

# MAILLIB

## Reference Manual

### Relative to version 540.33

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# Introduction

This document describes the facilities available within the latest version of the Metalogic SMTP MAIL Library (hereafter known as MAILLIB), which is a direct replacement for the Supervisor interface into the now-defunct Unisys A-Series MAIL.

The MAILLIB software is provided free for all Metalogic customers using the SUPERVISOR or FLEX products.

The implementation of this library came about for several reasons:

- The Unisys A-Series MAIL software has been effectively de-implemented in software released after March 2000, although Unisys have released their own alternatives, including Falcon MQ messaging and features in the DEPCON package.
- The need to provide email functionality in other Metalogic software, not just Supervisor.
- The ability to include and attach multiple Unisys files within an email message, supporting many file types e.g. DATA, symbolic, stream, wrapped containers, backup files etc. This was not possible with the previous Unisys implementation.

This document describes the functionality and features of the Supervisor-MAILLIB relationship, plus the basic facilities offered by an additional utility called MAILER.

MAILLIB has been tested in a number of different mail server/client environments, on Windows NT/2000, Windows 98 and Macintosh systems and using MCP versions 46.1 thru 55.1. The images used in this document were from a PIII 500 running Windows 2000 Professional and Outlook 2000 email client.

## MAILLIB features

The MAILLIB implementation offers many facilities; at this time, MAILLIB is not yet available as a stand-alone product. These features include:

- Supports many email clients and servers tested on PC and MAC platforms.
- Use of the MAIL statement from Supervisor ODTSequences can be used to automatically respond to waiting entries, abnormal job terminations, or system messages.
- Conforms to RFC internet mail and MIME transmission standards.
- Email conversion to SMS or pager messages via the Internet - can replace the RECORDER/HOTLINE interface.
- Nicknames support, message limit controls, outgoing address authorization.

- International code set support for handling European characters sets.
- Default and custom signatures or even inhibit signatures (useful for SMS).
- Include or Attach individual files or directories: handles various types including symbol and data files, backup files, containers, zip files etc.
- Intelligent handling of different file kinds.
- User control of attachment filenames when received by email client
- Integrated with Supervisor using 'TT MAIL' command interface from Supervisor windows, MARC or ODT.
- Real-time configuration of MAILLIB environment using Supervisor.
- Virtual Mail server interface to print backup files direct to a user mailbox using DESTINATION, NOTE and TRANSFORM attributes from applications or WFL.
- Simple, standalone MAILER utility, usable from WFL, for handling ad-hoc emails; has built-in file attach and include support.
- Automatic queuing of mails to disk if server is unavailable.
- Logging of all MAILLIB events, messages and file access to the SUMLOG.
- MAILLIB library entrypoints available for programmatic use.

## Requirements

MAILLIB is currently available as a free add-on to the Metalogic SUPERVISOR or FLEX products; it is now automatically set up during installation of a new software release by the Metalogic INSTALL utility.

The requirements for using MAILLIB are:

- Valid SUPERVISOR TRIM or FLEX Metalogic license key
- Up-to-date SUPERVISOR or FLEX installation
- Unisys or third-party TCP/IP networking software
- Mainframe access to a local or remote mail server on the network

Standard Unisys MAIL software is NOT required.

# What's New

This section of the manual highlights important new features available in MAILLIB in reverse-chronological order. The information will be regularly updated every time the content changes.

## Jul 11 540.32 Passworded zipped archives

MAILLIB can now create WinZip archives created with AES keys. Passwords can be assigned using the new ^PASSWORD control (available for SUPERVISOR/FLEX scripting or programmatic use):

```
^PASSWORD [My passphrase]
^ATTZIP    *LIVE/FILE ON DEV
```

This causes the zip file to be encrypted with an AES key generated from "My passphrase" password.

The MAILER utility can also generate encrypted archives by file-equation of the SECURITYGUARD attribute in the same was as COPYWRITE (see Dnote 540.27).

```
RUN *METALOGIC/MAILER("support@metalog.com", "Encrypted Zip");
FILE ATTZIP(TITLE=*LIVE/FILE ON DEV,
            SECURITYGUARD="My passphrase");
```

If the Password is longer than 17 bytes, then multiple 17 character Filelds may be used: for example, SECURITYGUARD="My pass"/"phrase" is the same as the example above by splitting the password into two parts.

## Mar 11 540.27 QUICKMAILC74 library entrypoint

MAILLIB now allows COBOL74 programs to call a modified version of its QUICKMAIL entrypoint, called QUICKMAILC74. The parameters used are basically the same: headers, email body and an options word.

A simple example COBOL74 program is shown below:

```
IDENTIFICATION DIVISION.  
PROGRAM-ID. MAILLIB-EXAMPLE.  
ENVIRONMENT DIVISION.  
INPUT-OUTPUT SECTION.  
FILE-CONTROL  
DATA DIVISION. FILE SECTION. WORKING-STORAGE SECTION. 77 RSLT  
USAGE REAL. 77 OPT USAGE REAL VALUE 0.  
01 MAIL-TXT PIC X(250).  
01 MAIL-HDRS PIC X(250).  
PROCEDURE DIVISION.  
THE-ONLY SECTION. GLOBAL-INITIALIZE.  
CALL-QUICKMAIL.  
MOVE "To:Test@metalog.com;Subject:Test message" TO MAIL-HDRS.  
MOVE "^ATTACH TEST/FILE" TO MAIL-TXT.  
CHANGE ATTRIBUTE LIBACCESS OF "MAILLIB" TO BYFUNCTION CALL  
"QUICKMAILC74 OF MAILLIB"  
        USING MAIL-HDRS,  
        MAIL-TXT,  
        OPT  
        GIVING RSLT.
```

## Feb 11 540.26 Allow MODIFY ALL extension

The MODIFY command will now accept the 'ALL' modifier; this allows all queued email transactions that are marked as exception to be processed simultaneously. Optionally, as with MODIFY <Trans.No>, the MODIFY ALL command will accept one or email addresses allowing these exception emails to be re-routed.

```
MAIL MODIFY ALL Test,Shipping@metalog.com  
MAIL MODIFY ALL
```

Note that the optional email address list associated with the MODIFY command now permits unqualified addresses (i.e. no '@' part) to be used. MAILLIB will automatically add the default domain in these cases: note that nicknames are not looked up.

## Jan 11 540.24 Zip names

The mechanism used to assign a name to a zipped attachment has been changed. If the first ^ATTZIP request is a directory and more than one file exists in the directory then the directory will be used instead of the first file title (the previous behaviour).



For example:

```
^ATTZIP *PP/PD/=
```

would create a zip attachment PP-PD.ZIP

Instead of the normal 'Attached' messages in the MAILLIB log file, zipped file entries will be tagged with 'Zipped' instead.

## Nov 10 540.19 Implement HELP ALL

The MAIL HELP command will now accept the 'ALL' modifier which allows the complete MAILLIB command set to be viewed in one response. From SUPERVISOR, the PRINT modifier can be used to create a backup file for printing.

## Nov 2010 540.18 New option USEDOMAIN

By default, if no 'From:' is provided, MAILLIB constructs a default address using the local TCPIP domain and the calling usercode e.g. SYSTEM-NODE@METALOG.COM. The TCPIP domain will usually be different from the 'Default Domain' that is assigned to MAILLIB for email recipients without a '@' component.

This mechanism can cause problems for mail servers/firewalls that may reject 'From:' addresses using an invalid email address domain. To detour the issue, a new OPTION has been added to MAILLIB's configuration.

```
--- MAIL ---- Option -----+-- + ----+----- USEDdomain -----|
                               +-- - ---+
```

For example, if the email address domain assigned to MAILLIB was 'METALOGIC.EU.COM' and the TCPIP domain was 'METALOG.COM', then setting USEDOMAIN on (MAIL OP + USEDOMAIN) causes all default 'From:' addresses to be 'USERCODE@METALOGIC.EU.COM' instead of 'USERCODE@METALOG.COM'. If the option is set, the normal status display will show the 'Default domain' as:

```
'Default Domain Address is 'METALOGIC.EU.COM' used for default From'
```

## Nov 10 540.17 Implement WINZIP archive streaming

MAILLIB now allows the creation of WinZip email attachments directly from one or files or directories as well as through the Virtual Print server. As with PDF support, no intermediate ZIP file is created on the MCP system but zipped file data is streamed directly into the attachment.

There are many ways to make zip files using MAILLIB but there is one prerequisite, the SL ZPIOH must be installed to use the CopyWrite library \*METALOGIC/COPYWRITE/ZPIOH. MAILLIB uses the MAGUS META\_ZIP entrypoint and this COPYWRITE library to implement the mechanism. ZPION is automatically installed

if the site has valid FLEX or SUPERVISOR licence keys.

The methods are shown below:

1. METALOGIC/MAILER has been changed to support two new file equations called ATTZIP and ATTZIPDIR. Multiple files and directories can be zipped in a single run of MAILER but the files may be streamed into separate archives if the FORMID attribute is used in any of the file equations.

For example:

```
RUN *METALOGIC/MAILER("Support@Metalog.com","Zip Test");  
FILE ATTZIPDIR(TITLE=*TEST/DIR, FORMID="DIRFILES");  
FILE ATTZIPDIR1 (TITLE=*TEST3, FORMID="MORETESTING");  
FILE ATTZIP=*TEST2/SINGLEFILE);
```

This causes 2 zip attachments to be created; the first will be called DIRFILES.ZIP and includes all files in the directory \*TEST/DIR. The FORMID setting in the file ATTZIPDIR1 causes a new zip archive to be created with all files from the directory \*TEST3/= but, because the ATTZIP equation does not have a FORMID, it will be added into the MORETESTING archive.

This is because MAILER processes all ATTZIPDIRn requests first until no other equations are seen then followed by any ATTZIP equations.

For a multi-file archive with no FORMID overriding the name, the zip file name will be constructed from the first file to be processed unless the first zip request is a directory then this directory will be used as the archive name.

2. For Virtual Mail server printing, it is possible to use a zip printer device:

```
PS CONFIG MAILZIP SERVER "PRINTTOZIP IN SL MAILLIB"
```

All files in the print request will be zipped into a single archive when this DESTINATION is used.

The normal Virtual Mail server may still be used but zip file creation is possible by specifying the TRANSFORM attribute as "ZIP". For example:

```
WFL PRINT *TESTDIR/FILE (DESTINATION="MAIL",TRANSFORM="ZIP")
```

It is very likely that other printing controls will be introduced in this implementation in the near future.

3. SUPERVISOR and FLEX Opal scripts can also create zip archives using the ^ATTZIP command.

For example, to create the same attachments as MAILER:

```
#EMail:= MAIL("To:support@Metalog.Com; Subject:Test Zip",  
#("^ATTZIP [MyZip] *TEST/DIR/= ON PACK",/,  
"^ATTZIP [MoreTesting] *TEST3/=",/,  
"^ATTZIP **TEST2/SINGLEFILE"));
```

As with normal attachments, the use of '[MyZip]' causes MAILLIB ,to override the

default name of the archive which for a directory request is currently constructed from the first file name seen.

The names of all files in a Zip archive retain their original MCP format but flattened out to a single level. As normal, MAILLIB will add default file extensions according to the FILEKIND or type.

## Jun 10 5540.14 Better load Nicknames

The LOAD NICKNAMES command will attempt to load the file from the family to which MAILLIB is SL-ed. Previously, only family 'DISK' was used.

## Jun 10 540.13 TRANSNO command

A new MAIL command, TRANSNO, allows the user to conveniently search the Metalogic MAILLIB logs for a specific email transaction number. Since this command uses the LOG FIND facility, additional log filtering can be appended to the command.

```
-- MAIL --- TRansno --- <TransNo> -----+-----+-----|
                                         +-- <log spec> --+
```

For example:

```
MAIL TRANSNO 1234
  ---- MAILLIB Log at 17:03 ----
  ---- Search 'All' ----
  ---- 15/06/10 LOG ----
16:46:05 Snd:07025:Sent OK to:Ian.Patterson@metalog.com
16:46:03 Att:07025:Attached *TEST/FILE ON DEV (864.0 Kb)
16:46:02 Rcv:07025:To:Support@metalog.com,Subject:Test

MAIL TRANSNO 5678 BACK 2 DAYS

MAIL TR 1234 +
```

## Jan 10 540.06 Entrypoint 'saved' result.

Because there are various reasons for any email transaction to be queued by MAILLIB, the MAILMAN and QUICKMAIL entry points will now return a flag in bit [47:1] indicating that the email has been saved to disk. This means that the user can take appropriate action to reprocess the email instead of the caller attempting to retry what maybe already a lost cause.

## Dec 09 540.05 Better alternate server handling

Previously, MAILLIB did not correctly handle an email request that had been

rejected by a server because its own maximum number of SMTP connections had been exceeded. In such cases, the mail server forcibly closes the SMTP connection immediately but MAILLIB did not detect this for 60 seconds, eventually marking the failure as a 'Read Timeout'. To compound the problem, MAILLIB was unable to reroute the email to the alternate server (if assigned) because the SMTP port file was not set up correctly.

Now, MAILLIB detects the immediate forced close immediately and will properly use the alternate server, if available. If the alternate is unavailable, the email will be queued to a \*SMTP file on disk with the error value -987 and is eligible for reprocessing later.

12:18:48 Que:01228:Message Queued [Closed] (-987):Connection refused by server

To address the wider issue of too many concurrent MAILLIB SMTP requests requests flooding the email server, a new control mechanism has been implemented to allow a limit to be enforced. A new command, MAXSMTP, is now available to control this setting: the default value is 10 connections but can take any value between 1 and 100.

