Meridian 1

Meridian Mail

General Description

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About this document

This document describes the features, capabilities, hardware, and software of Meridian Mail systems. This document is general in nature and contains the following sections:

- Chapter 1, "Meridian Mail product overview," describes the features and functions available to a user of Meridian Mail systems.

- Chapter 2, "Maintenance and administration," describes the features and functions related to the maintenance and administration of Meridian Mail systems.

- Chapter 3, "Configurations," provides an overview of the physical components and structure of each packaging option: Meridian Mail Modular Option, Meridian Mail Modular Option EC, and Meridian Mail Options.

- Chapter 4, "Technical specifications," provides details on specific capacities and parameters of Meridian Mail software and hardware.

- The "List of terms" provides definitions for abbreviations used throughout this manual.

- The "Index" provides another way to locate information in this manual.

Documents listed in the *Meridian Mail NTP Contents Overview* (NTP 555-7001-000) contain more detailed information on specific topics.

Document numbers may vary depending on the hardware configuration. Consult the *NTP Contents Overview* for details when a reference to an NTP number contains an "x" in place of a digit.

For the most part, from a Meridian Mail perspective, the Meridian 1 and
SL-1 switches are the same. For simplicity, only the term "Meridian 1" is
used when referring to these switches.

Chapter 1: Meridian Mail product overview

General description

Meridian Mail is a comprehensive voice processing system designed for use with Northern Telecom (Nortel's) Meridian 1 Communication Systems.

The standard single-customer business voice mail system provides the full array of features and options provided to Meridian Mail customers using either the MMUI or VMUIF compatible interface. A multi-customer system can be configured with both MMUI and VMUIF. Each customer group must use either MMUI or VMUIF.

The MMUI interface is a full-featured Nortel proprietary command-driven voice mail interface primarily designed for business users. Meridian VMUIF is an optional menu-driven interface similar to MMUI which is primarily designed for users with dual-tone multi-frequency (touch tone) telephone sets. This interface is designed for small business services to provide either a full-featured Voice Messaging system or only Call Answering and message retrieval. VMUIF is well suited for large campus environments such as universities and hospitals.

Basic features

Each Meridian Mail user is assigned a private voice mailbox number which is set up by the administrator. Users log on to their mailboxes using a password which they create themselves. Using simple commands at the keypads on their touchtone telephones, users can compose and listen to voice messages, and perform general messaging functions such as replying to, forwarding, and deleting messages.

Meridian Mail can be integrated with the call-processing capabilities of your switching system to provide messaging features such as Call Answering and Voice Messaging.

Call Answering prompts callers to leave messages when there is no answer or the extension is busy; Voice Messaging allows users to compose messages to, and receive composed messages from, other Meridian Mail users.

In all its applications, Meridian Mail provides recorded prompts to guide the inexperienced user. These prompts remind the user of available functions and provide instructions suited for novices. The system detects delays in user input and supplies additional information to assist the hesitant user.

Optional services

In addition to the basic features, the following optional services are available:

Networking
- Meridian Networking (MMUI)
- Virtual Node AMIS (MMUI)
- Network Message Service (MMUI)
- AMIS Networking (MMUI and VMUIF)

Multimedia
- Voice Menus
- Voice Forms
- Fax on Demand
- Meridian ACCESS

Optional services can be tailored to the needs of Meridian Mail users.

Administration

Meridian Mail is administered through a simple, menu-driven administrative interface available at a terminal or personal computer (PC). Using the administration menus, the administrator performs the initial configuration of the Meridian Mail system, maintains the user information base, creates voice applications such as announcements and Voice Menus, and monitors system usage and performance. The administrator also uses the menus to perform routine maintenance on the system.

If you have a Multi-Customer system, the administrative tasks can be assigned to several administrators. For example, a system administrator would be responsible for setting up both the Meridian Mail system and customer groups to meet specific requirements and preferences. To maintain the customers on the system, a customer administrator may then be assigned to each customer or a group of customers. Of course, you may still have just one administrator overseeing the whole system. In this case, the administrator would perform both system and customer administration tasks.

Integrated Mailbox Administration

Integrated mailbox administration (IMA) allows voice mailboxes to be created automatically when telephone sets are set up on the Meridian 1. The switching system communicates with Meridian Mail to add user information to the user database.

To take advantage of this feature, the Meridian 1 requires X11 Release 19.

Configuration options

Meridian Mail is available in several configurations to suit existing switching equipment. Modular Option and Modular Option EC serve Meridian 1 switches. Meridian Mail Options (which includes ST/RT and XT/NT) serve SL-1 switches.

Note: For the most part, from a Meridian Mail perspective, the Meridian 1 and SL-1 switches are the same. For simplicity, only the term "Meridian 1" is used when referring to these switches.

Meridian Mail uses the Automatic Call Distribution (ACD) functions of the Meridian 1 to connect users to voice services, and to communicate call-related information over the data link. Calls to voice services are distributed to the available Meridian Mail voice channels through the queueing functions of ACD.

System upgrades and expansions

Customers can also upgrade or expand existing systems to new configuration options. For more information on the various hardware configurations, see Chapter 3, "Configurations."

Voice channels connect the voice lines from the private branch exchange (PBX) to the processing circuits in Meridian Mail. The PBX and Meridian Mail also exchange call-related information through a data link.

Meridian Mail voice channels are provisioned in increments of four channels, or in the case of Modular Option EC, four or eight channels. Larger configurations are achieved by adding more nodes. Each node handles up to twelve voice channels; or, with the addition of a fourth voice processing card, up to 24. Therefore, the smallest Meridian Mail configuration is a single-node, four-channel system; and the largest configuration is a 5-node, 96-channel system.

Note: In systems with three or more nodes, there are no voice processing cards in node 1.

Basic voice services

MMUI and VMUIF offer two basic voice services: Voice Messaging and Call Answering. Only VMUIF can be set up to provide either both services or Call Answering only.

Call Answering

This service is integrated with the call-forwarding features of the switching equipment (Call Forwarding on Busy or No-Answer). This feature allows a user's mailbox to function much like an answering machine. Callers are able to leave messages for users who are away from their desks or on the phone. A greeting (recorded in the user's voice) is played, and the caller is prompted to leave a message after the tone.

When new messages have been received, the user is notified by one of the following two methods, depending on how the system has been configured.

- The message waiting indicator (MWI) on the telephone set lights up.

- The user receives an interrupted dial tone when picking up the receiver.

The user can retrieve and listen to these new messages.

Voice Messaging

Voice Messaging is a fast, reliable, and efficient method of communication that uses straightforward, easy-to-remember commands to control the range of features offered. The administrator provides each user of Voice Messaging with a private voice "mailbox". The user then logs on to the mailbox using a password.

Note: For VMUIF, passwords are not required for users who are logging in from their own telephone sets.

Voice Messaging using MMUI also includes Express Messaging through which any caller (not necessarily a Meridian Mail user) can

- send a message directly to a Meridian Mail user, without having to log on to Meridian Mail

- use Voice Messaging commands to compose and send a message

  Note: If networking is installed, Express Messaging cannot be used to send a message to a user at a remote site.

A set of simple commands lets the user perform even sophisticated messaging activities quite easily. Context-sensitive prompts offer guidance at every step. The Help service, accessed by pressing one key, supplements the prompts if the user desires, and speeds the learning process at the same time.

Features common to both MMUI and VMUIF

Descriptions of the features that are common to both MMUI and VMUIF follow. Additional features that are unique to MMUI and VMUIF (touch tone [DTMF] sets) are described as follows:

- MMUI on page 1-9

- VMUIF

  — touch tone sets on page 1-15

  — dial pulse sets on page 1-17

Mailbox Class of Service

Mailbox Class of Service (COS) provides an effective method of local user administration. Each user is assigned a class of service. The administrator maintains the COSs. This provides a quick and simple method of determining the mailbox properties for groups of users (for example, for billing purposes).

Mailbox password

Users can change their own logon passwords to ensure the privacy of their mailboxes. In addition, the administrator can set minimum password length and password expiry dates to ensure that secure access to messages is maintained.

Password expiry warning is a reminder from the system that your password is nearing its expiry date. It is time to change your password.

Mailbox access

You can access your private mailbox to retrieve messages, record a greeting, or create a password. You can be notified that you have a message waiting by a flashing indicator or, if your set does not have this feature, by an intermittent dial tone.

Logon allows users to access their mailboxes from their own or a remote phone. Once logged on, the user is informed of any new, unread, and urgent messages in the mailbox. Messages are announced in order of arrival.

On MMUI systems, users are also informed of messages that have been created but not yet sent. These are announced in order of creation.

The user can play any message as it is announced or, on MMUI systems, skip to another message. On VMUIF systems, the user cannot skip a message, but must specify whether to keep it, delete it, or save it as new (unread).

Autologin allows users to log on to Meridian Mail from their own telephones without entering a mailbox number and password. On MMUI systems, this feature must be enabled by the administrator.

Logon from Call Answering allows a user to log on to his or her own mailbox without hanging up after leaving a message at another user's mailbox.

Access security (incorrect logon) locks the mailbox if too many logon attempts are made using an incorrect password. The mailbox is locked until the administrator restores access privileges.

Logoff disconnects you from Meridian Mail Voice Messaging.

Greetings to callers

Personal greeting allows users to create customized personal greetings for callers reaching their mailboxes through Call Answering. On MMUI, greetings can be personalized for both internal and external callers. The greeting can be changed as frequently as required.

Default greeting is a system greeting that is played if the user chooses not to record a personal greeting.

Personal verification (spoken name) allows users to record their names. This personal verification then replaces the mailbox number in system prompts dealing with the user's mailbox.

Options for callers

Skip to record allows frequent callers to skip over a user's mailbox greeting and proceed directly to recording a message.

Message receive

Remote Notification allows users to receive notification of messages at remote telephone or pager numbers.

> *Note:* This feature may not be available in all areas outside North America.

Message playback

Mailbox summary delivers, after login, a count of messages as follows:

- on MMUI systems, the number of new messages and how many are urgent.

- on VMUIF systems, the number of messages in the mailbox and how many are new.

Play begins or resumes playback of a received or composed message, spoken name, or greeting.

Autoplay causes messages to be automatically played in turn after logon.

Delete removes a message from the user's mailbox.

Restore retrieves a message that is deleted during the current session.

Skip forward moves ahead five seconds in the message and then resumes playback.

Skip backward moves back five seconds in the message and then resumes playback.

Full mailbox notification prompts users to delete messages when their mailboxes are almost full.

If a VMUIF subscriber's mailbox is full, callers are unable to leave messages.

Autodelete allows the system to delete messages automatically after they have been in users mailboxes for a specified length of time.

Message send

Record allows a user to start recording a message.

For existing messages on MMUI systems, the record function can be used repeatedly to add to, or edit, the message already recorded before sending it. On VMUIF systems, messages cannot be edited; they must be recorded again.

Compose allows users to compose messages to, and receive composed messages from, other Meridian Mail users. Receiving a composed message is different from receiving a regular message.

A composed message is first recorded, or *composed,* and then sent to one person or a number of people simultaneously. When a composed message is sent, the recipient's phone does not ring. Instead the message is deposited directly in the user's mailbox. In this case, the sender of the message does not intend to speak directly to the recipient.

On the other hand, a Call Answering message is deposited in a person's mailbox after someone directly dials the user's extension and the phone rings but is not answered or is busy. In this case, the caller does want to speak with the user, but is unable to reach him or her and, therefore, leaves a message instead.

