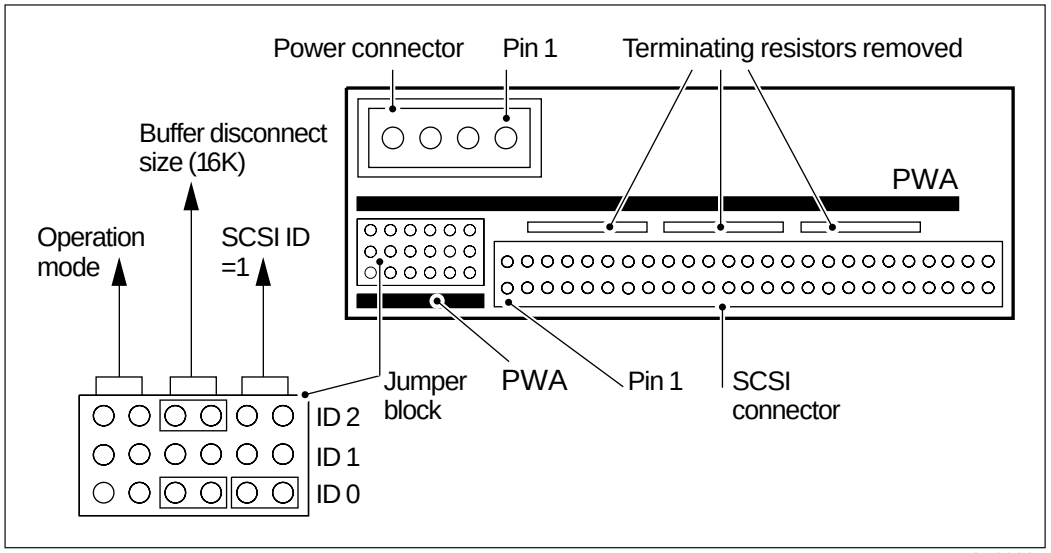
To replace the tape drive, follow these steps.

Step	Action
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 at the replacement unit for the tape drive jumper settings, and ensure that they are configured as shown in the illustrations on the following pages.
4	If the node is shadowed, see “Replacing a disk or disk/tape unit in a shadowed system—primary (left side) disk replacement” on page 13-6.
5	If the node is unshadowed, see “Replacing a disk or disk/tape unit in an unshadowed node” on page 13-6.
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.

Archive Viper tape drive—NT4R28AC



Archive Viper tape drive connectors and jumper settings



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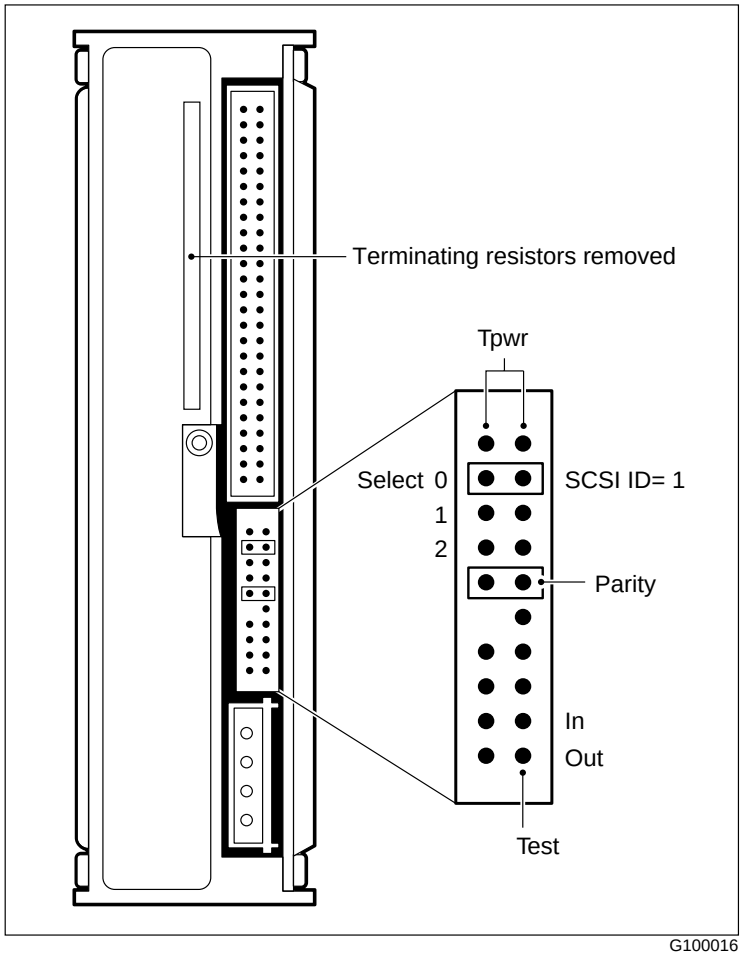
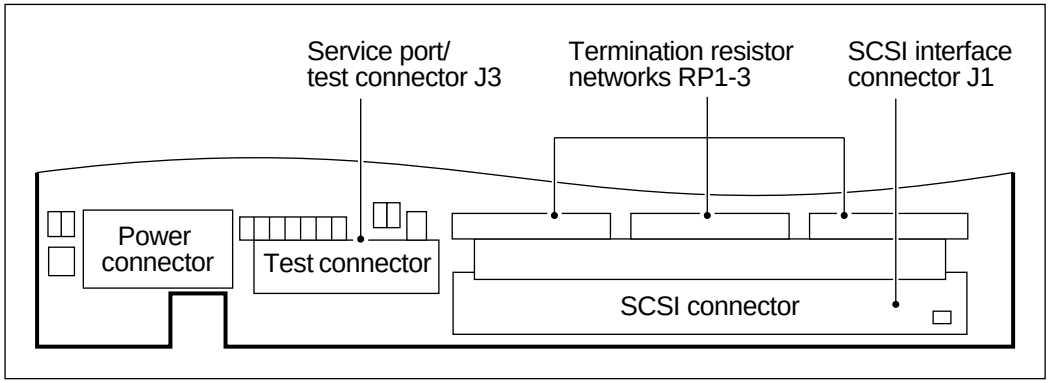
Tandberg tape drive connectors and jumper settings



Tandberg tape drive connectors



G100022

Chapter 14

Common disk subsystem problems

In this chapter

Overview

Introduction

When checking the disk subsystem problems, follow this diagnostic checklist:

- 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, and 66

Device jumpers

Jumpers are used to set the SCSI ID as well as a number of options on the disk and tape drives. Check the actual settings on these devices against the figures and descriptions in Chapter 5.

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

Bus termination

One set of terminating resistors should be attached to the SCSI devices in a node on the disk drive that 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 can behave erratically when there are power problems. Follow the procedures on pages 11-15 to 11-18.

SCSI sanity test

Introduction

To perform a quick sanity check of the SCSI bus, test the tape and disk drives by using the following two procedures.

Tape drive sanity test

To perform a tape drive sanity test, follow these steps.

Step	Action
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 appears.

Disk drive sanity test

To perform a disk drive sanity test, follow this step.

Step	Action
1	Power on each module. As power is applied, the LED on each disk drive should come on briefly and then go off. The LED should not remain lit.

Disk problems identified by SEERs

Introduction

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 on the most common SEERs.

Error codes

A SEER in the form of

```
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. An optional disk block number may be 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 Networks support.
- ***Sense key 6*** indicates the SCSI bus has been reset. If this appears during regular operation, contact Nortel Networks support.

A SEER in the form of

```
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 SEER. It is usually caused by incorrect SCSI ID jumpering on the drive itself or by a bad connection along the SCSI bus.

Disk or disk/tape drive connection integrity test

To perform a disk or disk/tape drive connection integrity test, follow these steps.

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

Data loss and disk replacement

Introduction

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.

Data loss

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 or corruption

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

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.

Disk replacement

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

Appendix A

Terminal configuration

In this chapter

Overview

Introduction

Several models of administration terminals can be used with Meridian Mail. Chapter 8 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 page A-4)
- HP700/32 terminal (see page A-7)
- NT220 terminal (see page A-11)
- VT220 terminal (see page A-14)
- VT320 terminal (see page A-16)
- VT420 terminal (see see page A-18)

Note: The VT220, VT320, and VT420 have been discontinued by the manufacturer.

- VT520 terminal (see page A-20)

Configure a terminal by entering setup mode.

CAUTION

Risk of data loss or corruption

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

Field types in terminal setup screens

Introduction

Terminal setup screens have three types of fields: action, read only and parameter entry, and 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.

HP700/22 terminals

Configuring an HP700/22 terminal

To configure an HP22 terminal, follow these steps.

Step	Action
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 as necessary so that they match those shown in “HP700/22 setup screens” on page A-5. Use the following keys to view and change setup values:
4	Save your 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.

Key	Description
Arrow keys	Move from field to field
<Enter>	Scroll through possible values that 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

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	EM200
On Line	YES	Interpret Control Mode	YES
Columns	80	User Features Locked	NO
Smooth Scroll	YES	User Defined Keys Locked	NO
Block Cursor	YES	Numeric Mode Keypad	NO
Cursor OFF	NO	Normal Mode Cursor Keys	YES
Light Background	NO	National Character Set	NO
Inhibit Auto Wrap	NO	Frame Rate	72
New Line	NO	Display OFF After (min)	15
MultiPage	NO		
Status Line	Indicator		

Communications Setup

Host

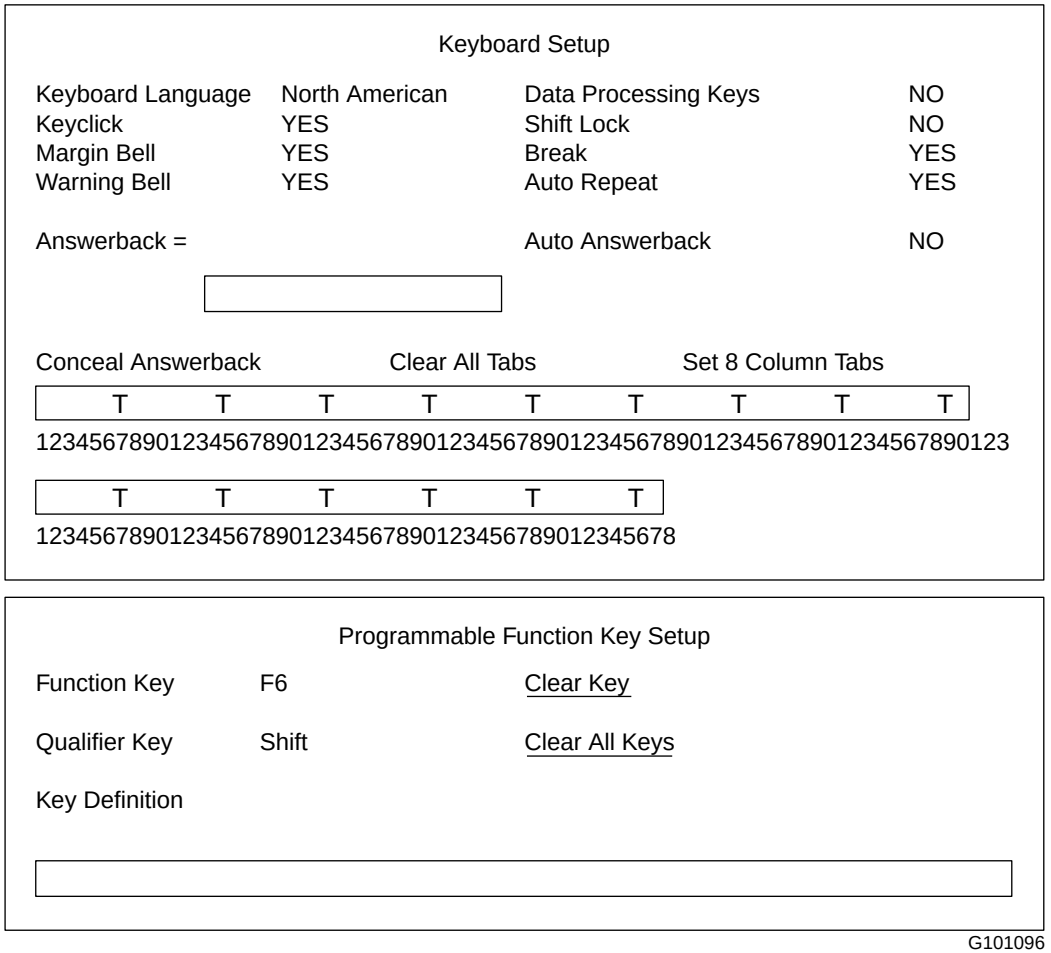
Xmit Baudrate	9600	XON/XOFF	@ 64
Recv Baudrate	=Xmit	Disconnect Delay	2 s
DataBits/Parity	8/None	Stop Bits	1
Check Parity	NO	Local Echo	NO
Port Selection	EIA, Data Leads Only	Unlimited Xmit	NO

Printer

Baudrate	9600	Print Mode	Normal
DataBits/Parity	8/None	Print Scroll Region	NO
Stop Bits	1	Terminator	None
Character Set	National Only		

G101095

HP700/22 setup screens (continued)



G101096

HP700/32 terminals

Configuring an HP700/32 terminal

To configure an HP32 terminal, follow these steps.

