HEWLETT PACKARD

RTE-A Mail/1000

User's Manual

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Preface

Mail/1000 is a mail message system that runs on HP 1000 computers. This *RTE-A Mail/1000 User's Manual* describes procedures for installing, using, and managing Mail/1000.

The *RTE-A Mail/1000 User's Manual* is written for all levels of HP 1000 computer users and for Mail/1000 postmasters. The manual is a reference document with a task-oriented format. Commands are described in terms of specific tasks, in a generalized form accompanied by specific examples as needed.

Command examples are presented as if entered from the Mail/1000 Line mode prompt, Visual mode prompt, or CI. In the examples, information or parameters printed in *italics* indicates parameters you need to replace, as applicable to your environment.

Chapter 1 - Introduction to Mail/1000

Describes the Mail/1000 system, how it works, and the tasks you can perform.

Chapter 2 - Starting Mail/1000

Describes startup methods and options, switching between Line and Visual modes, and exiting the program.

Chapter 3 - Running Mail/1000 in Line Mode

Describes the command syntax and message and address formats. Shows you how to create, edit, send, receive, forward, file, and delete messages, as well as manage your mailbox and folders.

Chapter 4 - Running Mail/1000 in Visual Mode

Describes the differences between Line and Visual mode, and how to run Mail/1000 in Visual mode. Compares Visual mode commands with their Line mode equivalents. Because many Visual and Line mode commands work the same way, instructions for executing such commands are referenced back to Chapter 3, "Running Mail/1000 in Line Mode".

Chapter 5 - Customizing Your Environment

Describes the creation and use of the “addressbook” file for storing distribution lists. Shows you how to use your mail.rc file and the “set” command to customize your own mailbox. Also shows you how to reply to, distribute, and save mail automatically. Information on redefining your new mail notification runstring, and wastebasket cleanup filtering is also described.

Chapter 6 - Advanced Mail/1000 Usage

Describes commands for running Mail/1000 facilities from CI, and reading Mail/1000 status and configuration information. Also includes information on encoding binary files for transmission and reading the encoded files.

Chapter 7 - Postmaster’s Guide to Mail/1000

Describes the Mail/1000 system files, and the commands postmasters use to configure and manage the system. Postmaster capabilities are required to use these files and commands. Mail/1000 message headers and internal programs are also described.

Appendix A - Installing Mail/1000

Describes procedures for installing Mail/1000.

Appendix B - Mail/1000 Program Messages

Appendix C - Terms and Acronyms

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Introduction to Mail/1000

Mail/1000 is an electronic mail system that runs on the HP 1000. It can run locally, and on the HP 1000 Distributed Systems (DS) or Network Services (NS-ARPA) networks.

When using Mail/1000 on a network, you can transmit mail between a variety of computer makes and models. The only requirement is that the network, host computers, and mail systems conform to the same communication protocols and mail message formats.

Mail/1000 is compatible with Advanced Research Projects Agency (ARPA) Internet standards for message format and transfer protocol. You can use Mail/1000 to communicate with users on many local area networks (LANs) in the business and academic community, providing you have the required networking links.

Mail/1000 provides these features for HP 1000 computer users:

- A private mailbox for each user
- Address aliases (nicknames) and distribution lists for sending and receiving messages
- Address lookup facility
- Message filing, recall, and printing
- Communication within and across host networks without disrupting other computer tasks

How Mail/1000 Works

Mail/1000 daily operations consist of sending, reading, storing, and disposing of messages. Figure 1-1 illustrates the flow of information through the system. Mail/1000 handles these functions automatically; as a user, you need not concern yourself with them.

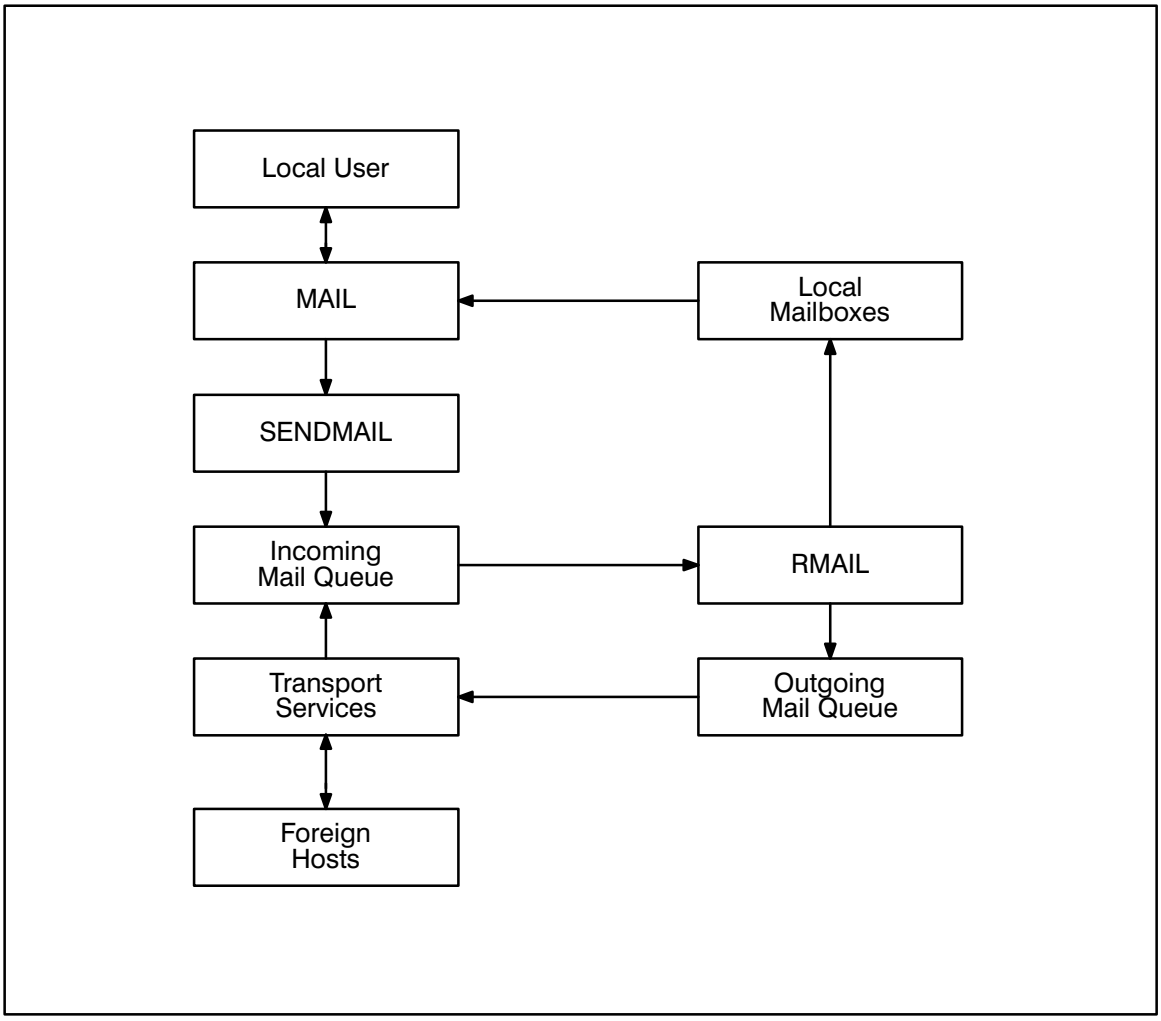

Figure 1-1. Flow Diagram of a Typical Mail/1000 System Message

Looking at Figure 1-1 from the sender's viewpoint, you enter the MAIL/1000 program, create your message, and send it. The message arrives in the incoming mail queue, where it is picked up. If the receiver is on your host, the message is sent to the receiver's mailbox.

If the receiver resides on another host, the message is sent to the outgoing mail queue. A transport service, which may consist of DS, NS-ARPA, or a customer supplied service, picks up the message and sends it to the target host.

At this point, the target host's transport services and incoming mail queue take over. The mail handling system on the target host then delivers the mail to the addressee.

Mail/1000 Messages

Mail/1000 messages consist of two parts, a message header and the message text. You can write these using any editor or processor you like, as long as it produces text in ASCII files.

Of the two message parts, only the message header fields must follow a strict format. The message itself may contain anything you wish. A typical message can be as simple as the following:

```
To: RedBaron@Jasta11                              |
From: Snoopy@Cigognes                             |------- Header
Date: Mon, 1 Apr 1917 06:00:00 GMT                |

Dear Red:                                         |
                                                  |
Good show, old boy.  Let's have lunch.            |------- Text
                                                  |
Regards,                                          |
  S                                               |
```

The header is composed of "fields" consisting of a field name, a colon (:) and a field value. The header is separated from the following text by a blank line.

In the example above, the information in the field labeled "To" tells Mail/1000 that the addressee is "RedBaron" on the host system named "Jasta11". The information in the field labeled "From" tells the system and the addressee that the sender is "Snoopy" on a system named "Cigognes". The "@" symbol tells the system which parts of the names are those of receivers and senders, and which parts are those of host computer systems. The name preceding the "@" symbol is that of a receiver or sender. The name following the "@" symbol is that of a host computer system.

If receiver and sender share the same system, the "@" and all host names following it need not be included. Message headers are fully described in Chapter 3, "Running Mail/1000 in Line Mode".

2

Starting Mail/1000

If your personal Mail/1000 configuration file (mail.rc) contains the command “set visual on”, the program starts in Visual mode. If the file does not contain the command, Mail/1000 starts in Line mode. Refer to Chapter 5, “Customizing Your Environment”, for information on mail.rc.

In Line mode, the screen displays the prompt “Mail>”. Line mode commands are described in Chapter 3 of this manual. In Visual mode, the screen displays a summary of the contents of your Mail/1000 inbox and the prompt “:”. Visual mode commands are described in Chapter 4 of this manual.

Line mode provides a basic command line user interface. Visual mode provides more convenience when working with your current mailbox. You may wish to use Visual mode for the daily operations of sending and receiving messages, and Line mode for such tasks as listing folders or creating users.

Mail/1000 Startup Command and Options

To start Mail/1000, enter the command "mail" at the CI prompt. The program provides three startup options, described in Table 2-1.

The general syntax for starting Mail/1000 is:

```
CI> mail [-options] [mailcommand]
```

where *mailcommand* is a valid Mail/1000 command string and *-options* are as described in Table 2-1.

Table 2-1. Mail/1000 Options

Option	Description
-f *foldername*	Opens a specified folder.
-u *user*[>*node*][/*password*]	Opens a mailbox other than your default. If you are on a distributed system (DS), to specify a mailbox on another system, enter the appropriate host (node). Include the user's password, if required.
-v	Prevents Mail/1000 from starting in Visual mode. The option prevents execution of "set visual on" in mail.rc. If the "set visual on" command is in mail.rc, you must use this option to start Mail/1000 in Line mode.

The following examples illustrate three ways of entering the same set of startup options. All three start Mail/1000 in Line mode, as a user named "Johann", and open a folder named "fugues". There is no difference in effect between one arrangement of options and another. In these examples, "Johann" is a mail box name, not a legal logon name (see Note, below). Be sure to note the use of the dashes (-) and the variations in the positions of the options.

Example 1:

```
CI> mail -uvf johann fugues
```

Example 2:

```
CI> mail -u johann -v -f fugues
```

Example 3:

```
CI> mail -vfu fugues johann
```

Note If "user" is a legal logon name with a required password, you must enter that password unless you are a postmaster. If "user" is not a legal logon name, no password is needed.

Starting Mail/1000 in Line Mode

If your personal mail.rc file does not contain “set visual on”, start Mail/1000 in Line mode by entering:

```
CI> mail
```
(The Mail/1000 startup message and the prompt “Mail>” is displayed.)

If your personal mail.rc file contains “set visual on”, you can override the command and start Mail/1000 in Line mode by entering:

```
CI> mail -v
```
(The Mail/1000 startup message and the prompt “Mail>” is displayed.)

The Mail/1000 Line mode startup message is:

```
 Mail/1000 Rev. nnnn; ? for help.
 Folder is inbox with n messages; m new.
Mail>
```

The message tells you that you can get help by pressing question mark (?), that your current folder is *inbox*, that your inbox contains *n* messages, and that *m* of them are new.

Starting Mail/1000 in Visual Mode

If your personal mail.rc file contains “set visual on”, start Mail/1000 in Visual mode by entering:

```
CI> mail
```

The summary list of inbox messages, the prompt “:”, and a list of Mail/1000 commands are displayed.

```
1   March 15   Julius Ceasar           (12)   Re: Meeting in Forum
2   March 16   Marcus Antonious        (16)   Attendance at speech
3   March 17   Caius Cassius           (54)   Big trouble brewing

:
Next  Delete  Undelete  Mail  Reply  Forward  Quit  :for line mode  ?for help
```

Figure 2-1. Visual Mode User Interface

Switching Between Line and Visual Modes

When in either Mail/1000 mode, you can switch to the other. To switch from Line mode to Visual mode, at the Line mode prompt (“Mail>”), enter:

```
Mail> v
```

To temporarily switch from Visual mode to Line mode, at the Visual mode prompt (:), enter a colon (:). The mode automatically switches back to Visual mode after one line-mode command is executed.

Getting Out of Mail/1000

To quit Mail/1000 from Line mode, enter:

```
Mail> quit (or q)
```

To quit Mail/1000 from Visual mode, press:

```
: q
```

Either of these two commands saves current messages, deletes messages marked for deletion, and returns you to the system prompt. To unmark messages marked for deletion, enter “Quit -u” in Line mode, or “x” in Visual mode.

3

Running Mail/1000 in Line Mode

The default mode for Mail/1000 is Line mode, unless you have "set visual on" in your personal mail.rc configuration file. Refer to Chapter 5, Customizing Your Environment.

The most often used Mail/1000 activities are: creating and sending messages, reading, listing and filing them, and printing and deleting them. Less often, you will copy messages and create folders. The information in this chapter is presented in that order.

Line Mode Command Syntax

Line mode commands are entered in the runstring or at the "Mail>" prompt . If you enter more than one command at a time, use semicolons (;) to separate them. If you enter commands from CI and you use semicolons (;) to separate them, you must precede each command with a backslash (\).

Line mode command syntax is:

```
command: = command [[option] command object]

command-line: = [command [;command-line]]
```

Command syntax parameters are described in Table 3-1.