Personal Distribution List allows a user to create a personal distribution list of other users on the Meridian Mail system. A user can create up to nine personal distribution lists containing up to 99 mailbox numbers each.

On MMUI, numbers for Meridian Mail remote users on Meridian Networking and Virtual Node AMIS can be included in personal distribution lists. Refer to the section entitled "AMIS Networking" later in this section for a description of an AMIS virtual node.

On VMUIF, personal distribution lists can contain external numbers, or mailbox numbers, for local users and AMIS Networking.

System Distribution List allows the system administrator to create organizational distribution lists containing 120 mailboxes each. System distribution lists can only contain mailbox numbers for local users or remote users on Meridian Networking or Virtual Node AMIS.

Broadcast Message allows the system administrator, or other user authorized by the system administrator, to send a message simultaneously to all user mailboxes in the system.

Acknowledgement request informs the sender of a message as to when the message was played by the recipient. For AMIS Network users, the acknowledgement only indicates that the remote site has received the message. There is no guarantee that the message has been played.

Send allows users to send the outgoing message to addressees.

Non-Delivery Notification informs the sender that a message could not be delivered.

Delivery to Non-Users (optional) allows users to compose and send messages to telephone numbers that are not part of a Meridian Mail system or network.

> *Note:* This feature may not be available in all areas outside North America.

Help

The Help service provides users with context-sensitive general help information and prompts.

AMIS Networking

AMIS Networking allows networking among non-Meridian Mail users without having to predefine any of the remote sites. A message can be addressed to any user by means of a direct dial system access number plus a unique mailbox identifier.

Features unique to MMUI

Voice Messaging is a fast, reliable, and efficient method of communication that uses straightforward, easy-to-remember commands to control the range of features offered. The administrator provides each user of Voice Messaging with a private voice "mailbox." The user then logs on to the mailbox using a password.

A set of simple commands lets the user perform even sophisticated messaging activities quite easily. Context-sensitive prompts offer guidance at every step. The Help service, accessed by pressing one key, supplements the prompts if the user desires, and speeds the learning process at the same time. The following is a summary of the MMUI Voice Messaging features. For more information on using these features, see the *Meridian Mail Voice Messaging User Guide* (P0741311).

Greetings to callers

Greetings to caller features include the basic features described on page 1-6.

Revert to Attendant allows the service provider to designate an alternate answering position. The alternate number may also have a voice mail greeting.

Custom Optional Revert allows an individual subscriber to designate an alternate answering position to which callers can transfer.

Message playback

Message playback features include the basic features described on page 1-7.

Play envelope plays back the name or mailbox number of the sender and any other summary information about the message (for example, a message classified as Urgent or Private). This information is called the envelope.

Call identification in header allows, within a subscriber group, the name of the caller, either prerecorded or the spoken name, to be incorporated into the message header. See "Spoken name" in the "Greetings to callers" section.

Forward allows users to forward an existing message to one or more users.

Next message allows a user to advance to the next message in the mailbox.

Previous message allows a user to move back to the previous message in the mailbox.

Go to allows a user to move directly to a specified message in the mailbox. This allows the user to listen to a message of particular interest.

Message reply

Call Sender automatically initiates a telephone call to the sender of the message the user has just listened to. Using Call Sender, the recipient of a message can return a call immediately, without looking up or dialing the sender's number, by pressing a single number on the key pad.

Reply allows a user to reply automatically to the sender of a message on the Meridian Mail network or virtual nodes defined under AMIS. Using this feature, a user can reply directly to the sender of a voice message without entering the sender's mailbox number.

Reply all allows a user to reply automatically to the sender and all other recipients of a message on the Meridian Mail network or virtual nodes defined under AMIS.

Message send

Message send features include the basic features described on page 1-8.

Name Addressing allows users to address messages by name instead of mailbox number.

Message classification classifies a message by priority as Urgent, Standard, or Economy (for delivery over the network). An Urgent message is announced when a user logs on. Urgent and Standard messages are sent within a maximum time after their submission. Economy messages are sent at a specific time of day, usually during off-hours.

A message can also be designated as Private. A private message cannot be forwarded by the recipient to any other user.

Timed Delivery allows a user to specify a time for message delivery. When the user issues the Send command, the message is retained by Meridian Mail until the specified time.

Express Messaging allows a user to leave a message in another user's mailbox without having to

- log on to Meridian Mail to compose and send the message

- call the person directly (that is, ring the person's phone)

A special Express Messaging number is defined by the administrator. To use Express Messaging a user dials the Express Messaging number and enters the mailbox number of the person for whom he or she wants to leave a message. The user is then prompted to leave a message. Callers can also be transferred to Express Messaging to leave messages in mailboxes.

> *Note:* If networking is installed, Express Messaging cannot be used to send a message to a user at a remote site, even if that user is defined on the system as a remote voice user.

Dialing options

Thru-Dial allows a user to place a telephone call while logged into Meridian Mail. This alleviates the inconvenience of logging off to place a call. Thru-dial can also be used with the name dialing feature.

Name Dialing allows a user to place a call by entering the person's name instead of the extension number. This is particularly useful for automated attendant applications.

Dual language prompting (optional)

This feature is intended for multilingual systems. It allows certain system prompts to be played first in one language and then in a second language. This is especially useful in areas where a substantial percentage of the population is bilingual. For example, in many parts of Canada, it is essential that basic system prompts be repeated in both English and Canadian French.

The administrator selects the first and second languages. The prompts that are affected by this feature are prompts that are heard

- by users during mailbox logon

- by external callers during Call Answering sessions

- by callers during Express Messaging sessions

- when using the hospitality voice service (HVS) if installed

Networking

Meridian Networking allows a Meridian Mail network to link up to 49 Meridian Mail sites through the long distance network, Direct Distance Dialing (DDD), tie lines, or digital trunks.

Note: Single-node Modular Option and Options systems require an RSM card for the Networking feature to be installed.

Meridian Networking allows Meridian Mail users to send, receive, reply to, and forward voice messages to users located at other Meridian Mail sites, using the same commands as they would for users on their own system. Meridian Networking connections are established automatically by Meridian Mail through modems connected to the system. Meridian Mail uses the modems in conjunction with conferencing circuits on the private branch exchange (PBX) to communicate the message and messaging information to the remote networking site (see Figure 1-1).

Figure 1-1
**Meridian Networking overview**
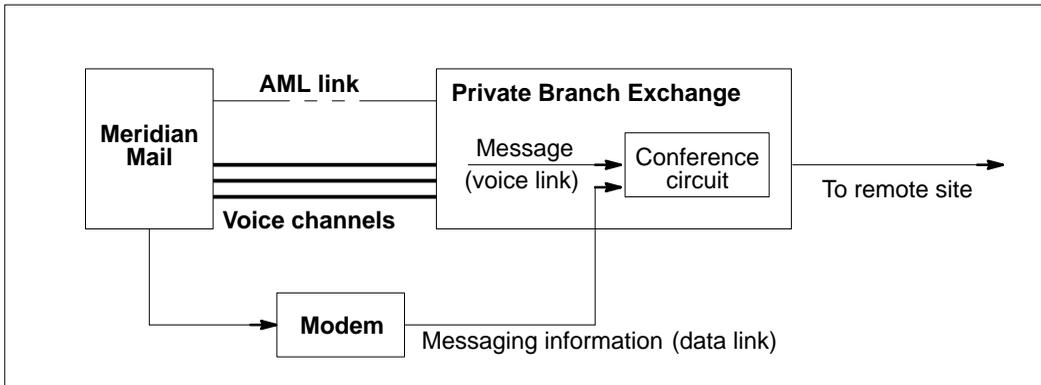
Virtual Node AMIS allows an AMIS site to be set up as a virtual node in a network that is equipped with both Meridian Mail Networking and AMIS Networking. Users at a Meridian Mail site are then able to send a message to those at an AMIS site using the same Meridian Networking addressing scheme.

Network Message Service (NMS) is an optional feature which allows one Meridian Mail system on a Meridian 1 at a prime location to provide voice services to multiple secondary PBX switches. The network, consisting of a Primary Rate Interface (PRI) or AML Signaling Link, provides customers at satellite locations with complete Voice Messaging feature functionality. (See Figure 1-2).

NMS allows users at satellite locations to access Meridian Mail and retrieve messages using the same method as users at prime locations. An unanswered call to a user is forwarded across the network to Meridian Mail and deposited into the appropriate user mailbox. Meridian Mail then directs the switch to notify the recipient of this call by enabling the Message Waiting Indicator (MWI).

NMS enables efficient use of unused Meridian Mail capacity by extending Voice Messaging services to additional users. NMS enables customers to offer Voice Messaging to smaller locations that cannot justify the purchase of a dedicated Meridian Mail system.

Figure 1-2
Network Message Service overview
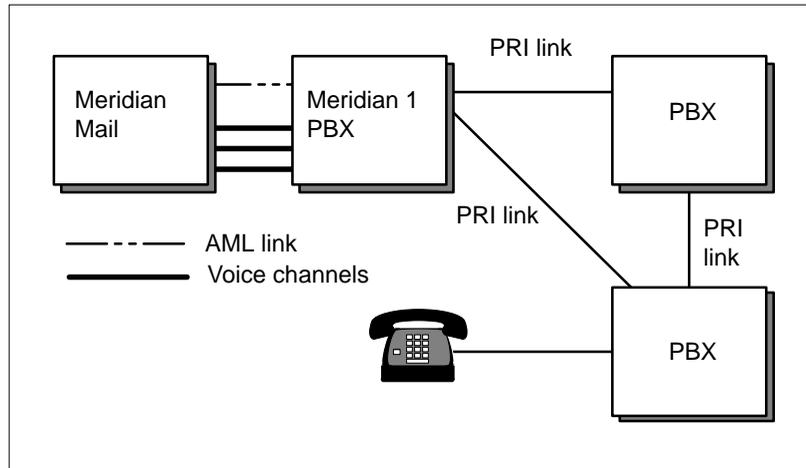
Hospitality voice services

The Hospitality voice services (HVS) feature is mutually exclusive with regular Voice Messaging. It provides the same functionality as Voice Messaging but is customized to suit the needs of the hotel industry. For example, when adding mailboxes to the system, you can specify them as either staff mailboxes or guest mailboxes. Staff mailboxes have full-featured Voice Messaging, whereas guest mailboxes have only basic capabilities.

In most hospitality environments, Meridian Mail is connected to a Property Management System (PMS). Most routine functions, such as check-in and check-out, are performed using the PMS. However, should the PMS be out of service for any amount of time, the Meridian Mail Guest Administration Console (GAC) provides some basic functionality for manual control of guest mailboxes.

Features unique to VMUIF

VMUIF Voice Messaging is designed specifically for the Central Office that wishes to offer either full-featured Voice Messaging or only Call Answering and message retrieval functionality to small business or residential subscribers. Call Answering subscribers do not have access to Voice Messaging functions (They cannot compose and send voice messages).

Single-line small business or residential subscribers with touch tone (DTMF) capability, have access to all the basic features with some enhanced options. A special, simplified Call Answering interface is available for households with dial pulse capability.

Subscribers with DTMF capability can access their private mailbox to retrieve messages, record a greeting, or create a password. They can be notified that they have a message waiting by a flashing indicator or by an intermittent dial tone on their telephone set, depending on the capabilities of the supporting switch and telephone.

Features available to users with touch tone sets

The Voice Messaging features described below are available for users with touch tone (DTMF) telephone sets. Users with dial pulse sets can only use the Call Answering and message retrieval functions listed on page 1-17.