Step	Action
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 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 as necessary so that they match those shown in “HP700/32 setup screens” on page A-8.
4	Save changes by pressing <F6-SaveMenu> on each screen on which you make changes that you want to save.
5	Exit setup mode by pressing the <SETUP> key.

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

HP700/32 setup screens

GLOBAL | USER | EMULATION | PORT 1 | PORT 2 | KEYBRD | PROGRAM

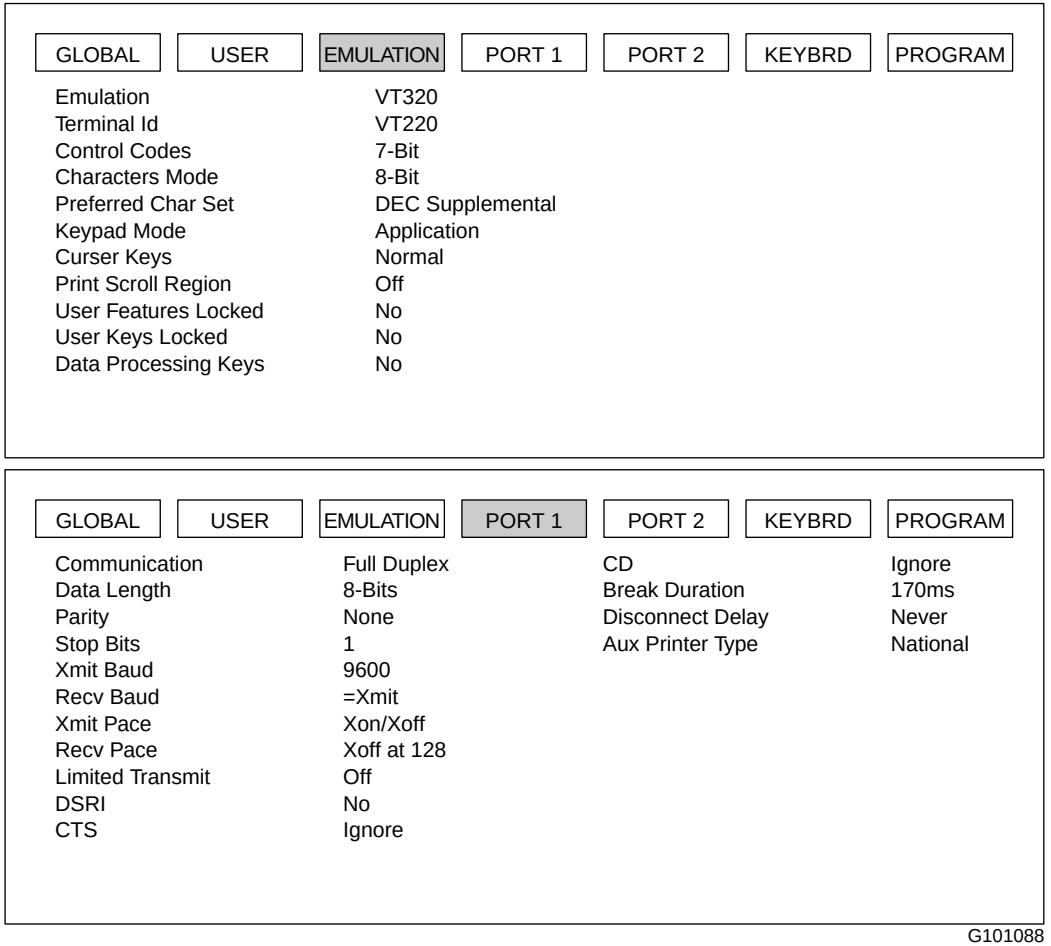
Host Port	1
Background	Dark
Screen Saver	10 Min
Refresh Rate	72 Hz
Key Click	Yes
Keyboard	U.S.
Message Translations	English
Setup Translations	English
Clear Display	
Clear Comm	
ROM Revision	C1017-80004-2948

GLOBAL | USER | EMULATION | PORT 1 | PORT 2 | KEYBRD | PROGRAM

Smooth Scroll	Jump	Display Width	80
Curser Type	Box	Display Width Allowed	80 or 132
Curser	On	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		

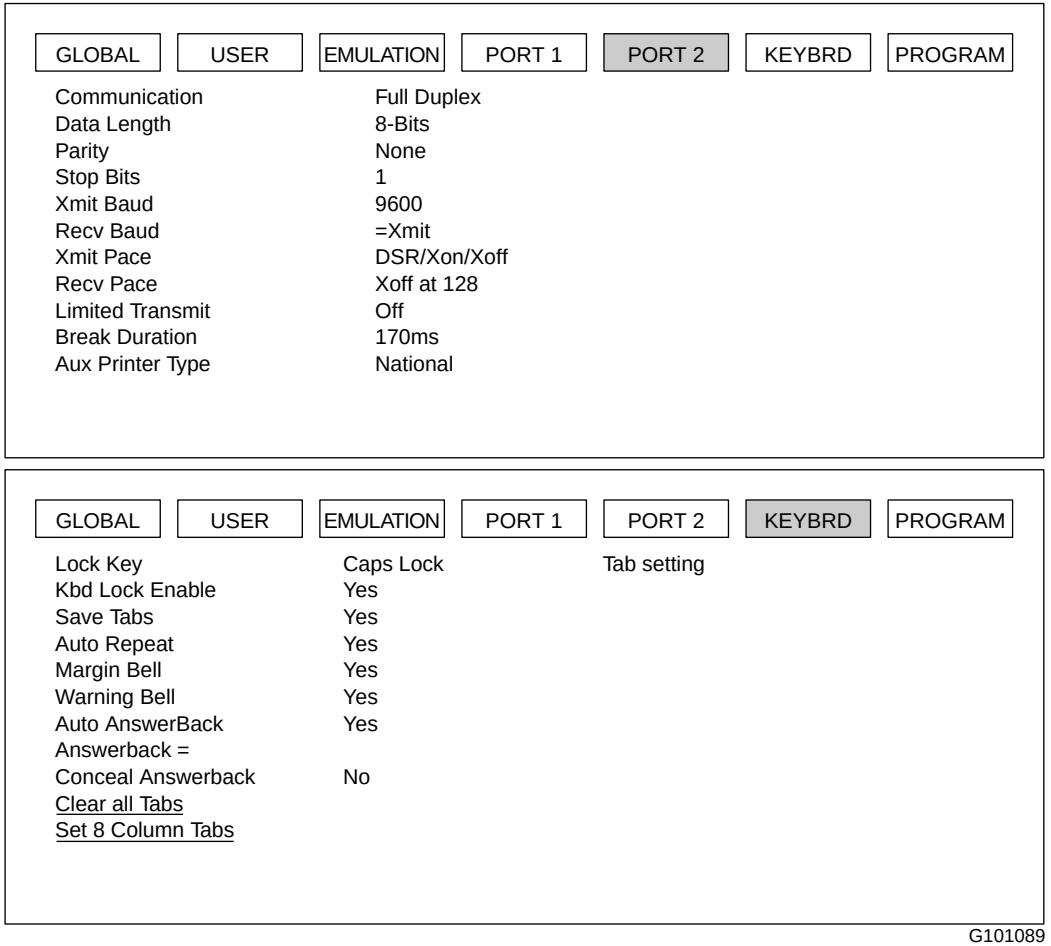
G101087

HP700/32 setup screens (continued)



G101088

HP700/32 setup screens (continued)



G101089

NT220 terminals

Configuring an NT220 terminal

To configure an NT220 terminal, follow these steps.

Step	Action
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 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 as necessary so that they match those shown in “NT220 setup screens” on page A-12. Use the following keys to view and change setup values:
4	To move to the next setup screen, select To Next Set-Up Screen on any setup screen.
5	Save your changes by returning to the General Set-Up screen, moving the cursor to the Save Current Values field, and pressing <Enter>.
6	Exit setup mode by pressing the <SETUP> key.

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)

NT220 setup screens

G101093

NT220 setup screens (continued)

G101094

VT220 terminals

Configuring a VT220 terminal

To configure a VT 220 terminal, follow these stesp.

Step	Action
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 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 as necessary so that they match those shown in “VT220 setup screens” on page A-15.
4	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.
5	Save changes by returning to the Setup Directory screen, moving the cursor to the *Save* field, and pressing <Enter>.
6	Exit setup mode by pressing the <SETUP> key.

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)

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=9600    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
```

G101098

VT320 terminals

Configuring a VT320 terminal

To configure a VT 320 terminal, follow these steps.

Step	Action
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 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 as necessary so that they match those shown in “VT320 setup screens” on page A-17.
4	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.
5	Save your changes by returning to the Setup Directory screen, moving the cursor to the Save field, and pressing <Enter>.
6	Exit setup mode by pressing the <SETUP> key.

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)

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=9600    Receive=Transmit
Xoff @ 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
```

G101097

VT420 terminals

Configuring a VT420 terminall

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

To configure a VT420 terminal, follow these steps.

Step	Action
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 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 as necessary so that they match those shown in "VT420 setup screens" on page A-19. **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 your 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. ***Note:*** If your system has been upgraded to Meridian Mail Release 13, and the VT420 screen does not clear, change the Sessions on the COMM1 value in the Global Setup screen to S1=COMM1 to avoid having to redraw the screen.