The syntax is:

```
--- MAIL --- MAXsmtp -----+-----+-----+-----+-----+-----+-----+
                                     +-- <integer> -----+
```

```
MAIL MAXSMTP 5
```

```
--- MAIL Library response ---
```

```
Maximum concurrent SMTP connections is now 5
```

When an email request is received by MAILLIB which will exceed the MAXSMTP limit, MAILLIB unconditionally holds up the request for 30 seconds before retrying. If the limit would still be exceeded, the request is queued with a result of -997 (not -999) and a \*SMTP disk file is created.

The MAILLIB log will show entries such as:

```
10:18:59 Msg:2900:Max connections exceeded:mail queued
```

```
10:19:02 Que:02900:Message Queued test@metallogic.eu.com (-997):Too
many SMTP connections:mail queued
```

The -997 SMTP files are treated in the same way as normal queued files and MAILLIB attempts to reprocess them during the next 'nudge' cycle.

Also, additional status information is now provided by the MAIL [STATUS](#) command showing corrected transmitted bytes values and destination details such as alternate server or SMTP file. MAILLIB now correctly applies the ALTPORTNO setting to the alternate mail server instead of previously using the value assigned to the primary.

# Dec 09 540.03 Support CRAM-MD5 authentication

MAILLIB now supports CRAM-MD5 as a method for SMTP authentication. This challenge-response authentication mechanism is widely used by many SMTP servers and is significantly more secure than the PLAIN and LOGIN methods also offered by MAILLIB.

The syntax of the AUTH command has been modified to support CRAM-MD5:

```
MAIL AUTH CRAM-MD5
    --- MAIL Library response ---
SMTP Authentication is set to 'CRAM-MD5'
Username and Password are NOT set!!!
```

If a password has not been previously assigned, as shown above, then:

```
MAIL AUTH USER TEST/PASSWORD
    --- MAIL Library response ---
SMTP Authentication is set to 'CRAM-MD5'
Username is 'TEST'
Password has been assigned
```

As before, if the username and password (aka secret key) are incorrect, the mail server will reject any all email transmissions.

```
13:29:30 Err:02095:Server report #535 5.7.8 Authentication failed
```

Note that, at this time, MAILLIB only supports 23-characters passwords.

# Nov 09 530.30 Support basic SMTP authentication

MAILLIB now supports several modes of SMTP authentication, allowing access to protected SMTP mail servers. In this implementation, only LOGIN and PLAIN modes are supported and there is no SSL or TLS security available for encrypting the login so these protocols are not available.

A new MAIL command called AUTH is now available and requires MAILLIB to authenticate all email requests with both primary and alternate mail servers. In a later release, it will be possible to assign individual authentication at the server level.

```
----- AUTH -----+-----+----- |
                    +-----+
                    +----- LOGIN -----+
                    +----- PLAIN -----+
                    +----- USER --- <User/Pass>---+
```

If AUTH is set to PLAIN or LOGIN, an AUTH USER command must also be used to establish security. MAILLIB will always expect a password to be provided after the user and must be separated by '/'.

```
MAIL AUTH PLAIN
MAIL USER TEST/test
MAIL AUTH -
```

Appropriate steps within MAILLIB have been taken to secure the password. Note that the USER specification is case-sensitive. The authentication settings can be cancelled at any time by using the AUTH command.

## Oct 09 530.26 Support PDF attachments creation

The MAILLIB library now has the capability to create Adobe PDF files either by streaming source files as email attachments or by creating the files directly on the MCP system. At this time, the implementation is by no means complete and there are various enhancements planned.

With regards to the mail system, PDF attachments can be created from any symbolic or readable stream file. The data is streamed directly in the email content so no local PDF file is created on the MCP system. Instead of using the ^ATTACH directive with, for example, the Opal MAIL function, a PDF variant is available:

```
^ATTPDF *SYMBOL/MYSOURCE ON DEV
```

The email attachment file name will be automatically assigned an extension of .PDF to allow the file to be opened by the Adobe Reader utility. All PDF files, by default, will open with page thumbnails visible in the Bookmarks navigation panel.

According to file specifications, MAILLIB will attempt to determine the best page formatting and font size to be used. Currently, only the font COURIER NEW is permitted but it will be possible to override this. If necessary, MAILLIB will switch the page set up to Landscape instead of Portrait (e.g. allowing better presentation of 132-character backup files). At this time, only A4 page formatting is supported.

Regarding STREAM files, MAILLIB currently uses a default line width of 90 characters and any lines longer than this are truncated inside the generated PDF file. This temporary behaviour will be corrected in the next release.

The PDF files are uncompressed and not linearized - this means that they are not optimized for fast loading by network or internet access (via a browser). Both linearization and, possibly, compression of PDF files will be available in later releases.

PDF files can also be generated from printer backup files by the MAILLIB Virtual Server. At this time, the only way to print files direct to PDF is to set up a new PrintS device:

```
PS CONFIG MAILPDF SERVER "PRINTTOPDF IN SL MAILLIB"
```

By changing the PRINTDEFAULTS DESTINATION setting of a MCS session or WFL job, all generated backup files will be created with the .PDF extension. Additional controls will be available later allowing the use of PRINTS attributes such as PAGECOMP and FORMID to signal a PDF request.

A new public entrypoint in the MAILLIB library allows PDF files to be created by any external program. This entrypoint is shown below:

```
Boolean Procedure CREATEPDF(INPUT,PDF) ;
File INPUT;
Array PDF[0];
Library MAILLIB;
```

The CREATEPDF entrypoint accepts a symbolic blocked file as source and requires the name of the output PDF file from Words[3] onwards in simple DisplayForm name format. There are no security restrictions in force, normal MCP file security applies.

```
File INPUT(KIND=DISK,TITLE="SYMBOL/MYSOURCE.");
Array PDF[0:21];
Replace Pointer(PDF[3]) By
"PDF/"48"7F" "MYSOURCE.PDF"48"7F" ". " ;
CREATEPDF(INPUT,PDF) ;
```

At this time, CREATEPDF does not yet handle stream files.

## Jan 09 530.17 Support ATTACHDIR

To assist with directory handling in general, MAILER will now accept two new run-time file equations: ATTACHDIR and INCLUDEDIR. When present, MAILLIB will append '/' to the file title before passing it to MAILLIB.

For example, the following MAILER file equations:

<b>FILE ATTACH=(ADMIN)FILE/1</b>	<b>maps to</b>
<b>^ATTACH (ADMIN)FILE/1</b>	<b>MAILLIB file request</b>

To process a file directory:

<b>FILE ATTACHDIR=(ADMIN)FILES ON DEV</b>	<b>maps to</b>
<b>^ATTACH (ADMIN)FILES/= ON DEV</b>	<b>MAILLIB file request</b>

INCLUDEDIR can be used instead of ATTACHDIR in the above examples and maps them onto their ^INCLUDE equivalents.

## Nov 08 530.12 Improved handling of -552 mail errors

This is a major change in the way that -552 errors (server storage exceeded) are handled by MAILLIB. Also, User Limit controls by usercode are now better handled and provide better information both to the Postmaster and recipients when an email



exceeds its limit.

Previously, a -552 error was retryable allowing the site to modify the queued transaction or correct the storage problem for that mailbox on the mail server. This behaviour has been changed; -552 errors are now not retryable and will be automatically rejected; no SMTP file is created.

MAILLIB will now notify email both Postmaster and intended recipients with an email when a -552 error has been encountered. The email provides detailed information about the failure, including attachment and include file details.

An example email is shown below:

```
--
Subject:MAILLIB Alert! SERVER storage exceeded
        for ian.patterson@metalog.com [-552]
The following email exceeded Storage limits on Mail Server
DELL8500
  To:ian.patterson@metalog.com
  Subject:Test
  Estimated Mail size: 1273.3 Kb
  Transaction No: 4902
  Maillib returned: -552
The above email transaction was Rejected
#1  *SOURCE/NEWTAPE ON DEV    (1273.3 Kb)
-> Attachment was processed ok
--
```

For emails that exceed Maillib User Limits restrictions, the recipient receives the email intact but with warning messages indicating the reasons that any files/ includes have been skipped or truncated. In addition, the Postmaster will also receive an advisory email similar to that for a -552 error.

In the event that a large email is sent to an offline server and the email is not restricted by MAILLIB User Limits, MAILLIB is obliged to retain the \*SMTP file but when the server subsequently becomes available and fails the queued email with a -552 error, MAILLIB will now also automatically remove the associated \*SMTP file.

Both system messages and entries in the MAILLIB log will show this behaviour:

```
10:48:24 Snd:04906:Sent OK to:ian.patterson@metalog.com,
        POSTMASTER@METALOGIC.EU.COM
10:48:24 Rcv:04906:To:ian.patterson@metalog.com,Subject:MAILLIB Alert!
        SERVER storage exceeded for ian.patterson@metalog.com [-552]
10:48:24 Err:04904:*SMTP file removed due to SERVER storage limit exceeded
10:48:24 Err:04904:Rejected ian.patterson@metalog.com (-552):Requested
        action aborted:Exceeded storage
10:48:24 Err:04904:Server report #552 Message too large - contact your
        administrator
10:48:14 Msg:Checking SMTP mail Queue (2 messages)
```

The MAIL SHOW command has been enhanced to show attachment and include file details when a transaction number is provided as a modifier to SHOW:

```
MAIL SHOW 4912
--- MAIL Library response ---
```



```
--- Searching for Queued Email #4912 ---
#4912 *SMTP/SUPERVISOR/20081126/"ian.patterson@met"/04912 1303.4 Kb
To:ian.patterson@metallogic.eu.com release@metalog.com
Subj:'Attach *SOURCE/NEWTAPE ON DEV'
Reason: Queued (-999)
#1 : File *SOURCE/NEWTAPE ON DEV      (1273.3 Kb)
-> Attachment processed ok
```

Each file will show status information about each attached or included file.

MAILLIB will now indicate adjusted file sizes when an attachment has been MIME-encoded. This has an effect for User Limit and Server storage limit considerations since MIME-encoded attachments are 33% larger than the original file length. Where appropriate, MAILLIB will indicate in the attachment details entry if a file has been encoded.

## Nov 08 530.09 Implement SMTP family assignment

A new MAILLIB command called SMTP has been implemented. This command allows the site to control the location of the \*SMTP disk files created for email requests that have been queued (e.g. because of Mail server unavailability). Previously the SMTP files would have been directed to the family specified in the MAILLIB SL, typically the H/L unit, which may be undesirable.

The command syntax is shown below:

```
--- MAIL --- SMTPfamily ---+-----+-----+-----+-----+-----+-----+
                                +--- <family ---+
```

The SMTP family is changed immediately and may only be used when the SMTP mail queue is empty (as seen by MAIL SHOW QUEUE). A default value will be automatically assigned using the SL family when this version of MAILLIB is first used. The current setting can always be viewed in a MAIL [STATUS](#) response. To assign an alternate family:

```
MAIL SMTP CDIMAGE
--- MAIL Library response ---
Default family for SMTP files will be CDIMAGE
```

In addition, MAILLIB now checks all SMTP file writes to the SMTP family ensuring that sufficient disk space is available. In the event that MAILLIB is unable to complete the write of a SMTP file because of disk shortage, the email request is aborted and the following will be seen:

```
13:34:31 Err:04480:Unable to create *SMTP disk file on
CDIMAGE
13:34:31 Err:04480:Rejected (-112):Insufficient Disk space
for *SMTP
13:34:30 Att:04480:Attached *BD/0029353/0029355/000OUTFILE ON
DISK
13:34:30 Que:04480:Message Queued [194] (-999):Mail Server
unavailable
13:34:30 Rcv:04480:To:Ian.Patterson@metalog.com,Subject:Print
files
from "Session" #29353
```

New MAILLIB errors have been included for the above:

```
-112 Insufficient Disk space for *SMTP file
-113 I/O error writing *SMTP file
-114 SMTP family <family> Unavailable of Off-line
```

If error -114 is returned, this means that the Mail server is offline and the disk family used to hold \*SMTP files is also unavailable. In this serious situation, all email requests are rejected and Virtual printing will fail.

## Oct 08 530.08 Strip invalid characters in included files

MAILLIB will now ensure that any included ASCII or EBCDIC files do not pass invalid characters such as nuls (4"00") in the data passed to the SMTP server. Previously, such rogue characters could have caused email rejection.

## Jul 29 530.05 Enhancements to MODIFY command

The MODIFY command has been enhanced to allow the 'To:' address of certain kinds of queued SMTP files to be replaced by one or more alternative addresses. Typically, this could be used for a queued email that has been rejected because the recipient mailbox is suspended or unavailable for some reason. Emails that are queued because of server unavailability (i.e. -999) cannot be modified with an alternate email address.

To change the email address of queued transaction #63136:

```
MAIL MODIFY 63136 support@metalog.com
```

MAILLIB will immediately perform a NUDGE so that the modified email will be immediately reprocessed. If the revised 'To:' address also fails, a SHOW QUEUE command address will also show the revised address.

The original content of each modified email will remain intact though any 'Cc:' or 'Bcc:' headers will be ignored. Additional information will appear in the MAIL LOG:

```
12:44:08 Snd:63136:ReSent OK to:ian.patterson@metalog.com
12:44:08 Msg:Processing #63136 SMTP file 'To:ian.patterson@metalog.com'
12:44:08 Msg:Trans #63136 *SMTP/SYSTEM-NODE/20080729/"fake@metal"/63136
modified
12:44:08 Cmd:MODIFY 63136 support@metalog.com
```

The <Return-path> header in the redirected message will appear as <RedirectedMail@mydomain.com> where mydomain.com is the MAILLIB's local default domain.