Descriptions of the features available to VMUIF DTMF telephone sets follow.

Mailbox password

Password features include the basic features described on page 1-5.

If you wish to access your mailbox from a remote phone, you must create your own password. You can change your password whenever you wish. Your system administrator sets a minimum and maximum password length and an expiration date.

Optional password allows residential subscribers, who intend to access their mailboxes exclusively from their home phones, to choose not to create a password.

Mailbox access

Mailbox access features include the basic features described on page 1-6.

Logon greeting welcomes users to Meridian Mail when they log on to their mailboxes.

Introductory tutorial presents first-time login users with an introductory tutorial that explains how to record a greeting and how to create a password. Users can listen to the tutorial by selecting the appropriate menu options.

Call Answering only mailbox means that a mailbox is set up to receive but not to send messages. In this case, compose is turned off in the class of service (COS) assigned to the user.

Send only mailbox means that a user's mailbox is set up to send but not to receive messages. In this case, Call Answering is turned off in the COS assigned to the user.

Family mailboxes allows a user to log on to a main mailbox plus up to eight submailboxes from their own or a remote phone. The user accesses the mailbox by dialing the system access number and entering their personal password for their submailbox.

Family mailbox is either enabled or disabled in the COS assigned to to the user. If enabled, the number of allowed submailboxes is also determined by the COS. However, the owner of the main mailbox is responsible for setting up and administering the number of submailboxes once the administrator has specified the number of submailboxes that can be created.

Disable lockout automatically resets a user who has been locked out due to a number of unsuccessful login attempts. The reset occurs after the time period specified by the administrator in the COS assigned to the user.

Lockout revert automatically transfers a user who has been locked out due to a number of unsuccessful login attempts to a DN specified by the administrator in the user's COS.

Message playback

Message playback features include the basic features described on page 1-7.

Save as new allows users to retain read messages as "unread" or "new." These messages are identified as new messages when users log in again.

Volume control allows users to control the volume of messages during playback at any time. Four volume levels may be set. The volume level remains in effect until it is changed. If the volume level is changed when the playback is paused or has finished, the user hears a verification of the change.

Message send

Send features can be used within the same customer group. They include the basic features described on page 1-8.

Send on disconnect automatically sends a message to the addressed mailboxes when the user hangs up before actually sending a composed message. This function must be enabled in the user's COS; otherwise, the composed message is deleted when the user hangs up.

User interface

The user interface is compatible with both MMUI and VMUIF. It supports full type-ahead, with proper handling of error messages. All prompts (except for error messages) can be interrupted or preempted.

Call Answering features for users with dial pulse sets

A special, simplified Call Answering interface is available for households with dial pulse capability. Because you do not have a phone keypad to enter commands, much of the interface is system automated. You do not require a mailbox number, password, or greeting.

The following are the only features available to dial pulse sets.

Autologin means that, for dial pulse set users, mailbox numbers or passwords are not required in order to log in.

Autoplay means that Message Summary and Message Playback follow automatically after Autologin. Messages are played in sequence with new messages first. Each message plays immediately after its announcement header.

No user commands are available; the user may hang up at any time or wait until the system terminates the session.

Autodelete operates automatically to delete all played messages, usually overnight.

Personal greeting allows a user to record a personalized greeting. To do this, the user must call a Greeting change number. If the user does not record a personal greeting, the default system greeting is played.

DTMF access means that if a dial pulse set user calls from other than his/her household phone to access the mailbox, the system requires a mailbox number and password. However, the system still operates as if it was accessed from a household phone (that is, it does not require the user to enter any commands).

If a DTMF command is received, the call reverts to the standard DTMF user interface. This means that the subscriber can take control of the call session by pressing any key after successful login. This allows the subscriber to perform the following functions on each message:

- replay

- keep

- delete

- save as new

- go to next message

International language capability

Meridian Mail can be configured to support several languages other than English and may be deployed in many countries around the globe. Meridian Mail can even be set up to provide different language prompts for different groups of users on the same system.

Alternate language capabilities include

Arabic	German	Russian
Cantonese	German (Austrian)	Spanish
Czechoslovakian	Hungarian	• European
Danish	Icelandic	• Latin American
Dutch	Italian	Swedish
English	Japanese	Turkish
• American	Japanese (INTEC)	
• Female European	Korean	
• Male European	Mandarin (PRC)	
• New Zealand	Mandarin (Taiwan)	
Finnish	Norwegian	
French	Polish	
• Canadian	Portuguese	
• European	Portuguese (Brazilian)	

Note: Please check with your representative for specific language prompt availability.

Optional multimedia services

Meridian Mail offers the following optional multimedia services:

- Voice Menu applications

- Voice Forms

- Fax on Demand

Voice Menu applications

Voice Menu applications are call-processing applications, created by the administrator, that allow callers to listen to recorded information, leave messages for specific users, or place calls.

Any number of Voice Menu applications can be created, each with a unique directory number which the user can dial to gain access to the application. These applications use Voice Menus which can be linked into a hierarchy. Each Voice Menu offers a maximum of 12 actions to the user, one for each key on the telephone keypad.

Voice Forms

Voice Forms are optional applications, created by the administrator, that allow Meridian Mail users to collect voice information from callers over the telephone. A series of questions is played to a caller who responds to each question in sequential order. In responding to the questions, the caller is essentially filling out a form over the telephone.

Once the information is collected, it can be retrieved and transcribed to suit your individual requirements.

Fax on Demand

Fax on Demand allows administrators to create fax information. It also allows users to retrieve fax information directly using a fax phone, or to select fax items from a Voice Menu.

Fax information can be sent to the caller on the same call (by means of the fax phone), or the caller may be prompted for a callback number to send the fax a short time later.

Note: To support the Fax on Demand feature, ports must be allocated as multimedia ports, and the Voice Menus option must be installed. Fax on Demand also requires 32-kbyte NVP cards on Options and Modular Option systems.

Other optional services
Multi-Customer

Multi-Customer is an optional feature that allows a single Meridian Mail system to be divided into multiple customer groups. Calls received from other customer groups on the same system are treated as external calls. Users within a particular customer group are prevented from composing messages to users outside their own customer group (unless they are using AMIS Networking).

Note: On the Meridian 1, a customer can be divided into a number of tenants. A Meridian 1 "tenant" is equivalent to a "customer" on Meridian Mail. This means that on the Meridian 1, a Meridian Mail "customer group," as discussed in this section, is actually a "tenant" of a Meridian 1 "customer."

In order to have a fully functional multi-customer system, the Meridian 1 (release 17 or greater) must have the following packages installed:

— Multi-Tenant Service (TENS) 86

— Console Presentation Groups (CPGS) 172. If this package is not installed, then the main customer (Meridian 1) attendant (instead of the tenant's attendant) is selected when a caller reverts to the operator.

All restrictions set up via Multi-Tenant Service on the Meridian 1 apply to the customer on Meridian Mail.

Note that the Meridian Mail Multi-Customer feature can also be implemented in a single-tenant environment. For more details on the Multi-Customer and Multi-Tenant features, refer to the "Setting up the system" section in the *System Administration Guide for Multi-Customer Systems* (NTP 555-7001-302).

Customer groups are administered separately and may have customized values for

• available features

• default attendant revert DN

• broadcast DN

- maximum voice file size and retention limits

- security and access controls

- system greeting and default language

Voice Menu applications such as announcements, Voice Menus, Thru-Dial services, and Voice Forms (if installed) are specific to a customer group. You cannot create an application that applies to more than one customer.

Note 1: Some operational measurements are generated at the system level whereas others occur at the customer level. Traffic reports are generated at the system level only. Since users are assigned to particular customer groups, user usage reports are generated at the customer level.

Note 2: Meridian Networking can only be enabled for one of your customer groups. AMIS Networking, on the other hand, can be enabled for all customers if desired. Network Message Service (NMS) is not available in a Multi-Customer environment.

Multiple administration terminals

This feature allows you to configure up to three Multiple Administration Terminals (MATs) in addition to the main administration terminal. The main terminal can be used for performing user administration, voice services administration, and view mailbox class of service.

Up to four administrators can simultaneously log on to perform administration tasks. The only restriction is that no two administrators can work on the same user profile at the same time. If an administrator tries to access a user profile while another administrator is already logged on to the same profile, only the first administrator to access that profile will have modify and save privileges.

Disk-to-disk backup

In multi-node configurations, disk space can be allocated for the disk-to-disk backup function. This optional feature involves backing up the text data on one node to a special volume on another node. For example, the node 1 user volume is backed up on VS902T on node 2; and the node 2 user volume is backed up on VS901T on node 1.

Note: Disk-to-disk backup is not the same as disk shadowing. Disk-to-disk backup is performed on systems that have one disk per node. Disk shadowing is where each node has two separate disks, each pair storing the same data.

Disk-to-disk backups are done by the administrator and are designed to alleviate the need for frequent backups to tape. Backups to tape should still be carried out periodically for added security.

Disk Shadowing

Disk Shadowing, an optional feature, is available on the Meridian Mail Modular Option EC, Modular Option, and Options platforms, and provides protection against any loss of data in the event a disk failure occurs. With disk shadowing, disks are added to Meridian Mail in pairs. As data is written to disk, both drives in a pair are updated simultaneously in real-time.

If one of the drives in a pair fails or needs to be repaired, it can be removed from service without loss of data or interruption of service. Once the faulty disk is replaced or repaired, it can be synchronized with the functioning disk so that the disks are once again mirror images of each other.

Note 1: Disk shadowing requires two disk drives of 300-Mbyte capacity or greater.

Note 2: The use of 600-Mbyte disk drives on Modular Option systems is not supported.

Meridian Mail and other computers

Meridian Mail Reporter (optional)

AdminPlus (for DOS) on the PC has been replaced by Meridian Mail Reporter (MMR). If you are currently using AdminPlus and are converting to Meridian Mail Release 10.0, you must do the following:

- Convert your AdminPlus (for DOS) application on the PC to Meridian Mail Reporter.

- Do a feature expansion after conversion in order to enable AdminPlus and redefine the AdminPlus dataports. (Meridian Mail will drop the AdminPlus feature during conversion. The AdminPlus feature on Meridian Mail must be re-enabled in order to use Meridian Mail Reporter.)

Note: Meridian Mail Reporter can communicate with releases of
Meridian Mail prior to Release 10.0.

Meridian Mail Reporter, an optional feature, is connected to the system
through RS-232 (Utility card) communication ports on the PC and
Meridian Mail.

Meridian Mail Reporter provides file download capabilities through which
billing records are received from the Meridian Mail system. These records
can be processed on the PC using any popular spreadsheet, reporting, or
accounting program (for example, Lotus 1-2-3 or dBASE III). This feature
provides added flexibility to customers requiring detailed accounting and
billing for users of Meridian Mail.

Meridian ACCESS

Meridian ACCESS (Release 3), an optional feature, is available as a
software platform for specialty applications integrating with various
Meridian Mail hardware platforms. These include Interactive Voice
Response (IVR) and VISIT Messenger (a desktop messaging application),
which require specific development jointly defined between Nortel and its
customers.

In previous releases of Meridian Mail, only one ACCESS link could be
configured on nodes 1 and 3. Now, more than one ACCESS link can be
configured on

• RSM and utility cards of node 1

• MMP40 cards of voice nodes

This means that on a 1- or 2-node system, Meridian Mail Reporter can be
run at the same time as other ACCESS applications.