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
0n 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=9600    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
```

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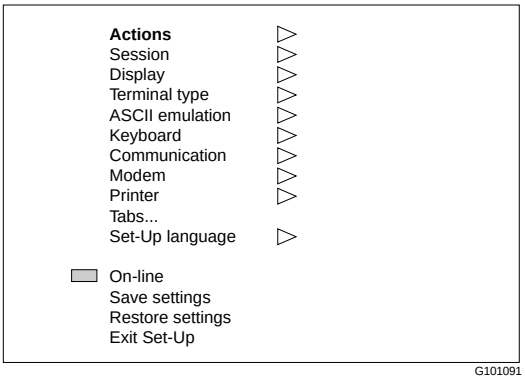
VT520 terminals

Configuring a VT520 terminal

To configure a VT 520 terminal, follow these steps.

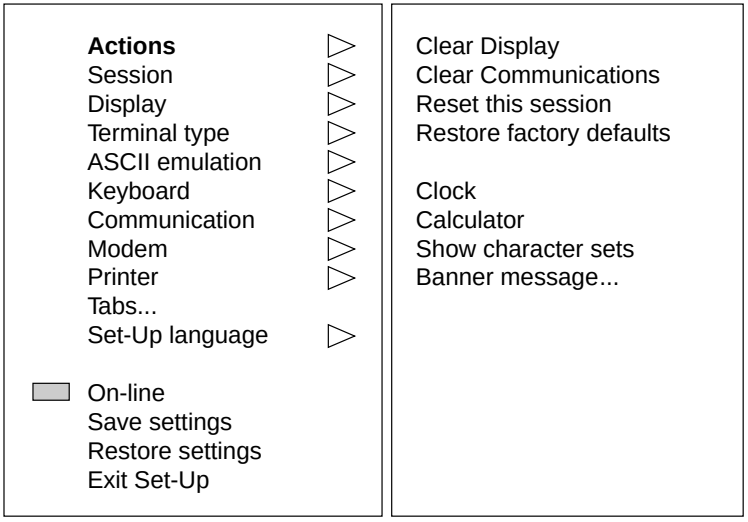
Step	Action
1	Power on the terminal.
2	Enter setup mode by pressing the <SETUP> key located on the top row of function keys. If no key is marked <SETUP>, press the third key from the left on the top row. The Main Set-Up window is displayed.



3	Use the up and down arrow keys to highlight the setup feature that is to change (for example, Actions).
4	When the setup feature is highlighted, use one of the following methods to select the appropriate settings:

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 the following illustration 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.

VT520 terminal—sample feature pop-up window



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Note: Any features shown in parentheses appear dimmed on the window.

5 Configure the terminal to match the mandatory settings in “VT520 setup values” on page A-22. If no setting is specified, select the parameter that best suits your environment.

6 Press <SETUP> again to exit setup mode.

VT520 setup values

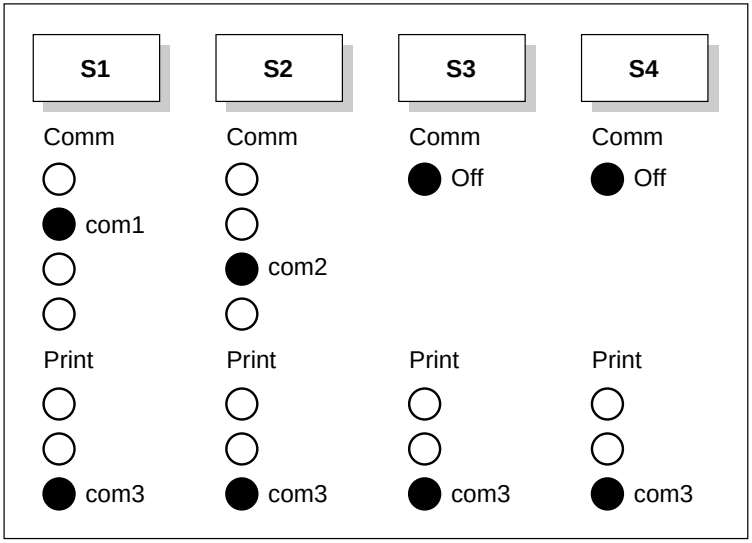
Setup feature	First level	Mandatory setting or description
Actions	Clear Display	Press <Enter> to clear the display.
	Clear Communications	Press <Enter> to clear communications.
	Reset this session	Press <Enter> to reset this session.
	Restore factory defaults	Press <Enter> to restore the factory default.
	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
	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	

Setup feature	First level	Mandatory setting or description
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
	(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	

Setup feature	First level	Mandatory setting or description
Communication	Port select . . .	See “ Port selection for VT520” on page A-25.
	Word size	8 bit
	Parity	None
	Stop bits	1 bit
	Transmit speed	2400 baud (9600 with Enhanced MMP40 or MMP40)
	Receive speed	Transmit speed
	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 “Port selection for VT520” on page A-25.
	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
	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

Setup feature	First level	Mandatory setting or description
Save settings		When settings are complete, push <Enter> to save.
Restore settings		
Exit Set-Up		

Port selection for VT520



Appendix B

Modem configuration

In this chapter

Overview

Introduction

Each modem supplied with Meridian Mail needs to be configured before use. Modems must be configured so the baud rate matches that of the terminal and the CPU's non-volatile memory (NVRAM).

Connection speed

The modems are configured so that the connection from the modems to Meridian Mail operates at a speed that is independent of the telephone line connection. Therefore, an older 2400 bps modem (such as the VenTel 2400-33) can be set to communicate with Meridian Mail at 9600 bps, while the telephone connection operates at the maximum modem speed of 2400 bps.

Terminal connection

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

Modem configuration

Modem configuration involves the following:

1. Temporarily connect the local administration terminal to the local modem.
   - For modem 2400 bps access, set the terminal to 2400 bps.
   - For modem 9600 bps access, set the terminal to 9600 bps.
2. Send appropriate commands to the modem.

Note: The UDS modem can be configured from the front panel if you prefer.

ATTENTION

To prevent flow control problems, use a remote modem or terminal at the same speed as the Meridian Mail local administration terminal you are accessing.

Modem configuration can 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.

Supported modems

Introduction

The following table lists the modem models that are supported in Meridian Mail Release 13, and indicates whether the modem can be used for local or remote access, and the bps at which it can be used.

Supported modems

	Local modem (console speed)		Remote-access modem (line speed)	
	2400 bps	**9600 bps**	**2400 bps**	**9600 bps**
U.S. Robotics Sportster 14.4	✔	✔	✔	✔
Racal ALM 3223	✔	✔	✔	✔
Hayes Optima 144	✔	✔	✔	✔
UDS 2440	✔	✔	✔	✔
UDS EC 224 A/D	✔	✔	✔	✔
Ven-Tel 2400-33/2400 Plus II	✔	✔	✔	✔
Ven-Tel 9600 Plus/9600 Plus II	✔	✔	✔	✔

Connecting the modem to the administration terminal

Introduction

You must configure the local and remote modems before using them. The local modem is the one connected to the Meridian Mail system. You configure it by by connecting the modem to a VT220 terminal (that is, the Meridian Mail administration terminal) and sending commands to it as described. The remote modem is the one used by offsite personnel to dial in to a Meridian Mail system.

Modem and terminal speed

Note: Before configuring the modem, configure the terminal speed. This speed 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.