## **Jul 08 530.03 Change MAIL FROM and flexible REPLY**

MAILLIB now includes the 'Originator-info' header for all email requests. This field identifies the MCP system origin and is usually of the form 'UserCode@TCPIP.Domain.com'; the usage of this address is now limited by MAILLIB.

If a 'From:' header has been provided by the caller and MAILLIB has validated that the address domain is acceptable (i.e. maps to MAILLIB's 'Default Domain' or the local TCPIP domain), then this 'From:' address will be used in the 'MAIL FROM:' protocol exchange with the mail server. This change allows certain mail servers to report errors back to addresses other than the PostMaster (which is used in all other cases).

Further, if a 'From:' header is an unqualified email address with no '@ <domain>' component, MAILLIB will now append its default domain setting, if present, to the address. Nicknames cannot be used with a 'From:' header.

## **May 07 520.10 Relax SENDER controls**

The changed described in DNote 510.10 caused a 'Sender:' header to be inserted into the body of a MAILLIB generated email if the domain of an user-provided 'From:' email address did not match the TCPIP domain of the MCP system. This behaviour has been modified to now omit the 'Sender' header if the domain of the 'From:' address additionally matches that of the DEFAULT POSTMASTER address.

## **Feb 07 520.07 Inhibit attached body messages**

If the PDEF SUPPRESS is set to TRUE or the MAILLIB control ^SIG NONE is used then MAILLIB will now inhibit the generation of 'Attached #' messages in the email body. MAILLIB was already inhibiting signatures and 'Included #' entries with SUPPRESS set to TRUE.

## Feb 07 520.05 New MAIL logging system

The logging of MAILLIB transactions and messages has been significantly changed. Instead of the SYSTEM/SUMLOG, MAILLIB will now log information into a dedicated file called \*METALOGIC/MAILLIB/LOG on a nominated family configured using the INSTALL utility. By default, this family is set to that of DL LOG.

The LOG command has been enhanced to allow varied access to the MAILIB log files; searching by category, wild card text patterns or time and date ranges is permitted. The LOG command extensions are shown below:

```

+<<-----+
--- MAIL -- LOG +---+-----+-----+-----+-----+-----+-----+-----+
                  +--- <Category> -----+
                  +--- <Time/Date> ---+-----+
                  |                   +--- - <Time/Date> ---+
                  +--- FIND ---- <Text Pattern> -----+

```

### <Category>

As in previous versions of MAILLIB, <Category> is a 3-character text value that filters the log search by message category. These categories are MSG,SND,RCV,ERR,LGC,QUE,ATT,INC and CMD.

### <Date/Time>

```

---- <hhmm> ---+-----+-----+-----+-----+-----+-----+-----+-----+
                +- <dd/mm/yy> -+-+-----+-----+-----+-----+-----+
                                +- - <hhmm> ---+-----+-----+
                                                +- <dd/mm/yy> +-

```

The <dd/mm/yy> format depends on the global setting of the Metalogic configuration variable SYS\_USDATES and can be set with the INSTALL utility. It is likely that the above syntax will be extended in future releases.

The FIND modifier permits the searching of each log entry for the specified text. The FIND automatically encloses the target with "=" at both ends of the text and is not case-sensitive, therefore finding both lower-case and upper-case matches.

The log files are automatically released when the file size exceeds 15,000 records or the LC CLOSE command is used. The LC command allows any comment command to be written into the current log. The command category for any LC command is 'Lgc'.

The LC command is shown below:

```

--- MAIL -- LC ---+--- <text> -----+-----+-----+-----+-----+-----+-----+
                  |                   |
                  +--- CLOSE -----+

```

## Nov 06 520.03 PDEF SUPPRESS=TRUE vs signature

For print requests handled by MAILLIB's Virtual Print server, the default signature

and 'Include #' and 'Attached #' messages will not appear in the email body if the PRINTDEFAULTS attribute SUPPRESSED is set to TRUE.

## Feb 06 510.11 New QUICKMAIL entrypoint

The MAILMAN entrypoint in the MAILLIB library is used to generate and send emails from various origins including SUPERVISOR, Virtual Mail printing and user programs such as MAILER. However, using the MAILMAN interface directly now needs to be simplified to allow the planned use of the MAIL function into FLEX Opal scripting.

To enable MAILLIB calls to be easier to use, a new entrypoint called QUICKMAIL has been implemented. This procedure has the following declaration in MAILLIB:

```
Real Procedure QUICKMAIL(MAILHDRS,MAILTEXT,OPT) ;
Value OPT;
EbcDic Array MAILHDRS, MAILTEXT [0];
Boolean OPT;
    Library MAILLIB;
```

The MAILHDRS and MAILTEXT array are used in the same way that the Opal MAIL function operates; that is, MAILHDRS holds a string of email headers whilst MAILTEXT hold multiple lines of text for the mail body each line delimited by a CR (48"0D"). Both arrays should be terminated by a NULL (48"00") character. All header contents are validated by MAILLIB and error values are returned if an illegal header is seen.

The OPTION parameter allows the user to specify additional controls and operate as in the MAILMAN entrypoint. Please refer to the MAILLIB Reference manual for more information. The OPTION parameter does not require any mandatory settings.

Example ALGOL program:

```
BEGIN
    LIBRARY MAILLIB(LIBACCESS=BYFUNCTION) ;
    Real Procedure QUICKMAIL(MYHDRS,MYTEXT,OPTION) ;
    Value OPT;
    EbcDic Array MYHDRS, MYTEXT [0];
    Boolean OPT;
        LIBRARY MAILLIB;
    EbcDic Array HDRS,TXT[0:29999];
    Boolean OPTION;
    Replace HDRS By "To:Support@metalog.com;Subject:QuickMail";
    Replace TXT By "First line",48"0D",
                  "Second line of body text",48"00";
    QUICKMAIL(HDRS,TXT,OPT) ;
End.
```

## Feb 06 510.10 Allow 'From:' addresses without domain

Previously, if MAILLIB encountered a FROM specification in an email, the address

was checked to see if it belonged to the MCP's local TCPIP domain. If the TCPIP domain and email address domain did not match, even partially, the FROM was modified to append the originator in the form of <usercode>@<TCPIP domain>. This measure was employed to identify email spoofing from MCP systems using MAILLIB.

This behaviour has been changed. If a FROM address is used and its email address does not match the local TCPIP domain, the FROM address is now not modified and MAILLIB will include a 'Sender:' header in the email body. This 'Sender:' header allows spoofing to be protected since many email clients will show this field when the email is displayed. The change permit spoofed emails to be traced and sent to the outside world with an intact FROM address.

The new behaviour is shown below:

Original From	Final From	Final Sender
a@bcd.com	a@bcd.com	
a@xyz.com	a@xyz.com	
a@zzz.com	a@zzz.com	usercode@bcd.com
	usercode@bcd.com	

On earlier versions of MAILLIB, the FROM address for a@zzz.com in the above example would have been automatically changed to:

**a@zzz.com [USERCODE@BCD.COM]**

Also with this change, MAILLIB will now assign the Default Postmaster email address, if available, for the normal 'Reply-To header' if one has not been assigned. Previously, it was usual that the usercode- TCPIP domain constructed mail address would have been used.

## Oct 05 510.04 Implement alternative mail server support

MAILLIB will now permit the specification of a secondary or alternate mail server allowing redundancy if the primary server has failed or is off-line. The server may be specified by the ALTSERVER command and its SMTP port is assigned with the ALTPORTNO modifier. These commands are syntactically similar to the existing SERVER and PORTNO commands.

```
----- ALTServer ----+-----+-----|
                        +----- <IP address> ----+
                        +----- <host name> ----+
                        +----- - -----+
```



```
----- ALTPortno ---+-----+-----|
                        +----- <integer> -----+
```

When an alternate server is first specified using ALTSERVER, a default value of 25 is assumed for the SMTP port number. This may be overridden by the ALTPORTNO modifier. The alternate server may be cancelled at any time using the '-' modifier i.e.

MAIL ALTSERVER -

When an email to the primary server fails and a secondary server has been assigned, MAILLIB will automatically route the email request to the secondary server without creating an interim \*SMTP disk file. If both servers fail, the email will then be written to disk. Note that the primary email server will \*always\* be used first even if the last email was known to have failed.

## Jun 04 500.09:ABORT command enhancements

The ABORT command will now accept a list of active or queued transaction numbers or the 'ALL' modifier. If 'ALL' is used, all queued emails regardless of the reason will be deleted; active emails are NOT affected. See the **ABORT command** in [Operator Interface](#) for more details.

## Jan 04 490.06:OP COPYBD for backup file retention

The OP COPYBD option, if set, prevents the Virtual MAIL Server from automatic removal of printer backup files. This allows the Print System to control the release of print files using the PRINTRETENTION and PRINTCOMPLETION options. See **OP command** in [Operator Interface](#) for more information.

## Jan 04 490.05:OP PRIORITY and OP READRECEIPT

The ^OP READRECEIPT modifier can be used in the Supervisor OPAL MAIL function to generate a 'Disposition-Notification-To' request in the email body to request a read receipt.

Similarly, ^OP PRIORITY HIGH applies an 'Importance' header of HIGH which informs an email client of the priority of the message. See [^OP modifier](#) in [Control Sequences](#) for more details.

## Nov 03 490.03:Read timeouts after TCPIP hang

MAILLIB will now give a "Read Timeout" error whilst waiting for input from the specified mail server for more than 60 seconds. Previously, it has been reported that MAILLIB can hang indefinitely with a connection open to a mail server that has died or hung. In such cases, the TCPIP connection persisted and could not be closed unless the caller was DS-ed. Now, such hung emails will be timed-out after 60 seconds and will be marked with an error of -554, which requires a MODIFY

command to allow re-processing.

### **Oct 03: 490.02:Try EMAIL USERDATA att if no ‘TO:’**

MAILLIB will now automatically inspect the EMAIL USERDATA attribute if a ‘To:’ Header is absent from the NOTE attribute. This means that, for the Virtual Print server in particular, only a DESTINATION need to be set for jobs that run under usercodes which an EMAIL attribute. See [Using the EMAIL usercode attribute](#) in [Virtual Mail Server](#).

### **May 2003: 480.11 Implement MODIFY command &enhance email retry**

For certain types of email failures e.g. –552 (mailbox storage exceeded), MAILLIB will now save and queue the email to disk and mark the email as ‘Exception.’ Unlike normal queued emails (e.g. –999 server unavailable), Exception emails require operator intervention before they are reprocessed. This is handled by the MODIFY command. See **MODIFY command** in [Operator Interface](#) for more information.

### **Oct 2002 480.08 Implement IPADDRESS command**

The IPADDRESS command allows sites, whose Clearpath uses multi-homed IP addresses, to configure a default MYIPADDRESS setting for all SMTP connections to the chosen network mail server. This allows emails to be passed through the network using the correct routing. See **IPADDRESS command** in **Chapter 9: Operator Interface** for more information.



# Getting Started

The MAILLIB software is automatically installed by the Metalogic INSTALL utility. If MAILLIB has not been installed before, the customer will be asked if the product should be loaded otherwise a new version will be installed, if required. The INSTALL utility will automatically SL the MAILLIB function:

```
SL MAILLIB=*METALOGIC/MAILLIB
```

The code file has various granulated privileges and TCPIP SERVICE assigned by the MP command. A utility called \*METALOGIC/MAILER is also installed. At this time, MAILLIB requires a valid key the SUPERVISOR product to run correctly.

## Configuring MAILLIB

Configuration of MAILLIB is very straightforward using the TT MAIL command interface. See the section called [Operator Interfaces](#) for more information.

## Assigning a Mail Server

From Supervisor, MAILLIB can be invoked by using any TT MAIL command:

```
TT MAIL
  --- Mail Library Status ---
Metalogic Mail Library 47.470.60 (Mix = 29321)
  Compiled at 15:07:19 on 30 Jul 2001
  Server assigned to : NEWMAIL
  SMTP port assigned : 25
  Last server status : UNKNOWN
  Current transaction: 1842
  Last successful msg: NONE
  Msgs sent = 0, Queued = 0, Rejected = 0
  Default Postmaster reply address is 'IAN@METALOG.COM'
  Default domain address is 'METALOG.COM'
  Default document attachment extension is .TXT
  4 NickName(s) loaded
  Data will be translated to Code Set ASCII (5)
  Debug SMTP tracing is OFF
```

By default, MAILLIB automatically assumes a default SMTP mail server name of MAILSERVER as its default SMTP mail server. At this point, you will probably need to assign your own server on the TCPIP network by using the TT MAIL SERVER command.

Alternatively, a specific IP address can be used, or a mapped host name assigned via the NW TCPIP MAPPING command, which should then, ideally, exist in the TCPIP initialisation file:

```
NW TCPIP MAPPING + MYMAILSERVER TO 10.0.0.13
```

Better, if the Unisys SYSTEM/RESOLVERSUPPORT library is using an external DNS server on the network, a hostname known to that external DNS server can be assigned to MAILLIB. When invoked, RESOLVERSUPPORT will automatically pass the name lookup request to that server.

Some examples:

```
TT MAIL SERVER MYMAILSERVER
TT MAIL SERVER MAIL.CPNTA.COM
TT MAIL SERVER 10.0.0.13
```

You should ensure that the server is PING-able from the Clearpath system (using the NW TCPIP PING command). The MAIL SERVER command also causes the server name to be written into MAILLIB's own configuration file:

```
*METALOGIC/MAILLIB/CONFIG
```

Using the SERVER command will initiate a NUDGE to attempt to initiate processing of any queued emails to the new server.