ACCESS links can now run at higher speeds, up to 38 400 bps on a single
node. The higher speed provides the increased throughput that is necessary
for supporting the demands of new applications such as desktop messaging.

Applications developed with ACCESS Release 3 are no longer required to
acquire a voice channel to communicate with the customer calling into, or
being called by the application service. For example, VISIT Messenger
enables a user to view messages received on a PC screen. A telephone call
(using a voice channel) is not required to perform this task.

There are five categories of ACCESS applications:

- *Inbound applications* These are applications that provide a service to callers who dial in, either from an internal telephone (an extension on the PBX), or from an external telephone (a pay phone or home telephone). The service to which the caller dials in is usually an IVR service such as

  — product ordering (airline tickets, catalogue purchases)

  — educational registration (college and university courses)

  — product information (audio catalogues or inventories)

  — telephone surveys (audio questionnaires)

  — telephone banking (account balances, transfers)

  VISIT Messenger is another example of an inbound application; the caller can access the VISIT Messenger FAX subsystem in order to print a fax message.

- *Outbound applications* These are applications that call internal or external telephone numbers. The application asks Meridian Mail to initiate an outgoing call and provides a service (IVR or call processing function) to a customer. Examples of outbound applications include telemarketing operations and paging services.

- *Transactional messaging applications* These types of applications combine the characteristics of both inbound and outbound applications. Users typically call into the service and leave messages in mailboxes (inbound). Subsequently, the application schedules a call to either a free agent or to the customer.

- *Administrative applications* These types of applications do not take incoming calls or place outgoing calls. An example of this type of application is electronic mail notification. Meridian ACCESS can be used to send summaries of voice messages to a host computer, receive notification of text messages, or turn on Message Waiting Indication at a telephone set. Paging services is another type of administrative application that is supported by Meridian ACCESS.

- *Desktop messaging applications* The key focus of these types of applications (such as VISIT Messenger) is to export Meridian Mail Voice Messaging capabilities to the user's desktop. This includes support for displaying and maintaining lists of voice messages, and support for Voice Messaging functions such as play, compose, and send. The desktop application places calls to the user when needed for playing or composing messages. The application does not need to answer calls and, in many cases, does not require a voice channel.

Chapter 2: Maintenance and administration

System maintenance

Meridian Mail has comprehensive maintenance facilities including

- automatic diagnostic reports

- diagnostics identifying fault conditions

- automatic system recovery from faults

- system courtesy down to ensure that no calls or messages are disrupted as the system is taken out of service

- remote maintenance access

- system backup to protect system data

System maintenance covers two broad areas: automatic maintenance and maintenance by human intervention.

Automatic maintenance

Automatic maintenance includes system diagnostics at the card level, reloading and reinitializing channels on a per-channel basis when necessary, initializing other programs fundamental to system operation, and monitoring all system events and errors. Events and errors are tracked and reported by System Error and Event Reports (SEERs). These can be viewed on the administration terminal screen, printed out, or both.

Maintenance by human intervention

The following two facilities are available for system maintenance:

- General system administration

- Tools and utilities

General system administration

Daily maintenance of the system is performed through menu-driven screens at the administration terminal. Daily maintenance involves backing up system data onto a tape or to another disk drive; setting and maintaining the system statistics and configuration; monitoring SEERs; and reporting any system faults to a technician as detailed in the SEERs.

Tools and utilities

Technical maintenance of the system is performed by the administrator or a technical craftsperson, either on-site or through remote terminal access. Technical maintenance involves testing voice functions and prompts, maintaining files, freeing disk space, and testing and changing cards when necessary. The technical craftsperson uses lower-level facilities than the administrator.

System administration

The Meridian Mail system is designed to make the daily administration of the system simple and straightforward. Administrative activities are carried out through easy-to-use menus from two possible types of devices:

- multiple administration terminals (MATs)

- local ASCII terminals

- remote ASCII terminals

Multiple administration terminals (MATs)

If you have the Multiple Administration Terminals feature installed, you can have up to four administration terminals: one main administration terminal and three secondary terminals.

Note: This feature is available only on the Modular Option EC platform.

The primary terminal can be used for performing all aspects of Meridian Mail administration, whereas the secondary terminals can only be used for user administration, voice services administration, and view mailbox class of service. These secondary terminals are referred to as multiple administration terminals (MATs).

With the multiple administration terminals feature, up to four administrators can simultaneously log on to perform administration tasks. The only restriction is that no two administrators can work on the same user or voice services profile at the same time. If an administrator tries to access a user profile while another administrator is already logged on to the same profile, only the first administrator to access that profile will have modify and save privileges.

Terminals
The administration terminal (also used for system maintenance) can be an NT220, HP700/22, HP700/32, VT220, VT320, VT420, or VT520 terminal. Only one terminal is required to access both the Meridian 1 and Meridian Mail systems provided that the single terminal access feature is on both the Meridian 1 and Meridian Mail, and that the Meridian 1 is running X11 Release 19 or later software.

Remote administration
A remote administration terminal can be connected to the Meridian Mail system through a modem. Compatible modems are

- Ven-Tel 9600plus

- Ven-Tel EC2400-33 rev. 5.2 or 6.0 (with the MNP/X.PC feature)

- UDS 2440

The modem can be connected to the same line as the local terminal and switched through an A/B switch box.

Printers
A printer can be connected to the auxiliary printer port on the administration terminal. System Event and Error Reports (SEERs) and operational measurement reports are directed to this printer. A second printer can also be connected to a spare serial port on the Meridian Mail system if the printing of SEERs needs to be dedicated to one printer. However, only one of the printers can be used at one time.

Administrator functions

The Meridian Mail administrator sets up the initial system configuration (normally a once-only operation) and performs some daily procedures needed for effective operation of the system. These procedures are performed either through the telephone or the administration terminal. Some procedures may need to be carried out frequently, perhaps daily; others only occasionally. The following are typical tasks for the administrator:

At the telephone

- *Custom system greeting* This involves the recording of the system greeting.

- *Broadcast messages* This task sends broadcast messages throughout the organization.

- *Voice prompt maintenance* This involves the routine recording of prompts, announcements, and greetings used in voice services.

- *Personal Verification recordings* This adds a personal verification recording to a user's profile.

At the Meridian Mail administration terminal

If the Multi-Customer feature is installed, some of the following tasks are performed at the system administration level whereas others are performed at the customer administration level.

- *User administration* This maintains a current information base of users, the Class of Service (COS) list, and system distribution lists. User administration also involves adding, changing, or deleting voice mail boxes.

  Note: If the Multi-Customer feature is installed, user administration is performed at the customer administration level only since users are associated with a particular customer group.

- *Class of Service (COS)* This is a template that contains information about the capabilities that a user has and the values that are assigned to specific parameters. It is essentially a method of classifying users according to their needs. When you add a user or customer group to the system, you must specify the Class of Service to which the individual belongs. This method of classifying users replaces the user models method used in releases older than Meridian Mail Release 9.0.

All new systems are installed without any COSs defined. It is, therefore, up to the system administrator to define the COSs initially. The task of defining COSs can be done before or after the addition of customer groups. It is, however, recommended that this be done before any customers are added to the system since the process of provisioning customer groups involves adding users who must be assigned to an existing class of service.

Note: Meridian Mail classes of service are not the same as Classes of Service (COSs) or Network Classes of Service (NCOSs) on the Meridian 1. Classes of service replace user models which were used in releases older than Meridian Mail Release 9.0.

For more information on how to use COS on Meridian Mail to set up users and their mailboxes, see the chapter entitled "Class of service administration" in one of the following NTPs (according to your system configuration):

— *System Administration Guide* (NTP 555-7001-301)
— *System Administration Guide for Multi-Customer Systems* (NTP 555-7001-302)
— *Customer Administration Guide for Multi-Customer Systems* (NTP 555-7001-303)

- *Integrated Mailbox Administration (IMA)* This allows user administration by way of the Meridian 1. (The Meridian 1 requires X11 Release 19). Refer to the appendix entitled "Integrated mailbox administration" in the *Meridian Mail System Administration Guide* (NTP 555-7001-301) for more information on how to use IMA to set up users and mailboxes.

- *General administration* This sets general system parameters, and backing up system data from the hard disk onto tape, or onto another disk drive (with the disk to disk backup option).

In a Multi-Customer system, the general administration functions are split up between the system administrator and the customer administrator. The General Options screen appears at both levels; however, they contain different parameters. Volume administration (backups) is performed at the system administration level.

- *Voice administration* This configures voice services, assigns phone numbers to voice services, and sets operational parameters and security for voice services. Voice administration also allows the administrator to create and maintain Voice Menu applications. The administration of Remote Notification is also done through the Voice Services Administration.

  Channels are also assigned to voice services in voice administration. Each channel is designated as having either "basic" or "full service" capability (depending on your purchased configuration). Basic channels can only be used for Voice Menus or IVR applications. Note that announcements, prompt maintenance, Thru-Dial, and time-of-day control can be used on basic channels as well.

  Voice administration is divided between system administration and customer administration in a Multi-Customer system. Most voice administration is done at the customer administration level. Here you can access the Voice Messaging Options screen, the Voice Security Options screen, the VSDN table, and the Outcalling Administration screen, as well as create voice menu applications and voice form applications (if installed).

  At the system administration level, you can access the Voice Security Options screen, the Voice Services Administration screen, and the Outcalling Administration screen (although they appear different from the screens at the customer administration level). You can modify voice menu applications, but you cannot create them. You cannot do any voice forms administration as the system administrator. Voice form applications are created and maintained by the customer administrator.

- *Hardware administration* This is used for obtaining general system configuration information.

  In a Multi-Customer system, hardware administration is only accessible to the system administrator.

- *System status and maintenance* This task views the operational status of the system and the activity of the different hardware components. You can access the Channel Allocation Table, including dedicating voice channels to a particular service, only when logged on as the system administrator.

  In a Multi-Customer system, system status and maintenance is only accessible to the system administrator.

- *Operational measurements (OM)* This task obtains system and user usage statistics sorted by users, events and errors, message traffic, disk space, and other criteria.

  In a Multi-Customer system, the system administrator can access all traffic reports. When logged on as customer administrator, you can access only user usage report.

- *Networking administration* This defines and administers the networking component of the system. The administrator is responsible for the local site's view of the network. Responsibilities include

  — local site administration, through which the basic networking parameters of the local site are specified

  — remote site administration, through which the connection parameters from the local site to selected remote sites are specified.

  In some installations, one administrator may be designated to maintain the networking parameters of several sites using dial-up access to these sites.

  In a Multi-Customer system, Meridian Networking can only be enabled for one customer group, and administration is carried out at the customer administration level.

  If AMIS Networking is installed, networking administration also involves administration of the AMIS service. AMIS can be enabled for as many customer groups as needed and is administered at the system administration level and the customer administration level on a Multi-Customer system.

  Refer to Chapter 2, "AMIS Networking," in the *Networking Services Administration Guide* (NTP 555-7001-335) for system access numbers.

- *Network Message Service* This defines and administers the Network Message Service feature. The administrator is responsible for administration of all sites linked by NMS, which primarily involves connection details and user administration.

  This feature cannot be installed on a Multi-Customer system.

- *Hospitality administration* *(if HVS installed)* This defines and administers the Hospitality service. The administrator is responsible for configuring hospitality voice services (such as Hospitality Voice Messaging, Express Messaging, and the post checkout mailbox), configuring the hospitality profile, monitoring the hospitality system status, and configuring hospitality installation parameters.