The baud rate of the Meridian Mail 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 using the Change Speed utility. This utility is available through the System Installation and Modification menu on the Install/data tape (on the System Operation Utility menu), or in the System and Feature Dependent Utilities on the TOOLS menu. After the speed is set, the terminal and remote support modem must be reset to match the baud rate of the CPU card.

Connecting the modem

To connect the modem, follow these steps.

Step	Action
1	Connect one end of a straight RS-232 cable (NTND91AA/AB) to the 25-pin modem connector.
2	Plug the modem power cord into an AC receptacle.
3	Power on the modem.
4	Temporarily disconnect the administration terminal from the A/B switchbox.

Step	Action
5	Connect the free end of the modem cable to the terminal for the purpose of configuring the modem. The terminal should be set to the speed that the Meridian Mail administration terminal will be using, either 2400 bps or 9600 bps. The modem will automatically save this speed when the configuration is saved.
6	Program the modem. Refer to the appropriate section for the type of modem you are programming.
7	Disconnect the administration terminal from the modem cable.
8	Reconnect the administration terminal to the A/B switchbox.
9	For a local modem, connect the free end of the modem cable to the B connector on the A/B switchbox.
10	For a local modem, connect the modem to the phone line provided for remote support.

U.S. Robotics modem

Introduction

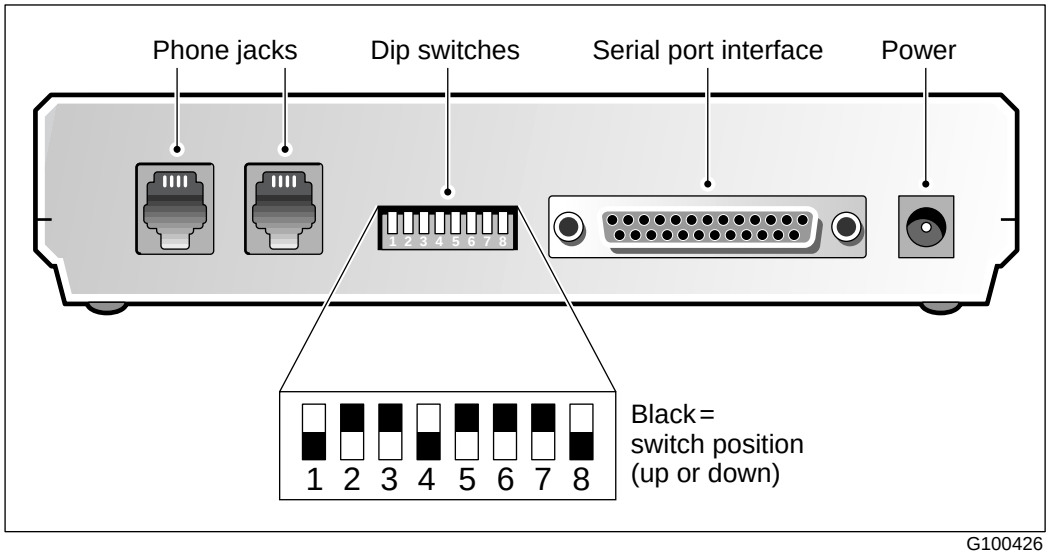
The U.S. Robotics Sportster 14.4 modem has DIP switches on the rear (see “U.S. Robotics Sportster 14.4” on page B-8). These have to be set as indicated in the configuration instructions. The down position is the On position for the switch, and the switches are numbered from 1 through 8.

Note: The U.S. Robotics modem may be used to dial in to Meridian Mail systems that use other supported local modems (for example, VenTel EC2400-33). The remote modem/terminal should only be used at 9600 bps when the local modem is capable of 9600 bps operation (for example, the U.S. Robotics modem, but not the VenTel EC2400-33) *and* the Meridian Mail local administration terminal is used at 9600 bps. In all other cases, 2400 bps should be used. This will prevent flow control problems that may otherwise occur.

Refer to the one of the following procedures depending on the modem configuration:

- “Configuring the U.S. Robotics Sportster 14.4 modem as a local modem” on page B-8 if you are configuring a local modem operating at either 2400 bps or 9600 bps
- “Configuring the U.S. Robotics Sportster 14.4 as a remote-access modem” on page B-9 if you are configuring a remote-access modem operating at either 2400 bps or 9600 bps

U.S. Robotics Sportster 14.4



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Configuring the U.S. Robotics Sportster 14.4 modem as a local modem

To configure the U.S. Robotics Sportster 14.4 as a local modem, follow these steps.

Step	Action
1	Power off the modem.
2	Set DIP switches 1, 3, 7, and 8 down for all programming. (All other switches should be up.)
3	Power on the modem.

Step	Action
4	Enter the commands below from the administration terminal to configure the modem. ***Note:*** The administration terminal should be set to either 2400 bps or 9600 bps (that is, Meridian Mail console speed). **AT&F0** <Return> (response is OK) **ATS0=1** <Return> (response is OK) **AT&B1** <Return> (response is OK) **ATY0** <Return> (response is OK) **ATQ1** <Return> (no response) **AT&W0** <Return> (no response) **AT&W1** <Return> (no response)
5	Power off the modem.
6	Set DIP switches 1, 4, and 8 down. (All other switches should be up.)

Configuring the U.S. Robotics Sportster 14.4 as a remote-access modem

To configure the U.S. Robotics Sportster 14.4, follow these steps.

Note: This configuration can be used to dial in to a system with a U.S. Robotics modem. For systems with another modem, it may be necessary to modify other parameters (for example, disabling error correction).

Step	Action
1	Power off the modem.
2	Set DIP switches 3, 5, 7, and 8 down for all programming. (All other switches should be up.)
3	Power on the modem.

Step	Action
4	Enter the commands below from the administration terminal to configure the modem. **AT&F0** <Return> (response is OK) **ATS0=0** <Return> (response is OK) **ATY0** <Return> (response is OK) **AT&M0** <Return> (response is OK) **AT&W0** <Return> (response is OK) **AT&W1** <Return> (response is OK)
5	Power off the modem.
6	Set DIP switches 3, 5, and 8 down. (All other switches should be up.)

Racal modem

Introduction

To configure the Racal ALM 3223 modem, use the administration terminal set up for either 2400 bps or 9600 bps operation.

Note: There are no DIP switches for this modem.

Refer to one of the following procedures, depending on the modem configuration:

- Refer to the following procedure if you are configuring a local modem operating at either 2400 bps or 9600 bps.