## Assigning a MAIL usercode

Although not strictly required, it is recommended that a usercode be assigned for the email address that is generated by all Supervisor emails. Supervisor also assigns this usercode to the MAILHANDLER sub-task invoked to handle MAIL requests.

From a Supervisor window or ODT:

```
TT FOR PRIV/PASSWORD USE USER META FOR MAIL
```

In the above case, a valid privileged usercode and password must be substituted for PRIV/PW to assign a default usercode of META.

This is used to automatically assign all Supervisor emails with a "From" address using the form:

```
META@MYCOMPANY.DOMAIN.COM
```

The MYCOMPANY.DOMAIN.COM address component is automatically detected from the TCPIP network.

## Setting the default file attachment extension

By default, where applicable, SUPERVISOR will attach the extension .TXT to all emails that have symbol file (e.g. DATA, SEQDATA, DCALGOLSYMBOL etc) attachments. The attachment name is generated from the last level of the file name though users can add their own prefix if desired (see the ^TRANSFORM option in the section on Control Options).

Other extensions options include .WRI' and .DOC; the default setting can be changed using the MAIL ATTACH command:

```
TT MAIL ATTACH DOC
```

## Setting a default Reply address

It is strongly recommended that a default 'Reply-To' address be assigned using the POSTMASTER command. Unless a Reply-To address is explicitly provided by SUPERVISOR or the MAILER utility, the default reply address for any MAILLIB generated email will be of the form USER@MYCOMPANY.DOMAIN.COM which comprises the calling usercode (USER) and the TCPIP domain name (MYCOMPANY.DOMAIN.COM)

To assign a default 'Reply-To' address:

```
TT MAIL POSTMASTER SUPPORT@METALOG.COM
```

This means that all emails that are "bounced" because of illegal email addresses or routing problems can be directed back to a valid email recipient.

It would be the responsibility of this "post master" administrator to check and, if necessary, resolve any problems that arise.

The POSTMASTER modifier always expects a fully qualified email address (i.e. with a valid domain) and cannot be a nickname. Using both Supervisor and MAILER facilities, the 'Reply-To' header can be locally overridden.

## Setting a default domain

Similarly, a default domain can be added to unqualified email addresses (i.e. with no '@' part):

```
TT MAIL DOMAIN METALOG.COM
```

This means that using an email address without a '@' part, say 'support', would automatically be reconstructed as 'support@metalog.com'.

The exception to this rule is if the name 'support' was already mapped into MAILLIB's nicknames list (see [Nicknames](#)) where the nickname will be expanded.

## Sending a test message

Using the [TEST](#) command, simple test emails can be sent to one or more recipients directly from a Supervisor window, MARC or the ODT:

```
TT MAIL TEST IAN@METALOG.COM
```

```
    --- Mail Server Test Message ---  
Sending test message to IAN@METALOG.COM  
Using 10.0.0.13 as Mail Server  
---  
Generating asynchronous SUPERVISOR test message  
Please use 'TT MAIL LOG' to check mail result
```

Any errors, such as server unavailable, invalid user or malformed email address, will be displayed.

You can also use the [LOG](#) command to see all the information concerning the test message transmission:

```
TT MAIL LOG  
----- MAIL Log: 11 May 2001 -----  
10:31:14 SND:00034:Sent OK to:IAN@METALOG.COM  
10:31:13 RCV:00034:To:IAN@METALOG.COM,Subject:Test message from MAILLIB
```

There are many errors that can be generated; -501 and -550 are the most common:

### **-501 Syntax error in parameters or arguments**

This usually refers to a badly formed email address.

### **-550 User not known or mailbox unavailable**

This usually means that the recipient is “local” to the mail server i.e. the email address has the correct domain name but the user is not known.

### **-999 Mail server unavailable**

This usually means that an incorrect TCPIP host has been nominated as a mail server or that the server is temporarily unavailable or has been busy for more than 30 seconds. MAILLIB will re-try any queued transactions after a further 3 minutes or upon receipt of a new email or via the NUDGE command.

## Security and firewalls

It is not unusual for SMTP connections to be restricted, especially from an A-Series or Clearpath system, to the outside world or even a local intranet. Both Microsoft Exchange and Windows NT systems, especially, are often configured to have domain restrictions and IP address barring.

In the light of any problems sending a test mail message, please contact your mail system administrator and/or your security administrator in case the A-Series or Clearpath system does not possess the necessary security privileges (designated by its IP address).

SMTP transmission errors -501 and -550 are indications of security restrictions in

identifying the existence of the user or recipient email addresses.

## **Mail server packages**

If the network normal mail server is inaccessible, because firewall or security restrictions, then using a second server on a dedicated PC is a possibility. There are many shareware and free mail server packages readily available for download from the Internet; the current list of mail servers that have been tested include:

Microsoft Exchange 2000

VPOP3

Qualcomm EIMS (Mac only)

Mercur SMTP/POP3/IMAP4 Usermanager

Excellent places to find downloadable mail servers on the Internet include:

<http://www.zdnet.com>

<http://www.tucoms.com>

<http://www.download.net>

If security restrictions allow and access to the Internet is not necessarily needed, using a third-party mail package, on a computer visible as server to the mainframe, can be very effective. Most email clients will support multiple accounts allowing mail to be picked up from a number of different servers.

# Supervisor Interface

The MAILLIB interface offers significant functionality for SUPERVISOR users. MAILLIB was written, with Supervisor in mind, to provide the ability to route alerts to mobile phone and pagers, using simple email. It is a convenient and cheap alternative to other more expensive options in the marketplace. This section describes the Opal MAIL function, which can be used from any ODTSequence, DISPLAY or even SITUation. It is assumed that the reader is conversant with both SUPERVISOR and the concepts of Opal programming.

If Supervisor is active and MAILLIB has been configured with at least a server (as seen in section 1.1), you can try the following simple in-line Opal test from any Supervisor window:

```
TT DO (SHOW(MAIL("To:me@mycompany.com; Subject:Test message",  
                  "Text of Message")))
```

where 'me@mycompany.com' is the address of the email recipient. Obviously, the configured mail server on your network must be capable of holding and forwarding email to that address. You should see the SUPERVISOR response '1' to your window if the message has been sent successfully. If a positive number, this indicates the number of email recipients that were successfully processed.

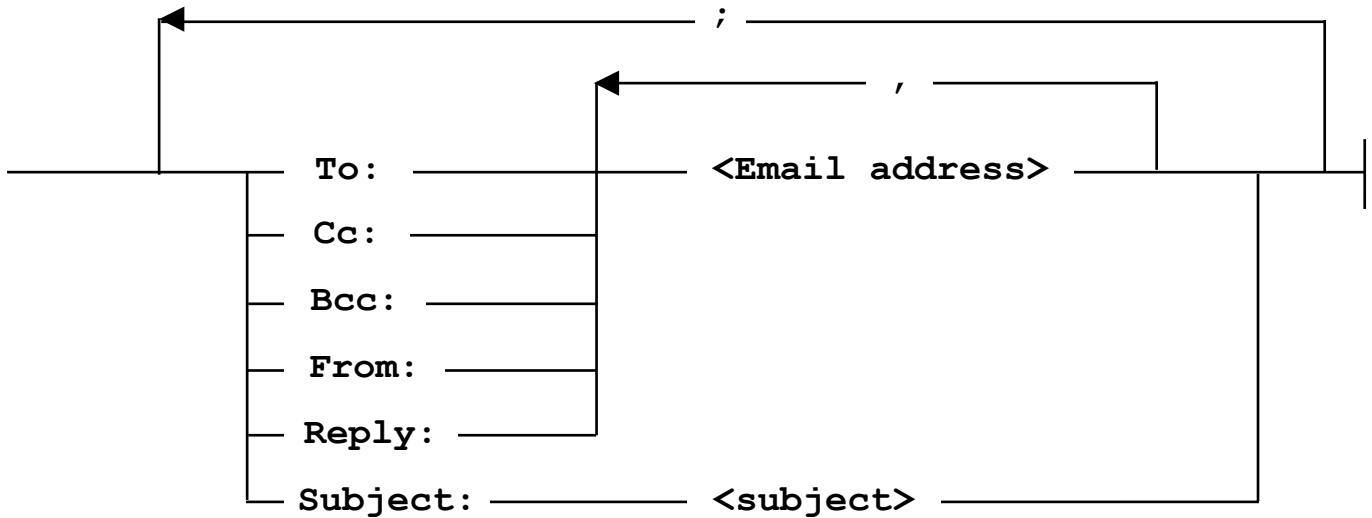
The above example used the OPAL MAIL function; this is discussed in detail in The section 'OPAL Statements' of the Metalogic OPAL Reference manual.

If the mail content was successfully processed but the mail server is unavailable on the network or the server rejected the email, it is likely that you will see a negative value returned. Typically, for server unavailability the value will be -999. There are many other values that can be returned; some are Internet RFC values whilst others are internal to either Supervisor or MAILLIB. These values, and their interpretation can be seen in [Maillib Errors](#).

The syntax of the MAIL statement has changed slightly from the original Unisys implementation, to permit an optional 'Reply-To' address header to be assigned. The revised syntax for the Opal MAIL statement, which needs two string parameters, is shown below.

```
MAIL ( <Headers>, <Message body> )
```

## <Headers>



The <header string> allows the caller to set up a variety of email headers. Only 'To:' is mandatory, all other headers may be left unused. However, if a header instruction is used then a non-empty string must be supplied or an error will be given.

Multiple email addresses can be specified for "To:", "Cc:" and "Bcc:" by delimiting each address with a comma. Normal string expressions can be used for the Subject header and for the text of the message itself. Each header item must be separated from other headers using a semi-colon.

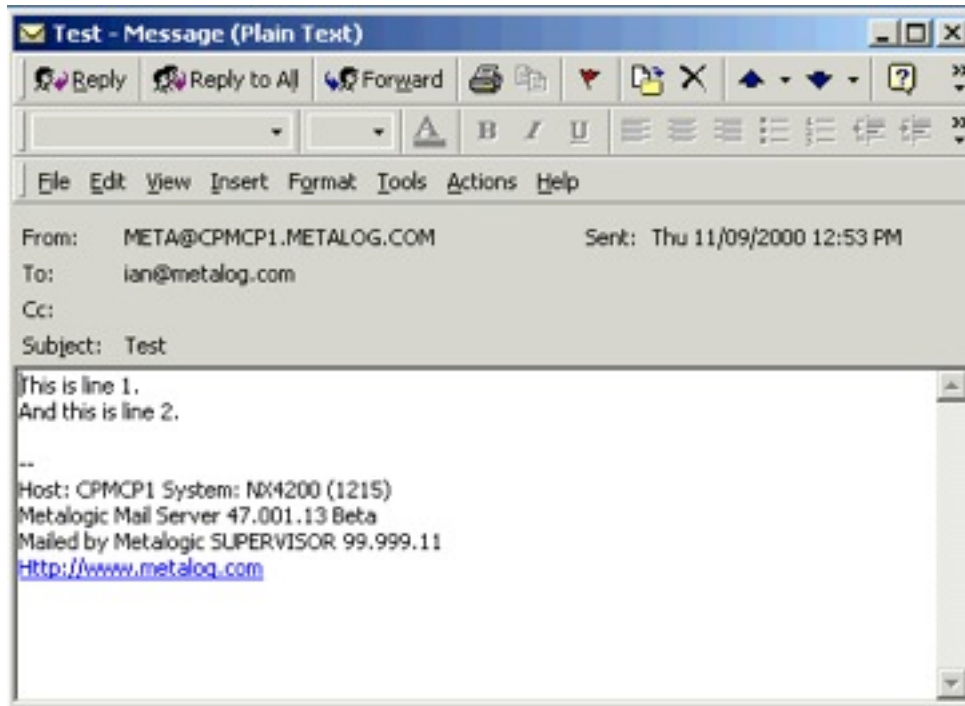
The "From:" modifier is very useful; this will apply a user-selected identity or nickname that will appear as the sender in most email clients, instead of a cruder formatted email address. Both Outlook and Eudora clients will show sender nicknames, where applicable, in mailbox folder contents. The <message text> field is simply a normal OPAL string expression.

For example:

```
TT DEFINE + ODTs TESTMAIL:  
  SHOW(MAIL("To:ian@metalog.com;Subject:Test",  
    #("This is line 1.",/,"And this is line 2."))));
```

Individual lines of message text can be delimited by carriage return characters by plugging in a '/' character in an OPAL string or using the lookup #[CR] in an OPAL string expression. Note the use of the hash-paren function #(.). In line 3, this is useful here because it allows a simple OPAL display string to be used where, otherwise, only a string expression would be permitted.

This is a screenshot of how the above email appears in an Outlook 2000 client:



## Restrictions

### Line Truncation

Both Supervisor and MAILLIB will automatically truncate individual lines greater than 3000 characters.

### Message Truncation

A maximum of 5999 lines of text and control strings can be passed using the MAIL statement. Supervisor will discard any lines that exceed this limit and display the warning message:

**SUPERVISOR: Message line count exceeded**

However, using the [^INCLUDE](#) control option, it is possible to insert large quantities of text into a single email without this restriction.

### Originator

MailLib includes the 'Originator-info' header for all email requests. This field identifies the MCP system origin and is usually of the form 'UserCode@TCPIP.Domain.com'; the usage of this address is limited by MAILLIB.

### From

If a 'From:' header has been provided by the caller and MAILLIB has validated that



the address domain is acceptable (i.e. maps to MAILLIB's 'Default Domain' or the local TCPIP domain), then this 'From:' address will be used in the 'MAIL FROM:' protocol exchange with the mail server. This allows certain mail servers to report errors back to addresses other than the PostMaster (which is used in all other cases).