Chapter 3: Configurations

This chapter is divided into the following sections:

- The first section, entitled "Features common to all systems," describes features which are available on the Meridian Mail Modular Option, Modular Option EC, and Options hardware platforms.

- The second section, entitled "Data links," describes the methods of connecting to the switch or Meridian 1.

- The third section describes each of the assembly elements and configuration variants for the Meridian Mail Modular Option, Modular Option EC, and Options systems. This section also provides useful information to those considering an upgrade or expansion on their existing system.

Features common to all systems

Terminal interface

The link to the administration/maintenance terminal is an asynchronous 2400 bps RS-232 port on the MMP40 card. Multiple administrative terminals may be connected to RSM or utility card ports.

If you wish, you can change the terminal link speed on the MMP40 card to 9600 bps. If you change the speed, then you must ensure that the MMP40 card is labelled with the "9600 bps" sticker provided with the system.

A brief overview of how you can change the speed follows.

Table 3-1
Changing the terminal link (console port) speed

If you are	then do the following:
installing a Meridian Mail for the first time	1 Run the Console Port Speed Utility on the installation tape and change the speed on the MMP40 card to 9600 bps.
	2 Set the terminal to 9600 bps (by using the Modify Data Port screen on the Modify Hardware Utility from the Tools menu).
	3 Program the remote access modem to run at 9600 bps.
	4 Apply the 9600 bps sticker to the MMP40 card.
	5 Proceed with the installation.
converting to Meridian Mail Release 10.0 from a previous release	1 Run the conversion with the terminal and modem set at 2400 bps (the default).
	2 Run the Console Port Speed Utility on the installation tape and change the speed on the MMP40 card to 9600 bps.
	3 Set the terminal speed to 9600 bps (by using the Modify Data Port screen on the Modify Hardware Utility from the Tools menu).
	4 Program the remote access modem to run at 9600 bps.
	5 Apply the 9600 bps sticker to the MMP40 card.
	6 Reboot the system into service.

Note: You can use the Console Port Speed Utility at any time to change or reset the terminal link speed on the MMP40 card. Don't forget to

- change the speed on both the terminal and modem

- apply or remove the 9600 bps sticker

Remote access modem

The following modems allow remote access to Meridian Mail by authorized maintenance personnel:

- Ven-Tel 9600plus

- Ven-Tel 2400-33 rev. 5.2 or 6.0 modem with the MNP/X.PC feature

- UDS 2440

- other equivalent modem

Networking modems

Ven-Tel 2400-33 rev. 5.2 or 6.0 modems with the MNP/X.PC feature are required for networking. They are connected to the RS-232 ports on the RSM card or the utility card (Modular Option EC) and allow Meridian Mail to establish and receive calls from remote Meridian Mail sites.

Disk to disk backup options

In multi-node configurations, disk space can be allocated for the disk to disk backup function. This optional feature involves backing up the text data on one node to a special volume on another node. For example, the node 1 user volume is backed up on VS902T on node 2; the node 2 user volume is backed up on VS901T on node 1.

It should be noted that if disk to disk backup is implemented, there is a slight reduction in voice storage capacity.

Data links

AML link

The link to the Meridian 1 is known as the Application Module Link (AML) also known as the Integrated Services Digital Network/Application Link (ISDN/AP) or Command Status Link (CSL). This link is an RS-232 synchronous connection, supporting High-level Data Link Control/Link Access Protocol-Balanced protocol (HDLC/LAP-B). It is interfaced to the Meridian1 by one of the two ports on the MMP40 card. This link connects to the ESDI or MSDL interface on the Meridian 1. The baud rate of the link is 9600 bps.

ACCESS links

Multiple ACCESS links are supported on a single node. With multiple links, if there are two serial ports available for ACCESS links, a single node Meridian Mail system could have, for example, VISIT Messenger and Meridian IVR running at the same time.

ACCESS links can be configured on voice nodes only. The total aggregate ACCESS link speed cannot exceed 38 400 bps.

Meridian Mail Reporter link

The link to Meridian Mail Reporter is a 9600 bps asynchronous RS-232 connection to Meridian Mail Reporter by one of the following:

- one of the two ports on the MMP40 card

- one of the four ports on the node 1 Utility card on the Modular Option EC platform

- one of the four ports on the node 1 RSM card on the Options and Modular Option platforms

Modular Option systems

The Meridian Mail Modular Option (Figure 3-1) is specifically designed for Meridian 1 modular systems, but it can also be used with existing Meridian 1 systems if configured in independent columns. It consists of one or more Meridian 1-compatible Universal Equipment Modules (UEMs), each housing one Meridian Mail node.

Figure 3-1
Modular Option (2-node)
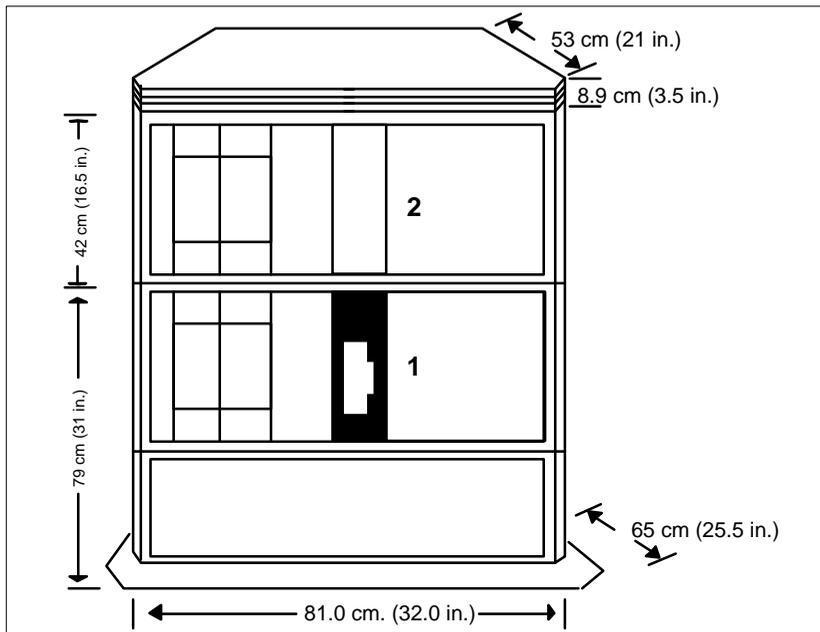
Circuit cards and subsystems

The Meridian Mail hardware packaging options are assembled from printed circuit pack (PCP) cards. Each node holds up to eight cards. Along with a hard disk and tape drive (tape drive in the prime node only), each node is equipped with the following cards:

- MMP40 board with 16-Mbyte RAM

- High Availability Bus Controller (HABC), if in a multi-node configuration (prime node only)

- one or more Voice Processor cards (except for node 1 in a 3-, 4- or 5-node system)

- RS-232 Service Module (RSM) card (optional)

MMP40

The MMP40 (Meridian Mail Processor 40) card has a 24-Mhz 68040 processor, 16 Mbyte of RAM (expandable to 64 Mbyte), a SCSI interface processor, and two RS-232 serial ports. MMP40 handles all voice-related functions and the data link to the PBX.

Note: MMP40 replaces the ESBC, both the 2- and 2.5-Mbyte memory cards, and the SCSI/RAM card of earlier Modular Option systems.

High-Availability Bus Controller (HABC)

The HABC card provides 2 Mbyte of RAM storage for programs and data, and circuitry that allows interconnection of nodes in multi-node configurations through an external bus (DVS bus).

Voice Processor

The Voice Processor card provides four voice ports. Each card has two Digital Signal Processors (DSPs) that provide voice compression and Digital Tone Receiver (DTR)/Automatic Gain Control (AGC) functions. The voice channel interfaces to the PBX through the network loop interface. The Network Voice Processor card (NVP), in 16K and 32K configurations, is used for connections to Meridian 1 systems. Some Meridian Mail features (such as Outcalling, AMIS Networking, Meridian Networking, and Fax on Demand) require the 32K NVP card.

RS-232 Service Module (RSM)

The RSM card provides four RS-232 serial ports, a battery-backup clock, and alarm relays. The ports connect to networking and remote administration modems, terminals, and printers.

Disk drive

The disk drive assemblies are 5-1/4 inch, offering 300 Mbyte or 600 Mbyte of storage capacity, or 3-1/2 inch offering 300 Mbyte, 600 Mbyte, or 1 Gbyte of storage capacity.

Tape drive

The tape drive assembly is a Tandberg TDC4220 unit which uses tapes capable of storing up to 2.5 Gbyte.

> *Note:* If you are converting from a previous release of Meridian Mail to Release 10.0 or greater, you can still use your Archive Corporation Viper unit and DC6150 or DC6250 tapes. You do not have to upgrade your tape drive unit at this time.
>
> If you choose to upgrade to the Tandberg tape drive, the drive will read Archive tapes if a system restore is required during conversion. The Tandberg drive will read tapes containing voice prompts, and full and partial backups.
>
> Please note that some downtime will be required when upgrading to the Tandberg tape drive.
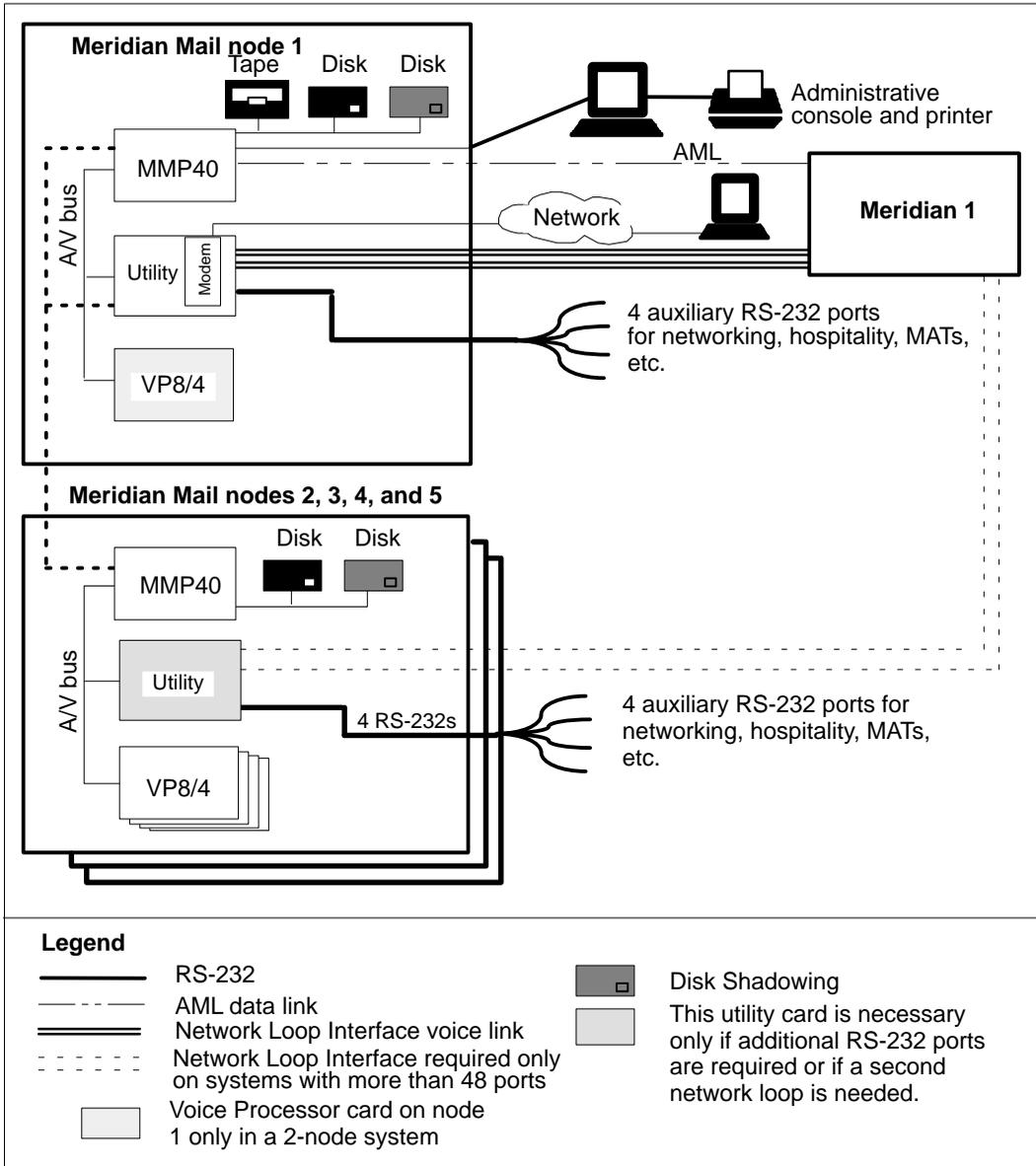
Configurations

The Meridian Mail Modular Option system is configured with MMP40 (68040) processor cards on all nodes.