Table 3-1. Command Syntax Parameters

Parameters	Description
command	An action to be executed on a command object.
command-line	Several commands and/or text.
;	Semicolon used as the separator between commands.
option	Modifies the action of a command. For example, "lf -l" asks the program to list all of your folders, using the "long form" of listing. Options are preceded by a dash (-).
command object	The object or item on which a command operates. Examples include folders, messages, and message lists.

If the CDS version of Mail is loaded then Mail provides the same Emacs and vi editing modes as are provided by CI. Instead of providing the "file name completion" feature of CI, Mail provides

"folder name completion" for commands that accept folder names. For more information, see the section "Creating and Using Folders" in this chapter.

Creating Mail/1000 Messages

In brief, the procedure for creating a message is:

1. Start Mail/1000 (refer to Chapter 2, Starting Mail/1000).
2. At the "Mail>" prompt, enter "mail".
3. Enter destination addresses (see Addressing Messages section below).
4. Enter the message.
5. Send the message.

The Mail/1000 Message Format

The Mail/1000 message format is like that of a business memo. It has a header that identifies the sender, the receivers, the message title, and the date. The sender specifies all of these elements except the sender and date, which are added by the system.

The body of the message consists of text. Opening and closing salutations are part of the message.

Addressing Messages

The format of the addresses used in header fields, such as "To:", "From:", and "Cc:", must conform to the syntax described below.

The general syntax for addressing is:

user@domain

Table 3-2. Address Parameters

Parameter	Description
user	The name of the receiver. The name may be a mailbox name or a user logon name. In the first example below, "Cinderella" is a user name.
domain	Specifies the name of a node (host). In the second example below, "oz" is a *domain*.
@	Defines the following word as a *domain*. If a message is to pass through more than one *domain*, the *domain* name immediately preceded by "@" is the one that is to receive the message. See the third example, below.
%	Defines the following word as either a final or intermediate *domain*. See the third example, below.
,	Separates the names of addressees.

To write the address of a user residing on your own system, at the Mail/1000 prompt enter:

```
Mail> mail
```

Mail/1000 answers with the prompt "To:" At the prompt, enter the name of the user to whom you want to send a message. For example:

```
To: cinderella
```

To write the address of a user who resides on another host, enter:

```
To: witch_west@oz
```

To write the address of a user on another host, where an intermediate host is involved, enter:

```
To: spock%vulcan@star_fleet
```

The general syntax for the above example is:

user%user_domain%intermediate_domain . . . .@first_domain

In this example, the message goes first to star_fleet, then to vulcan, where it is delivered to spock.

Note The form of addressing just described is not universally standard and may not work on some systems.

Addressing More than One User

To send a message to several users at a time, enter their names using commas (,) to separate them. For example:

```
To: uhuru,sulu,chekov,spock%vulcan@star_fleet
```

If the list of users is longer than one line, use a comma (,) at the end of each line that must be continued.

Address formats on other computer systems may differ. If these do not work on your system, see your postmaster or system administrator.

Writing a Complete Message

A complete Mail/1000 message includes a title, text, and an address. The title should summarize the message. When you list the messages in your inbox, they are identified by number and title.

After you enter an address, the prompt "Subject: [ ]" is displayed. Enter a message title at the prompt. In the two following examples, the sender is Class Glass, the company that supplies Cinderella with glass slippers. The header begins:

```
To: cinderella
Subject: [] Slippers1
```

At this point, predefined header fields can be copied into your message header. For this to happen, you must first have created a file named headers.mail in your home directory, in which the header information is stored.

In this case, the headers.mail file in Class Glass' home directory contains a header labeled "Organization:". The text associated with the header is "Class Glass, Inc.". Receivers will see the headline "Class Glass, Inc." in every message Class Glass sends.

A headline of this type does not appear in the message when you first create it, but is visible if you then view the message in the message editor (see "Editing Messages", below).

After you enter the "Subject" text, you will see the following message and prompt:

```
Enter message text; "." to end; "~?"" for help.
>
```

To enter text, type it.

To end text entry mode, type "." at the "`>`" prompt.

To get online help in the message editor, type "~?".

The complete Mail/1000 start and message creation procedure looks like this:

```
Mail> mail
To: cinderella
Subject: [] Slippers1

> Re:  Your order; one pair glass slippers size 6.
>
> Regret late delivery.  Sorry you missed the ball.
>
> P.S. My best to Fairy Godmother.
> .
```

When entering text, terminate each line with a carriage return. Use multiple carriage returns to enter blank lines.

Format Editing Commands

Use the commands in Table 3-3, “Format Editing Commands”, to specify message formatting options. For example, the command “~a” includes a signature file; the command “~c ” adds the header field “Cc:”, for carbon copies. Note that each command is preceded by a tilde (~). Commands in this form are used in text entry mode only (at the prompt “>”).

Table 3-3. Format Editing Commands

Command	Definition
~a	Insert signature file.
~b *addresses*	Add Bcc: (blind carbon copy) *addresses*.
~c *addresses*	Add Cc: (carbon copy) *addresses*.
~e	Run editor on the current message.
~f *msglist*	Insert messages without alteration.
~m *msglist*	Insert messages, prefixing each line with “>”.
~p	Print message to terminal.
~r *addresses*	Add “Reply-To:” *addresses*.
~s *subject*	Set *subject*.
~t *addresses*	Add “To:” *addresses*.
~w *file*	Write message to *file*.
~.	End message text input mode.
~< *file*	Include the contents of a file named *file* in the message.
~+c	Insert this banner into a message: “––– cut here –––”.
~! [*runstring*]	Run CI, or *runstring* if supplied.
~~ *text*	Add a *text* line prefixed with a tilde (~). If the tilde has been redefined (using the escape variable), the *text* will be prefixed with the escape character.
~?	Display help messages for Editing commands.

Additional Message Headers

Depending on how you address a message, one of the following headers may be added to it. Some types of headers will be added if you forward a message. Other headers may be added depending on the options you select from Table 3-3, "Format Editing Commands", when you edit messages.

Standard Addressing Headers

The prompt "To:" is displayed when you enter the command "mail". This is the default address header for the receiver(s) of your message:

`To:` *address, address ...*

The prompt "Resent-To:" is displayed when you use the "fwd" and "bounce" commands for forwarding a message from another user.

`Resent-To:` *address, address ...*

Carbon Copy Addressing Headers

The "Cc:" prompt is displayed when you select the "~c" option (carbon copy) in Table 3-3.

`Cc:` *address, address ...*

The "Resent-Cc:" prompt is displayed when you select the "~c" option to carbon copy a forwarded message.

`Resent-Cc:` *address, address ...*

Blind Carbon Copy Addressing Headers

The "Bcc:" prompt is displayed when you select the "~b" option (blind carbon copy) in Table 3-3.

`Bcc:` *address, address ...*

The "Resent-Bcc:" is displayed when you select the "~b" option to blind carbon copy a forwarded message. This field is not included in delivered messages.

`Resent-Bcc:` *address, address ...*

Standard Subject Header

The default "Subject:" header is included in every message.

```
Subject: text
```

Reply to Different Address Headers

The "Reply-to:" prompts for the address for replies if not the sender's address. Use the "~r" option in Table 3-3.

```
Reply-to: address, address
```

The "Resent-Reply-to:" prompts for the address for replies to a forwarded message if not the sender's address. Use the "~r" option with a forwarded message.

```
Resent-Reply-to: address
```

Comments Header

The following is displayed when you select the "Comments" option from Table 3-4, "Closing Options".

```
Comments: text
```

Sending Messages

After you leave text entry mode by entering ".", the following prompt is displayed:

```
Deliver/Edit/?: [D]
```

The "[D]" indicates that "Deliver" is the default. To send your message, press "RETURN" or "d". If the message cannot be delivered, it will be mailed back to you with a message that describes the error.

Editing Messages

To edit a message before you send it, press "e" at the prompt:

```
Deliver/Edit/?: [D] e
```

The following is displayed:

```
EDIT: Use ? for help
Opened file MAIL/MAILD6B778B3511.TMP
n lines read.
To: addressee
/n                                    (where n is the number of text lines)
    "message text"
/
```

Edit the message using Edit/1000 (or your default editor) commands. If you are not familiar with Edit/1000, refer to the *Edit/1000 User's Manual,* part number 92074-90001.

Note The preceding format is displayed when you edit messages if your default editor is Edit/1000. If it is not, the display may have a different appearance.

To exit from the Mail/1000 editor, enter:

```
/er
```

Closing Options

There are several options you can use to dispose of a message besides delivering or editing it. To display the closing options list, press "?" at the prompt:

```
Deliver/Edit/?:[D] ?
```

The list of closing options is displayed. The closing options are described in Table 3-4.

Table 3-4. Closing Options

Option	Description
Deliver	Delivers the message to the addressees. If any addressees cannot be found, Mail/1000 mails the message back to you, along with a list of the unfound addressees.
Edit	Displays the message again, for editing.
List	Lists the message on your screen.
Spell	Checks the spelling in your message, using the spell-checker specified by the "spell" variable in your mail.rc file.
Folder	Stores the message in the current folder. Refer to "Remailing Messages", below, for information on mailing stored messages. The stored message is automatically assigned the sender name "--Outgoing--".
Acknowledge Delivery/Read	Requests all receivers to acknowledge that they either have received or read the message. The type of acknowledgement desired is selected at the "Acknowledge Delivery/Read" prompt. The acknowledgement type selected is toggled on or off. The default is off for both types. If you select "Delivery", "Message delivery will be acknowledged" is displayed. Delivery Acknowledgement mails a message back to you when each addressee is delivered a copy of your message. This option adds to your message the header field "Return-Receipt-To" and your address. This option is implemented on HP-UX systems as well as in Mail/1000. If you select "Read", Reading Acknowledgement mails a message back to you when each addressee reads your message, but only if the reader allows the acknowledgement message to be sent. This option is implemented in Mail/1000 only, and has no effect on other mail systems. After reading the message, the receiver sees "The sender requests that you acknowledge reading this message. Do you wish to send an acknowledgement (y/n) ? [y]". If the receiver answers "y", the receiver sees the message "[acknowledgement sent]" and you receive a corresponding acknowledgement. If the receiver answers "n", the receiver sees the message "[acknowledgement refused]" and you do not receive an acknowledgement.
Throwaway	Erases the undelivered message.
Comments	Lets you add a comment to the top of a message. The comment text is separated from the body text by a dashed line.
|*programname*	Runs a program on the message file. Refer to the "|" command in Chapter 6, Advanced Mail/1000 Commands.
After the list of closing options is displayed, the prompt "Deliver/Edit/?:[D]" is displayed again.	

Selecting a Closing Option

To select a closing option, press the first letter of the option's name. For example, to request a delivery acknowledgment, press "a" at the prompt:

```
Deliver/Edit/?:[D]  a                (for acknowledge)
```

This is followed by the prompt:

```
Acknowledge Delivery/Read: d         (then press "d" for acknowledge delivery)
```

After you select the option, the prompt "Deliver/Edit/?:[D]" is displayed for the third time. To deliver the message as modified by the option, press "d" (Deliver).

Mailing the Message

To send a message, press "d" in answer to the prompt:

```
Deliver/Edit/?:[D]
```

Mail/1000 Command Modifiers

The results of many Mail/1000 commands depend on how they are modified. Command modifiers, also known as message lists (*msglists*) can, for example, select messages by number, number range, status, and subject. Message lists are defined in Table 3-5, "Mail/1000 Command Modifiers".

To specify a message list, enter:

```
Mail> command msglist
```

For example, to delete all messages that have been read, enter:

```
Mail> delete :o
```

Line mode commands can be entered as complete words, or in abbreviated form. Unless noted otherwise, you can enter either the full word or the abbreviated form listed in Table 3-5. The first two modifiers (*n* and *m*) are placeholders or numeric values. For example, to select message number three in your mailbox, for *n*, enter the number "3".

Table 3-5. Mail/1000 Command Modifiers (Msglists)

Msglist	Definition
n	Selects a message by number.
m−*n*	Selects a group of messages by number range.
*	Selects all messages in the mailbox.
:n or :u	Selects all messages that have not been read.
:d	Selects all messages marked for deletion.
:p	Selects all messages not marked for deletion.
:o or :r	Selects all messages that have been read.
/*subj*	Selects all messages that contain the term *subj* in the subject field where *subj* is the text you enter.
"*sender*"	Selects all messages that contain the term "*sender*" in the sender's name. *sender* must be enclosed in quotes. For example, to list all messages from Arbuthnot, use "Arbu". NOTE: The */subj* and "*sender*" selectors can be used with the wild cards "*" (all characters) and "?" (a specific character position).
.	Lists the current message in Visual mode.
+	Selects all tagged messages in Visual mode.
$	Selects the highest numbered message in the list.

Receiving Messages

To execute commands on received messages, you must know their identities. Numbers are assigned to messages in the order received. The number, message title, and status indicator are displayed in the message list. Mail/1000 provides the following commands for listing this information.

Checking the Mail Box

To check for mail, enter:

```
Mail> ??
```

This displays the following message:

```
Folder is foldername with n messages; m new.
```

Listing Messages

All three of the following commands perform the same function. They list the "table of contents" of your current folder. The title, date, sender, time, and subject for each message is listed.

```
Mail> from msglist
Mail> headers msglist
Mail> list msglist
```

For example, if you enter:

```
Mail> l 4-7
```

Messages four through seven are listed.

If you enter:

```
Mail> f "calvin"
```

All messages from Calvin are listed.

Reading Messages

To read a message, enter:

```
Mail> read msglist

    or

Mail> type msglist
```

Message Disposal Options

After reading a message, the following prompt is displayed:

```
Preserve/Delete/?: [P]
```

To "Preserve" or keep a message in your inbox after reading it, enter "p" or carriage return at the above prompt. To "Delete" the message, press "d". The default option is "p" (Preserve). To get a list of all available options, enter "?" at the above prompt. The following options list will be displayed:

```
Disposal -- "Preserve/Delete/?:" prompt

Answer this prompt with a one-character command to retain or
dispose of the message just read.  Enter one of:
```

```
    Preserve      the message for future use (default)
    Delete        mark the message for deletion from your mailbox
    Reply         to the person who sent this message
    Group reply   to the sender and all recipients
    List          the message again
    Headers       list the message showing all header fields
    Move          the message into a folder mailbox
    Copy          the message into a file system file
    Forward       the message to someone else
    Quit          listing messages now (the current message is
                    preserved)
    |runstring    run a program on the message; see the "|"
                    command

Preserve/Delete/?: [P]
```

The above commands can be entered at the "Preserve/Delete/?: [P]" prompt for the indicated actions. Note that some of the functions above may also be done at the "Mail>" prompt as described in the following sections.