- Refer to "Configuring the Racal ALM3223 as a remote-access modem" on page B-12 if you are configuring a remote-access modem operating at either 2400 bps or 9600 bps.

Configuring the Racal ALM3223 as a local modem

To configure the Racal ALM3223 as a local modem, follow these steps.

Step	Action
1	Connect the modem to the administration terminal (see "Connecting the modem" on page B-5).

Step	Action
2	Enter the following commands from the terminal: **AT&F** <Return> (response is OK) **AT&Y0** <Return> (response is OK) **AT\Q0, 0** <Return> (response is OK) **AT\M1** <Return> (response is OK) **AT\N0** <Return> (response is OK) **AT&D0** <Return> (response is OK) **AT&S2** <Return> (response is OK) **ATS61=3** <Return> (response is OK) **ATS43=3** <Return> (response is OK) **ATS44=7** <Return> (response is OK) **ATQ1** <Return> (no response) **ATE0** <Return> (no response) **AT&W0** <Return> (no response) **AT&W1** <Return> (no response)

Configuring the Racal ALM3223 as a remote-access modem

To configure the Racal ALM3223 as a remote-access modem, follow these steps.

Step	Action
1	Connect the modem to the administration terminal (see "Connecting the modem" on page B-5).
2	Enter the following commands from the terminal: **AT&F** <Return> (response is OK) **AT&Y0** <Return> (response is OK) **AT\Q0, 0** <Return> (response is OK) **AT\M1** <Return> (response is OK) **AT\N0** <Return> (response is OK) **ATS0=0** <Return> (response is OK) **AT&S2** <Return> (response is OK) **ATS43=3** <Return> (response is OK) **ATS44=7** <Return> (response is OK) **AT&W0** <Return> (response is OK) **AT&W1** <Return> (response is OK)

Hayes modem

Introduction

To configure the Hayes Optima 144 modem, use the administration terminal set up for either 2400 bps or 9600 bps operation.

Note: There are no DIP switches for this modem.

Refer to the one of the following procedures depending on the modem configuration:

- Refer to the following procedure if you are configuring a local modem operating at either 2400 bps or 9600 bps.
- Refer to "Configuring the Hayes Optima 144 as a remote-access modem" on page B-14 if you are configuring a remote-access modem operating at either 2400 bps or 9600 bps.

Configuring the Hayes Optima 144 as a local modem

To configure the Hayes Optima 144 as a local modem, follow these steps.

Step	Action
1	Connect the modem to the administration terminal (see "Connecting the modem" on page B-5).
2	Enter the following commands from the terminal: **AT&F** <Return> (response is OK) **AT&K2** <Return> (response is OK) **ATS0=1** <Return> (response is OK) **ATS37=9** <Return> (response is OK) **ATS46=0** <Return> (response is OK) **ATT** <Return> (response is OK) **ATQ1** <Return> (no response) **ATE0** <Return> (no response) **AT&W0** <Return> (no response) **AT&W1** <Return> (no response)

Configuring the Hayes Optima 144 as a remote-access modem

To configure the Hayes Optima 144 as a remote-access modem, follow these steps.

Step	Action
1	Connect the modem to the administration terminal (see “Connecting the modem” on page B-5).
2	Enter the following commands from the terminal: **AT&F** <Return> (response is OK) **ATT** <Return> (response is OK) **AT&K2** <Return> (response is OK) **ATS0=1** <Return> (response is OK) **ATS37=9** <Return> (response is OK) **ATS46=0** <Return> (response is OK) **AT&W0** <Return> (response is OK) **AT&W1** <Return> (response is OK)

UDS modems

Introduction

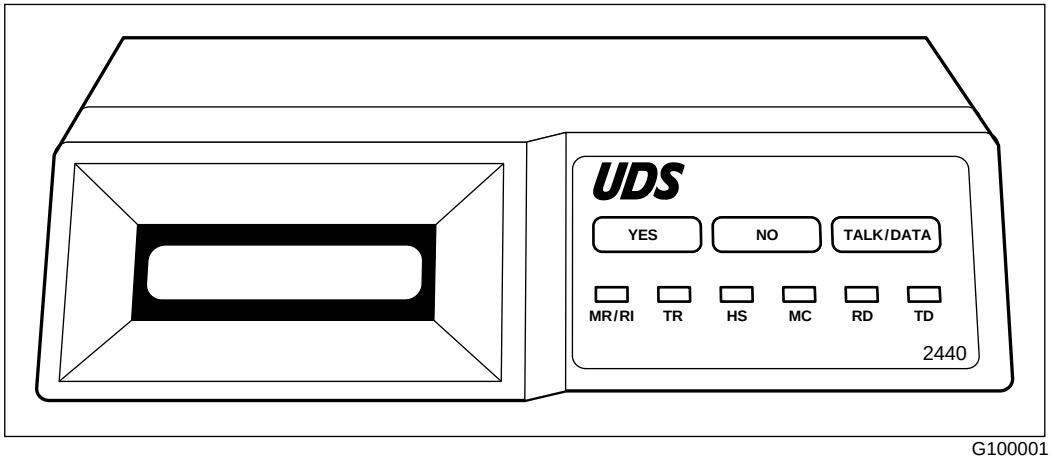
The following versions of UDS modems are supported in Release 13 of Meridian Mail:

- 2440 This modem can be used as a local modem operating at either 2400 bps or 9600 bps, or as a remote-access modem operating at 2400 bps. The UDS 2440 can be configured using either the front panel or the administration terminal.
- 224 A/D This modem can be used as a local modem operating at either 2400 bps or 9600 bps, or as a remote-access modem operating at only 2400 bps.

UDS 2440 modem

The UDS 2440 modem can be configured as a local modem operating at either 2400 bps or 9600 bps using either the administration terminal or the front panel on the modem. (The modem can only be configured as a remote-access modem by using the administration terminal.) The front panel of the modem contains a small display and several buttons (YES, NO, and TALK) that can be used to configure the modem as a local modem.

UDS 2440 modem—front panel



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Refer to the procedure that will produce the modem configuration you require:

- " Configuring the UDS 2440 as the local 2400 bps modem through the terminal" on this page
- " Configuring the UDS 2440 as the local 2400 bps modem using the front panel method" on this page
- "Configuring the UDS 2440 as the local 9600 bps modem through the front panel" on page B-19
- "Configuring the UDS 2440 as the local 9600 bps modem through the terminal" on page B-20
- "Configuring the UDS 2440 as the remote-access 2400 bps modem through the terminal" on page B-20

Configuring the UDS 2440 as the local 2400 bps modem through the terminal

To configure the UDS 2440 modem via the terminal as a local modem operating at 2400 bps, follow these steps.

Step	Action
1	Connect the modem to a terminal using a straight-through cable.