Meridian Mail Modular Option systems can have up to five nodes. Figure 3-2 shows the interconnections of circuit cards and subsystems for single-node configurations. Figure 3-3 shows the interconnections in multi-node systems. The various connection options for administrative terminals and printers are not shown in these illustrations.

Figure 3-2
Modular Option schematic diagram (single-node)
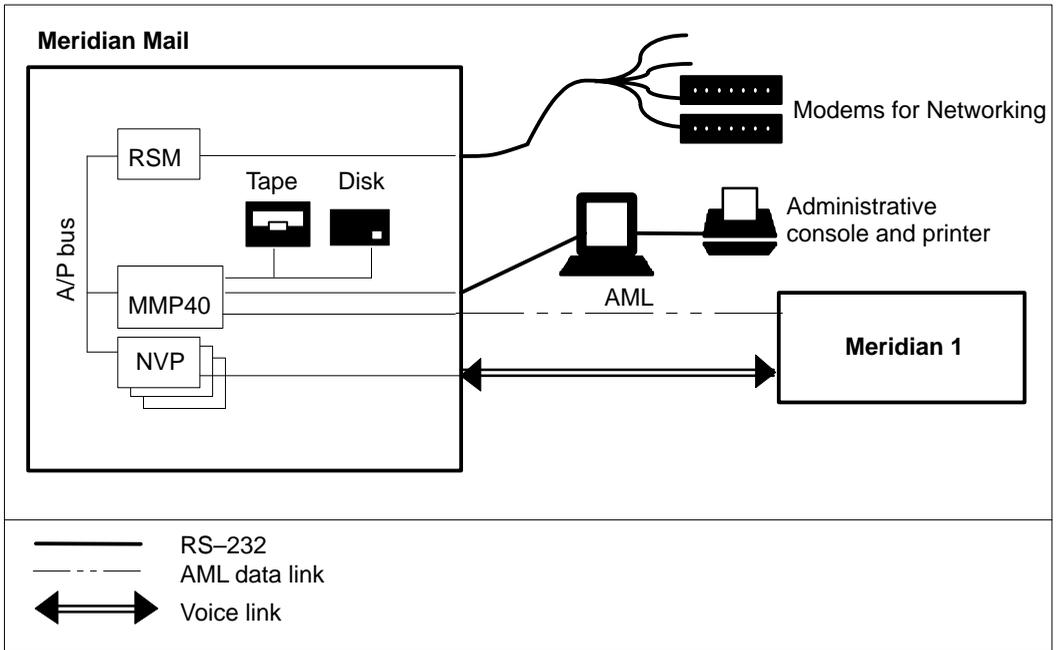
**Figure 3-3**
Modular Option schematic diagram (multi-node)

Note: NVP cards in node 1 are allowed in 2-node systems only.
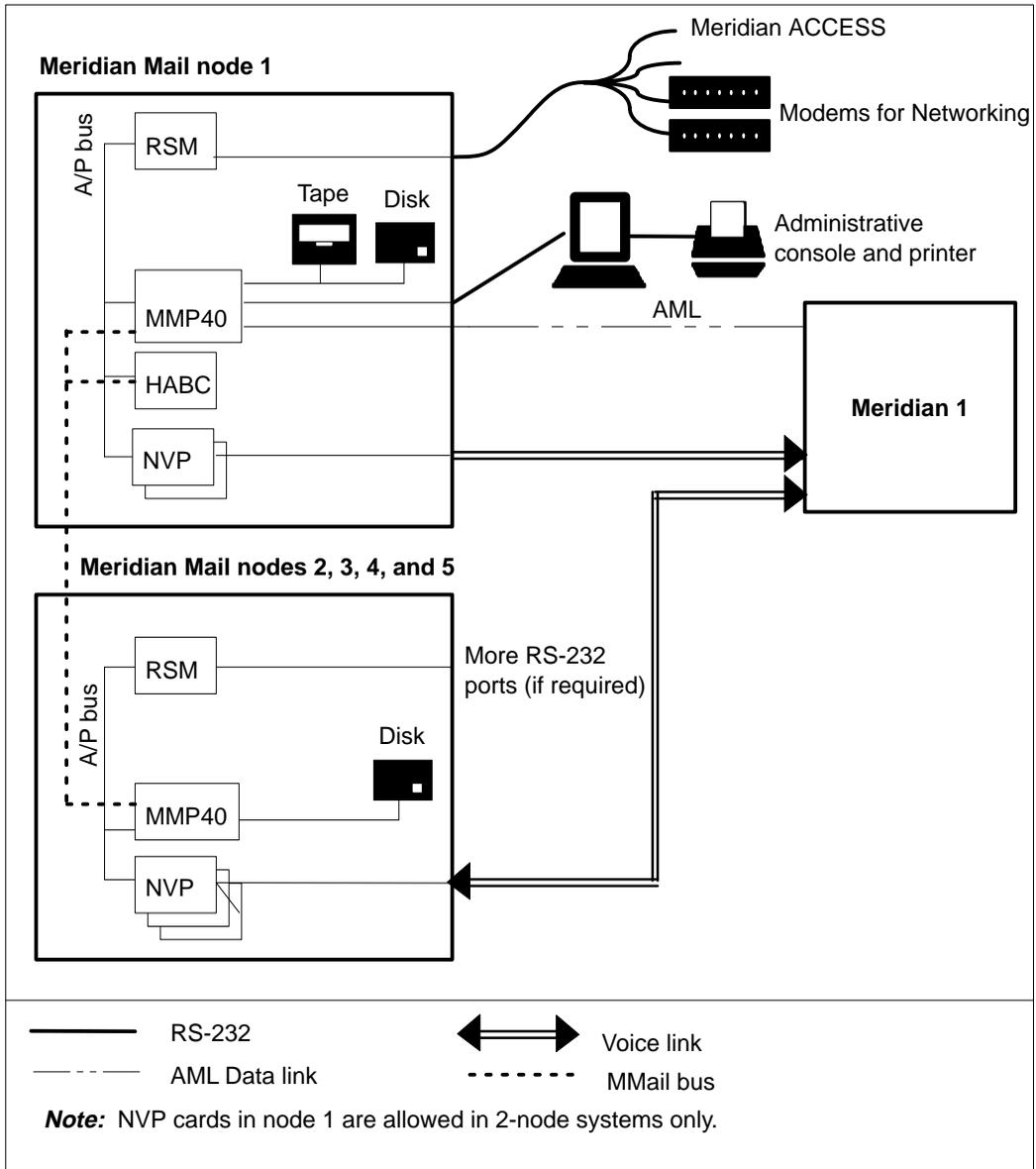
Modular Option EC systems

The Meridian Mail Modular Option EC, a version of Meridian Mail Modular Option, consists of one or more Meridian 1 compatible Universal Equipment Modules (UEMs), each housing up to three Meridian Mail nodes. It is specifically designed for Meridian 1 modular systems, but it can also be used with existing Meridian 1 systems if configured in independent columns.

Circuit cards and subsystems

The Modular Option EC system merges the hardware and the software of six Modular Option printed circuit packs (PCP) onto three PCPs, thereby substantially increasing the functionality of the system and decreasing the shelf space required to house the cards. Along with the hard disk (two hard disks if you choose the disk shadowing option as described in Chapter 1) and the tape drive (in the prime node only), each Meridian Mail Modular Option EC node is equipped with the following cards:

- MMP40 card with 16-Mbyte RAM

- one utility card (dependent on node number)

- one or more voice processors (except for node 1 in a 3-, 4- or 5-node system), with either 4 or 8 ports (VP4/VP8)

MMP40
The Meridian Mail Processor 40 (MMP40) has a 24-Mhz 68040 processor, 16 Mbyte of RAM (expandable to 64 Mbyte), a SCSI interface processor, and two RS-232 serial ports. It replaces the 68K cards in Modular Option EC 68K systems. The MMP40 handles all voice-related functions, provides storage for programs and data, interfaces to the tape and disk storage devices, and connects to the Meridian 1 by means of the AML link.

Utility card

The utility card replaces the HABC and RSM card found in Meridian Mail Modular Option and Options systems. It provides the system timing and network interface facility for Meridian Mail and other applications. This circuit pack includes 4 auxiliary RS-232 ports. One utility card is required in every system. A second utility card is required if you have more than 48 ports.

Meridian Mail Option EC can accommodate a second utility card in the second and/or third module if additional RS-232 ports are needed. The maximum number of utility cards for the various configurations are listed in Table 3-2.

Table 3-2
Utility card locations for various configurations

Number of nodes	Shadowed or unshadowed	Maximum number of utility cards supported	Location of utility card(s)
1	Shadowed or unshadowed	1	module 0, slot 5
2	Shadowed or unshadowed	1	module 0, slot 5
3	Unshadowed only	1	module 0, slot 5
3	Shadowed only	2	module 0, slot 5 and module 1, slot 5
4	Shadowed or unshadowed	2	module 0, slot 5 and module 1 slot 5
5	Shadowed	2	module 0, slot 5 and module 2, slot 5
5	Unshadowed	2	module 0, slot 5 and module 1, slot 5

Voice Processing cards (VP8/VP4)

The VP8 and VP4 cards provide eight and four voice ports, respectively. Each card has either four (VP8 cards) or two (VP4 cards) Digital Signal Processors (DSPs) that provide voice compression and Digital Tone Receiver (DTR)/Automatic Gain Control (AGC) functions. The voice ports interface to the utility card by means of a voice bus. The utility card, in turn, interfaces to the Meridian 1.

Disk drive

The disk drive assemblies for Meridian Mail Modular Option EC are 3-1/2 inch disk drives that offer 300 Mbyte or 1 Gbyte of storage capacity.

Tape drive

The tape drive assembly is a Tandberg TDC4220 unit which uses tapes capable of storing up to 2.5 Gbyte.

Note: If you are converting from a previous release of Meridian Mail to Release 10.0 or greater, you can still use your Archive Corporation Viper unit and DC6150 or DC6250 tapes. You do not have to upgrade your tape drive unit at this time.