Replying to Messages

To reply to the sender of a message, enter:

```
Mail> reply msglist
```

"reply" can also be entered as "rep". The prompt "Copy message text?" is displayed. Answer "yes" if you want to include the sender's original message along with your reply. Each line in the included message is preceded by ">".

To reply to the sender and all other receivers, enter:

```
Mail> greply msglist
```

This command works like the "reply" command. You also can enter "g" for group reply.

Forwarding Messages

To forward a message:

```
Mail> fwd msglist distrlist
```

Use "fwd" to include an existing message in a new message sent to a different user or list of users. You are the originator of the new message. Or,

```
Mail> bounce msglist distrlist
```

"Bounce" forwards a message in the name of the original sender.

Copying Messages to Disk

To copy one or more messages to a disk file, enter:

```
Mail> copy msglist [+|~] filename
```

where:

filename	is the name of a disk file. If the file does not exist, it will be created.
+	appends a message to an existing file.
~	overwrites an existing file.

For example, to append messages 3 through 7 to a file named "agendas", enter:

```
Mail> copy 3-7 + agendas
```

Deleting Messages

To mark messages for deletion, enter:

```
Mail> delete msglist
```

Messages marked for deletion are not deleted until you exit Mail/1000. If you have created a "wastebasket" folder, deleted messages will be retained in it for the defined number of days before being deleted; the default is 3 days. (See the Wastebasket Cleanup Filtering section in Chapter 5 for more information on defining wastebasket emptying operations.) You also can enter "d" for "delete".

Undeleting Messages

To remove deletion markers from messages, enter:

```
Mail> undelete msglist
```

Editing Messages

To edit the contents of a message file, enter:

```
Mail> ed[it] msglist
```

This command executes the runstring defined by the EDIT variable on the specified message files. If the "Subject:" header body is modified during the edit then the new text is displayed in message listings generated by the line-mode "list" command and the visual-mode message menu.

Printing Messages

To print messages, enter:

```
Mail> print msglist
```

(Refer to "Changing Printers" in Chapter 5, "Customizing Your Environment", for information on setting the runstring used to print messages.)

Remailing Messages

Use this command to remail the messages specified by the *msglist*. For example, use it to resend messages returned with errors, or to send an unfinished message that has been stored for later processing.

```
Mail> rm msglist
```

Getting Help for Mail/1000 Commands

To display help messages for commands, enter:

```
Mail> ? [keyword]
```

where:

keyword	specifies a command. If *keyword* is not specified, a summary of all command help is displayed.

For example, to get help for the command "print", enter:

```
Mail> ? print
```

Information about the command "print" is displayed.

Creating and Using Folders

The folders used to store Mail/1000 messages are analogous to the card stock folders in a filing cabinet. When Mail/1000 is first started, the only existing folder is the “inbox”. Incoming mail is always stored in this folder.

You can create as many additional folders as you need, giving each a name of up to sixteen characters. Two folder names are reserved: “inbox” and “wastebasket”. The system creates “inbox”. You may create “wastebasket” if you choose.

If you do not have a “wastebasket” folder, files marked for deletion are deleted when you exit Mail/1000. If you do have one, files marked for deletion are moved into it and held for the defined number of days before being deleted (default is 3 days). Then they are deleted.

Folders are referenced by a 1- to 16-character name, optionally preceded by the names of subdirectories of your mail directory in which the folder appears. For example, folder “dialogue/bobby” references a folder named “bobby” that appears in subdirectory “dialogue” of your mail directory.

If the CDS version of Mail is loaded then a feature called “folder name completion” is provided. This feature allows folder names to be displayed and completed from unique abbreviated names in the same manner as file name completion is performed by CI. The same Emacs or vi editing mode characters that CI allows may be entered at the “Mail>” prompt and at prompts for folder names.

Additionally, the following shorthand folder names may be entered whenever the corresponding folder is referenced:

name	folder referenced
!	folder “inbox”, the incoming mailbox
#	folder “wastebasket”, where specified messages are held until final deletion.
.	the current working folder

Folders are stored in two formats: non-hierarchical and hierarchical. A folder stored in non-hierarchical format appears as a file in your message directory that has the folder name as the file name and type extension “.mbox”. All messages contained in a non-hierarchical folder are stored in that same message directory. This is the format in which folders were created prior to Revision 6100 of Mail.

A hierarchical folder appears as file “mbox.mbox” in a subdirectory of your message directory, where the subdirectory is named after the folder. Hierarchical folders may be contained in subdirectories of subdirectories and so forth. This is the format in which all folders are created starting at Revision 6100 of Mail. The “rnf” command may be used to convert an existing folder from non-hierarchical to hierarchical format.

For example, if your user name is Arthur and your mail directory is /arthur/mail, then you can use the “crf” command, described below, to create a folder named “lifestyle” that is stored as mailbox file /arthur/mail/lifestyle/mbox.mbox.

Each message contained in a folder, whether hierarchical or non-hierarchical, is stored in a separate file that resides in the same directory as the folder mailbox file.

Creating Folders

To create a folder, enter the command “crf” followed by a legal folder name. For example, to create a folder named “action_items”, enter:

```
Mail> crf action_items
```

To create the folder named “wastebasket”, enter:

```
Mail> crf wastebasket
```

To create a new folder within another folder, enter:

```
Mail> crf existing_folder/new_folder
```

Filing Messages in Folders

To file (move) a message from the current folder to another, enter:

```
Mail> move msglist foldername
```

For example, to move all of the messages in the current folder to “action_items”, enter:

```
Mail> mo * action_items
```

Note the use of the wildcard “*”. Moved messages are deleted immediately from the current folder.

Listing Folder Names

Use the “list folder” command to list the names of folders, and use masks to restrict the list to selected names. You can list folders by short form or long form. The short form displays only folder names. The long form lists names, the number of messages in each folder, and the time the folder was last used. The syntax for the list command is:

```
Mail> lf  [-l]  [mask]
```

For example, to list all of your folder names, enter:

```
Mail> lf
```

To list all folder names in long form, enter:

```
Mail> lf  -l
```

To list only folder names (in long form) that contain the term “prod”, enter:

```
Mail> lf  -l prod@
```

This lists the folders named “product_meetings” and “product_specs”.

Opening a Different Folder

When you open Mail/1000, the current folder is always “inbox”. Use the “wf” command to move from the current folder to another. The syntax of the command is:

```
Mail> wf [-u] folder | [?]
         [-h]
```

where:

-u	unmarks all messages in the current folder that are marked for deletion. The default action is to delete marked messages at this time.
-h	holds, without unmarking, all messages in the current folder that are marked for deletion.
folder	is a folder name.
?	prompts you for a folder name if you did not enter one.

For example, to open “action_items” and hold marked messages in “inbox”, enter:

```
Mail> wf -h action_items
```

Renaming Folders

To change the name of a folder, use the command “rnf” with the current and new folder names. For example, to rename the folder “action_items” to “work_in_process”, enter:

```
Mail> rnf action_items work_in_process
```

The new name must be a legal filename without a type extension field, and may specify subdirectories. Mail creates subdirectories as needed.

This command may be used to convert folders from non-hierarchical format to hierarchical. To accomplish this, simply rename the folder to its existing name, for example, “rnf file1 file1”.

Do not rename your incoming mailbox (“inbox”) or your wastebasket (“wastebasket” if you have created it), unless you are renaming them to the same name to convert from the non-hierarchical folder format to hierarchical.

Deleting Folders

To delete a folder, use the command “df” with the name of the folder. The folder must be empty and not in use. You will be warned if it is not empty or is in use. To delete the folder named “product_specs”, enter:

```
Mail> df product_specs
```

Adding a File to a Folder

Mail/1000 can be handy for organizing any files, not just mail message files. The “ff” command allows an arbitrary file to be copied into the current folder as if it were a message file. The new entry may then be treated just like any message entry. To add a file into the current folder, enter:

```
Mail> ff file
```

This command makes a copy of the named file as a “message” in the current folder. If the file is already in the format of a mail message then the sender, subject, and so forth are read from the file for display by the line-mode “l” command and the visual-mode menu. If this information is not present, or if you wish to change the existing headers, use the “edit” command to modify the file.

Closing Mail/1000

Mail/1000 lets you use any of three commands to exit and return to CI:

`exit`	(The short form is “ex”.)
`quit`	
`xit`	Before exiting Mail/1000 this command unmarks and retains messages marked for deletion.

You also have three closing options. The following describe the options using them with the “q” command as an example:

`Mail> q`	(Exit, deleting all messages marked for deletion. This is the default.)
`Mail> q -u`	(Exit, unmarking and thus retaining, all messages marked for deletion.)
`Mail> q -h`	(Exit, holding but not unmarking, messages marked for deletion.)

Note that using “xit” , “quit -u“, or “exit -u” yields the same results.

Advanced Mail/1000 Commands

The following commands either are not used often, or are of interest to advanced users.

Displaying Mail/1000 Directories

The following command displays the *user* directory specified. If *user* is not specified, your mail directory is displayed.

```
Mail> mdir user
```

Listing Queued Messages

To list messages in the incoming and "retrying" queue, enter:

```
Mail> lq
```

Reading the Names of Mail/1000 Objects

To list the name of a Mail/1000 folder or mailbox user name, enter:

```
Mail> echo string
```

where *string* is any string of characters, including the following substitution strings:

`%m`	the name of the current folder
`%M`	the file name of the current folder
`%n`	the incoming mailbox user name
`%N`	the incoming mailbox real name

For example, if a user with a user name of "bill" enters the following command at the Mail> prompt:

```
Mail> echo My real name is %N
```

Mail/1000 will print Bill's real name:

```
My real name is William F. Cody
```

The short form of the echo command is "ec".

Reading the Mail/1000 Version Number

To list the Mail/1000 version number, enter:

```
Mail> version
```

The short form is "ve".

Executing Mail/1000 Commands from a File

To execute Mail/1000 commands contained in a file, enter:

```
Mail> source filename
```

or

```
Mail> transfer filename
```

where:

filename is the name of a file containing Mail/1000 commands.

Both commands work in exactly the same way. Either will run *filename* when entered at the Mail/1000 prompt. "source", which may be abbreviated "so", is the form of the command familiar to HP-UX users. "transfer", which may be abbreviated "tr", is the form familiar to HP 1000 users.

Running Programs from Mail/1000

If you want to run a program from Mail/1000 and you want Mail/1000 to wait until the program is completed before asking for another command, use "ru". For example,

```
Mail> ru programname
```

Or, use "xq" if you want to enter further commands immediately. For example:

```
Mail> xq programname
```

Running a Program on Mail/1000 Messages

In Line mode, to run a program on one or more messages, enter:

```
Mail> | msglist runstring
```

where *runstring* may be entered with the following substitutions:

`%f` is replaced by the name of the message file.

`%n` is replaced by the record number of the first line of text in the message.

`%#` is the number of the message in your mailbox.

The "|" command allows you to filter the current message (or all tagged messages) through a program:

```
|
```

For example, to display the number of lines in messages 3 through 5, enter:

```
Mail> | 3-5 dl %f n
```

Running CI from Mail/1000

Enter:

```
Mail> ru ci
```

To return to Mail/1000, at CI, enter “ex”.

Displaying Header Fields

To display all of the header fields in one or more messages in Line mode, enter:

```
Mail> rh msglist
```

This displays all header fields, whether hidden or not.

4

Running Mail/1000 in Visual Mode

Visual mode gives you a fast, convenient way to select mail messages and run Mail/1000 commands. When Visual mode starts, the interface lists all of the messages in your inbox, with the current message highlighted. Use the highlighted cursor to select messages from the list. The interface also displays the names of the seven most often used Mail/1000 commands (see "Convenience Commands" below).

Visual Mode Screen

The Visual mode screen is illustrated in Figure 4-1. Each incoming message is added to the bottom of the message list. To select a message, use the UP and DOWN arrow keys. Commands typed at the Visual mode prompt (:) will operate on the selected message.

```
1   March 15   Julius Caesar          (12)   Re: Meeting in Forum
2   March 16   Marcus Antonius        (16)   Attendance at speech
3   March 17   Caius Cassius          (54)   Big trouble brewing

:
Next  Delete  Undelete  Mail  Reply  Forward  Quit  :for line mode  ?for help
```

Figure 4-1. Visual Mode User Interface

Visual Mode Command Set

The Visual and Line mode command sets are similar, but not identical. Some commands work the same way in both modes. Others do not. The differences between commands that are used in both modes are described in Table 4-1.

The two modes also differ in the way commands are entered. In Line mode, commands are entered in the form of one, two, or three characters, or a complete word. With the exception of the closing options and the command for keeping messages in a mailbox, you execute Line mode commands by pressing ENTER or RETURN.

In Visual mode, all commands are a single character and execute as soon as you type them at the prompt (:).

For example, to delete message number 3, highlight message number 3 and press “d”. When you exit Mail/1000, the message will be deleted.

Visual Mode Convenience Commands

For your convenience, Visual mode displays seven of the most often used commands, plus those for switching to line mode and displaying help messages, on a line under the message list. These commands are: Next, Delete, Undelete, Mail, Reply, Forward, and Quit. Execute these commands by typing the first letter of the command at the Visual mode prompt.

Except for “Next”, these commands are identical to the Line mode commands. “Next” is like Line mode’s “Read” command. It displays the contents of a message, then automatically moves the highlight to the next message.

Because most Line and Visual mode commands are similar, they are not described in detail again here. Refer to Chapter 3, “Running Mail/1000 in Line Mode”, for full descriptions. For convenience, Table 4-1 lists the Visual mode commands and their Line mode equivalents. Where Visual mode commands differ significantly from their Line mode equivalents, they are fully described. Where there is no equivalent, the Line mode column is left blank.

Note In the following table, the symbol “^” means that you are to press the [CTRL] key, hold it down, and press the following specified key. For example, the command “^D”means press and hold [CTRL] and press the “D” key.