2	Enter **at&f s14=140** <Return> from the terminal. 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 no longer see your input on the terminal screen.
3	Enter **at&w** <Return>.
4	Turn the modem off, wait 10 seconds, and then turn it back on.

Configuring the UDS 2440 as the local 2400 bps modem using the front panel method

To configure the UDS 2440 modem via the front panel as a local modem operating at 2400 bps, follow these steps.

Step	Action
1	Plug in the modem and turn it on.
2	Press the YES button until OFFLINE appears in the display window.

Step	Action
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 in the following table to configure the modem.

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
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

Prompt	Response
AUTO ANS?	YES
AUTO ANS E?	YES
RINGS?	YES
RING= 001?	YES
AUTO ANS	NO
DATA OPTS?	NO
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
DISC OPTS?	NO
SREGS?	NO
OPTIONS?	NO

Prompt	Response
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	

Configuring the UDS 2440 as the local 9600 bps modem through the front panel

To configure the UDS 2440 modem via the front panel as a local modem operating at 9600 bps, follow these steps.

Step	Action
1	Press the NO button to advance to the OPTIONS? prompt.
2	Respond to the appropriate prompt as outlined in the following table.

Prompt	Response
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 reappears and you can continue your entries. If you have already saved the configuration, start over at step 1.

Configuring the UDS 2440 as the local 9600 bps modem through the terminal

To configure the UDS 2440 through the terminal as a local modem operating at 9600 bps, follow this step.

Step	Action
1	Enter the commands on the administration terminal as shown in the following table:

Command	System response
at&f3 <Return>	OK
at&c1 <Return>	OK
ats0=1 <Return>	OK
at e0 s14=140 <Return>	No response on the terminal.
at&w <Return>	

Configuring the UDS 2440 as the remote-access 2400 bps modem through the terminal

To configure the UDS 2440 as a remote-access modem operating at 2400 bps, follow these steps.

Step	Action
1	Connect the modem to a terminal using a straight-through cable.
2	Enter **at&f s14=140** <Return> from the terminal. The cursor returns to “A” on the same line. ***Note:*** This step disables the echo of the modem. Enter commands carefully, because you no longer see your input on the terminal screen.
3	Enter **at&w** <Return>.
4	Turn the modem off, wait 10 seconds, and then turn it back on.

Configuring the UDS 224 A/D as a local 2400 bps modem

To configure the UDS 224 A/D as a local modem operating at 2400 bps, follow these steps.

Step	Action
1	Put the front panel rotary switch in the Data position.
2	Set the modem DIP switches as defined in the table below.
3	Connect the modem to a terminal using a straight-through cable.
4	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 no longer see your input on the terminal screen.
5	Enter **at&w** <Return>.
6	Turn the modem off, wait 10 seconds, and then turn it back on.

UDS 224 EC A/D modem hardware configuration for 2400 bps operation

Front panel switches		
Rotary switch: - DATA position when using the terminal to dial. - TALK position when using the TELSET to dial. Switch to the DATA position once connected.		
Three-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

Circuit board mount DIP switches (continued)		
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

Configuring the UDS 224 A/D as a local 9600 bps modem

To configure the UDS 224 A/D as a local modem operating at 9600 bps, follow these steps.

Step	Action
1	Put the front panel rotary switch in the Data position.
2	Set the modem DIP switches as defined in “UDS EC 224 A/D modem hardware configuration for 9600 bps operation” on page B-23.
3	Connect the modem to a terminal using a straight-through cable.
4	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 no longer see your input on the terminal screen.

Step	Action
5	Enter **at&w** <Return>.
6	Turn the modem off, wait 10 seconds, and then turn it back on.

Configuring the UDS 224 A/D as a remote-access 2400 bps modem

To configure the UDS 224 A/D as a remote-access modem operating at 2400 bps, follow these steps.

Step	Action
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&w** <Return>. Factory default settings are used for the UDS modem. For reference see the table below.

UDS EC 224 A/D modem hardware configuration for 9600 bps operation

Front panel switches		
Rotary switch: - DATA position when using the terminal to dial. - TALK position when using the TELSET to dial. Switch to the DATA position once connected.		
Three-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	On	Enable 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	On	
S2-5	Off	
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

Ven-Tel modems

Introduction

The following versions of Ven-Tel modems are supported in Release 13 of Meridian Mail:

- ***2400-33, rev. 5.2 or 6.0*** This modem can be used as a local modem operating at either 2400 bps or 9600 bps, or as a remote-access modem operating at 2400 bps.