If you choose to upgrade to the Tandberg tape drive, the drive will read Archive tapes if a system restore is required during conversion. The Tandberg drive will read tapes containing voice prompts, and full and partial backups.

Please note that some downtime will be required when upgrading to the Tandberg tape drive.

Configurations

The Meridian Mail Option EC system contains MMP40 (68040) processor cards on all nodes. Each voice node can support up to 24 voice ports. Therefore, a 5-node MMP40 system can support up to 96 voice ports.

Modular Option EC systems can be configured with up to five nodes. Figures 3-4 and 3-5 show the alternative card configurations. The various connection options for administrative terminals and printers are not shown in these illustrations.

Figure 3-4
Modular Option EC schematic diagram (single-node)
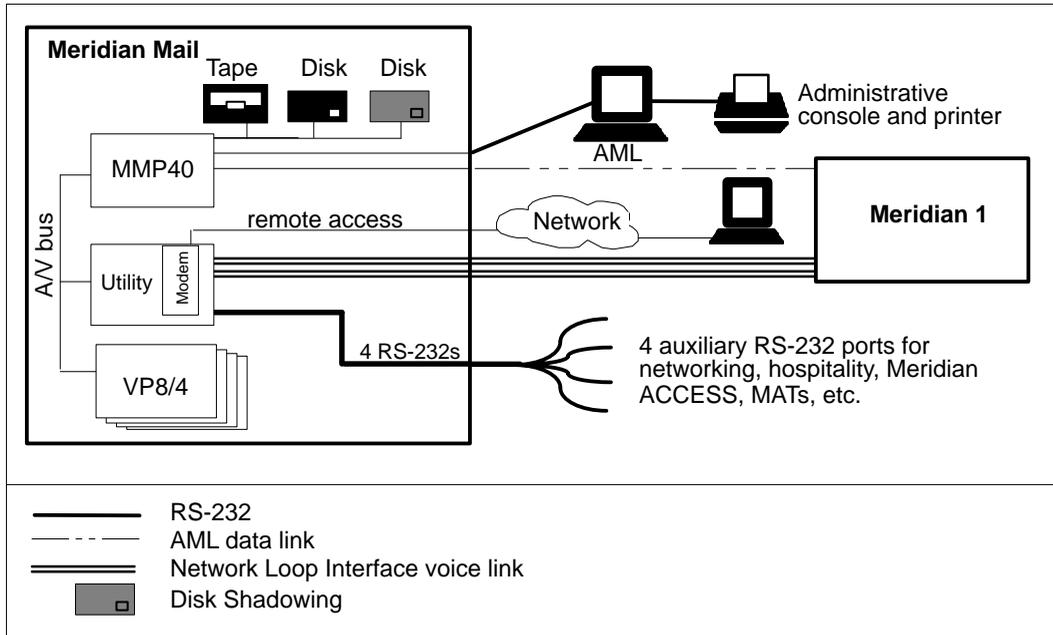
Figure 3-5
Modular Option EC schematic diagram (2-, 3-, 4-, or 5-node systems)

Options systems

Meridian Mail Options are used in some Meridian 1 configurations:

- *ST/RT Options* Meridian Mail is configured as a Meridian 1 ST or RT tier. The Meridian Mail node takes up the right half of the tier, with the left half configured for a PE shelf (Figure 3-6).

- *Options* Meridian Mail is configured as a single PE shelf in a large Meridian 1 cabinet (Figure 3-6).

Figure 3-6
Options system
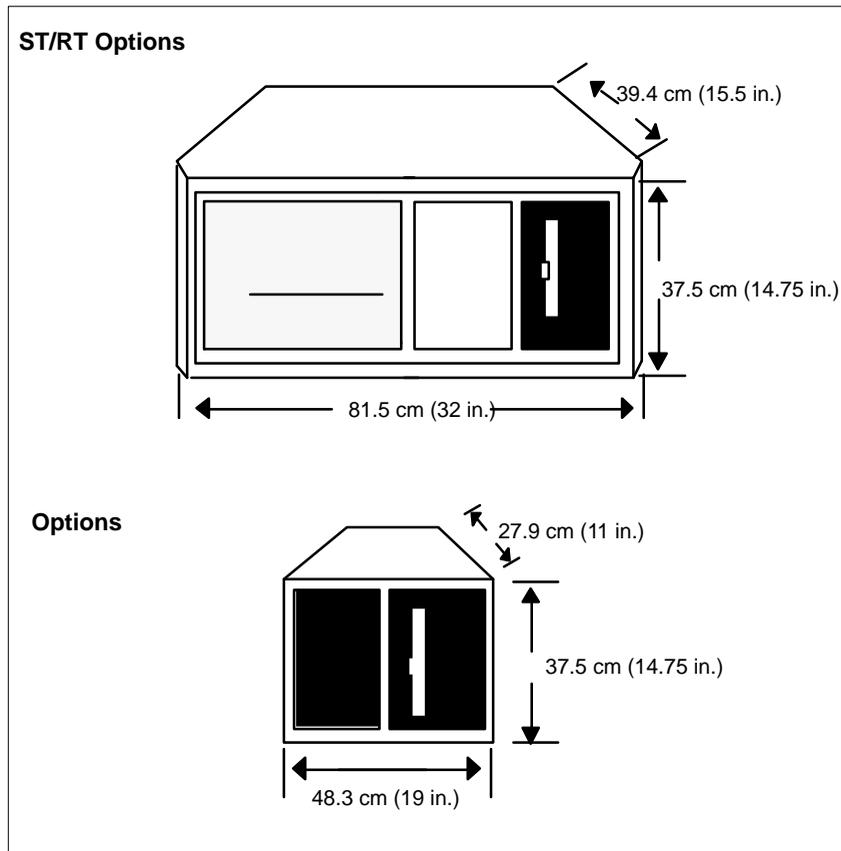
Circuit cards and subsystems

The Meridian Mail hardware packaging options are assembled from printed circuit pack (PCP) cards which are housed in a card cage. Each card cage holds up to eight cards. Along with a hard disk and tape drive (in the prime node), each cage constitutes a Meridian Mail node and is equipped with the following cards:

- MMP40 board with 16 Mbyte of RAM

- High Availability Bus Controller (HABC), if in a two-node configuration (prime node only)

- one or more Voice Processor cards

- RS-232 Service Module (RSM) card (optional)

For a description of the cards and tape drive, refer to the section entitled "Circuit cards and sub-systems" for the Modular Options platform (page 3-5).

Configurations

The Meridian Mail Options system is configured with MMP40 (68040) processor cards on all nodes. The MMP40 replaces the ESBC, SCSI/RAM, and memory cards of earlier systems.

An Options system may have a maximum of two nodes with up to 12 voice ports per node.

Figure 3-7 shows the interconnections of circuit cards and subsystems for single-node configurations. Figure 3-8 shows the interconnections in two-node systems. The various connection options for administrative terminals and printers are not shown in these illustrations.

Figure 3-7
Options schematic diagram (single-node)
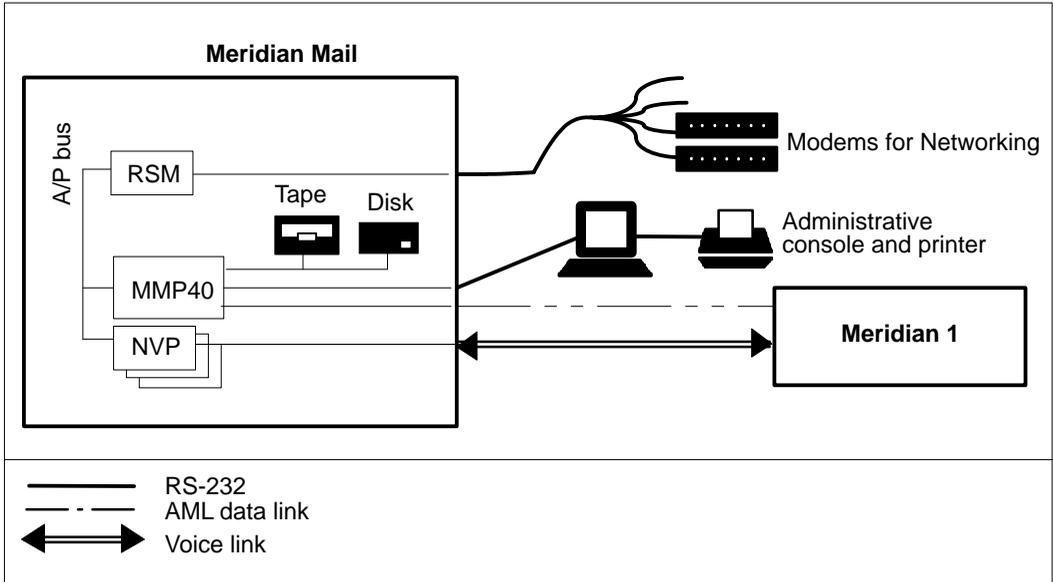
Figure 3-8
Options schematic diagram (multi-node)
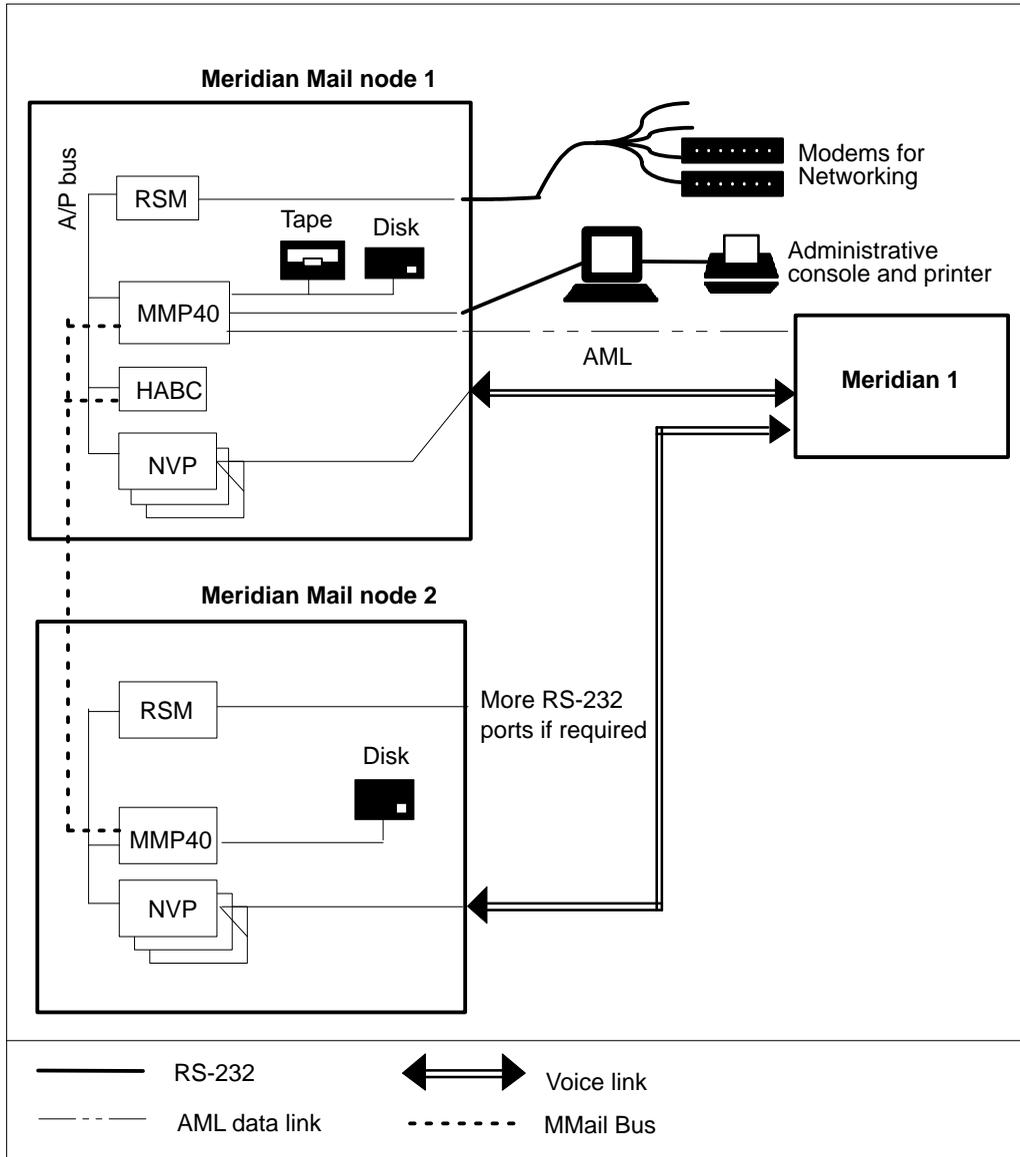
Chapter 4: Technical specifications

The following tables provide information on the features and capacities of Meridian Mail systems. The maximum capacities given in these tables should be considered typical values since they represent various types of information which share a finite amount of disk space. The maximum capacities should be considered recommended values that guarantee efficient and trouble-free operation of the given Meridian Mail configuration.