Table 4-1. Line and Visual Mode Commands Compared

Visual Mode	Line Mode	Usage
b	bounce	Sends a message received by you to another addressee. Retains the name of the original sender.
c	wf	Switches to a different folder. You are prompted for the folder name. Refer to “Opening a Different Folder”, in Chapter 3.
d	delete	Marks the current message for deletion.
e	edit	Runs the Edit/1000 editor, or the editor specified in your personal mail.rc file.
f	fwd	Forwards a message, from you, that contains a message from another sender.
g	greply	Sends a message to the original sender and all other addressees of a message received by you.
j or cursor down		Moves highlight down one message.
k or cursor up		Moves highlight up one message.
l		Limits the messages shown in the message menu to only those that match given criteria. See “/” below.
m	mail	Creates a new message.
<*n*>		Selects a message by its number in the messagelist. The prompt “Goto message:” is displayed after you type the first digit. For message numbers higher than “9”, type the second digit. Otherwise, press ENTER or RETURN.
n or [Return]	read	Reads current message and moves highlight to next message in list.
p	print	Prints mail messages.
q	quit	Exits Mail/1000 and deletes messages marked for deletion.
r	reply	Replies to the sender of a message.
s	move	Saves a message to a specified folder.
S	copy	Copies a message to a file.
t		Removes a tag from a tagged message. Tags a message that does not have a tag. Use with any command that operates on tagged messages. These include the |, b, e, f, p, s, and S commands.
u	undelete	Removes the delete marker from a message.
x	xit	Exits Mail/1000. Unmarks messages marked for deletion.
^D		Marks for deletion all messages selected by criteria. Uses same criteria as “/”.
^L		Refreshes the screen.
^Q		Same as “x”.

Table 4-1. Line and Visual Mode Commands Compared (continued)

Visual Mode	Line Mode	Usage
^T		Tags all messages matching criteria. Uses same criteria as "/".
^U		Undeletes messages matching criteria. Uses same criteria as "/".
= or [HOME UP]		Moves the highlight to the top of the message list.
*, [HOME DOWN], [SHIFT-HOME], or [CTRL-HOME]		Moves the highlight to the bottom of the message list.
$		Deletes all marked messages and resumes visual mode on the same folder.
?	?	Displays online help messages.
+ or [Next] or <space>		Displays the next "page" of the current message list.
− or [Prev]		Displays the previous "page" of the current message list.
:		Switches from Visual to Line mode for one command only. To switch from Visual to Line mode "permanently", enter "v" at the Line Mode prompt that the ":" command displays.
/		Moves current message marker to the next message that matches given criteria. Displays the "Criteria:" selection prompt. At the prompt, enter one of the following: subject *string* — Selects messages that contain *string* in the title. Equivalent to Line Mode command modifier */subj*. from *string* — Selects messages that contain *string* in the sender name. Equivalent to Line Mode command modifier "*sender*". = *selector* — Selects messages that match *selector*, where *selector* specifies one of the *msglist* command modifiers listed in Table 3-5. all — Selects all messages in the current message list.
|	|	Filters message or tagged messages through program.
!	ru	Shell escape. Runs a copy of CI, or whatever shell is selected by the "shell" variable.

Visual Mode Commands Listed by Task

Visual mode commands are very easy to execute. To execute a command, type its command character at the Visual mode colon (:) prompt . Some commands will display a prompt at which you can enter further information.

Creating and Mailing a Message

The “mail” command works the same way in Visual and Line modes. At the prompt, enter:

```
m
```

Enter address and subject at the suitable prompts, and message text. When you close the message editor, the prompt “Deliver/Edit/?: [D]” is displayed. After you deliver the message, Mail/1000 returns to the Visual mode prompt.

Editing a Message

To run your installed editor on the currently highlighted message or on all tagged messages enter:

```
e
```

Reading the Current Message

To read the currently highlighted message and move the highlight to the “next” message in the list, enter:

```
n          (or press RETURN)
```

Displaying the Next “Page” of the Message List

In a message list several pages long, the “+” command displays the next “page” of the list. Enter:

```
+          (or press NEXT)
```

Displaying the Previous “Page” of the Message List

In a message list several pages long, the “−” command displays the previous “page” of the list. Enter:

```
-          (or press PREV)
```

Selecting the Next Message

To move the highlight down one line, enter:

`j` (or press `DOWN ARROW`)

Selecting the Previous Message

To move the highlight up one line, enter:

`k` (or press `UP ARROW`)

Selecting a Message by Number

To select a message by its number in the message list, enter its message number (where *n* is the message number) followed by a return:

<*n*>

The prompt "Go to Message:" is displayed after you type the first digit. For message numbers higher than "9", type the second digit then press ENTER or RETURN.

Selecting the First Message in the List

To move the highlight to the top of the message list, enter:

`=` (or press `HOME`)

Selecting the Last Message in the List

To move the highlight to the bottom of the message list, enter:

`*` (or press `SHIFT-HOME`)

Selecting Messages by Selection Criteria

To move the cursor to the next command that meets the criteria, enter:

`/`

To limit the messages displayed in the folder's list of messages to those that meet the criteria, enter:

`l`

For either command, at the “Criteria:” prompt, select messages by entering one of the following criteria:

`s[ubject]` *string*	(Selects messages that contain *string* in the title.)
`f[rom]` *string*	(Selects messages that contain *string* in the sender name.)
`=` *selector*	(Selects the first message that matches *selector*, where *selector* specifies a *msglist* command modifier listed in Table 3-5.)
`a[ll]`	(Selects all messages in the current message list.)

Updating the Current Folder

To update the current folder by deleting messages previously marked for deletion, enter:

```
$
```

Replying to a Message

The “r” command operates the way the “reply” command does in Line mode:

```
r
```

Replying to a Group

The “g” command operates the way the “greply” (group reply) command does in Line mode :

```
g
```

Bouncing a Message

The “b” command allows you to bounce a message (or tagged messages) to another user. The command operates the way the “bounce” command does in Line mode:

```
b
```

Forwarding a Message

The “f” command allows you to forward a message (or tagged messages) to another user. The command operates the way the “fwd” command does in Line mode:

```
f
```

Tagging or Untagging Messages

The “t” (tag) command works with other commands that operate on tagged messages (these include the |, b, e, f, p, s, and S commands). It removes a tag from a tagged message or tags an untagged message.

```
t
```

Tagging Messages by Limiting Criteria

The “^T” command tags all messages matching a limiting criterion. It uses the same set of criteria as “/”.

```
^T
```

Saving a Message to Another Folder

The “s” command allows you to save a message (or tagged messages) to a folder. The “s” command operates the way the “move” command operates in Line mode:

```
s
```

Saving a Message to a File

The “S” command allows you to save a message (or tagged messages) to a file. The “S” command operates the way the “copy” command operates in Line mode:

```
S
```

Switching to a Different Folder

The “c” command operates the way the “wf” command does in Line mode:

```
c
```

Marking a Message for Deletion

The “d” command operates the way the “delete” command does in Line mode:

```
d
```

Marking Messages for Deletion by Limiting Criteria

The "^D" command marks for deletion all messages selected by a limiting criterion. It uses the same set of criteria as "/".

```
^D
```

Undeleting a Message

The "u" command operates the way the "undelete" command does in Line mode:

```
u
```

Undeleting Messages by Limiting Criteria

The "^U" command undeletes messages matching a limiting criterion. It uses the same set of criteria as "/".

```
^U
```

Printing a Message

The "p" command allows you to print a message (or tagged messages) to a printer. The command operates the way it does in Line mode:

```
p
```

Displaying Header Fields

To display all header fields for a selected message, enter:

```
h
```

Refreshing the Screen

To refresh your screen display, enter:

```
^L
```

Displaying Online Help Messages

The "?" command operates the way it does in Line mode:

```
?
```

Running CI from Mail/1000

The "!" command is the shell escape command. When entered, it runs a copy of CI, or whatever shell is selected by the "shell" variable.

```
!
```

To return to Mail/1000, at the CI prompt, enter "ex".

Running a Program on Mail/1000 Messages

The "|" command allows you to filter the current message (or all tagged messages) through a program:

```
|
```

After you have entered the "|" command, at the "Runstring: " prompt, enter the runstring for the program you would like to run on the message file. The syntax is the same as the syntax for the *runstring* parameter of the "|" line mode command (where %f is replaced by the name of the message file, %n is replaced by the record number of the first line of text in the message, and %# is the number of the message in your mailbox). For example, to display the number of lines in the current message or all tagged messages you would enter "dl %f n" at the "Runstring: " prompt.

Switching Temporarily from Visual to Line Mode

The ":" command switches you into Line mode for the execution of one command. Then it returns you to Visual mode.

```
:
```

Switching Permanently from Visual to Line Mode

To switch to Line mode and remain there, at the Visual mode prompt enter:

```
:     (to switch to Line mode)
```

Then, at the Line mode prompt, enter:

```
v
```

Exiting Mail/1000, Deleting Marked Messages

The quit command operates the way it does in Line mode:

```
q
```

Exiting Mail/1000, Undeleting Marked Messages

The command operates the way it does in Line mode:

```
x          (or  ^Q)
```

5

Customizing Your Environment

The Mail/1000 environment consists of the program's screen image and program facilities. By modifying the variables in your personal mail.rc file, you can customize the screen image and add new facilities to those described in Chapters 3 and 4 of this manual. These additional facilities are:

- The address book, which lets you create aliases, or "nicknames", for individual and group user addresses (*distrlists*).
- Automatic message handling, which lets you dispose of incoming messages automatically, by "filtering" them through limiting criteria.
- Customization, which lets you set up (configure) your personal mailbox.

For example, you can set Mail/1000 to start in Visual mode instead of Line mode, or automatically include your signature in every message you send.

Creating the Address Book

Use Edit/1000 or any text editor that creates ASCII files to create a file named addressbook.mail in your home directory. In it, enter "pairs" of names consisting of aliases ("nicknames") and mailbox addresses (*distrlists*). This file may also contain comment lines of the form:

```
* comment
```

where the asterisk (*) is in column 1.

In simple form an alias-address pair looks like this:

```
cindy : cinderella
```

where:

`cindy`	is an alias.
`:`	separates aliases from addresses.
`cinderella`	is the address of another user on your system.

To send a message to cinderella, enter "cindy" instead of "cinderella".

The previous example saves only a few key strokes. The next example illustrates the real power of aliases:

```
pogo : pogo_possum%okefenokee_swamp@georgia
```

This alias saves a number of keystrokes, and a lot of memorizing, as well.

Complex addresses, such as the examples used here, are required where networks are connected by a common gateway yet not aware of each other. In more tightly integrated networks, simple *user@domain* addressing can be used.

Using Multiple Aliases

You can create several aliases for a given address. For example:

```
cindy, cin, cinders : cinderella
```

Note that commas (,) are used to separate the aliases. Use any of the three aliases to send mail to cinderella.

Using Multiple Addresses

You also can assign several addresses to an alias, creating a distribution list. For example:

```
fleet : comspacflt@star_fleet, spock%vulcan@star_fleet,
    kirk%earth@star_fleet, mccoy, uhuru, sulu@marsport
```

In this example, you can use the alias "fleet" to send messages to all of the addresses in the distribution list. You also can use some or all of the names in a distribution list in another distribution list. Note that a list that is longer than one line must have a comma (,) at the end of each line that is to continue.

Technically, a single "alias:address" pair is a distribution list. In the previous example, the term is used in its common business meaning, that is, as a list of message recipients.

Using Aliases in the Address

Within a distribution list, an alias can be used as an address for another alias. This can simplify the creation of multiple distribution lists. For example, create a series of aliases such as:

```
spock : spock%vulcan@star_fleet

kirk : kirk%earth@star_fleet

sulu : sulu@marsport

cindy : cinderella

pogo : pogo_possum%okefenokee_swamp@georgia
```

```
king : benny_goodman%carnegie_hall@rcavictor
muskrat : kidory%sanfrancisco@capitol
```

Then use the aliases as addresses in distribution lists, such as:

```
fleet : uhuru, spock, kirk, sulu, mccoy
session : cindy, pogo, king, muskrat, spock
royalball: cindy, uhuru, king, sulu, muskrat
```

The number of key strokes saved by an alias-like “session” is several dozen. Because “uhuru” and “mccoy” are on your local system, you can include them in a distribution list without defining an alias for them.

Creating Non-Expanded Aliases

Normally, aliases are “expanded” in the headers of messages that the mail system delivers to the recipients. When an alias is expanded it is replaced by the list of addresses that the alias stands for. This means that whenever an alias is entered as a recipient in the header of a new message, the message actually sent contains the addresses that the alias defines, not the alias name. For example, if your address book contains the following alias:

```
clyde : kclyde@cup.hp.com
```

then if you send a message to the alias by entering:

```
To: clyde
```

the message actually sent contains the expanded address:

```
To: kclyde@cup.hp.com
```

Thus, Clyde’s “real” address appears in the message, not your shorthand name for him.

You may wish to prevent an alias from being expanded when the alias names a mailing list. To prevent an alias from being expanded, enter two colons between the alias name and the distribution list. Using a previous example:

```
fleet :: uhuru, spock, kirk, sulu, mccoy
```

A message sent to alias “fleet” does not expand the alias. Assuming the local host name is acme.cup.hp.com, a message sent to “fleet” creates a header similar to:

```
To: fleet@acme.cup.hp.com
```

One usage of this feature is to maintain local control over the addresses that are members of the list. For example, if a member of the “fleet” distribution list replies to a message received from that list, the reply is sent back to host acme.cup.hp.com to be delivered to each member of the “fleet” alias. If, on the other hand, the alias had been expanded to the member addresses then the reply would have been sent directly to each member. However, the alias as it was expanded at that time may now be out of date. For example, new members may have joined the list.

Listing Distribution Lists

To list the address or addresses associated with an alias, enter:

```
Mail> wh[ereis] alias
```

If more than one *alias* is associated with an address, running "whereis" on each will display the same address.

Altering Your Environment

Mail/1000 lets you customize both the Mail/1000 system and your personal mailbox, using variables stored in files named "mail.rc". A system-level file contains variables that define Mail/1000's global environment. Your personal file contains variables that define your personal Mail/1000 environment.

You can create and edit your own mail.rc file in your home directory. Only the system Postmaster can create and edit the system mail.rc file.

Customizing Read Acknowledgement

Setting the "ack" variable specifies whether read acknowledgement messages should be sent when you read messages for which the sender has requested read acknowledgement. For example:

`set ack on`	(automatically sends acknowledgements)
`set ack off`	(automatically disables acknowledgements)
`set ack ask`	(asks you if acknowledgement should be sent; default)

Specifying Message Disposition Query

If the "askdisp" variable is set to "on", the "Preserve/Delete/?:" prompt is issued after each message is read. If the variable is set to "off", then the prompt is not issued, and the Visual mode current message is not advanced so that any Visual mode command can then be given to specify the disposition of the message. The variable default setting is "on". For example:

```
set askdisp on
```

Skipping Messages Marked for Deletion

When the "skipdel" variable is set to "on", messages marked for deletion are skipped over by the cursor movement commands and other commands which automatically increment the current message. Messages marked for deletion must then be selected by the uppercase "J" or "K" keys

or by number in order to be unmarked. The default is “off”. To set the “skipdel” variable to skip over messages marked for deletion, enter:

```
set skipdel on
```

Customizing the Shell

The “shell” variable value specifies the runstring used for the Visual mode “!” command and the text-entry “~!” command. The default is “ci”.