- ***2400-33 Plus II*** This modem can be used as a local modem operating at either 2400 bps or 9600 bps, or as a remote-access modem operating at 2400 bps.
- ***9600 Plus/Plus II*** This modem can be used as either the local or remote-access modem but can only operate at 9600 bps.

Note: The manufacturer of these modems no longer exists.

Switches on the Ven-Tel 2400-33/2400 Plus II modem

You do not need to change the switch settings on these models if you are currently using the modem at 2400 bps and want to use it at 9600 bps. If you have not already set the switches, use the settings described below for both local and remote use.

Setting the switches on the Ven-Tel 2400-33/2400 Plus II modem

To set the switches on the Ven-Tel 2400-33/2400 Plus II modem, follow these steps.

Step	Action
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.

Step	Action		
3	Set the switch as follows:		
	S2-1	ON	Modem assumes data terminal ready (DTR) is on.
	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.

Switches on the Ven-Tel 9600 Plus/ 9600 Plus II modem

If you are using the Ven-Tel 9600 Plus/Plus II modem, you must set SW2. The SW2 settings are the same for both local and remote use.

Note: The factory default settings can be used.

Setting the switches on the Ven-Tel 9600 Plus/Plus II modem

To set the switches on the Ven-Tel 96400 Plus/Plus II modem, follow this step.

Step	Action
1	Set SW2 according to “Settings for SW2 for the Ven-Tel 9600 Plus modem” on page B-27.

Settings for SW2 for the Ven-Tel 9600 Plus modem

SW2	Command	Setting
1	Force CTS/Override &R command	ON
	CTS Follows &R command	**OFF**
2	CD Forced/Override &C command	ON
	CD Follows &C command	**OFF**
3	DSR Forced/Override &S command	ON
	DSR Follows &S command	**OFF**
4	Disable AT Commands	ON
	Enable AT Commands	**OFF**
5	4-Wire Leased Line (9600 Plus II)	ON
	2**-Wire Leased Line**	**OFF**
6	Modem Reset	See note
7	Not used	
8	Not used	

Note: SW2-6 is used to reset the modem to the asynchronous command mode if &M2, &M3, &M6, or &M7 is set. To reset the modem from synchronous to asynchronous, SW2-6 must be turned ON prior to powering up. In addition, the SW2-6 switch can be used to reset the modem if an improper *V command string is used.

Switches on the Ven-Tel 9600 Plus II modem

If you are using the Ven-Tel 9600 Plus II modem, you must set both SW2 and SW6. The SW2 settings are the same for both local and remote use.

Setting the switches on the Ven-Tel 9600 Plus II modem

To set the switches on the Ven-Tel 9600 Plus II, follow these steps.

Note: The factory default settings can be used.

Step	Action
1	Set SW2 as described in the table above.
2	Set SW6 according to “Settings for SW6 for the Ven-Tel 9600 Plus II modem” on page B-28.

Settings for SW6 for the Ven-Tel 9600 Plus II modem

SW6	Command	Setting
1	Telset Enable	ON
	Telset Disable	**OFF**
2	Telset Enable	ON
	Telset Disable	**OFF**
3	Telco J3 M1 Enabled/A Disabled	ON
	Telco J3 M1 Disabled/A Enabled	**OFF**
4	J3 MIC Enabled/A1 Disabled	ON
	J3 MIC Disabled/A1 Enabled	**OFF**

Configuring the Ven-Tel 2400-33/2400 Plus II as a local 9600 bps modem

The Ven-Tel 2400-33/2400 Plus II modem can be configured for 9600 bps operation through the administration terminal.

To configure the Ven-Tel 2400-33/2400 Plus II modem, follow these steps.

Step	Action
1	Set the switches according to “Setting the switches on the Ven-Tel 2400-33/2400 Plus II modem” on page B-25.
2	Enter the commands from the following table on the administration terminal to configure the modem.

Ven-Tel 2400-33/2400 Plus II modem configuration commands

Command	System response
at&f <Return>	OK
at&c1<Return>	OK
at&d0 <Return>	OK
at\n3 <Return>	OK
at\j0 <Return>	OK
at\q1\x1 <Return>	OK
ats0=1 <Return>	OK
ats64=1 <Return>	OK
at e0 s14=12 <Return>	No response on the terminal
at&w <Return>	

Configuring the Ven-Tel 9600 Plus/9600 Plus II as a local 2400 bps or a 9600 bps modem

The Ven-Tel 9600 Plus/9600 Plus II modem can be configured for 2400 bps or 9600 bps operation through the administration terminal. The speed of the administration terminal determines the configured modem speed.

To configure the Ven-Tel 9600 Plus/9600 Plus II as a local 2400 or 9600 bps modem, follow these steps.

Step	Action
1	Set the switches according to "Setting the switches on the Ven-Tel 9600 Plus/Plus II modem" on page B-26 or "Setting the switches on the Ven-Tel 9600 Plus II modem" on page B-27, depending on the modem.
2	Enter the commands from the following table on the administration terminal to configure the modem.

Ven-Tel 9600 Plus/9600 Plus II modem configuration commands

Command	System response
at&f <Return>	OK
at&c1 <Return>	OK
at\n3 <Return>	OK
a\q0 <Return>	OK
at%f2 <Return>	OK
at\f0 <Return>	OK
ats0=1 <Return>	OK
ate0 q1 <Return>	No response is seen on the terminal after this command
at&w <Return>	

Configuring the Ven-Tel 2400-33/2400 Plus II as a local 2400 bps modem

The Ven-Tel 2400-33/2400 Plus II modem can be used as a remote-access modem operating at 2400 bps. If you have not already set the switches, use the settings described in "Setting the switches on the Ven-Tel 2400-33/2400 Plus II modem" on page B-25 for both local and remote use.