Further, if a 'From:' header is an unqualified email address with no '@ <domain>' component, MAILLIB will now append its default domain setting, if present, to the address. Nicknames cannot be used with a 'From:' header.

## Sender

'Sender:' header will be inserted into the body of a MAILLIB generated email if the domain of an user-provided 'From:' email address does not match either the TCPIP domain of the MCP system or that of the DEFAULT POSTMASTER address.

The following table shows the various possibilities where TCPIP domain is bcd.com and the domain of the postmaster address is xyz.com

Original From	Final From	Final Sender
a@bcd.com	a@bcd.com	
a@xyz.com	a@xyz.com	
a@zzz.com	a@zzz.com	usercode@bcd.com
	usercode@bcd.com	

## Example: SECTORS REQUIRED waiting entry

The following is an example of a mail alert to detect a SECTORS REQUIRED waiting entry and send an email message to a

```
TT DEFINE + SITUATION MAIL_SECRQD (MX=W) :
    "SECTORS REQUIRED" ISIN RSVP AND
    NOT ("RESERVEDISK" ISIN NAME)

TT DEFINE + ODTSEQUENCE MAIL_SECRQD (MX) :
    #RES:=MAIL("TO:SUPPORT@METALOG.COM;FROM:SUP ALERT;" &
    "REPLY: OPS@METALOG.COM;SUBJECT:SECTORS REQUIRED ALERT",
    #("TASK: ",NAME,/,
    "MIX NO: ",MIXNO,/,
    "RSVP: ",RSVP));
    IF #RES LSS 0 AND #RES NEQ -999 THEN
        DISPLAY("RSVP EMAIL ALERT NOT SENT!! ERROR #",#RES)
    ELSE
        DISPLAY("RSVP ALERT SENT OK");
```

To capture every occurrence of a 'SECTORS REQUIRED' waiting entry and send an email:

```
TT WHEN MAIL_SECRQD DO MAIL_SECRQD
```

## Example: Capturing an abnormal job termination

This example uses LOGEOJ Opal scripts to capture specific abnormal EOJ or EOT entries and then email an alert to Operations.

```
TT DEFINE + SITUATION MAIL_EOJ (LOGEOJ) :  
    USERCODE EQL {"META", "OPS", "LIVE", "ATM"} AND  
    NAME INCL {"BATCH/", "OBJ/", "LINC14/", "DBCONTROL/", "COMS/" }  
TT DEFINE + ODTSEQUENCE MAIL_EOJ (LOGEOJ) :  
    #RES:=MAIL ("TO:SUPPORT@METALOG.COM;FROM:EOJ ALERT;" &  
        "SUBJECT:ABNORMAL TERMINATION "&NAME,  
    # ("TASK: ", NAME, /,  
        "MIX NO: ", MIXNO, /,  
        "EOJ TYPE: ", EOJTYPE, /,  
        "EOJ REASON: ", EOJREASON) ;
```

These scripts will detect any abnormal EOJ or EOT for any task whose usercode is "META", "OPS", "LIVE" or "ATM"... and... whose task name includes any of the literal strings "BATCH/", "OBJ/", "DBCONTROL" or "COMS/".

So, to capture every occurrence of an abnormal termination for the specifies Users and Programs,

```
TT WHEN MAIL_EOJ DO MAIL_EOJ
```

## SUPERVISOR-MAIL features and enhancements

There are additional MAILLIB facilities available for the Supervisor user that can facilitate the routing of Supervisor-generated prints to an email client.

The TT USE DESTINATION command permits the assignment of a default destination to all prints generated by Supervisor. This command now has a small modification that allows an optional email address to be associated with the destination

e.g.

```
TT USE DESTINATION MAIL:STIRLING@METALOG.COM
```

This will set up a default print DESTINATION attribute of MAIL and a default NOTE is set to "To:STIRLING@METALOG.COM". If the MAIL printing device is a Virtual Server using configured to use MAILLIB (see Section 9: Virtual Mail Server) then any backup files generated by Supervisor (such as debug traces, program taskfiles or TT command reports) issued from a scheduled activity or via the ODT, can be automatically "printed" to email.

Alternatively, from any Supervisor window, Supervisor will examine the PRINTDEFAULTS associated with the usercode originally logged-on to MARC. For example, this might be a typical response to the TT TERM command from a Supervisor window:

```
TT TERM LINES 47 WIDTH 96 FIRST 2 TRUNCATE TRUE RESPONSE
EXPANDED
  MESSAGES TRUE FULLPAGE FALSE DCSTATION TRUE
  You are: IPP02/S/1 [236]
  Log-On User: IPP
  PrintDefaults:destination="MAIL",NOTE="To:ian@metalog.com"
```

Here, any print requests generated by commands processed locally from this window will be automatically passed to the MAIL printer device, using the NOTE attribute to denote the email recipient(s). These PRINTDEFAULTS cannot be assigned or changed by a Supervisor command; they must be inherited from settings applied to the usercode in the USERDATAFILE.

# Mobile phone and pager alerts

In conjunction with Supervisor, the Metalogic MAIL Library offers powerful and flexible mechanisms for driving system alerts to email, which can then be converted to mobile phone SMS (Short-Message-Service) text messages or pager alarms. Many Internet companies across Europe and the US, in particular, offer facilities to “convert” emails using a tailored mail address to these formats.

This is an example of a Supervisor OPAL script to detect an abnormal EOJ of any program whose name includes the string “OBJECT/VITAL”:

```
TT DEFINE + SITUATION O2_EOJ(LOGEOJ) :  
    EOJTYPE NEQ NORMALEOTV AND "OBJECT/VITAL" ISIN NAME  
TT DEFINE + ODTSEQUENCE O2_EOJ(LOGEOJ) :  
    #RES:=MAIL( # ("TO:METALOG@O2.CO.UK  
        "SUBJECT:PROGRAM FAILURE ALERT" , ,  
        TIME(TIMEOFDAY) , " " , DATETOTEXT(TODAY,DDMMYY)) ,  
        # ("^SIG DATETIME" , / ,  
        "PROGRAM FAILED " , / ,  
        NAME , / ,  
        EOJCAUSE , "-DSED" , / ,  
        EOJREASONTEXT)
```

In this example, the O2\_EOJ SITUation will be triggered on every job or task termination but will only take specific action if the EOJ was not a NORMALEOT and has OBJECT/VITAL anywhere in the job/task name.

The O2\_EOJ ODTSequence determines the action taken. This consists of one statement, MAIL, which consists of two parameters – email message headers and text body. The “To:” message header has a special email address, metalog@o2.co.uk. This address has been registered at a British Telecom (BT) web site in the UK:

<http://www.o2.co.uk>

BT is one of many mobile providers offering free SMS messages each month to any mobile phone, by associating the telephone number to an email address. When the email message arrives at the O2 mail server, it is translated into a mobile message and forwarded to the phone as a text SMS message.

The following example is a simple system heartbeat message sent by Supervisor:

```
TT DEFINE +ODTSEQUENCE HEARTBEAT:  
    #RES:=MAIL("TO:SMS@SMTP1.DELTICA.COM;" &  
        "REPLY:IAN@METALOG.COM;" &  
        "SUBJECT:HEARTBEAT MESSAGE" ,  
        # ("USER=METALOGIC" , / ,  
        "PASS=MYPASSWORD" , / ,  
        "TO=445551234567" , / ,  
        "^SIG DATETIME" , / ,  
        "MSG=HEARTBEAT MESSAGE FROM `",HOSTNAME)) ;
```

**TT AFTER + 1800-2359(30) DAILY: TT DO HEARTBEAT**

This SUPERVISOR AFTER command demonstrates a simple method of providing a mail heartbeat to a mobile phone using another UK web service, called Deltica, available at:

**<http://www.deltica.co.uk>.**

In the Deltica example, unlike the BT option, each SMS text message must include a Username, Password and destination mobile number (denoted by "TO").

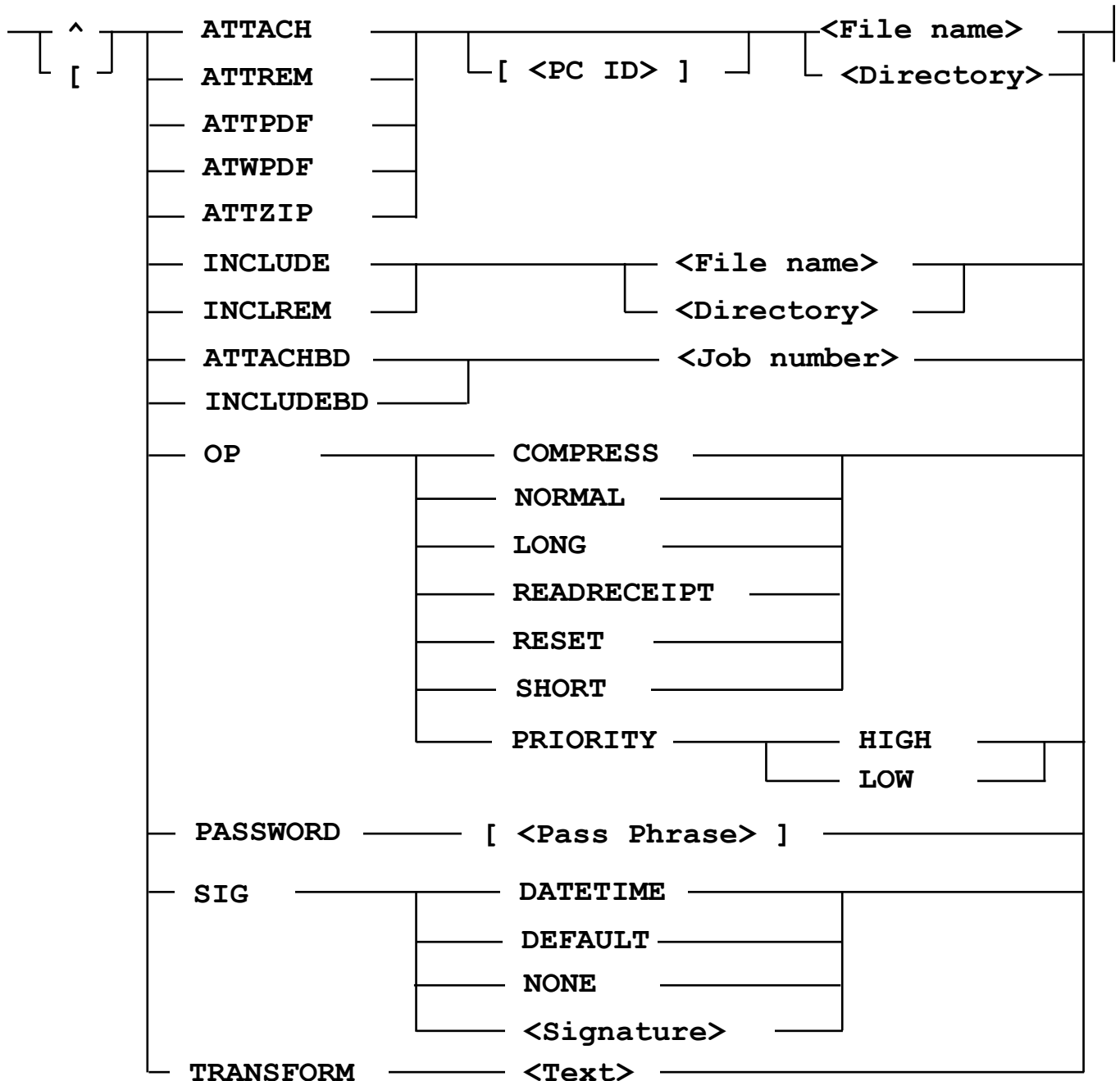
Deltica, like many other providers, charge a flat rate for each message (typically 10-12 cents or 8 pence) but the email transmission time to phone reception is fast and reliable.

The moral here is you get what you pay for; free services such as O2 are very convenient but not necessarily consistently reliable. Providers such as Deltica are more reliable if the alerts generated are important enough to require fast turnaround.

## Control Sequences

MAILLIB has many options for controlling the presentation and transmission of emails. These options range from signature controls, attachment and include file handling, trailing space removal and more.

MAILLIB recognises certain “control” sequences that are processed as options instead of text. A control sequence must start with the “^” or a “[” character in column one of a new line of text. If the sequence is invalid, it will appear as raw text in the message body. The following control sequences are available:



These controls can be used within emails generated by the Supervisor-Opal MAIL function and by programmatic invocation of the [MAILER utility](#)).

## **^ATTACH and ^INCLUDE controls**

Using the MAIL statement, Supervisor can attach or insert one or more files within an individual email message. The number of files that can be attached or included depends on the number of lines of text enclosed in the message – the combined total cannot exceed 999.

Files attachments are designated by beginning an individual line of text with the characters '^' or ']', followed by the keywords ATTACH or INCLUDE. If the ^ appears anywhere other than the first character, it will be ignored.

Typically, a usercode and/or family can be optionally specified in the name of the file otherwise these attributes will be inherited from the caller.

For example:

```
^ATTACH *BD/0001234/000LINE ON DEV  
^INCLUDE (META)SYMBOL/MAILLIB ON DEV
```

MAILLIB will handle the attachment of various filekinds and will attempt to make as much sense of the file as possible. Filekinds such as all DATA types, backup printer, all stream and symbolic files plus CONTAINERDATA can be attached; other filekinds will give an error. MAILLIB will determine the generated name of an attachment by extracting the last level of the actual file name and adding the default extension (as set by the [ATTACH](#) command).