Customizing the Editor

The “edit” variable takes a runstring that specifies an editor. The default editor for Mail/1000 is Edit/1000. In addition to specifying an editor, you can specify its operating characteristics. For example, to change the default operating mode of Edit/1000 from line to screen, enter:

```
set edit edit %f %# %n|s
```

where:

`%f`	is replaced by the name of the file you will edit.
`%#`	is replaced by the number of the selected message.
`%n`	is replaced by the record number of the first line of text in the message. This skips the cursor over the header and places it at the first line of text.
`s`	specifies screen mode. Use this to run Edit/1000 in screen mode instead of line mode.

Running the Text Editor Automatically

When creating message text, the initial default is Message Text Entry Mode (the “>” prompt is displayed). This “editor” runs when you create text for a message. To use your text editor (default is Edit/1000) for creating message text as well as editing it, enter:

```
set justedit on
```

Customizing the Message Terminator

The message terminator tells the Mail/1000 text editor that the message is ended. The initial default character is a “.” (period). To change this character to another, or to a word, edit the variable named “eom”. For example, to change the message terminator to the word “bye”, enter:

```
set eom bye
```

Customizing the Message Line Prefix

In replies to a message, each line of the original message is prefixed by ">" (the default). To change this, edit the variable named "prefix". For example, to set the message line prefix to "}", enter:

```
set prefix  }
```

Changing Printers

The "print" variable takes a runstring that specifies a printer. It works the same way the "edit" variable works, and takes the same arguments (%f and %n). In most cases, you need not change the default, which is "print +C:OFF %f". The default runs the RTE-A PRINT utility specifying no carriage control in the file to be printed. See the *RTE-A Print and Spooling Reference Manual*, part number 92077-90248, for more information on the PRINT utility.

Customizing the Mail/1000 Command Prompt

The initial (default) Mail/1000 prompt is "Mail>". To change the prompt to another name of up to fifteen alphanumeric characters, enter:

```
set prompt string
```

where *string* may consist of or include one of the substitution parameters listed below:

`%m` is replaced by the current folder name.

`%M` is replaced by the mailbox file name.

`%n` is replaced by the mailbox user name.

`%N` is replaced by the mailbox real name.

For example,

```
set prompt %n>
```

produces the prompt "Farley >" for a mailbox user named "Farley".

The example:

```
set prompt Mail [%m]>
```

produces the following prompt when you start Mail/1000:

```
Mail [inbox]>
```

Customizing the Visual Mode Menu Order

The “sortby” variable determines the order in which messages appear in the visual mode menu. The legal values are:

received	Present messages in the order received into the mailbox. This is the default.
reverse-received	Present messages in the inverse order of receipt.

For example, to set messages to display in inverse order of receipt, enter:

```
set sortby reverse-received
```

Suppressing the Mail/1000 Startup Message Display

When you start Mail/1000, the messages “Mail/1000 version ..”, and “Folder is ..” are displayed. To turn off this display, enter:

```
set quiet on
```

Customizing the Message Reader

The “read” variable takes a runstring that specifies a message reader. It works the same way the “edit” variable works. The default is “rdmsg -# %# %f”. In most cases, you need not change the default.

Saving Message Copies Automatically

You can specify a folder in which to save copies of messages you mail. If no name is specified, no copies are made or saved.

To save copies, enter:

```
set record foldername
```

where *foldername* is the name of the folder used for saving copies.

Adding a Signature File to Messages

To append a file to the end of each outgoing message, enter:

```
set signature namefile
```

Use Edit/1000 to create *namefile*.

To append “Have a Happy day” to messages, in your home directory create the file “hpday”, containing the phrase “Have a Happy day.”, then enter:

```
set signature #0/hpday
```

Adding a Spell-Checker

If a spell-checker is installed on your system, you can use it to spell-check your messages. For example, if you have a spell checker named "SPLCHK", enter:

```
set spell splchk %f
```

The variable %f is replaced by the name of the file on which the "spell" closing option executes.

Starting Mail/1000 in Visual Mode

To start Mail/1000 in Visual mode instead of Line mode, enter:

```
set visual on
```

Customizing Read Message Displays

The "ignore" command specifies the message header fields that the program "rdmsg" will limit the display of when reading messages. Rdmsg limits the number of lines printed for the named fields to the specified value, or skips the field entirely. This is useful to skip headers that are not interesting to you in everyday use, and to truncate long headers to a reasonable length. This command is valid only in your personal #0/mail.rc file or the system-wide /mail/admin/mail.rc file; it has no effect when entered interactively. Any rules entered in your personal #0/mail.rc file override rules in the system-wide file. Command syntax is as follows:

`ig[nore]` *rule* `[,`*rule ...*`]`

where each *rule* is of the syntax:

mask`[:`*limit*`]`

where:

mask	is a mask containing "*" and "?" wildcards that selects the header fields for which this *rule* applies.
limit	is an integer from 0 to 255; sets the maximum number of lines printed of a header field which matches the *mask*. If zero, then the field is skipped completely. The default if no limit is specified is zero.

Additionally, a *rule* may be the string "[default]" which matches the following fields with *limit* zero:

From, Date, Return-Path, Received, Message-Id, Resent-Message-Id, Full-Name, In-Reply-To, X-Mailer, Mailer, X-HpDesk*, X-Openmail-Hops

Note that the information contained in fields "From" and "Date" is summarized in the single-line banner at the top of the listing.

For example, to skip the field "Received:" and any field containing the string "pliers", enter:

```
ignore received, *pliers*
```

To skip all default fields and limit the number of “To:” lines printed to 3, enter:

```
ignore [default],to:3
```

Upper and lowercase are not significant for matching field names.

Handling Messages Automatically

Mail/1000 can handle incoming messages automatically. For example, the system can automatically file all messages with Subject: “lunch” in a folder named “priority_one”. It also can automatically refuse, forward, delete, reply to messages, or pass them to a program. Messages are selected for automatic handling by message filtering criteria.

Message Filtering Criteria

Messages are selected for action by filtering them through “selection criteria”. Criteria are stored in a file named filter.mail, which is located in your mail subdirectory. Create filter.mail with Edit/1000 or other text editor. This file may also contain comment lines of the form:

```
* comment
```

where the asterisk (*) is in column 1.

A selection criterion is a condition and a Mail/1000 action, joined with a colon (:). The condition determines which messages will be processed. Create compound conditions by joining them with “and” or “or”.

Allowed conditions are:

subject “*mask*”
: This specifies selecting messages based on the contents of the “Subject:” header. The *mask* may contain wildcards “*” and “?”. The double quotes surrounding the *mask* are optional; these are required only if the *mask* contains spaces. The *mask* is not case-sensitive.

  For example:

  ```
  subject meeting
  ```

  selects all messages with subject “meeting”.

from “*mask*”
: This specifies selecting messages based on the sender’s address. The *mask* may contain wildcards “*” and “?”. The double quotes surrounding the *mask* are optional; these are required only if the *mask* contains spaces. The *mask* is not case-sensitive.

  For example:

  ```
  from “mgr”
  ```

  selects all messages from “mgr”.

all
: This matches all messages.

Each selection criterion in filter.mail is applied to an incoming message in the order in which it appears in the file until one is found that applies to the message. If none is found, the message is left in the incoming folder.

An action criterion determines how messages will be handled. Allowed actions are:

- leave
- execute
- folder
- refuse
- forward
- copy
- autoreply

The two following examples illustrate the use of selection and action criteria:

```
subject *suppertime*: leave
from charlie : refuse
```

These have the effect of refusing all messages from Charlie except those that concern "suppertime". Any message from any user that includes "suppertime" in the subject will be saved. Any message from Charlie will be refused except those that include "suppertime" in the subject.

Additional examples are described below.

Leaving Messages in the Inbox

To leave incoming mail in your inbox without further processing, enter:

```
all : leave
```

The condition "all" specifies all messages. The action does not take a modifier.

Executing a Program on a Message

To run a program on an incoming message:

```
subject sale : execute ci junkmail %f
```

This runs a command file named "junkmail" on incoming messages (%f) identified by the subject "Sale".

Sending Messages to Folders

To send selected mail to a specified folder instead of the default folder “inbox”:

```
from Sylvester : folder Caution
```

This stores messages from Sylvester in a folder named “Caution”. Messages received but not yet read have the status “New”.

Refusing Messages

To refuse messages, join senders and subjects with the conjunction “and”, and enter the instruction “refuse”. For example, to refuse all messages from Sylvester that deal with the subject of lunch, enter:

```
from Sylvester and subject lunch : refuse
```

Forwarding and Copying Messages

Forwarded messages appear only in the receiver’s (the address to whom you are forwarding) inbox. Copied messages appear in your inbox as well as the receiver’s.

For example, to forward or copy messages:

```
all : forward bob@bora_bora
```

This forwards all messages to bob on bora_bora. Or,

```
all : copy bob@bora_bora
```

This copies all messages to bob on bora_bora.

Replying to Messages Automatically

To automatically reply to specified incoming messages:

```
all : autoreply /bob/gone.txt
```

This sends a message named “gone.txt” to all senders.

You must include the full pathname of “gone.txt” in filter.mail. Autoreply keeps a record of persons who have been replied to in a file named “autoreply_done.mail”, located in your mail directory. Once listed in autoreply_done.mail, a user will receive no further replies from you as long as the autoreply file exists. When no longer needed, the file must be purged.

Redefining New Mail Notification Runstring

To redefine the runstring used for notification of new mail, enter:

```
notify runstring
```

The same substitution parameters are available as for the "notify" keyword in the /mail/admin/mail.cf file. A blank runstring will inhibit notifies.

In the case of multiple "notify" lines, the last one read before a filtering rule that matches a message is used. For example:

```
notify redalert %f : %t
subject critical : leave
notify notify %u New mail from %f - %t
```

This example uses the special "redalert" program for mail with subject "critical", and the usual notify program for all other mail.

Wastebasket Cleanup Filtering

File wastefilter.mail can be created in your mail directory (the same place as filter.mail) to control the wastebasket emptying operation performed by rmail every midnight. The format of the file is very similar to filter.mail, except that the allowable actions are different. (See the Message Filtering Section for more information on the filter.mail format.)

The filtering actions for wastebasket cleanup are:

```
hold days
```

All messages that match the selection criteria should be held for the specified number of *days* before being deleted. The default is 3 days.

```
delete
```

Delete all messages matching the selection criteria on the next wastebasket emptying pass. Similar to "hold 0".

```
leave
```

The "leave" action indicates never to delete a message that matches the selection criteria.

The "from" keyword will operate on the "real name" of the sending user as displayed by Mail in the Visual mode menu or Line mode "l" command report. Therefore, messages that are automatic copies of your outgoing mail (generated by "set record wastebasket") may be recognized thus:

```
from "To:*" : hold 10
```

This rule causes automatic copies of messages from you to be held for 10 days instead of 3.

Wastefilter.mail also may contain special command lines in the form:

```
dispose runstring
```

This specifies an FmpRunProgram runstring, without a leading “ru” or “xq”, to be used to actually dispose of message files for messages that have just been deleted from the wastebasket. The name of the message file will be appended to the given *runstring*, with one blank intervening. The *runstring* is neither upshifted nor comma-inserted. A blank *runstring* executes the default disposition, which is to purge the file via FmpPurge.

For example, the line:

```
dispose ci archivemail
```

will execute a runstring similar to:

```
xq ci archivemail /greg/mail/MSG_22EE0A78825.MAIL
```

The last “dispose” line preceding the wastefilter.mail rule that matches a message is used as the disposition command.

For example:

```
subject test* or subject junk : delete
dispose ci archivemail
all : hold 5
```

The above wastefilter.mail file will delete without archiving any message with a subject of “junk” or which begins with “test”; all other mail will be held in the wastebasket for 5 days and then archived via the custom archivemail.cmd script.

6

Advanced Mail/1000 Usage

This chapter describes Mail/1000 procedures you can run from CI.

Reading the Host Mailbox List

To list the names of the other mailbox users on your host system, enter:

```
CI> li /mail/admin/mailboxes
```

Checking for New Mail from CI

To check for the arrival of new mail without starting Mail/1000, from CI enter:

```
CI> newmail [options] [runstring]
```

where:

options =	`-u` *user*	checks the mailbox for *user*; you cannot specify a remote host.
	`-q`	suppresses the message "New mail arrived", which is executed only if new mail has arrived.
runstring		is any valid program runstring.

Executing "newmail" without *runstring* checks for the arrival of new mail and prints the newly arrived message. Execute newmail with a runstring to act on the new message. For example, to use the *runstring* "mail l new" to list a menu of all new (unread) messages in your mailbox, enter:

```
CI> newmail mail l new
```

Sending Mail/1000 Messages from CI

To mail a message without starting Mail/1000, in CI enter:

```
CI> sendmail [options] messagefile
```

where *options* =

`-a`	asks addressee to acknowledge reading the message.
`-d`	asks addressee to acknowledge receiving the message.
`-k`	keeps the message text file; normally, sendmail purges a message after mailing.
`-r`	re-sends (bounces) a message; requires "resent" headers in the message.
`-s`	"secretary-sends" mail from another user.
`-f` *user*	generates a "From:" (or "Resent-From:" if "-r" given) header which names local mailbox *user*. This option implies "-s" (secretary-sent mail) and will cause a "Sender:" (or "Resent-Sender:") header to be generated for your logon name.
`-t` */title of message/*	generates a "Subject:" header that contains the text between the delimiters as the body. The slashes indicated may be any non-blank, non-comma character.
`-c` */text/*	adds the comment *text* to a field labeled "Comments:". The slashes indicated may be any non-blank, non-comma character.
messagefile	is a file containing a Mail/1000 message. The file must be in the Mail/1000 message header/body format, with a blank line between the header and the body text.