You do not need to change the switch settings on the VenTel modem if you are currently using the modem for 2400 bps operation. If you have not already set the switches, use the

settings described in "Setting the switches on the Ven-Tel 2400-33/2400 Plus II modem" on page B-25 for both local and remote use.

To configure the Ven-Tel 2400-33/2400 Plus II as a local 2400 bps modem, follow these steps.

Step	Action
1	Ensure that the switches are set as described in "Setting the switches on the Ven-Tel 2400-33/2400 Plus II modem" on page B-25.
2	Connect the modem to a terminal using a straight-through cable.
3	Enter **at&f &d3 &c1 \j1\n3 s0=1 s64=1 s14=12** <Return>. ***Note 1:*** If the console port speed is set for 1200 bps, configure the modem with **\j0** instead of **\j1**. ***Note 2:*** 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.
4	Enter **ate0 &w** <Return>.
5	Turn off the modem for 10 seconds and then turn it back on.

Configuring the Ven-Tel 2400-33/2400 Plus II as a remote-access 2400 bps modem

The Ven-Tel 2400-33/2400 Plus II modem can be used as a remote-access modem operating at 2400 bps. If you have not already set the switches, use the settings described in "Setting the switches on the Ven-Tel 2400-33/2400 Plus II modem" on page B-25 for both local and remote use.

To configure the Ven-Tel 2400-33/2400 Plus II as a remote-access 2400 bps modem, follow these steps.

Step	Action
1	Ensure that the switches are set as described in "Setting the switches on the Ven-Tel 2400-33/2400 Plus II modem" on page B-25.
2	Connect the modem to a terminal using a straight-through cable.
3	Enter **at&f** <Return>.

Step	Action
4	Enter **at&f \n3 &c1 s14=170** <Return>. The response on the terminal is OK.
5	Enter **at&w** <Return>.
6	Turn off the modem for 10 seconds and then turn it back on.

Configuring the Ven-Tel 9600 Plus/9600 Plus II as a remote-access modem

To configure the Ven-Tel 9600/9600 Plus II as a remote-access modem, follow these steps.

Step	Action
1	Connect the modem to a terminal using a straight-through cable.
2	Enter **at&f** <Return>.
3	Enter **at&f \n3 &c1 s14=170** <Return>.
4	Enter **at&w** <Return>.
5	Turn off the modem for 10 seconds and then turn it back on.

Appendix C

Enhanced MMP40 troubleshooting flowcharts

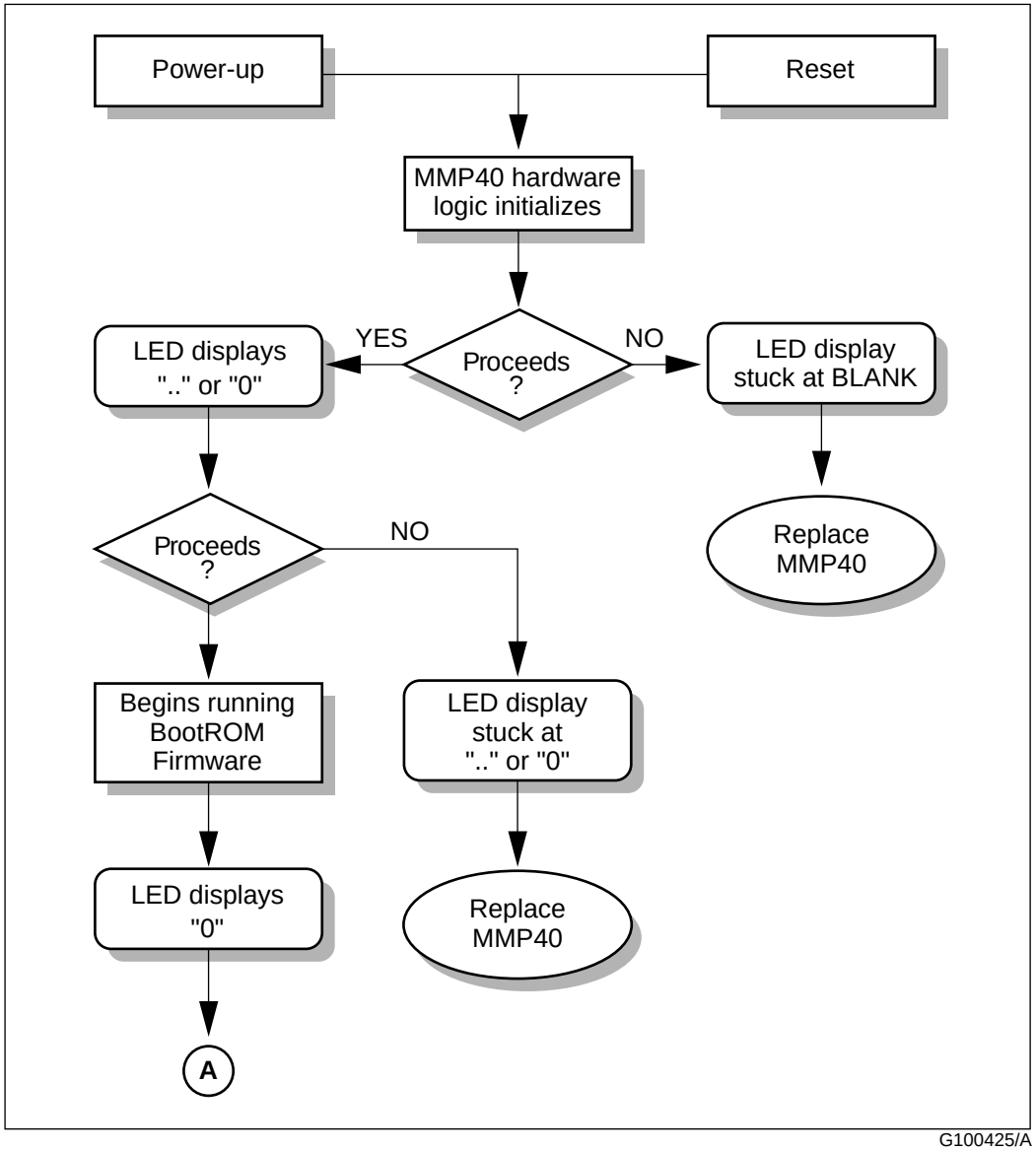
In this chapter

Overview

Introduction

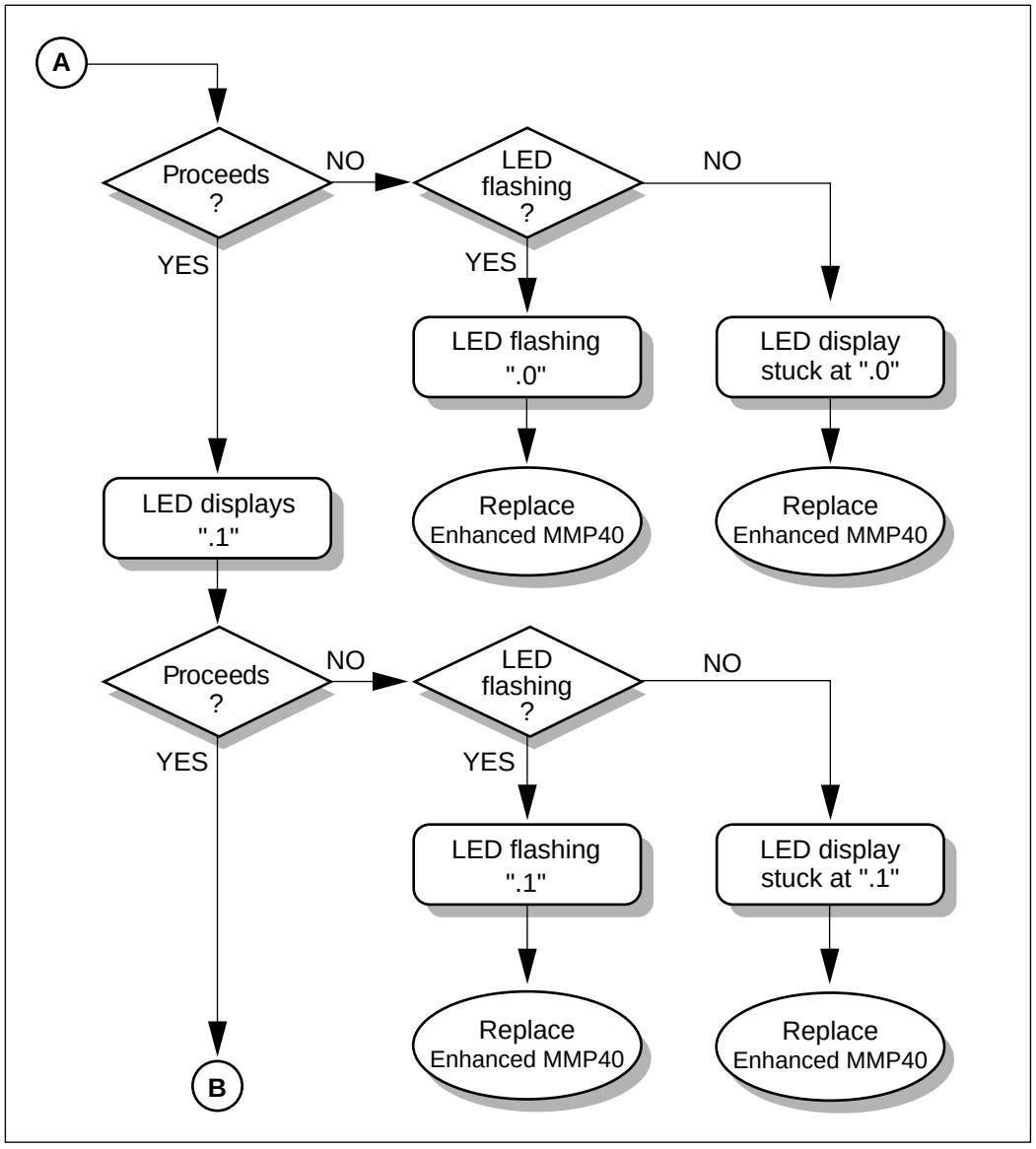
The following charts can be used to determine causes and solutions for potential problems for the Enhanced MMP40 card. Start from the first chart, and follow through the others until you have localized the problem. When directed to the double-letter options (AA, BB, CC, and so on), refer to the tables following the flowcharts.

Enhanced MMP40 troubleshooting flowcharts



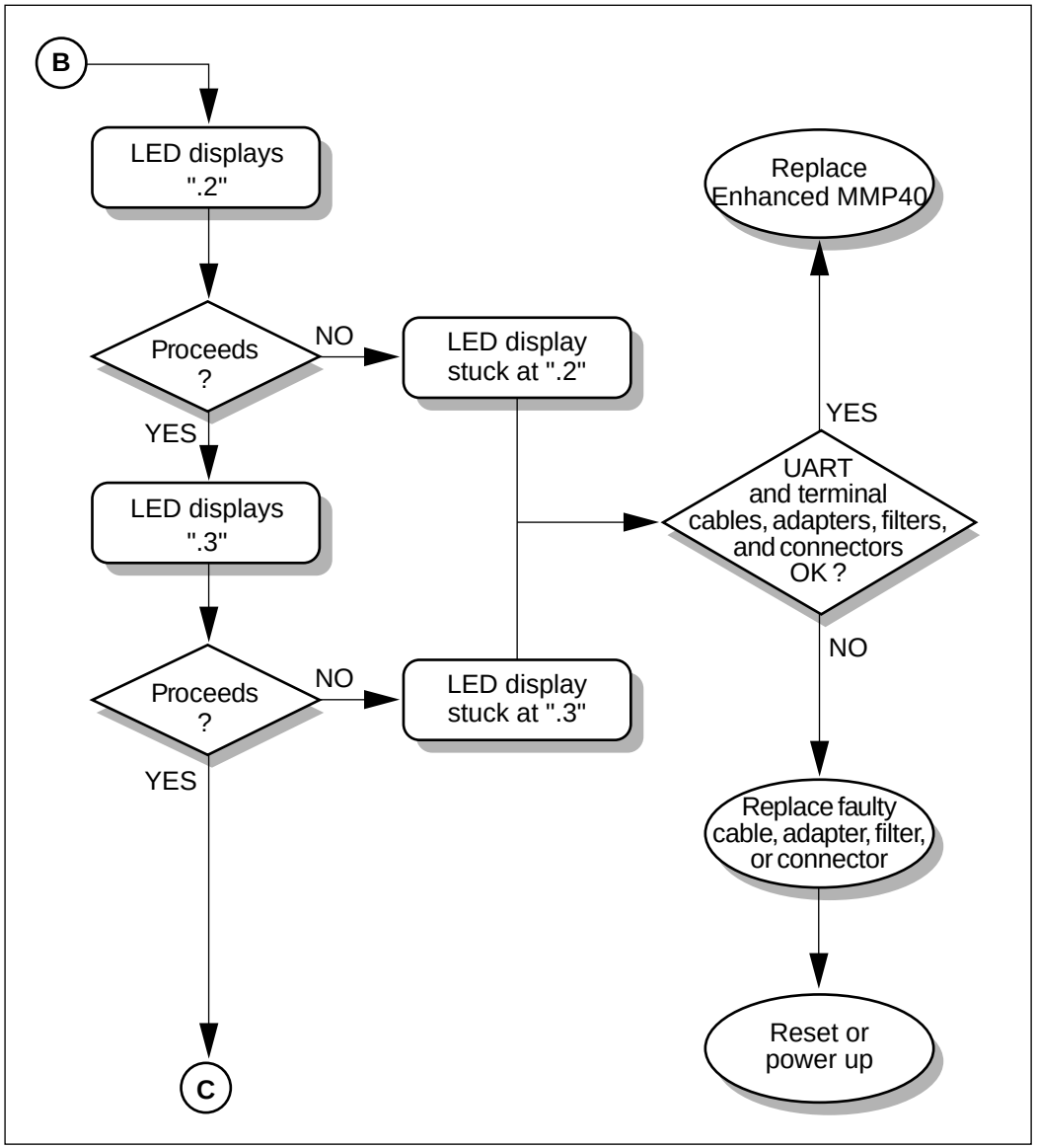
G100425/A

Enhanced MMP40 troubleshooting flowcharts (continued)



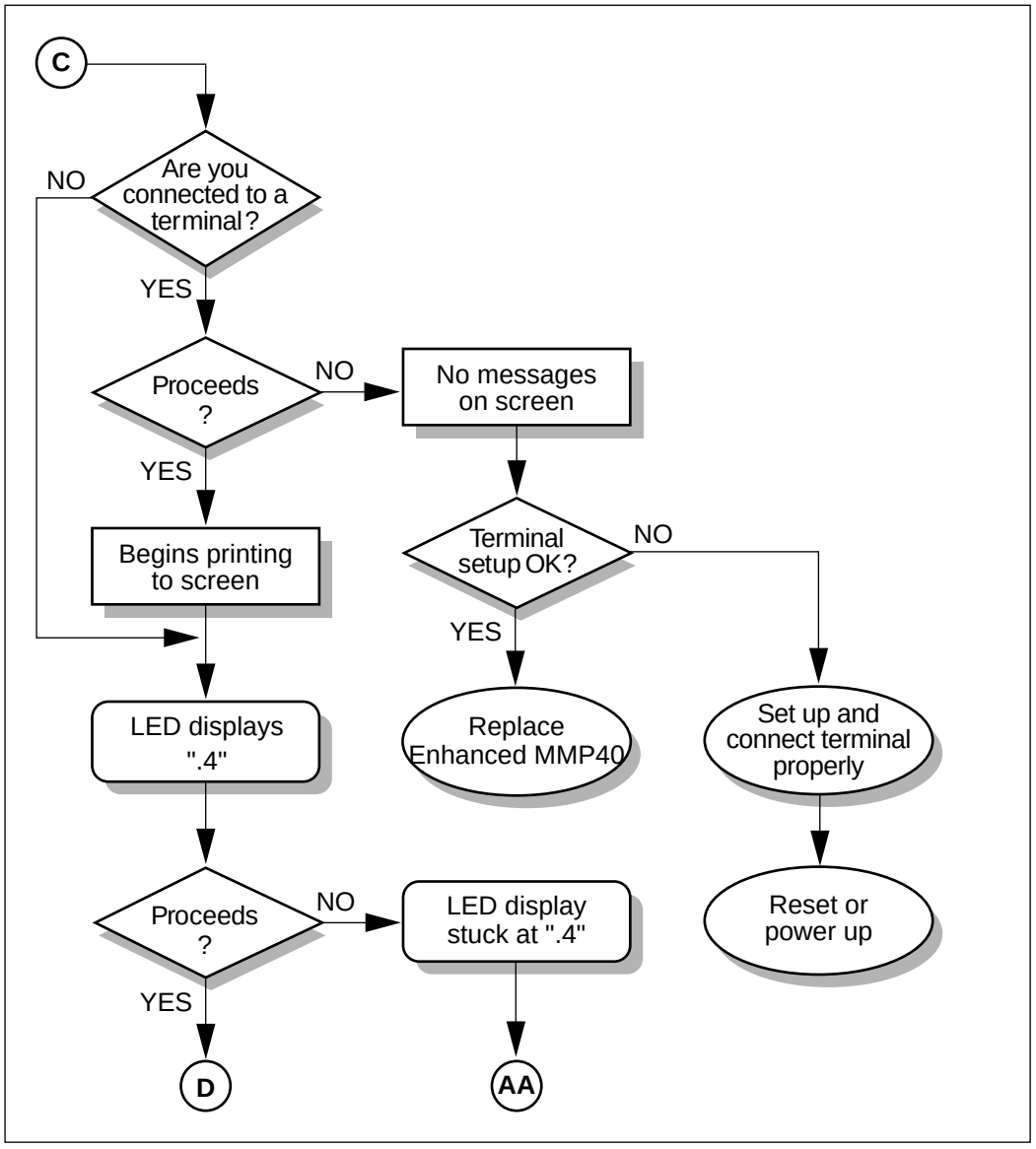
G100425/B

Enhanced MMP40 troubleshooting flowcharts (continued)



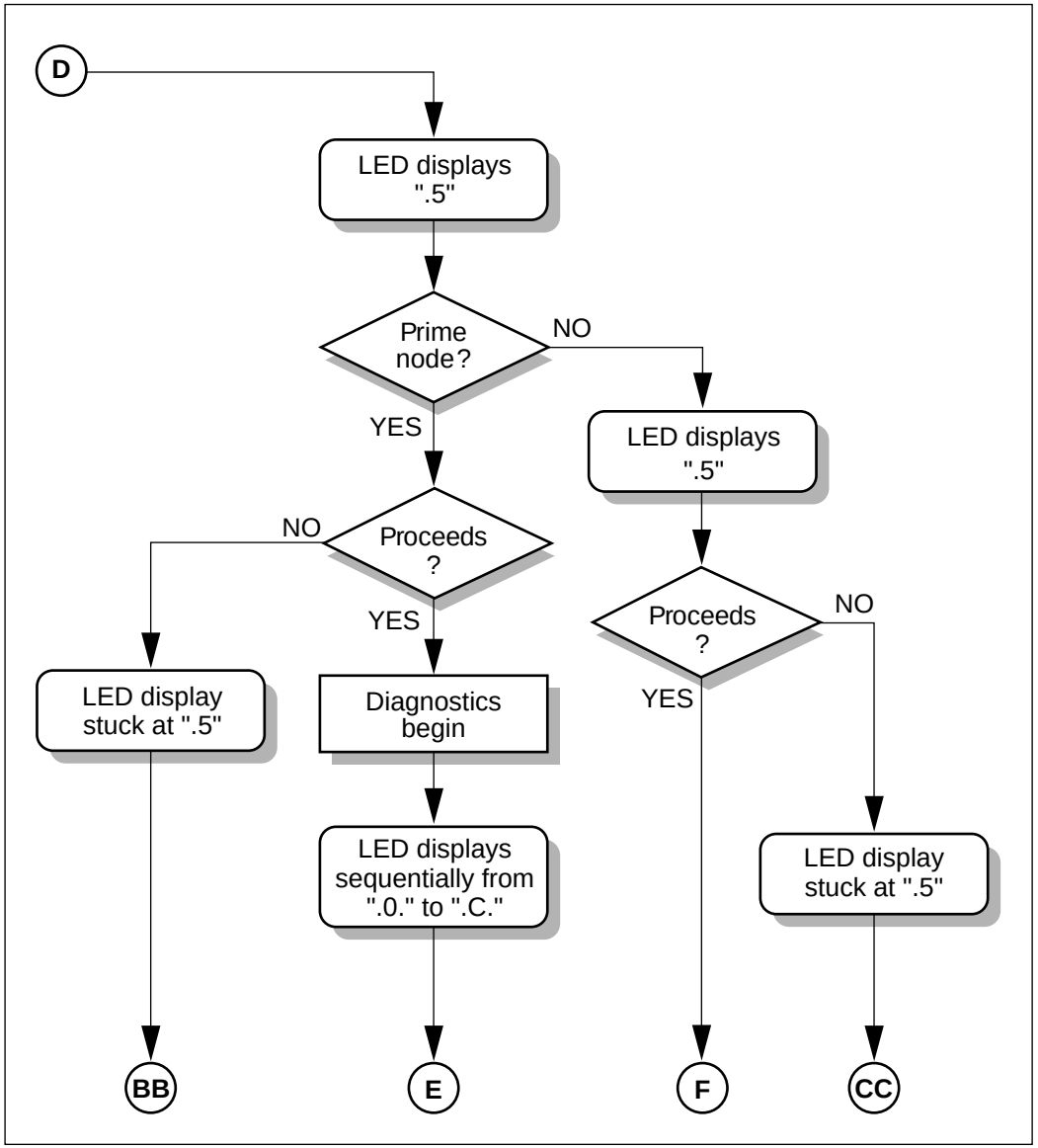
G100425/C

Enhanced MMP40 troubleshooting flowcharts (continued)



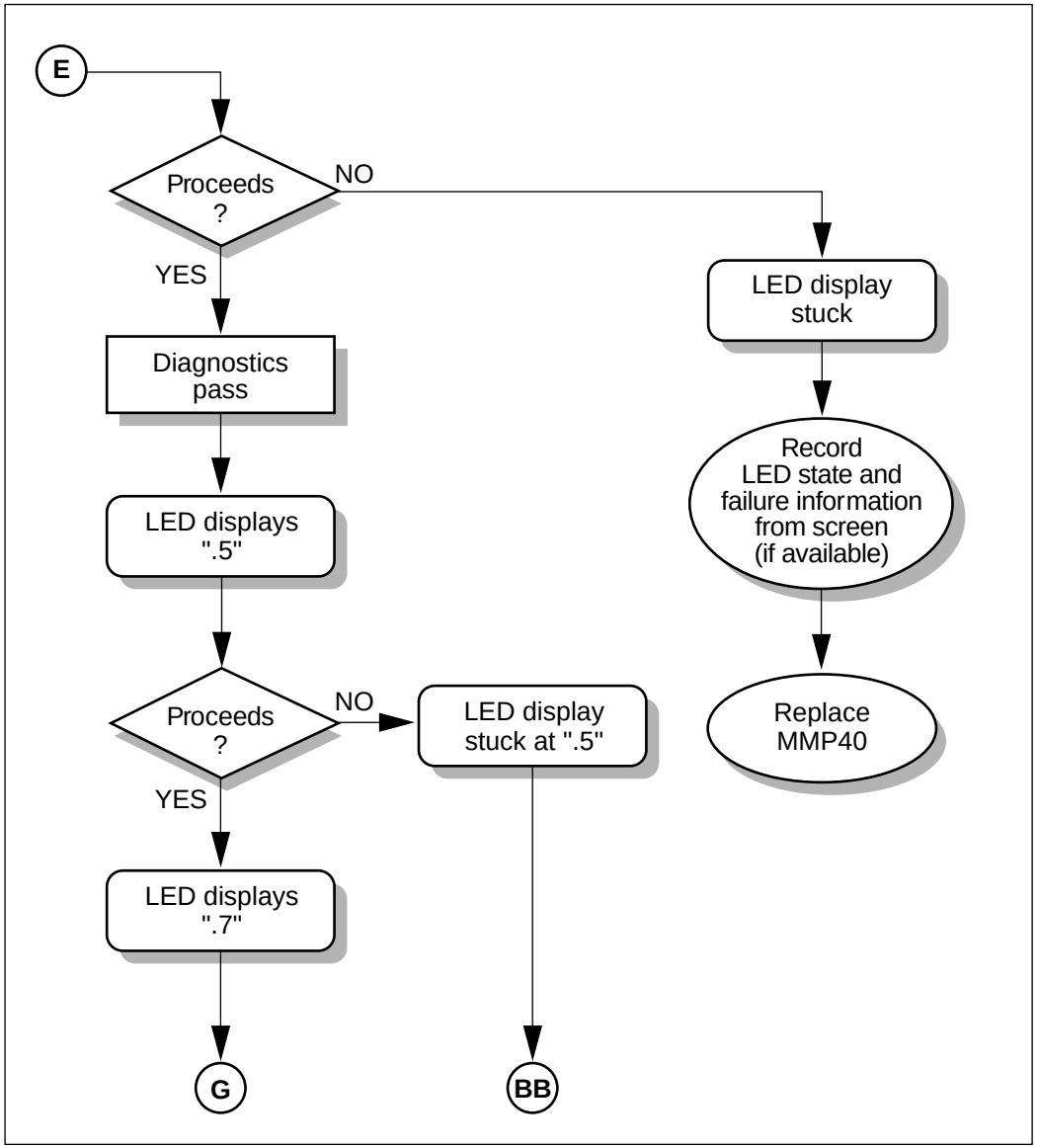
G100425/D

Enhanced MMP40 troubleshooting flowcharts (continued)



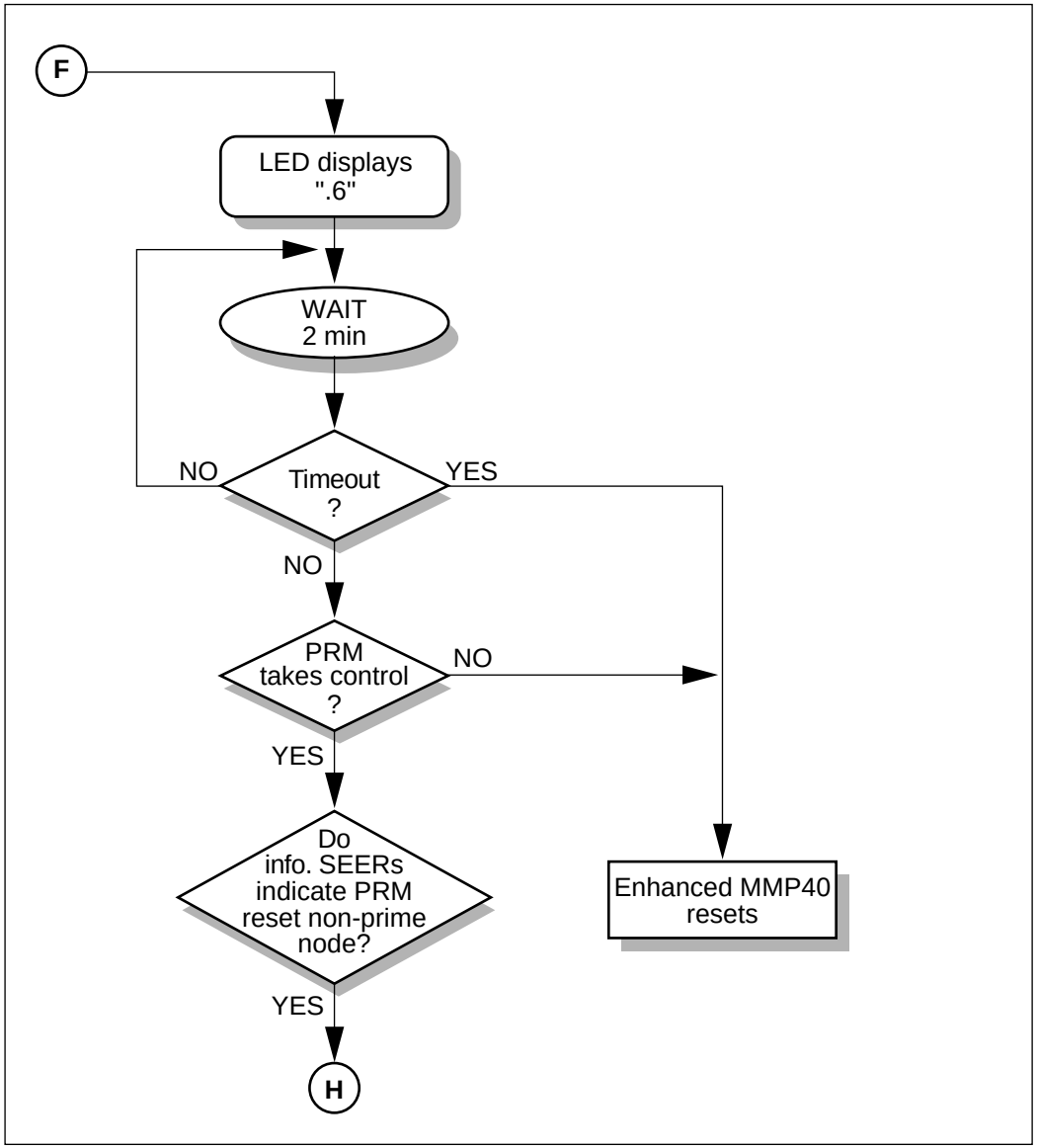
G100425/E

Enhanced MMP40 troubleshooting flowcharts (continued)



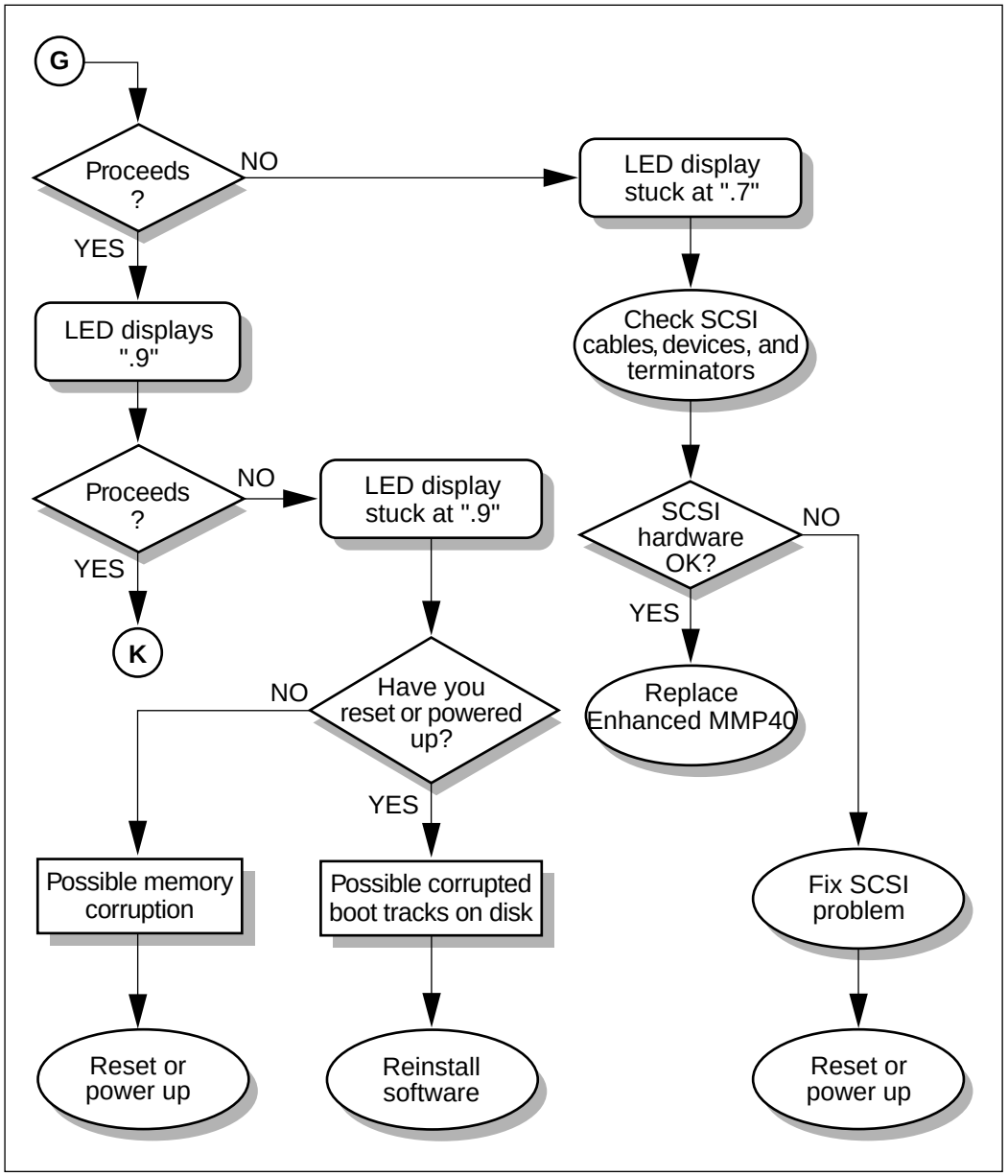
G101112

Enhanced MMP40 troubleshooting flowcharts (continued)



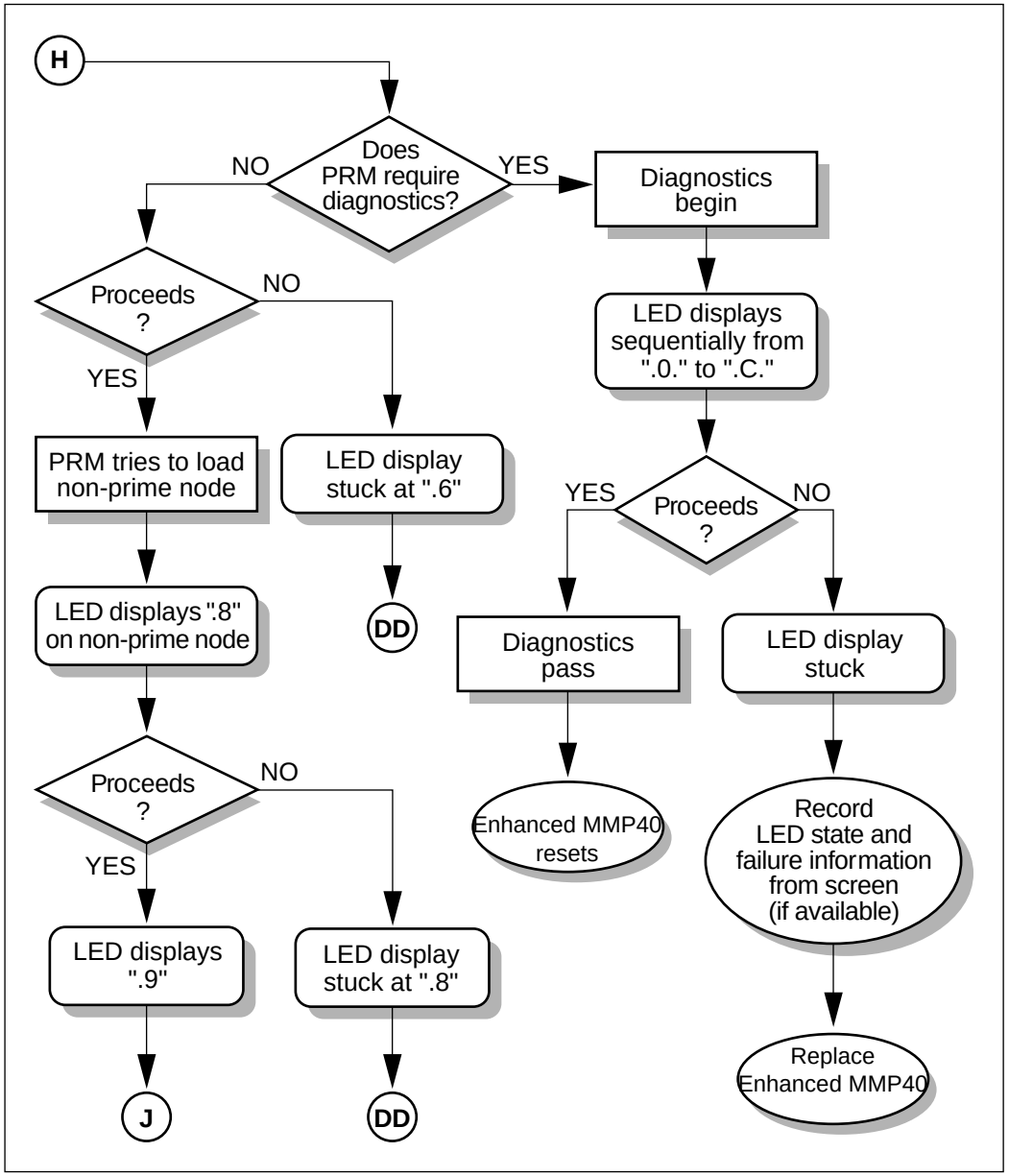
G100425/G

Enhanced MMP40 troubleshooting flowcharts (continued)



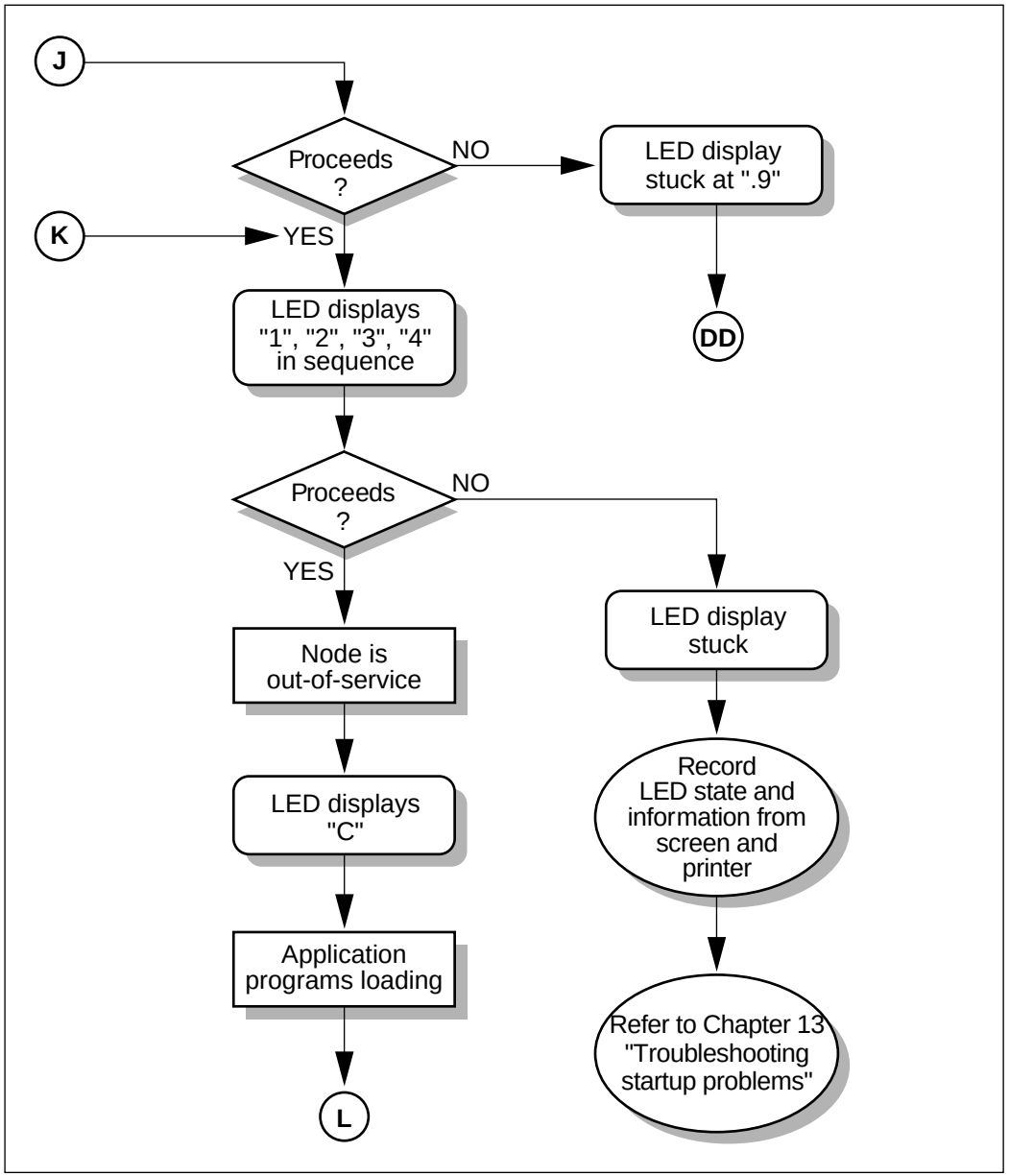
G100425/H

Enhanced MMP40 troubleshooting flowcharts (continued)



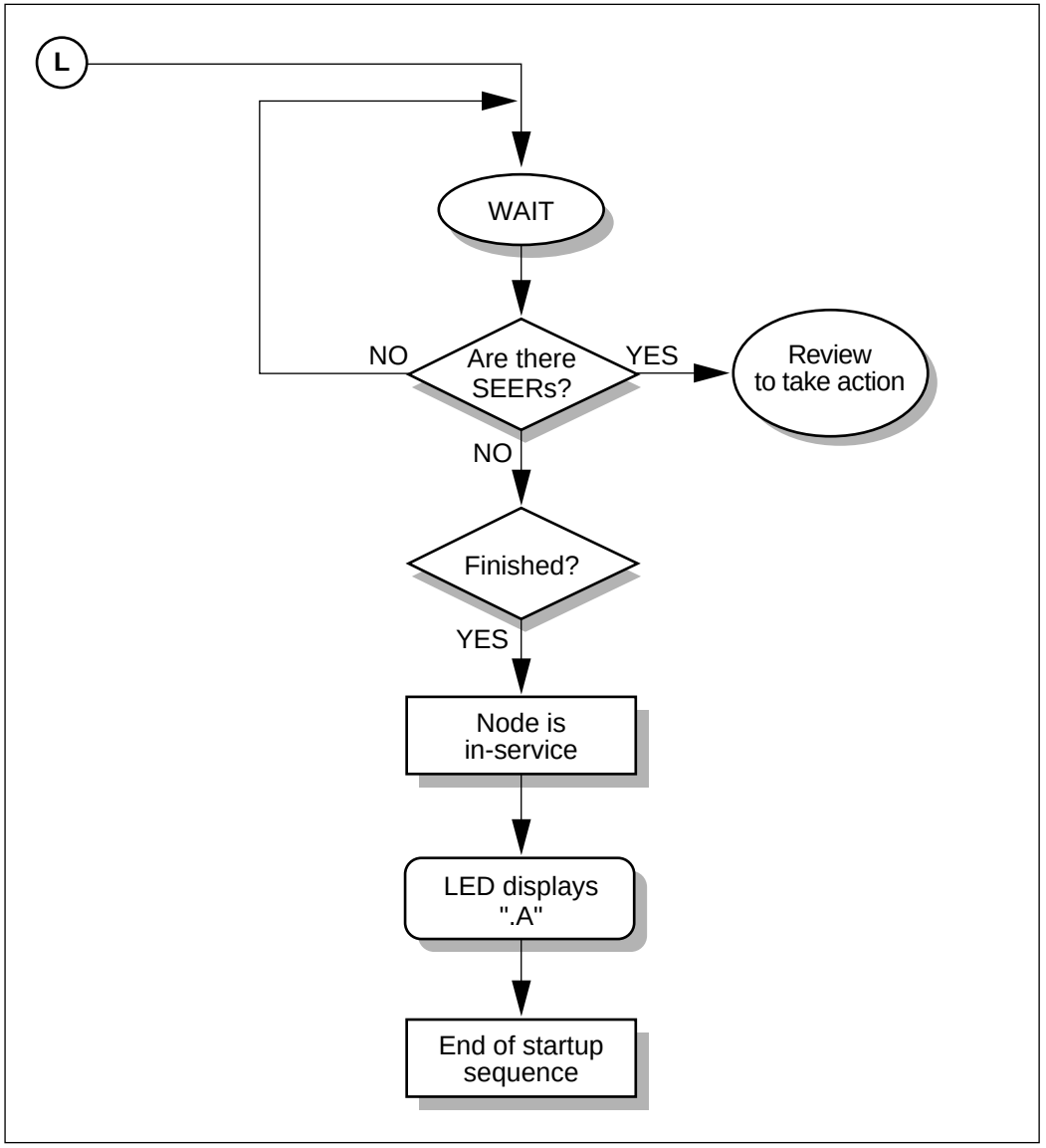
G101113

Enhanced MMP40 troubleshooting flowcharts (continued)



G100425/J

Enhanced MMP40 troubleshooting flowcharts (continued)



G101114

AA—LED stuck at ".4"

Possible causes	Recovery action
Ctrl-B or BREAK key was pressed, or terminal was powered up during startup 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.
Enhanced MMP40 card may be faulty.	Record messages on screen. Replace Enhanced MMP40 card.

BB: LED stuck at ".5" (prime node)

Possible causes	Recovery action
Ctrl-B or BREAK key was pressed, or terminal was powered up during startup sequence.	Reset or power up node again.
Enhanced MMP40 card may be faulty.	Record messages on screen. Replace Enhanced MMP40 card.

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 startup 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.
Enhanced MMP40 card may be faulty.	Record messages on screen. Replace Enhanced MMP40 card.

DD: LED stuck at ".6", ".8", or ".9" (non-prime node)

Possible Causes	Recovery Action
Prime node Enhanced MMP40 may be faulty.	Record LED state and any SEERs. Replace prime node Enhanced MMP40.
Enhanced MMP40 card on non-prime node may be faulty.	Record LED state and any SEERs. Replace non-prime node Enhanced MMP40.
Utility card may be faulty.	Replace faulty card.

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5. What information (if any) was missing from this book?

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