For example, where the following has a DATA or symbolic filekind:

```
^ATTACH (META)IPP/TESTFILE ON DEV      will attach TESTFILE.TXT
```

If a wrapped container is attached:

```
^ATTACH (META)WRAPPED/TEST47125      will attach TEST47125.CON
```

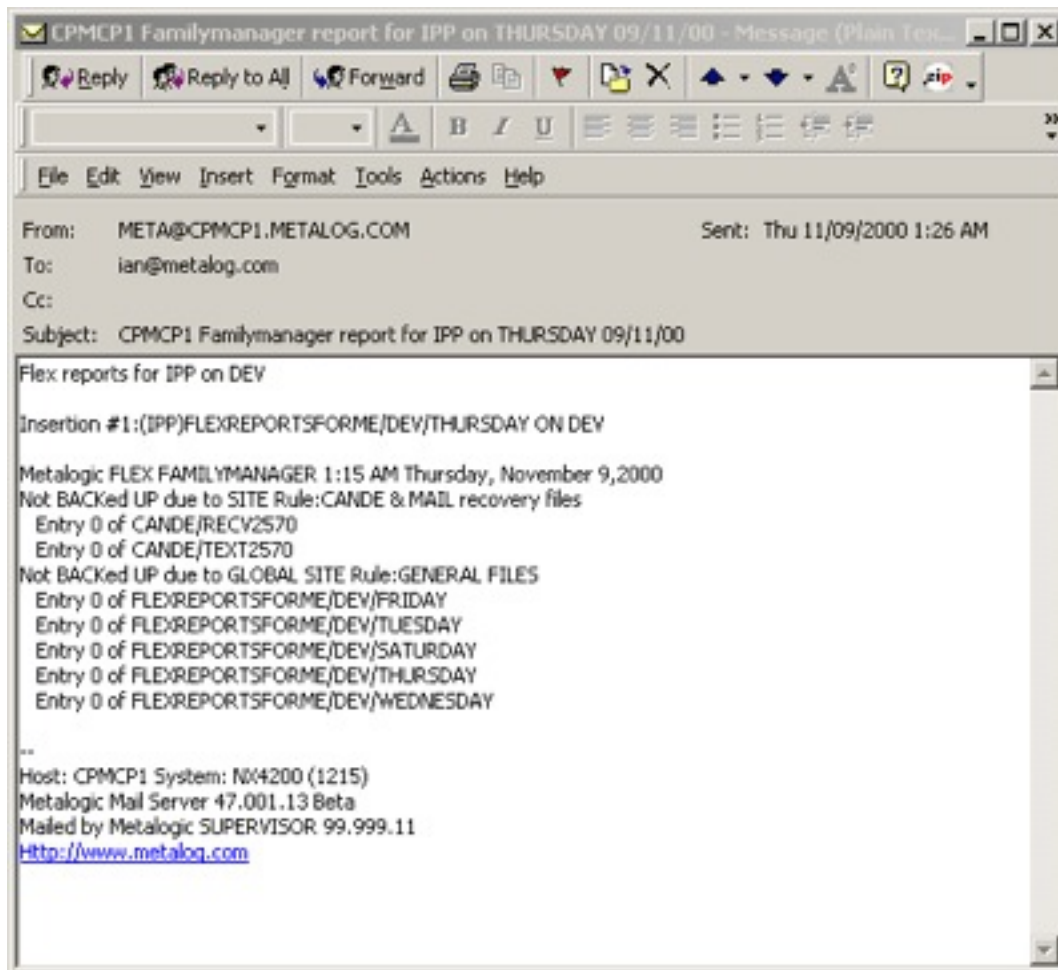
PC-style ZIP files and raw CD images, if held on a Unisys system, are also recognised; if an extension is absent, MAILLIB will automatically assign a .ZIP or .IMG extension to the file name.

Note that the actual attachment name, as it appears in the recipients email client, can be altered to a simple PC-style name using the '[...]' syntax e.g. '[myfile.log]'

```
^ATTACH [mytest.log] (META)IPP/TESTFILE ON DEV
```

In this case, instead of the file appearing as TESTFILE.TXT, MAILLIB will provide the alternate name 'mytest.log', note that the original case is preserved.

An example of an [^INCLUDE](#) is shown below:



The screen shot on the previous pages shows a [^INCLUDE](#) file has a FILEKIND of DATA generated from a Metalogic FLEX application called FAMILYMANAGER. In this case, a Supervisor WHEN, of context LOGEOJ, detects the successful EOJ, check for the presence of the report file and emails it to the appropriate recipients.

MAILLIB handles symbol files differently for [^ATTACH](#) and [^INCLUDE](#). An [^INCLUDE](#) command always drops sequence numbers from the original file before lines are inserted into the text body. In contrast, [^ATTACH](#) always preserves any sequence numbers, if they exist, which makes practical the movement of intact source files between remote Clearpath systems.

Both [^ATTACH](#) and [^INCLUDE](#) will now also handle file directories:

```
^ATTACH FLEX/=
```

This will process all files in the FLEX directory under the caller's usercode and family. Note that if a file called FLEX is resident, then MAILLIB will NOT add it into the processing list. As previously, MAILLIB will only [^ATTACH](#) symbol files, containers, stream and zip files; [^INCLUDE](#) will handle stream and symbol files only.

Using the [^OP LONG](#) option changes the way MAILLIB generates the default PC name using all the levels of the filename except usercode and family. For example:

```
^ATTACH (IPP)THIS/IS/A/LONG/NAME ON DEV
```



This file would appear in the email as the following named attachment:

**THIS\_IS\_A\_LONG\_NAME.TXT**

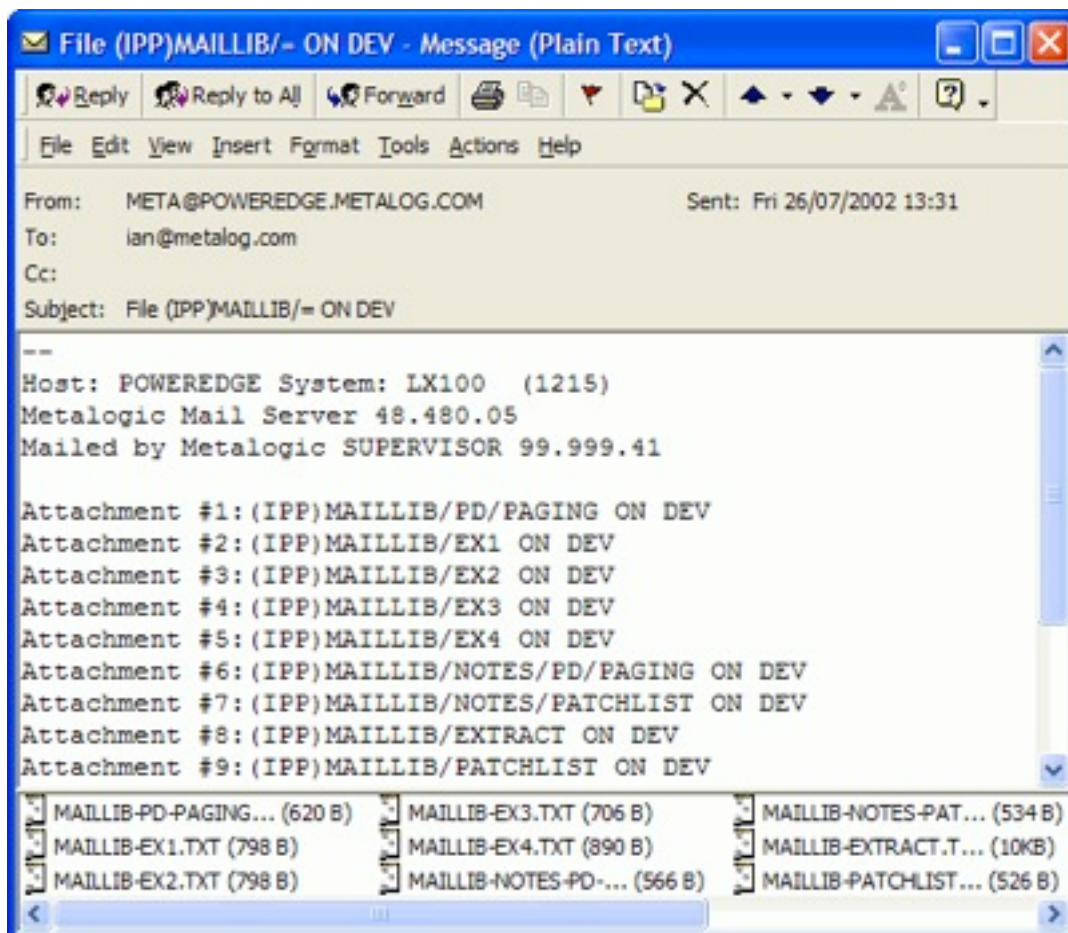
This is instead of the usual NAME.TXT (See [^OP LONG](#)).

Consider the following example:

**^OP LONG**

**^ATTACH MAILLIB/=**

Here, each of the files has been attached with the “long” format of the name using all levels of the original A-Series title. This is how the email might appear in an Outlook 2000 client:



It should be noted that MAILLIB will process all eligible files exist in the directory; currently, up to a limit of 999 files.

A simple OPAL example for sending a file with [^INCLUDE](#) is shown below:

**TT DEFINE + ODTs MAIL\_INCLUDE (MSG) :**

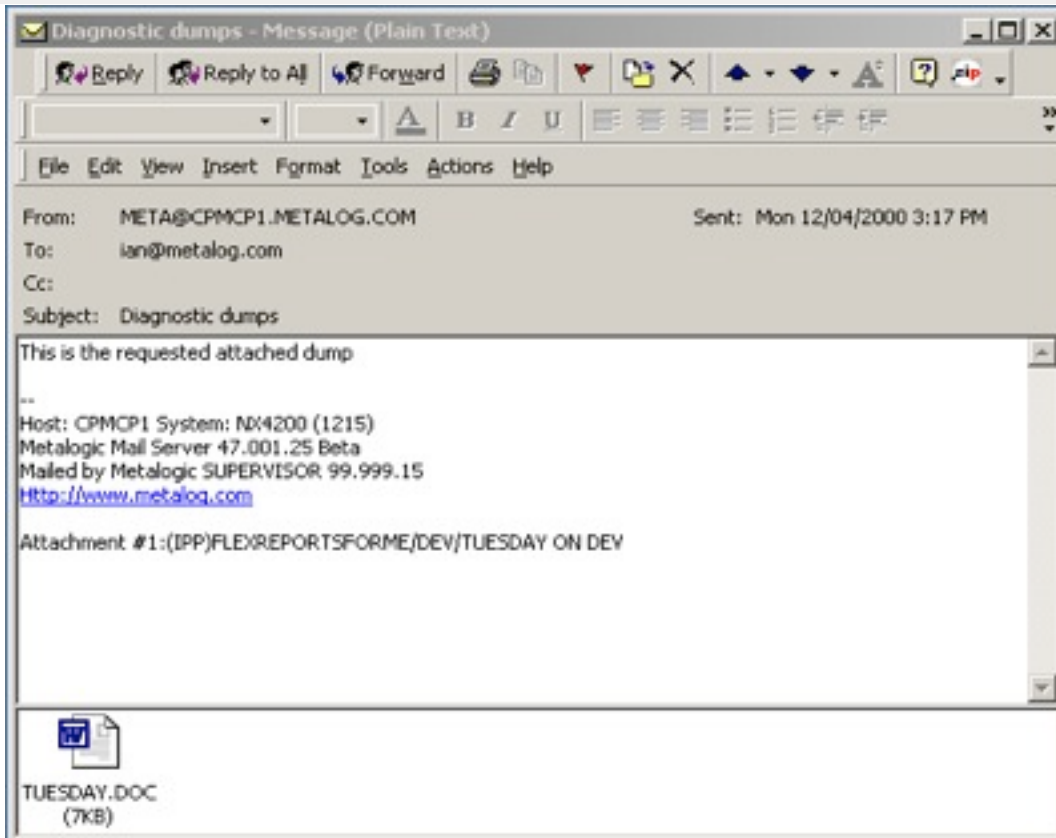
```
SHOW (MAIL ("To:support@metalog.com;From:ian@metalog.com;" &
           "Subject: Diagnostic dumps",
           # ("This is the requested dump", /, % Force new line
             "^INCLUDE ", TEXT) ) );
```

**TT DO MAIL\_INCLUDE \*BD/0001234/000LINE ON WORK**

Note that if the [^INCLUDE](#) file type cannot be handled by MAILLIB, the email is