For example, to send a message in the file "meeting4" and retain the message, enter:

```
CI> sendmail -k meeting4
```

Running Rmail from CI

The program “rmail”, run interactively from CI, lets you process the message retry queue, list addresses and address book names, and display Mail/1000 status and configuration information. To run rmail interactively, enter:

```
CI> rmail [command]
```

where *command* =

`pq`	reads the “retry” queue; this queue contains messages destined for remote hosts that cannot be reached due to network problems.
`sd`	shuts down rmail.
`xa` *mask* [*filename*]	displays local addresses and address book names that match *mask*; *mask* can include the wildcards “*” and “?”; the output will be sent to *filename*, if specified.
`??`	displays Mail/1000 status and configuration information.
`in`	re-initializes rmail.

For example, to list the names of local users and address book entries whose names begin with “B”, enter:

```
CI> rmail xa B*
```

Reading a Message File from CI

The “rdmsg” program is used by the read command to read a message file and write the results to an output file, which by default is the scheduling terminal. Rdmsg will not display header fields selected by “ignore” commands in files #0/mail.rc and/or /mail/admin/mail.rc unless flag “h” is given, in which case all headers are shown.

Syntax and flag options are as follows:

```
CI> rdmsg [-flags] msgfile [outfile]
```

where *flags* options =

`-b`	suppresses the “Message #n from <sender>, <date>” banner.
`-h`	shows all header fields.
`-#` *msgnum*	sets the message number to *msgnum*, 1-32767. For example, to set the message number to 12 enter: `-#` 12

`-p |`*runstring*`|` defines the runstring for the pager program used to view the output. The delimiters around the *runstring* (vertical bars in the above example) may be any character. The *runstring* will be neither upshifted nor comma-inserted.

Substitution strings are:

`%f` is replaced by the output file name; this name is of a special file which will be recognized only by software configured properly, such as LI.

`%%` is simply "*%*".

`%i<`*condition*`><`*linect*`>/<`*string*`>/`

Substitute *string* into the current position in the *runstring* if the number of lines in the original message file meets the specified *condition*.

<*condition*> is either the character "<" or ">" to indicate the number of lines must be less than or greater than the specified value, respectively.

<*linect*> is an integer from 0-32767.

The delimiters surrounding <*string*> (in the above example, slashes) may be any character. For example,

```
%i>1000/-q/
```

substitutes the string "-q" into the runstring if the number of lines in the original message file is greater than 1000.

The default runstring is:

```
LI,%i<501/->|$lgl|,/%f
```

This causes LI to read its input to the end before backing up to the start and beginning the listing, but only if the number of lines in the original file is less than 501. Example usage from Mail:

```
set read rdmsg -# %# -p !LI,-w,%%f! %f
```

which specifies LI flag "-w", causing mail to be read in binary mode. Note that the "inner" string substitution must be quoted by doubling the percent sign to defeat expansion by the Mail program.

Encoding Binary Files for Transmission

The "uuencode" program is used to prepare (encode) a binary file for transmission via internet (or other) mail. To encode a binary file, enter:

```
CI> uuencode [-a] [-d remotedest] input output
```

where:

`-a`	causes an RTE variable length ASCII file to be translated to a UNIX* text file before the file is encoded. (A newline character is inserted between each record.)
`-d` *remotedest*	is the file name to which the encoded file will be decoded on the remote host. This file name is contained within the encoded file.
input	is the binary file to be encoded.
output	is the encoded output file version created by uuencode.

Uuencode reads the named *input* file and produces an encoded version in the specified *output* file. If the *output* file already exists, and you have write permission, uuencode overwrites the file. The file is encoded using only printable ASCII characters and includes the file's protections and the *remotedest* file name for recreation on the remote system. The *remotedest* defaults to the name of the *input* file being encoded. The −d option can be used to specify a different file name for use as the *remotedest*. For files other than type 1 files or translated ASCII, the *remotedest* includes a full file descriptor including the file type and size. The directory path is included only if it is specified in the *input* parameter.

In the example,

```
CI> uuencode -d vegetable.rel veggie.rel veggiemail
```

The *input* file is "veggie.rel" and the encoded *output* file is "veggiemail" that can be mailed and decoded by the receiver. (See following section on Reading Encoded Files.)

The encoded file is an ordinary text file and can be edited by any text editor to change the protections or the *remotedest* file name. Note that trailing spaces are significant and EDIT/1000 screen mode removes trailing spaces.

When a file is encoded by uuencode, the encoded file is expanded by 35% (3 bytes become 4 bytes plus control information) causing a longer transmit time.

---

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Reading Encoded Files

To decode an encoded file, enter:

```
CI> uudecode [-a] filename [output]
```

where:

`-a`	causes uudecode to translate UNIX text files to RTE variable length ASCII files. (Newline characters are stripped out and interpreted as record separators.) If the *remotedest* file name contained in the encoded file does not include a file type, uudecode creates a type 1 file. If the −a option is supplied, the data will be decoded and translated to a type 4 ASCII file.
filename	is the encoded file to be decoded.
output	is the recreated (decoded) original file.

Uudecode reads an encoded file, ignoring any leading and trailing lines added by mailers, and re-creates the original file using the original file's protections and the name specified in the *remotedest* field in the encoded file. Specifying an *output* file name in the runstring overrides the name specified in the *remotedest* field of the encoded file. If the decoded file being created by uudecode already exists, and you have write access to the file, the existing file is overwritten.

In the example:

```
CI> uudecode veggiemail
```

uudecode will decode the encoded "veggiemail" file and re-create the original file, in this case, using the file name "vegetable.rel" that was specified as the *remotedest* file name when the original file was encoded.

7

Postmaster's Guide to Mail/1000

This chapter describes files and commands that the Postmaster uses to manage Mail/1000. The material is presented for experienced computer users with Postmaster capabilities. This means you must be assigned postmaster capabilities in the "mail.cf" configuration file. Refer to Appendix A, "Installing Mail/1000".

Postmaster's Administrative Files

The Mail/1000 postmaster is responsible for files used to configure and maintain the system. These files include:

- mail.cf
- addressbook.mail
- mailboxes
- traffic.log
- error.log
- nitely.cmd

The mail.cf and addressbook.mail files must be set up when Mail/1000 is installed.

Mail/1000 Configuration File

The file "/mail/admin/mail.cf" contains information that defines system facilities such as the local host, postmaster, local time zone, message transport service, and the default gateway host. Refer to Appendix A, "Installing Mail/1000", for instructions on setting up mail.cf and other configuration files.

Mail/1000 Addressbook File

The file "/mail/admin/addressbook.mail" contains system-wide address aliases. At the least, this file must contain the alias "postmaster". Both system-wide and personal addressbook.mail files are set up in the same manner. Refer to Chapter 5, "Customizing Your Mailbox", for instructions on setting up addressbook.mail.

Mail/1000 Mailboxes File

The file "/mail/admin/mailboxes" contains all of the mailbox names on your host. It includes the "real names" of mailbox owners, and instructions on how to deliver mail to each mailbox. The following describes the information in the file. Although you can enter it manually, it is more convenient to do so using the command for creating users (crusr), described below, under "Mail/1000 Administrative Commands".

The syntax for information you enter in the mailboxes file is:

name:*realname*:*delivery*

where:

name is the mailbox name. Usually, this is the logon name of the mailbox owner.

realname is the real name of the mailbox owner.

delivery is information on how to deliver messages to the specified mailbox.

The parameters for *delivery* are:

/*maildir* specifies the mail directory to which messages are delivered. Usually, this is the "mail" subdirectory in the user's startup directory.

|*program runstring* *program* filters incoming messages. *program* runs on each received message, using *runstring* for the parameter, where *runstring* contains the following substitution strings:

`%f` = received message file name.

`%%` = %.

* *comment* asterisk (*) lets you enter a *comment*.

For example:

```
doc-request:Document Archive:|ardoc -m %f
```

defines an address named "doc-request", owned by "Document Archive"; "ardoc" is a program that reads the subject header information of files sent to "doc-request" and sends a copy of the requested document to the "From:" user.

Mail/1000 Message Logging

The system logs every received message in a file named "/mail/admin/traffic.log". The file records the date-time, message ID, sender, receivers, and disposition of the message. To turn logging off, enter filename "0" for the "Log" option in the mail.cf file and reinitialize rmail.

When the file contains more than 300 records, the system purges any existing traffic.old file, renames traffic.log to traffic.old, and creates a new traffic.log file.

Mail/1000 Error Message Logging

The system creates the file "/mail/admin/error.log" to collect error messages as they occur. Each day the file (if it exists) is mailed to the postmaster, then purged from /mail/admin.

Mail/1000 Nitely.cmd File

If the CI command file "nitely.cmd" exists in the /mail/admin directory, mail will execute this file within the first five minutes after midnight every night. This can be used to perform daily administrative duties. For example, if you have several machines in a network sharing a common address book, you could use this feature to resynchronize all of the address books.

Mail/1000 Mail Queue

The directory /mail/queue holds incoming and outgoing messages for processing. Refer to "Reading Message Queues", below.

Mail/1000 Lost Mail Directory

If the system cannot recognize or process a queued file as a mail message, it sends the file to the directory /mail/lost. The system also makes an entry in error.log, which notifies the postmaster. It is then up to the postmaster to process the lost file.

Mail/1000 Administrative Commands

Use the following commands to execute Mail/1000 administrative functions.

Modifying Mail/1000 User Directory Names

```
Mail> mdir user newdir
```

Changes a Mail/1000 directory for *user* to *newdir*. Files in the current directory will be moved to the new directory.

Creating Mail/1000 Users

```
Mail> crusr
```

You will be prompted for input. You must be logged in to the account designated as postmaster in the mail.cf file.

Listing Mail/1000 Users

```
Mail> lusr
```

Lists all Mail/1000 users. Lists mailbox name, real name, the number of messages in the inbox, and the update time.

Deleting Mail/1000 Users

```
Mail> dusr user
```

Deletes *user*.

Reading Message Queues

```
Mail> lq
```

Lists information about messages in the incoming and retry queues. Original error messages will be included with mail messages being retried due to network failure.

Domain Name System Administration

Mail/1000 running on NS/ARPA hosts can access a Domain Name System (DNS) name server for mail routing purposes. The DNS is an Internet-standard network information database. If you have a DNS name server running on a non-HP 1000 host in your network, then you can configure Mail/1000 to retrieve mail routing information from that name server; name servers are not provided for the HP 1000.

There are two Mail/1000 programs that access the DNS:

- Sendmail
- SMTP

The Sendmail program checks for CNAME records that indicate a domain specified in an address is an unofficial alias to a "canonical" domain. If a CNAME record is found, the canonical domain is substituted in the message header and envelope.

The SMTP program locates MX (Mail EXchange host) records for the destination domain of outgoing mail. For each MX host found, SMTP tries to connect to each address of the MX host, as registered in A (Address) records, until a connection is established. Failing this, SMTP will query for any A records pertaining to the destination domain and attempt to connect to each of those addresses.

In order to run the DNS version of Mail/1000, you must indicate that DNS support is to be included at mail installation time. See Appendix A for instructions on how to install DNS support. Your /mail/admin/mail.cf file must contain the following line for DNS support to take effect:

```
flags dns
```

If you edit mail.cf to add the line after Mail/1000 is already running, you must re-initialize rmail when done by issuing the following command:

```
rmail in
```

DNS on the HP 1000

As mentioned previously, the DNS implements a database of network information. The DNS subscribes to the usual "client/server" paradigm, where clients ask for information from servers. A question asked of the DNS is termed a "query".

The DNS software provided on the HP 1000 consists of three parts:

- The "resolver" library, DNS_RESOLVER.LIB. In DNS terminology, clients are called "name resolvers," or just "resolvers." The resolver library is a set of routines for use by applications that issue DNS queries.

- The NAMED program, a slave-mode-only name server. This means that the name server cannot fully process queries itself, but must rely on full-service name servers located elsewhere on the network to process queries. The NAMED program simply caches locally information retrieved from full-service name servers. A second query for the same information will not require another network access, thus conserving network bandwidth.
- The sig_named command, a command that allows you to send a signal to the NAMED program.

The NAMED program is optional; execute it only if you desire the performance advantage of reduced network access. (See DNS Configuration Files below for a discussion of the /etc/named.boot file.)

Some sites may choose to execute one copy of NAMED on a local network and configure each resolver on the local network to query that name server. Thus, queries to a full-service name server located on another network need only be generated for information that has not already been cached in response to a query issued by any of the local hosts.

Queries are generated using the TCP protocol (Transmission Control Protocol), rather than via the UDP protocol (User Datagram Protocol), because UDP is not available on the HP 1000. The DNS standard stipulates that queries may be made using TCP, but only after first trying the query using UDP. However, many name server implementations will honor requests made via TCP without regard to whether a UDP query is first attempted.

DNS Configuration Files

The DNS configuration files /etc/resolv.conf and /etc/named.boot are discussed below.

/etc/resolv.conf

The /etc/resolv.conf file must be present for Mail/1000 to access the DNS. This file informs the resolver of the local domain name, and of the IP addresses of name server hosts.

The file consists of lines containing the following keywords:

`domain` *local_domain*

where:

local_domain is the local domain name, not including the host name. This is different than the domain entered in the mail.cf file.

For example, if mail.cf specifies “domain magic.cup.hp.com”, then resolv.conf would specify “domain cup.hp.com”.

The local domain is used for automatically qualifying abbreviated domain names.

```
nameserver ip_address
```

where:

ip_address is the IP address (in dot notation) of a name server that the resolver should query. Up to 3 name servers can be listed, one per keyword. If there are multiple servers, the resolver library queries them in the order listed. The algorithm used is to try a name server, and if the query times out, try the next, until out of name servers, then repeat trying all the name servers until a maximum number of retries is made.

The IP address may be of the local host if the NAMED program is run on the local host.

Each line may contain a comment prefixed with a pound sign (#). Comments may begin anywhere on the line, and end at the end of the line.

For example:

```
nameserver 15.0.88.167   # magic
```

File resolv.conf in your Mail/1000 product distribution directory contains a skeleton file that may be edited to create an /etc/resolv.conf file.

/etc/named.boot

The /etc/named.boot file must be present only if the local host runs the NAMED program. This file tells NAMED the IP addresses of hosts running full-service name servers. Each line may contain one of the following keywords, “forwarders” or “slave”. Keyword descriptions are given below:

```
forwarders ip_address [, ip_address, ...]
```

where:

ip_address is the IP address of a host that runs a full-service name server. NAMED will ask these name servers for information if a query cannot be satisfied from cached data.

```
slave
```

The “slave” keyword should be present for future compatibility, although it currently has no effect. NAMED always runs in “slave mode” at present. This means NAMED will not attempt to contact authoritative name servers for queries that cannot be satisfied from cached data. Instead, NAMED will simply refer all such requests to the “forwarders” hosts.