Table 4-1
Maximum capacities common to all systems

Voice Services

Voice Service Directory Numbers:
Options: 4000
Modular Option and Modular Option EC: 24 000

Up to four languages, subject to disk space availability

Voice Menu Applications

Voice Menus:
Options: 5.4 hours on System Volume; 100 hours on User Volume
Modular Option and Modular Option EC: 19 hours on System Volume;
100 hours on User Volume

20 levels of Voice Menus

Voice Forms Applications

The number of Voice Forms definitions per customer is limited to disk space
availability (see Table 4-2)

1000 responses per Voice Form

Up to 150 fields per Voice Form

User Information

360 minutes per mailbox

999 messages per mailbox

Distribution Lists

The number of system distribution lists is limited to disk space availability

120 entries per system distribution list

9 personal distribution lists per mailbox

99 entries per personal distribution list

Addresses per message

290 addresses for 99 minutes of voice message

350 addresses for 60 minutes of voice message

425 addresses for 10 minutes of voice message

440 addresses for 1 minute of voice message

ACCESS

Refer to Table 1-1 in the *Meridian ACCESS Configuration Guide*
(NTP 555-7001-315).

Networking

49 networking sites

Operating Temperature

40 degrees C (104 degrees F) with thermal shutdown capability

---

Table 4-2
Meridian Mail configuration for Modular Option, Modular Option EC, and Options platforms

Note: For Options, only the numbers in the 1-node and 2-node columns are applicable.

System	1-node	2-node	3-node	4-node	5-node
Maximum directory entries	10 000	10 000	15 000	18 000	25 000
Maximum number of mailboxes	1399	2516 on node 1 3074 on node 2	3074 on each of nodes 2 and 3	3074 on each of nodes 2, 3, and 4	3074 on each of nodes 2, 3, 4, and 5
†EC–MMP40 voice channels	4–24	28–48	28–48	52–64	64–96
‡All other voice channels	4–12	16–24	28–32	24–48	40–64
Disk-to-disk backup	no	yes	yes	yes	yes
¥Disk shadowing available	yes	yes	yes	yes	yes
*Maximum networking ports	3	5	7	7	7
Storage hours	5, 11, 24, 36, 54, 100	26, 54, 84, 114, 200	30, 60, 90, 120, 200	45, 90, 120, 180, 300	60, 120, 180, 240, 400
** Storage hours with disk-to-disk backup	n/a n/a	48 78, 108, 190	41 71, 101, 177	72 102, 162, 276	102 162, 222, 374
Maximum personal verifications	5 h sys: 2100 11 h sys: 2100 24 h sys: 3500 36 h sys: 3500 54 h sys: 3500 100 h sys: 5700	26 h sys: 2100 54 h sys: 3500 84 h sys: 3500 114 h sys: 3500 200 h sys: 5700	19 000	19 000	19 000
—continued—					

Table 4-2 (continued)
Meridian Mail configuration for Modular Option, Modular Option EC, and Options platforms

System	1-node	2-node	3-node	4-node	5-node
***Maximum Voice Menus & Forms definitions (hours)	5 h sys: 2 (5) 11 h sys: 2 (11) 24 h sys: 3.5 (24) 36 h sys: 3.5 (36) 54 h sys: 3.5 (54) †100 h sys: 5.4 (100)	26 h sys: 2 (9) 54 h sys: 3.5 (23) 84 h sys: 3.5 (23) 114 h sys: 3.5 (52) †200 h sys: 3.5 (54)	30 h sys: 18 (15) 60 h sys: 18 (30) 90 h sys: 18 (60) 120 h sys: 18 (60) †200 h sys: 18 (100)	45 h sys: 18 (15) 90 h sys: 18 (30) 120 h sys: 18 (60) 180 h sys: 18 (60) †300 h sys: 18 (100)	60 h sys: 19 (15) 120 h sys: 19 (30) 180 h sys: 19 (60) 240 h sys: 19 (60) †400 h sys: 19 (100)
****Disk drives	1 (2)	2 (4)	3 (6)	4 (8)	5 (10)
Tape drives	1	1	1	1	1

* Numbers in brackets are the number of networking ports for shadowed systems.

** With Disk-to-disk backup

*** The figures are representative maximum values when Voice Menus and Voice Form Definitions share storage space with Personal Verifications. The figures in brackets represent maximum values when Voice Menus and Form Definitions share storage space with Voice Messaging.

**** Numbers in brackets represent shadowed systems.

†100-, 200-, 300-, and 400-hour systems are not supported on the Modular Options platform.

‡ Channels are added in increments of 4 ports.

¥ Disk shadowing is unavailable on Options platforms.

—end—

Table 4-3
Card configuration for Modular Option

Card	1-node	2-node	3-node	4-node	5-node
4-port voice processor	1–3	4–6	7–8	6–12	10–16
MMP40	1	2	3	4	5
HABC	0	1	1	1	1
RSM	0–1	0–2	0–3	0–4	0–5

Table 4-4
Modular Option EC weight and power specifications

System	Weight	Power
1-node	95 kg (215 lbs)	2 A @ 220 V ac 6 A @ 48 V dc
2-node	163 kg (365 lbs)	4 A @ 220 V ac 12 A @ 48 V dc
3-node	231 kg (515 lbs)	6 A @ 220 V ac 18 A @ 48 V dc
4-node	299 kg (665 lbs)	8 A @ 220 V ac 24 A @ 48 V dc
5-node	367 kg (815 lbs)	10 A @ 220 V ac 30 A @ 48 V dc

Table 4-5
Modular Option weight and power specifications

System	Weight	Power
1-node	95 kg (215 lbs)	2 A @ 220 V ac 6 A @ 48 V dc
2-node	163 kg (365 lbs)	4 A @ 220 V ac 12 A @ 48 V dc
3-node	231 kg (515 lbs)	6 A @ 220 V ac 18 A @ 48 V dc
4-node	299 kg (665 lbs)	8 A @ 220 V ac 24 A @ 48 V dc
5-node	367 kg (815 lbs)	10 A @ 220 V ac 30 A @ 48 V dc

Table 4-6
Options weight and power specifications

Platform	Weight	Power
Option	1-node: 18.1 kg (40 lbs) 2-node: 36 kg (80 lbs)	2 A @ 110 V ac 12 A @ 220 V ac 8 A @ 48 V dc
ST/RT	1-node: 27.3 kg (60 lbs) 2-node: 154 kg (20 lbs)	4 A @ 110 V ac 2 A @ 220 V ac 15 A @ V dc

Regulatory standards

Meridian Mail systems comply with the following regulations:

Safety
- Underwriters Laboratory 478
- Underwriters Laboratory 1459
- Canadian Standards Association (CSA) 22.2.7
- Canadian Standards Association (CSA) C13J-J1970

Electromagnetic interference
- United States Federal Communications Commission (FCC), Rule 15, Subpart J, Class A
- United States Federal Communications Commission (FCC), Rule 68
- Department of Communications (DOC) C108.3.1J-J1975
- Department of Communications (DOC) CS03

International standards

International standards are met on a country-by-country basis.

Environmental requirements

Meridian Mail requires no special environmental considerations above and beyond those required to accommodate your existing switching equipment. Detailed information on Meridian Mail environmental specifications are provided in the *Site and Installation Planning Guide* (NTP 555-70x1-200).

Meridian Mail hardware has the same environmental specifications as the Meridian 1. For detailed information on these requirements, refer to *Installation and Acceptance (SL-1)* (NTP 553-2431-200).

List of terms

ACD	Automatic call distribution
AGC	Automatic gain control
AML/CSL	Application module link/Command status link
BPS	Bits per second
CDP	Co-ordinated dialing plan
COS	Class of service
DOC	Department of Communications (Canada)
DTR	Digital tone receiver
EMI	Electromagnetic interference
ESDI	Enhanced serial data interface
FCC	Federal Communications Commission (USA)
GAC	Guest administration console
Gbyte	Gigabyte
HABC	High-availability bus controller
HDLC	High level data link control
IMA	Integrated Mailbox Administration
IVR	Interactive Voice Response
kbyte	Kilobyte
LAP-B	Link Access Procedure-Balanced

LED	Light emitting diode
Mbyte	Megabyte
MHz	MegaHertz
MMP40	Meridian Mail Processor 40. A series of processor cards with a 24 MHz 68040 processor, SCSI interface, packet bus interface, and 16 Mbyte of memory expandable to 64 Mbyte.
MSDL	Multipurpose serial data link
NVP	Network voice processor
PBX	Private Branch Exchange
PCP	Printed circuit pack
PMS	Property Management System
RAM	Random access memory
RN	Remote Notification
RSM	RS-232 service module
SEER	System error and event report
SCSI	Small Computer System Interface
VP	voice processor
VP4	voice processor Pack (4 channel)
VP8	voice processor Pack (8 channel)

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NORTEL

Reader's Response Form for

Meridian Mail
Meridian 1 *General Description*, 555-7001-100
August 1995

Tell us about yourself:

Name: _____ **Date:** _____

Company: _____

Address: _____

_____

Occupation: _____ **Phone:** _____

---

1. What is your level of experience with this product?

   ❏ New user ❏ Intermediate ❏ Experienced ❏ Programmer

2. How do you use this book?

   ❏ Learning ❏ Procedural ❏ Problem solving ❏ Reference

3. Did this book meet all of your needs?

   ❏ Yes ❏ No

   If you answered **No** to this question, please answer the following questions.

4. What chapters, sections, or procedures did you find hard to understand?

   _____

   _____

   _____

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

   _____

   _____

   _____

6. How could we improve this book? (For example, books can also be evaluated in many other ways, including: ease of information retrieval, presentation, and use of reading aids, such as diagrams.)

   _____

   _____

Please return your comments by fax to (416) 597-7104, or mail your comments to: Customer Documentation, Northern Telecom, 522 University Ave., 12th Floor, Toronto, ON, Canada M5G 1W7

Meridian 1

Meridian Mail

General Description

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