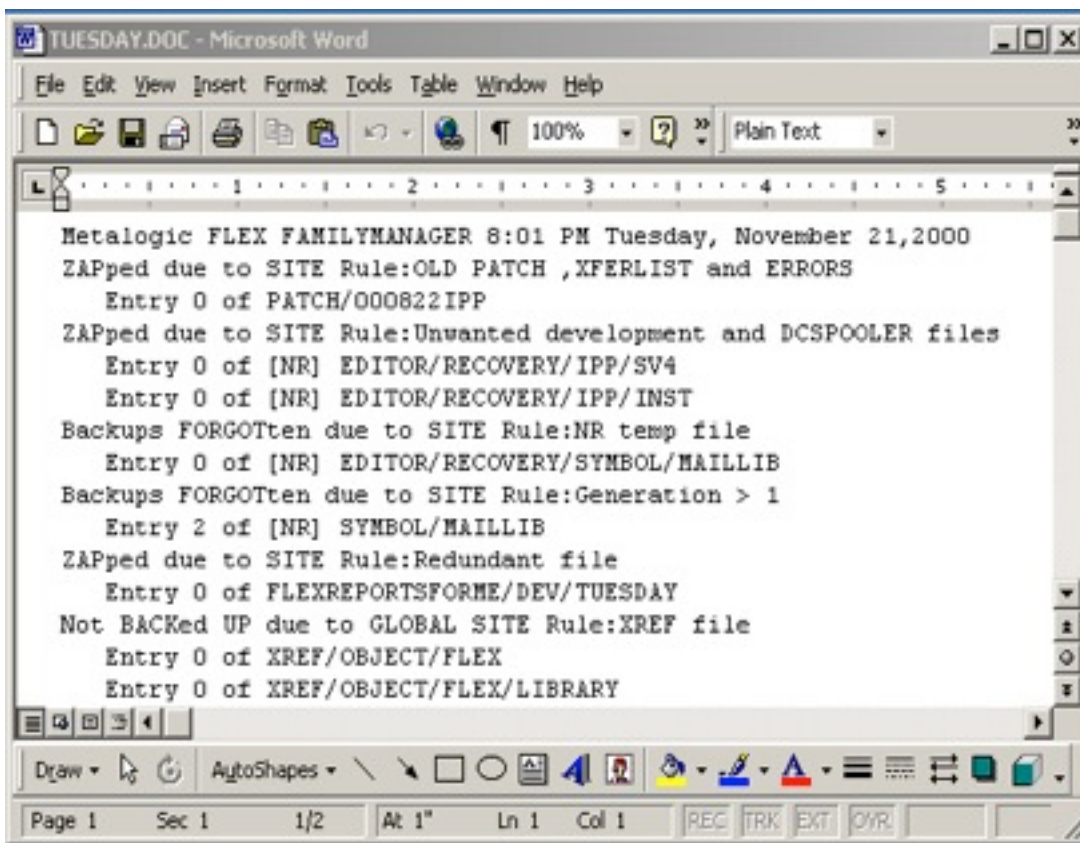
NOT aborted; instead, an error message will be generated in the sent email. To [^ATTACH](#) files instead of [^INCLUDE](#), the OPAL can be changed:

```
TT DEFINE + ODT5 MAIL_ATTACH(MSG) :  
    SHOW(MAIL("To:ian@metalog.com;Subject: Diagnostic  
dumps",  
    #("This is the requested attached dump", /,  
    "^ATTACH ", TEXT) ) );  
TT DO MAIL_ATTACH (IPP)FLEXREPORTSFORME/DEV/TUESDAY ON DEV
```



Double-clicking on “TUESDAY.DOC” in the open Outlook mail window causes the default word processing application to be invoked.

In this case, Microsoft Word shows the file content:



## Attachment Renaming

Although MAILLIB will automatically assign a default PC-style name to any attachment, it is possible to override this assignment in the [^ATTACH](#) command syntax. The desired PC name should be inserted between the characters '[' and ']' and should consist of two simple strings separated by a '.' character where the second string represents the file name extension.

For example:

```
^ATTACH [excelfile.csv] (META)TEST/EXCEL/CSVDATA ON DEV
```

The following example uses the OPAL TODAY attribute to automatically construct the name of any attached file to include the string "diag" with today's julian date e.g. "Diag2001190.txt"

```
TT DEFINE + ODTs MAIL_ATTACH:
```

```
SHOW(MAIL("To:ian@metalog.com;Reply:support@metalog.com;" &  
  "Subject: Today's Diagnostic files",  
  #("This is the requested attached diagnostics", /,  
    "^ATTACH [Diag",TODAY,".txt] (LIVE)DIAG/LIST")));
```

This technique can also be adopted using the MAILER utility by file-equating the FORMID attribute for any file attachment. See Section 6 for more information on the MAILER utility. Any lower case characters in the PC name are preserved when the file is posted to the PC email client.

## Using the FORMID attribute

Any attached physical file that has a FORMID attribute assigned will be checked by MAILLIB at file-open time. If FORMID conforms to a simple PC-style name e.g. "abc.txt" then MAILLIB will automatically use this value as the attachment file name otherwise it will be ignored. There are many ways to assign FORMID, at file creation-time, by file-equation or using the WFL ALTER command:

```
WFL ALTER LIVEDATA/CSVDATA (FORMID="MYFILE.TXT")
```

## More ^ATTACH and ^INCLUDE

For all ^ATTACH controls, MAILLIB uses conventional BASE64 Content-Transfer-Encoding techniques for attaching the file. This conforms to the practices documented in RFCs 821 and 1521.

MAILLIB is less tolerant with files processed by a [^INCLUDE](#) statement – only symbolic, stream, backup printer and DATA filekinds are permitted. Wrapped containers and zipped files cannot be subject to a [^INCLUDE](#). Neither [^ATTACH](#) nor [^INCLUDE](#) can handle restricted filekinds such as codefiles, LOG etc.

Note also that using [^INCLUDE](#) to process stream file which have word-processing TAB characters may cause line indentation problems; please avoid using such documents. Note also that MAILLIB will recognize HTML-content files as long as the tag <HTML> appears on the first line of the file.

MAILLIB will ensure that any Included ASCII or EBCDIC files do not pass invalid characters such as nuls (4"00") in the data passed to the SMTP server.

For both [^INCLUDE](#) and [^ATTACH](#) actions, where necessary, automatic translation from EBCDIC to ASCII is performed automatically.

Up to a maximum of 999 combined [^ATTACH](#), [^INCLUDE](#) control statements and lines of text can be embedded within the body of an email message.

## Suppressing "Included #n:<file title>"

If the controls [^SIG NONE](#) or [^SIG DATETIME](#) are used, all files processed by the [^INCLUDE](#) control will NOT show the text "Included #n: <file title>" in the message body. This is useful; for SMS or pager messaging where the number of characters permissible for a message is often limited.

## Variants on ATTACH and INCLUDE.

### **^ATTPDF**

Used to create PDF attachments from any symbolic or readable stream file. The data is streamed directly in the email content so no local PDF file is created on the MCP system.

Ex.

```
^ATTPDF *SYMBOL/MYSOURCE ON DEV
```

The email attachment file name will be automatically assigned an extension of .PDF to allow the file to be opened by the Adobe Reader utility. All PDF files, by default, will open with page thumbnails visible in the Bookmarks navigation panel.

According to file specifications, MAILLIB will attempt to determine the best page formatting and font size to be used. Currently, only the font COURIER NEW is permitted but it will be possible to override this. If ATWPDF (Wide PDF) is used, MAILLIB will switch the page set up to Landscape instead of Portrait (e.g. allowing better presentation of 132-character backup files). At this time, only A4 page formatting is supported.

Regarding STREAM files, MAILLIB currently uses a default line width of 90 characters (132 for [ATWPDF](#)) and any lines longer than this are wrapped inside the generated PDF file.

The PDF files are uncompressed and not 'linearized' - this means that they are not optimised for fast loading by network or internet access (via a browser). Both 'linearization' and, possibly, compression of PDF files may be available in later releases.

### **^ATWPDF**

As ATTPDF but with 132 character lines.

### **^ATTREM**

As ATTACH but file to be attached is removed on successful email.



## **^ATTZIP**

Allows attachments to be zipped.

```
#EMail:= MAIL("To:support@Metalog.Com; Subject:Test Zip",
#("^ATTZIP [MyZip] *TEST/DIR/= ON PACK",/,
"^ATTZIP [MoreTesting] *TEST3/=",/,
"^ATTZIP *TEST2/SINGLEFILE"));
```

As with normal attachments, the use of '[MyZip]' or '[MoreTesting]' causes MAILLIB ,to override the default name of the archive which for a directory request is currently constructed from the first file name seen.

The names of all files in a Zip archive retain their original MCP format but flattened out to a single level. As normal, MAILLIB will add default file extensions according to the FILEKIND or type.

If the first ^ATTZIP request is a directory and more than one file exists in the directory then the directory will be used instead of the first file title

For example:

```
^ATTZIP *PP/PD/=
```

would create a zip attachment PP-PD.ZIP

Instead of the normal 'Attached' messages in the MAILLIB log file, zipped file entries will be tagged with 'Zipped' instead.

Zipped files may be encrypted by using the [^PASSWORD](#) control

Related to [^PASSWORD](#)

## **^INCLREM**

As INCLUDE but the included file will be removed after a successful email.

## **^ATTACHBD and ^INCLUDEBD controls**

The ^ATTACHBD and ^INCLUDEBD controls are variants of [^ATTACH](#) and [^INCLUDE](#), respectively, that allow all backup files generated from the same job and denoted by the job mix number, to be emailed with one simple statement.

e.g.

```
^ATTACHBD 12345
```

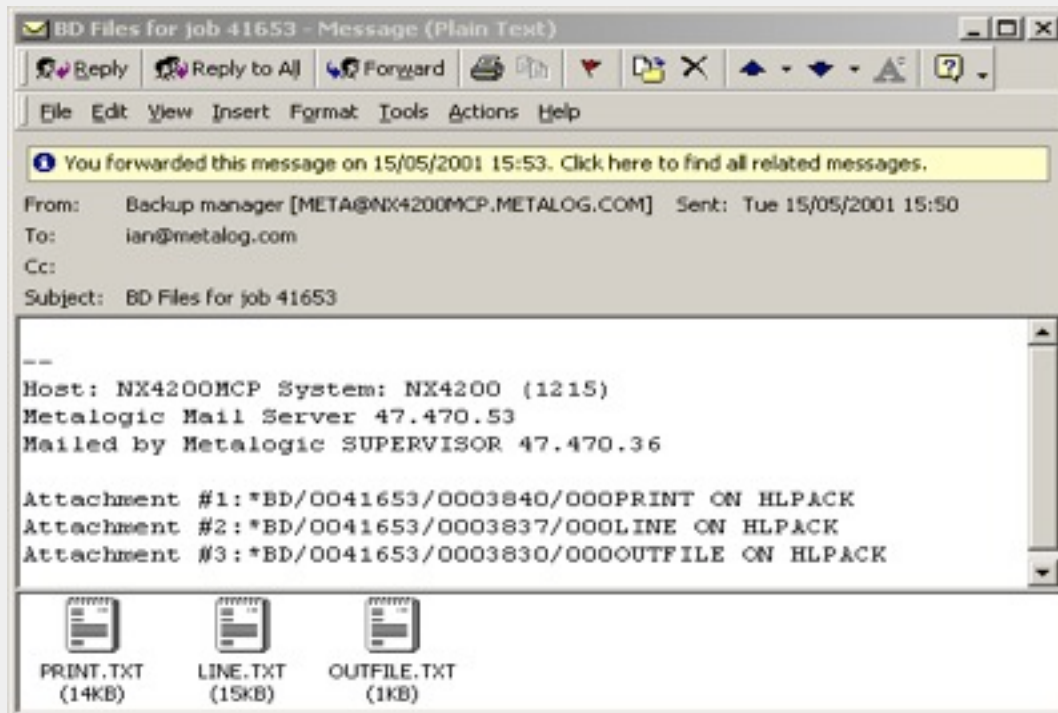
This control sequence would mail all the backup files created under the directory \*BD/0012345/=, on the DL BACKUP family. If no files are found or a processing error is obtained then display messages will be reported to the SUMLOG and inserted into the body of the email.

For example:

```
TT DEFINE + ODTSEQUENCE MAIL_BD(MSG) :  
    SHOW(MAIL("To:ian@metalog.com;From:Backup manager;"&  
        "Subject:BD Files for job "&TEXT,  
        "^ATTACHBD "&TEXT));
```

Job 41653 has created 3 backup files under the \*BD directory; so, to email all the files in this directory using the above ODTSequence:

```
TT DO MAIL_BD 41653
```



## ^OP controls

The ^OP controls subset allows the user to change the PC name format of attached files and to control trailing spaces removal. These features can be utilised in several ways by using ^OP and also run-time file-equation.

See Appendix B on how to set these options when calling the MAILMAN library entrypoint programmatically.

The OP modifier has six different settings:

## ^OP COMPRESS

Use of ^OP COMPRESS allows the removal of trailing spaces for file attachment and includes. In the case of [^ATTACH](#), only DATA files are eligible for space removal whereas any blocked, text-based file used for an [^INCLUDE](#) will be processed. This is because many text file kinds have sequence numbers that should be preserved in MAILLIB attachments.

Related to [^OP NORMAL](#).

## **^OP LONG**

By default, using the [^ATTACH](#) modifier, MAILLIB will generate a 'short' style attachment name for the PC file by using the last level of the A-Series file title and the current default extension. By using the ^OP LONG modifier, this behaviour can be changed to generate a file name with all the levels of the original file (except usercode and family).

For example:

```
^OP LONG  
^ATTACH *DATA/TEXT/EXAMPLE ON DEV
```

Would generate the PC attachment file name:

```
DATA-TEXT-EXAMPLE.TXT
```

Instead of the normal 'EXAMPLE.TXT'; this functionality can also be provided by the MAILER utility by setting the FLEXIBLE attribute to any file-equated ATTACH file:

```
RUN *METALOGIC/MAILER("ian@metalog.com", "TEST") ;  
FILE ATTACH(TITLE=*DATA/TEST/EXAMPLE) ;  
FILE ATTACH1(TITLE=*DATA/MYPC/NAME, FLEXIBLE) ;
```

In the above case, the long PC name format only applies to the logical file ATTACH1.

Related to [^OP SHORT](#).

## **^OP NORMAL**

An ^OP NORMAL command disables the space removal capabilities. Note that, once set, any previous ^OP command will apply to all [^ATTACH](#) and [^INCLUDE](#) statements until it is disabled.