Each line may contain a comment prefixed with a semicolon (;). Comments may begin anywhere on the line, and end at the end of the line. For example:

```
forwarders 15.0.89.12  ; Masher
```

File named.boot in your Mail/1000 product distribution directory contains a skeleton file that may be edited to create an /etc/named.boot file.

sig_named

The sig_named command sends a signal to the NAMED program, if it is running. The type of signal sent is determined by the parameter given.

Command syntax is:

```
sig_named [kill | dump | stats]
```

where:

`kill`	signals NAMED to shut down.
`dump`	signals NAMED to dump a listing of its cache to file /scratch/named_dump.db. This listing may be used to locate erroneous resource records (RRs) that have been cached locally, causing incorrect results to be returned for DNS queries.
`stats`	Signals NAMED to dump statistics into file /scratch/named_stats .

nslookup −− Display DNS Information

The nslookup program can be used interactively or from the command line to query Internet Domain Name System (DNS) servers for information.

nslookup runs on an RTE-A/VC+ system with the NS-ARPA or ARPA subsystem installed. DNS client support (also known as the DNS "resolver") must be installed on the system at Mail/1000 installation time, that is, file /etc/resolv.conf must be in place.

Runstring:

`nslookup [-`*option...*`] `*host_to_find*` [`*server*`] [>[>]`*outfile*`]`

or `nslookup [-`*option...*`] [- [`*server*`]] [>[>]`*outfile*`]`

where:

option	Any option that may be given to the "set" command, described below, preceded by a dash. The option may be given a value after an equal sign. No blanks nor commas may appear in the definition. More than one of these options may be specified.
host_to_find	The name of the host or domain to lookup information for in non-interactive mode. If this name is not given or is a dash ("−") then interactive mode is entered instead. By default, a non-interactive mode query looks for A records of class IN; use dashed options to specify otherwise.
server	The name or IP address of the host on which the DNS server to use resides. If not specified the first "nameserver" host in file /etc/resolv.conf is used. The server may name the local host if the NAMED program is running.

outfile Send the output to this file. If preceded by ">>" then nslookup appends its output to an existing file; if preceded by ">" then nslookup overwrites an existing file. The default output file is the scheduling terminal.

Interactive Commands:

To exit, type a control-D or type "exit". To treat a built-in command name as a host name, precede it with a backward slash ("\"). An unrecognized command is interpreted as a host name.

The interactive commands are:

host [*server*]

Look up information for domain *host* using the current default server or using *server* if specified. If *host* is an IP address and the query type is A or PTR, the name of the host is returned. If host is a name and does not have a trailing period, one or more domain labels are appended to the name in the usual search sequence (this behavior depends on the state of the "set" options "domain", "defname", and "search"). Answers from a name server's cache, as opposed to answers from an authoritative name server, are labelled "non-authoritative".

`exit`

Exit nslookup. Control-D may be entered instead to exit.

`help`
`?`

Display help on commands.

`server` *domain*
`lserver` *domain*

Change the default server to domain. lserver uses the initial server (the one in effect at the time nslookup was started up) to look up information about *domain*, while server uses the current default server.

`set` *option*`[=`*value*`]`

Change or display state information that affects lookups. Valid options are:

`all`

Prints the current values of the various options to set. Information about the current default server and host is also printed.

`cl[ass]=`*value*

Change the query "class", which specifies the protocol group of the information desired. *value* may be one of:

`IN` the Internet class (the default).

`ANY` any class (this is a wildcard).

`[no]def[name]`

If set ("defname"), append the default domain name to a single-label domain in a lookup (that is, a domain that does not contain a period character). If not set ("nodefname") then single-label domains are sent to the server "as is". The default is to append the default domain name ("defname").

`do[main]=`*name*

Change the default domain name to *name*. The default domain name is appended to a lookup request, depending on the state of the "defname" and "search" options. The domain search list contains the parents of the default domain if it has at least two components in its name. For example, if the default domain is gp.big-swifty.com, the search list is gp.big-swifty.com and big-swifty.com. The default is the "domain" value from /etc/resolv.conf .

`q[uerytype]=`*value*
`ty[pe]=`*value*

Change the type of information returned from a query to one of:

`A`	Host's Internet address.
`ANY`	Any data found for the domain.
`CNAME`	Canonical name for an alias domain.
`HINFO`	Host CPU and operating system type.
`MB`	Mailbox domain name.
`MG`	Mail group member.
`MINFO`	Mailbox or mail list information.
`MR`	Mail rename domain name.
`MX`	Mail exchange domain.
`NS`	Authoritative name server for the named zone.
`PTR`	Host name if the query is an Internet address; otherwise, a pointer to other information.
`SOA`	Start of authority record.
`TXT`	General text strings.
`WKS`	Well-known service description.

`[no]rec[urse]`

If set ("recurse"), tells the name server to query other servers if it does not have the information. If not set ("norecurse") then the server will return an error if it does not have the information. The default is "recurse".

`ret[ry]=`*number*

Set the number of retries to *number*. When a reply to a request is not received within a certain amount of time, the timeout period is doubled and the request

is resent. The retry value controls how many times a request is resent before giving up. The default is 4 times.

`[no]sea[rch]`

If set ("search") and the lookup request contains at least one period but does not end with a trailing period, then nslookup appends the domain labels in the domain search list to the domain in the request until an answer is received. If not set ("nosearch") then the domain search list is not used. The domain search list is set using the "domain" option. The default is "search".

Examples:

```
nslookup - umrk
```

Run interactively, using default server "umrk".

```
nslookup -querytype=mx -nosearch rosebud.times.com >mx.lst
```

Run non-interactively, looking up MX records for host "rosebud.times.org" with the "search" option off, sending the output to file mx.lst .

Note that if you wish to run nslookup on an HP-UX host to a caching-only server on an HP 1000, then you must enter "set vc" to use TCP virtual circuits, rather than UDP datagrams, for the queries.

Mail/1000 Message Headers

Every Mail/1000 message is created with the headers “To:” and “Subject”. The system adds standard headers, such as date and time, and others that depend on message type. The abbreviated syntax of these system added headers are:

Date and Time Headers

`Date:` *date-time*

Displays the date and time a message was sent.

`Resent-Date:` *date-time*

Displays the date and time a message was forwarded.

Author or Re-sender’s Address Headers

`From:` *address*

Displays the address of the original author.

`Resent-From:` *address*

Displays the address of the forwarder.

Dispatcher’s Address Headers

`Sender:` *address*

Displays the address of an original sender who is not the author mentioned in the “From:” header. This type of message is called “secretary-sent”.

`Resent-Sender:` *address*

Displays the address of someone forwarding a secretary-sent message.

Author’s Return Address Header

`Return-Path:` *route-address*

Displays the author’s full return address.

Message ID Headers

`Message-ID:` *message ID*

Displays a unique, system assigned ID. Used to identify and track messages.

`Resent-Message-ID:` *message ID*

Displays a unique ID assigned by the system to a forwarded message. Used to identify and track messages

Host Reception Tracking

`Received: [from` *domain*`] by` *domain* `[with` *service*`];` *date-time*

Displays the name (*domain*) of each host that sends and/or receives a message, the protocol (*service*) used to transfer the message, and the date and time. Used to track messages.

Replied-To Message ID

`In-Reply-To:` *<message ID> (sender, date-time)*

Identifies a replied-to message by message ID, sender, date and time.

Mail/1000 Internal Programs

These internal programs are described for the information of interested users.

M1KSS - Network and File Management Functions

The “M1KSS” program handles certain Distributed Systems (DS) network and File Management Package (FMP) functions. It is initialized by Rmail.

SMTP - Network Message Handling Functions

SMTP handles sending and receiving messages via SMTP (Simple Mail Transfer Protocol) over NS-ARPA. SMTP only runs on RTE-A VC+ with NS-ARPA networking software and is required for communication with HP-UX systems.

Program syntax:

```
smtp [-flags]
```

where *flags* options =

-b Sets the size (in number of bytes) of the TCP send and receive buffers for use by NS-ARPA. The default for outgoing mail is 1500 bytes; the default for incoming mail is 100 bytes. This value may be between 10 and 2048. For incoming mail, this value must match the values specified for the “-s” and “-r” flags in file /etc/inetd.conf.

For example:

```
smtp -b 2048
```

sets the buffering size to the maximum of 2048 bytes.

-t Sets the protocol timeout in minutes. This timeout is applied to each SMTP command/response to be received.

For example:

```
smtp -t 10
```

sets the timeout to 10 minutes.

A

Installing Mail/1000

Mail/1000 is distributed in a directory named /rte_a/mail. It includes a file named "installmail.cmd", which you will use to automate installation. The files referenced by Mail/1000 that are directly involved in the installation process are described in this chapter. Others are described in Chapter 7, "Postmaster's Guide to Mail/1000".

The RTE-A master installation command file, `/RTE_A/RTE_INSTALL.CMD` can be used to invoke `INSTALLMAIL.CMD`. Please refer to the *RTE-A System Generation and Installation Manual,* part number 92077-90034, for information on `RTE_INSTALL.CMD` usage.

Installation Considerations

Networking

Mail/1000 provides support for two networking services: DS File Transparency and the internet Simple Mail Transfer Protocol (SMTP). These services are used to pass mail between hosts in a network. If both of these services are used on the same host then Mail/1000 first tries the DS File Transparency service when attempting to relay a message to a remote host. If the name of the host is unknown to DS File Transparency then Mail/1000 attempts to relay the message using the SMTP service.

The DS File Transparency service is available on hosts that have either the DS/1000-IV or NS-ARPA/1000 subsystems installed. The SMTP service requires either the ARPA/1000 or NS-ARPA/1000 subsystems to be installed. Certain Mail/1000 programs use routines contained in libraries that are provided with these subsystems; the appropriate libraries must therefore be available at the time Mail/1000 software is loaded.

If no networking subsystems are installed on your host then two Link command files provided with Mail/1000 must be edited. The files to edit are M1KSS.LOD and NOTIFY.LOD. Follow the directions contained in comments in those files. The directions tell how to uncomment a line that relocates file DUMMYDS.REL; this file contains dummy versions of DS routines used by the M1KSS and NOTIFY programs.

DS File Transparency

The DS File Transparency service uses the "transparent file access" feature of RTE-A and DS/1000-IV, or the DS/1000-IV Compatible Services of NS-ARPA/1000. This service allows mail to

be sent to and received from any remote HP 1000 host in your DS or Router/1000 network that also supports transparent file access.

Support for this service is built into Mail/1000; no additional configuration steps are necessary for Mail/1000 to use it. To send mail to a remote host, the DSRTR program must be RP'ed. To receive mail from a remote host, the TRFAS program must be active.

The DS File Transparency service will relay a message to a remote domain if the "hostname" portion of the domain is recognized by file transparency and the "upper-level" portion of the domain is the same as that of the local host. For example, if the local domain is "ion.hp.com" then only domains of form "<hostname>.hp.com" will be passed to the DS File Transparency service for relaying. The hostname portion must be found in the /system/nodenames file and the DSRTR program must have read the /system/nodenames file since the hostname was added.

SMTP

The Simple Mail Transfer Protocol (SMTP) service requires the ARPA/1000 or NS-ARPA/1000 subsystems. Using this service, Mail/1000 can exchange mail with other HP 1000 hosts, HP 9000 hosts running HP-UX, and other types of hosts to which NS-ARPA/1000 or ARPA/1000 connectivity is supported. The mail systems on the remote hosts must also support the SMTP protocol.

The SMTP service will relay a message to a remote domain if the domain name can be resolved using the Domain Name System (DNS), if installed, or if the name is found in the NS-ARPA/1000 or ARPA/1000 Nodal Registry.

To use the SMTP service, the following steps must be taken:

1. ARPA/1000 or NS-ARPA/1000 must be installed and initialized on your system.

2. The SMTP software must be loaded when installmail.cmd is executed. If you wish to use the Domain Name System (DNS) then that software must also be installed. See the following section "Installing Mail/1000 the First Time" for instructions on how to load the Mail/1000 software.

3. The line "service smtp smtp" must appear in the mail.cf file. This file is documented in the "Installing Mail/1000 the First Time" section.

4. The ARPA/1000 or NS-ARPA/1000 monitor "inetd" should be scheduled at ARPA/1000 or NS-ARPA/1000 initialization time, and should be configured to listen for SMTP connections. (See the *NS-ARPA/1000 Generation and Initialization Manual*, part number 91790-90030, or the *ARPA/1000 Node Manager's Manual*, part number 98170-90001, for more information.)

RTE Configuration

If DNS software is installed and you wish to use the sig_named program then RTE must have signals capability. RTE module %SIGNL must be relocated in the system generation to add this capability.

Installing Mail/1000 the First Time

1. For a first time installation, set your working directory to the mail distribution subdirectory by entering:

```
CI>  wd /rte_a/mail
```

2. Set CI installation variables.

   There are a number of CI variables that may be set prior to transferring to the "installmail.cmd" file. Table A-1 below describes these variables:

Table A-1. Mail/1000 CI Variables

Variable Name	Default	Purpose
mail_dir	/MAIL	Directory where the mail system resides
mail_dns	A	Indicates whether DNS software should be installed. Set to Y(es), N(o), or A(sk)
mail_smtp	A	Indicates whether SMTP software should be installed. Set to Y(es), N(o), or A(sk)
mail_start	Y	Indicates whether Mail/1000 should be restarted on this host when installation completes. Set to Y(es), N(o)
rte_cats	/CATALOGS	Directory where NLS catalog files go
rte_cds	F	Indicates whether the CDS version of the Mail program should be installed. Set to T(rue), F(alse) **NOTE**: Must be set to true for type 12 file support.
rte_etc	/ETC	Directory where /ETC/ files go
rte_help	/HELP	Directory for help files
rte_mklnks	F	Indicates whether symbolic links should be used where possible. Set to T(rue), F(alse)
rte_progs	/PROGRAMS	Directory where the programs go
rte_snap	(default snap file)	Snap file for loading programs; must have type extension .snp

Additionally, if DNS is installed, "installmail.cmd" runs edit interactively by default to allow the user to edit the "resolve.conf" and "named.boot" files in the target "etc" directory. If the following CI variables are set prior to transferring to it, "installmail.cmd" will exit these files in batch mode using the values defined in the variables.

Variable Name	Contents
`mail_domain`	the local domain, not including the host name. For example: `set mail_domain = cup.hp.com` (See /etc/resolv.conf in Chapter 7)

`mail_nmsrv`	the IP address of a host running a DNS server. For example: `set mail_nmsrv = 15.0.88.159` (See /etc/resolv.conf in Chapter 7)
`mail_fwders`	a comma-separated list of IP addresses of full-service name server hosts. For example: `set mail_fwders = 15.0.56.128, 15.0.80.85` (See /etc/named.boot in Chapter 7)

3. Run "InstallMail" by entering:

```
CI>  installmail new maillu  mailowner
```

where:

maillu is the LU on which the /Mail directory will reside. At least 4000 free blocks are suggested.

mailowner is the account that will own the /Mail directory. *mailowner* is usually "manager" on RTE-A.

`new` required only for a first time installation.

For example:

```
CI>  installmail new 25 manager
```

This creates /mail and its subdirectories on LU 25, and loads the Mail/1000 programs.

4. Edit the configuration file "/mail/admin/mail.cf".

The mail dispatcher (rmail) reads mail.cf at startup. The file contains comments, preceded by an asterisk (*), and instructions in the format, *keyword value value*. The first element in the syntax description is the *keyword*. Following elements are *values*. Enter instructions where you see the string "<_>". The rmail program must be reinitialized whenever mail.cf is modified.

The instructions you can enter in mail.cf are:

```
domain domain [(comment)]
postmaster logon [,logon ...]
timezone zone
service service server
gateway domain
notify program parameters
retry interval [giveup]
hidden domain1, domain2, ...
log file
errlog file
flags flag [, flag ...]
```

Syntax descriptions for each of the above instructions follow. Note that for clarity, instruction keywords are in boldface print and instruction parameters are in italics.

domain *domain* [(*comment*)]

where:

domain is the full domain name of the local host system, in the NS-ARPA node name format:

node.domain.organization

(Three identifiers of up to sixteen characters each, separated by dots.)

If your host supports NS-ARPA, this name should correspond to the local NS-ARPA node name.

If your host is a DS system, the domain name normally is constructed from the DS transparency node name and any domain and organization names you choose.

It is recommended that all nodes in your DS network use the same domain and organization names.

If your system is known by more than one name (for example, different NS-ARPA node field and DS node names), alias alternate names for these names to the official name, in the "domainalias.cf" file.

If your host has neither NS-ARPA or DS, you still must enter a domain name. This can be a single identifier for the hostname.

comment can be any text, enclosed in parentheses ( ). Nested parentheses must be paired or quoted with a preceding backslash.

For example:

```
(be happy :-\))
```

Typically, a comment holds a local alias for the host when the official domain name is not the familiar name. In the following example, "(magic)" is a comment that identifies a local alias. It specifies that host "happy.hp.com" is also known as "magic":

```
domain happy.hp.com (magic)
```

The argument of the *domain* keyword is given in the "Received:" header fields for the host. For example, mail passing between hosts will contain something like the following:

```
Received: from happy.hp.com (magic) by grumpy.hp.com
```

In the example, "happy" is a host system in the upper level domain "hp.com". This upper level domain fully qualifies any domain name that is not accompanied by an upper level domain name in messages on that host.

For example, if a user on "happy" specifies the destination address "Walt@grumpy", Mail/1000 extends the address to "Walt@grumpy.hp.com".

If the upper level name for “Grumpy” was not “hp.com”, then “Grumpy” would not recognize the address as referencing itself. Therefore, it is important to use the same upper level domain on all hosts within the local network in which you use the abbreviated domain names.

Other hosts on your network may use domains with four or more identifiers separated by dots (for example “happy.day.hp.com”). If so, you should use the same upper level domain for Mail/1000 addressing.

In the case of multiple identifiers, create domainalias.cf entries that map the four level domains back to three level domains, so NS-ARPA will recognize them. For example, if host “happy.day.hp.com” sends mail to host “grumpy.day.hp.com”, enter the following in the domainalias.cf file:

```
grumpy.day.hp.com  : =grumpy.hp.com
```

postmaster *logon* [,*logon* ...]

where:

logon is the logon name or names of users with postmaster capabilities. The keyword assigns the capabilities. For example:

```
postmaster manager, zippy
```

timezone *zone*

where:

zone is the current time zone for your geographic location. Zone must be:

`UT or GMT`	Universal Time.
`EST or EDT`	Eastern standard or daylight-savings time.
`CST or CDT`	Central standard or daylight-savings time.
`MST or MDT`	Mountain standard or daylight-savings time.
`PST or PDT`	Pacific standard or daylight-savings time.
`+-`*hhmm*	Hours and minutes ahead of or behind UT.
sss, ddd	*sss* is one of the standard times listed above. *ddd* is one of the daylight savings times listed above. If you use this format, you must run the utility systz before initializing the rmail program. By utilizing this format, you do not have to change mail.cf whenever daylight savings time changes.

`service` *service server*

where:

service is the name of a transport facility other than DS.

server is the FmpRpProgram file name of the program that handles the service, with arguments to the server, if any. Mail/1000 provides the program "SMTP". To add it enter:

```
service smtp smtp
```

In the provided file, "service smtp smtp" may be uncommented by deleting the asterisk (*) in front of the line.

`gateway` *domain*

where:

domain is the name of the default gateway host. Mail is routed to this host if the destination host in a message is unknown to the local host. For example:

```
gateway timewarp
```

`notify` *program parameters*

where:

program is the name of the program that notifies users when mail is delivered.

parameters parameters to program with the following string substitutions (upper and lower case are significant):

`%u`	receiving user's address (name)
`%d`	today's date (Jan 2)
`%D`	date and time message arrived (Mon Feb 19 11:11 am)
`%f`	sender's real name
`%F`	sender's mail address
`%t`	message title
`%%`	the percent (%) character

For example:

```
notify notify %u New mail from %f - %t
```

This runs a program named “notify”, which sends the message “New mail from %f - %t” to the receiver %u.

`retry` *interval* [*giveup*]

where:

interval is the number of minutes to wait between attempts to send messages waiting in the retry queue. The default is 30 minutes.

giveup is the number of hours to continue retrying before discontinuing attempts. When a message runs out of *giveup* time, it is returned to the sender with an error message. The default is 72 hours (three days).

For example,

```
retry 15 24
```

retries every fifteen minutes and gives up after twenty-four hours.

`hidden` *domain1*, *domain2*, ...

where:

domain is the name of a host on a network, where your computer is the gateway host between that network and another.

The keyword “hidden” tells the gateway to modify the addresses of domains on the network when messages from them are passed out of the network.

The gateway host modifies messages by substituting its own name for the originating host name in the “From:”, “Reply-To:” and similar header fields. The name of the originating host remains in the address, identified by “%”.

For example, if “gateway” gets a message from “alvin” on host “chipmunks”, addressed to another network, the original sender address will be:

```
From: alvin@chipmunks
```

The gateway host changes the header to:

```
From: alvin%chipmunks@gateway
```

The receiver can reply to the message by the above address and need not be aware of the host “chipmunks”.

Typically, “gateway” will be shared by a DS and NS-ARPA network, and will contain in its mail.cf file the “hidden” names of all domains on the DS network.

log *file*

where:

file is the name of the file in which message traffic is logged. The default is "/mail/admin/traffic.log". If the file name is "0", information is not stored.

errlog *file*

where:

file is the file in which errors are logged. The default is "/mail/admin/error.log".

flags *flag* [, *flag* ...]

where:

flag modifies the behavior of the mail system. Valid *flag* values are:

`rtad` Generates "From:" and "Sender:" addresses in the format, *Real Name* <*local@domain*> instead of the default, *local@domain* (*Real Name*).

`dns` Uses the local host's Domain Name Service (DNS) resolver to determine canonical host names, mail exchange hosts, and host IP addresses. The DNS versions of the Sendmail and SMTP programs must be installed on your host.

5. Create and Edit the file "/mail/admin/domainalias.cf".

This file stores special definitions for domain names. You can use this file to assign short names to full domain names, or direct mail addressed from one domain to another.

The file contains comments, preceded by an asterisk (*), and domain definitions in the syntax:

full_domain_name : =*newdomain*

An alternate definition for a host might take the form:

dsname.domain.org : =*nsname.domain.org*

The example aliases the DS transparency node name *dsname* to the NS-ARPA node name, which is also the official local Mail/1000 domain name contained in mail.cf.

The following example gives the domain "piton.hp.com" the alias "spike".

```
piton.hp.com : =spike
```

Messages sent to "piton.hp.com" will go to "spike".

Full_domain_name must be a fully specified domain address, and begin in column one of the file. This assures that only the intended domain name will be modified.

For example, if the domains “piton.hp.com” and “piton.dc.com” exist, entering

```
piton : =spike
```

reroutes messages for both “piton.hp.com” and “spike.dc.com”.

When you send mail to the domain that is aliased, rmail will use *newdomain* when routing the message. If *newdomain* is the same as the domain name given in the “mail.cf” file, rmail routes it locally. If the two names are not the same, rmail gives the message to DS and/or NS-ARPA for routing to another host.

Besides the *newdomain* modifier, the *runstring* modifier is allowed in the domainalias.cf file in the following syntax:

full_domain_name : |*runstring*

where:

runstring is a string suitable for FmpRunProgram that will be used to forward mail bound for the aliased domain. The name of the temporary file that contains the message will be appended to the runstring. The message file will contain the routing envelope information at the top; this file is suitable for copying directly into another host’s /mail/queue directory with name QMSG_x.QIN for further Mail/1000 processing.

For example,

```
big-swifty.com : |ci queuemsg
```

will cause all mail bound for domain big-swifty.com to be passed to a runstring similar to:

```
xq ci queuemsg /mail/queue/tmsg_asd56756zXc6.tmp
```

Note that the runstring is not upshifted or comma-inserted.

If you do not assign domain aliases you will not need “domainalias.cf”. If you do, you must reinitialize rmail whenever you modify “domainailas.cf”. (See item 6, below.)

6. Edit the file /mail/admin/addressbook.mail.

This is the system-wide addressbook file. Refer to Chapter 5, “Customizing Your Mailbox“. The information on addressbooks applies to both system-wide and personal addressbooks.

7. Edit the Domain Name System files (if used).

If the Domain Name System (DNS) software is being installed, the installation command file will place you in EDIT for two configuration files related to the DNS. For more information on the DNS software supplied, and the contents of the configuration files mentioned here, see the section named ”Domain Name System Administration” in Chapter 7.

The first file edited is /etc/resolv.conf. This file is read by the DNS resolver routines. Follow the instructions contained in the comments in the file.

The second file edited is /etc/named.boot. This file is necessary only if you wish to run the NAMED program on this system. NAMED locally caches information retrieved by the resolver

routines. Follow the instructions contained in the comments in the file.

8. Completing the Installation

If you have installed Mail/1000 successfully, no error messages will be displayed when you run it. If you change any of your configuration files, enter the following to reinitialize rmail:

```
CI> rmail in
```

If you want to start Mail/1000 automatically at logon, enter the following in the system welcome file:

```
xq rmail
```

If SMTP service is installed (on RTE-A VC+ with NS-ARPA), the “inetd” monitor must be scheduled at NS-ARPA initialization.

If DNS support is installed and you wish to run the NAMED program on this system, also enter the following in your welcome file:

```
xq named
```

9. To create users for the system, run Mail/1000 and use the “crusr” command, described in Chapter 7, “Postmaster’s Guide to Mail/1000”.

This completes the installation procedure.

Installing Mail/1000 Updates

After the initial installation, install updates by setting the installation CI variables as desired and entering:

```
CI> installmail
```

B

Mail/1000 Program Messages

This appendix describes Mail/1000 error messages, their cause, and remedies.

Mailbox is not empty

You tried to delete a mailbox that contains messages.

Delete or move all messages in a folder before you delete it.

Maximum system hops exceeded; recursive addressing suspected

Your message cannot be delivered due to an incorrect network or forwarding instructions. The "Received:" header field may indicate the source of the problem.

Consult your Postmaster for help.

NetIPC <code> : <description>

SMTP encountered a NetIPC error.

Refer to the *NS/1000 Error Messages and Recovery Manual,* part number 91790-90045, for the meaning of <code> and <description> or consult your Postmaster.

No Mailbox for <username>

No mailbox exists for <username>.

Ask your Postmaster to create a mailbox for you. Then log on to the account that contains your mailbox and enter "mail".

No reply address found in message header

The message return address is missing. This should occur only if the message was created incorrectly by a mail system that does not conform to Internet standards.

Consult your Postmaster.

rmail errors logged

This message is displayed during logon if an error occurs. It tells the Postmaster the file "/mail/admin/error.log" now exists.

No action is required by users. The Postmaster will purge the file when through with it.

rmail : SC05 error scheduling program M1KSS

Rmail did not read in the M1KSS monitor properly.

Consult your Postmaster. M1KSS will have to be read in from CI.

Schedule error SC05 on M1KSS

Rmail did not read in the M1KSS monitor properly.

Consult your Postmaster. M1KSS will have to be read in from CI.

sendmail : SC05 error scheduling rmail

Rmail did not run properly.

Consult your Postmaster. Rmail will have to be read in again and restarted from CI by executing “xq rmail”.

This address is serviced programmatically

The mailbox passes all incoming mail to a program and cannot be read by the Mail program.

The program runstring is contained in the file “/mail/admin/mailboxes”. Only your Postmaster can access the file.

Too many addresses expanded; recursive addressing suspected

You have used an addressbook alias that contains itself.

Check the addresses in your personal addressbook.mail file. You will probably find an alias that contains a reference to itself.

You must be a postmaster to use this command

You tried to use a command reserved to postmasters.

Warning: Mailbox may be in use (lock file exists)

Either another user is using the mailbox, or a lock file may have been created when someone aborted Mail.

Verify that no other users have the mailbox open, then continue with the operation.

C

Terms and Acronyms

Most of the terms used in this manual are either self-explanatory or described in the text and referenced in the table of contents or index. The items below define initials or mnemonics used to identify governing bodies, network nomenclature, and technical names.

ARPA	Advanced Research Projects Agency
CI	Command Interpreter
DARPA	Defense Advanced Research Projects Agency
DNS	Domain Name System
DS	Distributed Systems Network
LAN	Local Area Network
LU	Logical Unit
NS	Network Services
SMTP	Simple Mail Transfer Protocol

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