Using the TRIMBLANKS file attribute, the MAILER utility can be persuaded to perform trailing space removal for individual files:

```
RUN *METALOGIC/MAILER("ian@metalog.com", "TEST") ;  
FILE ATTACH(TRIMBLANKS, TITLE=*DATA/TEST/EXAMPLE) ;
```

## **^OP PRIORITY**

The ^OP PRIORITY HIGH and ^OP PRIORITY LOW variants allow an email to be sent with an 'Importance' header of HIGH or NORMAL. A setting of HIGH may be interpreted in various ways by different email clients e.g. OUTLOOK marks the incoming email with a red exclamation mark.

## **^OP READRECEIPT**

^OP READRECEIPT will generate a 'Disposition-Notification-to' entry in the body of



the email triggering the email client to request a read receipt, if supported by that email client.

## **^OP RESET**

The ^OP RESET command will return both controls to their original settings; please note that, currently there is no way to alter the global behaviour of file-naming and space removal.

The Virtual Mail server facility is unaffected by both mechanisms though the assignment of the TRIMBLANKS attribute on an individual print file will be controlled by the Print System in the usual way.

## **^OP SHORT**

This command will revert any [^OP LONG](#) behaviour back to the default short file name format.

Related to [^OP LONG](#).

## **^PASSWORD**

Used in conjunction with [^ATTZIP](#) to create WINZIP archives encrypted with an AES key generated from the <Pass Phrase>.

Ex.

```
^PASSWORD [My passphrase]
^ATTZIP    *LIVE/FILE ON DEV
```

The MAILER utility can also generate encrypted archives by file-equation of the SECURITYGUARD attribute in the same was as COPYWRITE (see Dnote 540.27).

```
RUN *METALOGIC/MAILER("support@metalog.com","Encrypted Zip");
FILE ATTZIP(TITLE=*LIVE/FILE ON DEV,
            SECURITYGUARD="My passphrase");
```

If the Password is longer than 17 bytes, then multiple 17 character Filelds may be used: for example, SECURITYGUARD="My pass"/"phrase" is the same as the example above by splitting the password into two parts.

Related to [^ATTZIP](#)

## **^SIG**

By default, MAILLIB will insert a default signature constructed with version information of the library codefile itself and the application using the MAILLIB entrypoints. However, other signature layouts can be used by using the ^SIG

construct at the start of a new line in the text component of any email.

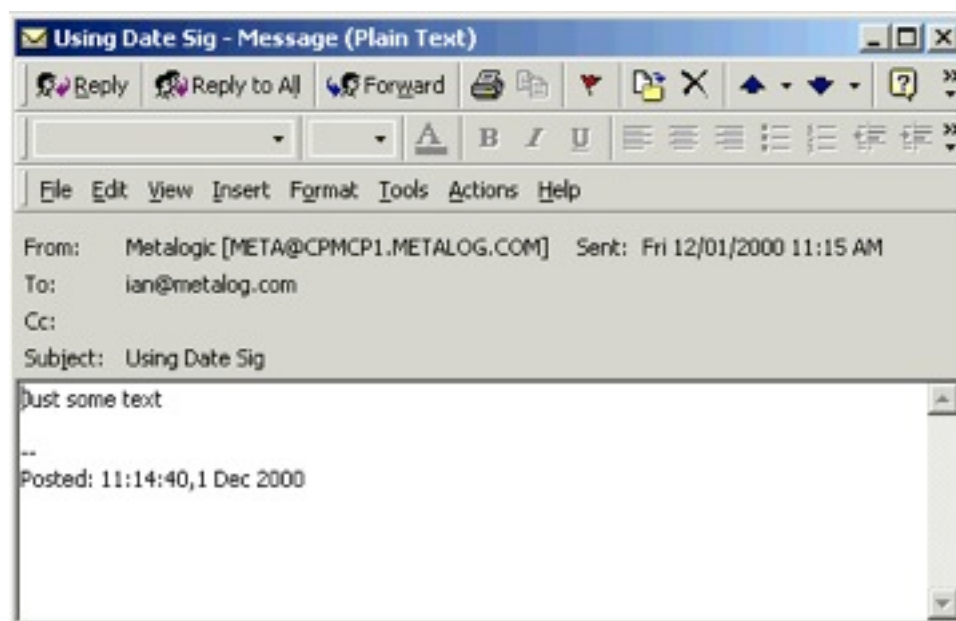
The ^SIG modifier may appear on any line in the message content but the ^ must appear as the first character on a new line. It can take four variants: DATETIME, DEFAULT, NONE or any other identifier.

## ^SIG DATETIME

Using ^SIG DATETIME generates a signature which is essentially the timestamp that the message was posted.

```
TT DEFINE + ODTSEQUENCE MAIL_DATETIMESIG:
  SHOW("Date sig:",MAIL("To:ian@metalog.com;From:Metalogic;"&
    "Subject:Using Date Sig",
    #("Just some text",/, " ^SIG DATETIME")));
```

This will generate an email similar to:



The DATETIME option is appropriate for the generation of SMS and pager messages since this shortens the size of the transmitted text.

## ^SIG DEFAULT

Reverts any previously assigned signature setting in the message back to its default.

## ^SIG NONE

The use of ^SIG NONE inhibits the inclusion of any signature into the mail body. In addition, the generation of 'Attached #' and Included # messages in the email body are suppressed.

Typically, the NONE and [DATETIME](#) variants would be used for SMS or pager

messages where it is important to keep the messages as short as possible. [DATETIME](#) is useful because it provides a useful timestamp yet keeps the number of characters used to a minimum.

When using the virtual mail printer PDEF SUPPRESS is set to TRUE for ^SIG NONE behaviour.

## **^SIG <identifier>**

The last variant, ^SIG <identifier> allows the user to select a custom signature from an external file. The file should be a data or symbol file (e.g. ALGOL, JOBSYMBOL) and be present in the following directory where the MAILLIB library has been SL-ed:

```
*METALOGIC/MAILLIB/SIGNATURE/=
```

The <identifier> field corresponds to the last level of the file:

So, using ^SIG SUPPORT would search for a data or symbol file called

```
*METALOGIC/MAILLIB/SIGNATURE/SUPPORT
```

When assigned, the whole of the signature file will be inserted at the end of the generated email. The following is an example file for the SUPPORT signature:

```
00000100--  
00000200support@metalog.com  
00000300Metalogic Support  
00000400http://www.metalog.com
```

## **^TRANSFORM control**

The ^TRANSFORM control permits the caller to assign a “prefix” for all file attachments generated by an individual email. Typically, this is useful where the same file attachments names are being generated for the same job, on a regular basis, and allows the attached files to be named differently from the previous by using, say, a date prefix in the following Supervisor OPAL:

```
TT DEFINE + ODTSEQUENCE MAIL_BD(MSG) :  
  Show(Mail("To:ian@metalog.com;From:Backup manager;"&  
    "Subject:BD Files for job "&TEXT,  
    #("^TRANSFORM WORK",/,  
    "^ATTACHBD "&TEXT))) ;
```

The ^TRANSFORM WORK control sequence tells MAILLIB to apply a prefix of “WORK\_” to all attachments generated in this email (note: you do not need to supply the additional ‘\_’).

So, using the above ODTSequence and re-printing BD files from job 41653 again:

```
TT DO MAIL_BD 41653
```

Would generate the email with the same attachments but with different names:

**WORK\_LINE.TXT**

**WORK\_PRINT.TXT**

**WORK\_OUTFILE.TXT**

# MAILER Utility

A small utility, \*METALOGIC/MAILER, is provided with the standard release package which allows one or more emails to be sent from CANDE or MARC sessions and WFL jobs.

## Attach and Include via file equation

You can also email multiple attachments and/or included files (or \*BD directories) with each invocation. Simple one-line messages can be passed in the TASKSTRING attribute.

Consider the following example of a CANDE run of METALOGIC/MAILER:

```
WFL RUN *METALOGIC/MAILER("ian@metalog.com","MAILER file tests");
FILE ATTACH (TITLE=IPP/NPSUPP,FORMID="MYFILE.CSV");
FILE INCLUDE = *BD/0009898/0001144/000LINE;
TASKSTRING = "MAILER examples of INCLUDE and ATTACH"
#RUNNING 1463
#BOT 1464 (IPP)WFLCODE
#BOT 1465 *METALOGIC/MAILER ON DEV
#1465 MAILLIB:Msg to:ian@metalog.com,Subject:MAILER file tests
#1465 MAILLIB:Included *BD/0009898/0001144/000LINE ON DISK
#1465 MAILLIB:Attached (IPP)IPP/NPSUPP ON DEV
#1465 MAILLIB:SentOK:ian@metalog.com,Subject:MAILER file tests
#1465 DISPLAY:File(s) mailed ok.
#EOT 1465 (IPP) *METALOGIC/MAILER ON DEV
#EOT 1464 (IPP) (IPP)WFLCODE
```

If the ATTACH file is file-equated then the file will be sent as a MIME-encoded attachment; if INCLUDE is file-equated then, if possible, the file is inserted into the body of the text. The optional FORMID attribute allows the caller to change the name of the PC attachment. In the above case, the attachment would normally appear as "NPSUPP.TXT" in the email message but the FORMID assignment alters the name to "MYFILE.TXT". Incorporating date, time, hostname or other information into the destination name is very practical with the programming facilities available in WFL.

Subsequent attaches or includes can be done by equating ATTACH1, ATTACH2 etc. Please note that the numbers must be consecutive. If ATTACH3 is file equated but ATTACH2 is not then the ATTACH3 equation is ignored.

If the INCLUDE file is equated to KIND=READER then multiple lines of text may be supplied in a DATA deck.

For example:

```
BEGIN JOB MAIL;  
RUN *METALOGIC/MAILER(("ian@metalog.com","MAILER file  
tests");  
    FILE INCLUDE(KIND=READER);  
DATA INCLUDE  
Line one of email  
Line two of email  
Line three of email  
?END JOB
```

## Variants of ATTACH file equation.

### ATTZIP and ATTZIPDIR

Multiple files and directories can be zipped in a single run of MAILER but the files may be streamed into separate archives if the FORMID attribute is used in any of the file equations.

For example:

```
RUN *METALOGIC/MAILER("Support@Metalog.com","Zip Test");  
FILE ATTZIPDIR(TITLE=*TEST/DIR, FORMID="DIRFILES");  
FILE ATTZIPDIR1 (TITLE=*TEST3, FORMID="MORETESTING");  
FILE ATTZIP=*TEST2/SINGLEFILE);
```

This causes 2 zip attachments to be created; the first will be called DIRFILES.ZIP and includes all files in the directory \*TEST/DIR. The FORMID setting in the file ATTZIPDIR1 causes a new zip archive to be created with all files from the directory \*TEST3/= but, because the ATTZIP equation does not have a FORMID, it will be added into the MORETESTING archive.

This is because MAILER processes all ATTZIPDIR requests first until no other equations are seen then followed by any ATTZIP equations.

For a multi-file archive with no FORMID overriding the name, the zip file name will be constructed from the first file to be processed unless the first zip request is a directory then this directory will be used as the archive name.

Encrypted archives may be created by file-equation of the SECURITYGUARD attribute

```
RUN *METALOGIC/MAILER("support@metalog.com","Encrypted Zip");  
    FILE ATTZIP(TITLE=*LIVE/FILE ON DEV,  
                SECURITYGUARD="My passphrase");
```

If the Password is longer than 17 bytes, then multiple 17 character FileIds may be used: for example, SECURITYGUARD="My pass"/"phrase" is the same as the example above by splitting the password into two parts.

## INCLUDEBD and INSERTBD.

The title of these files should be equated to a job number where all of the printer backup files of that job are to be included or attached.

Example:

```
BEGIN JOB MAIL;  
RUN PROG1;  
RUN PROG2  
RUN *METALOGIC/MAILER(("ian@metalog.com","MAILER file  
tests"));  
    FILE ATTACHBD = #(STRING(MYJOB(JOBNUMBER),*));  
END JOB
```

Or

```
BEGIN JOB MAIL;  
RUN PROG1;  
RUN PROG2  
RUN *METALOGIC/MAILER(("ian@metalog.com","MAILER file  
tests"));  
    FILE INSERTBD = #(STRING(MYJOB(JOBNUMBER),*));  
END JOB
```

As with ATTACH and INCLUDE, internal files ATTACHBD1, ATTACHBD2... and INCLUDEBD1, INCLUDEBD2...may also be file-equated.

## Others

The NOTE attribute of some other files can be used to control additional parameters:

The internal file CC is used to add a CC or CC lists to the email.

```
FILE CC(NOTE="INSPIRON@METALOG.COM, IAN@METALOG.COM");
```

The internal file BCC is used to add a BCC or BCC list to the email

```
FILE BCC(NOTE="KAREN@METALOG.COM, IAN@METALOG.COM");
```

The internal file REPLY is used to change the default Reply field of the email.

```
FILE REPLY(NOTE="support@metalog.com");
```

The internal file FROM is used to change the default nickname of the From: field of the email.

```
FILE REPLY(NOTE="Bob Nicol");
```

See the example WFL file EXAMPLES/MAILER/TEST/WFL for an example of these techniques

## DISPLAYS

Note the generation of DISPLAY messages, prefixed by an identity of MAILLIB, which provide diagnostic information for all mail activity when running the MAILER utility. Other callers, such as Supervisor's MAILHANDLER process, may not display any such messages since displays are automatically suppressed if the MAILLIB caller is privileged.

However, although these Supervisor-generated messages do not appear on the ODT or in the response to a MSG command, they can be extracted by using the SYSTEM/LOGANALYZER utility:

```
LOG MSG FIND "MAILLIB:"
```

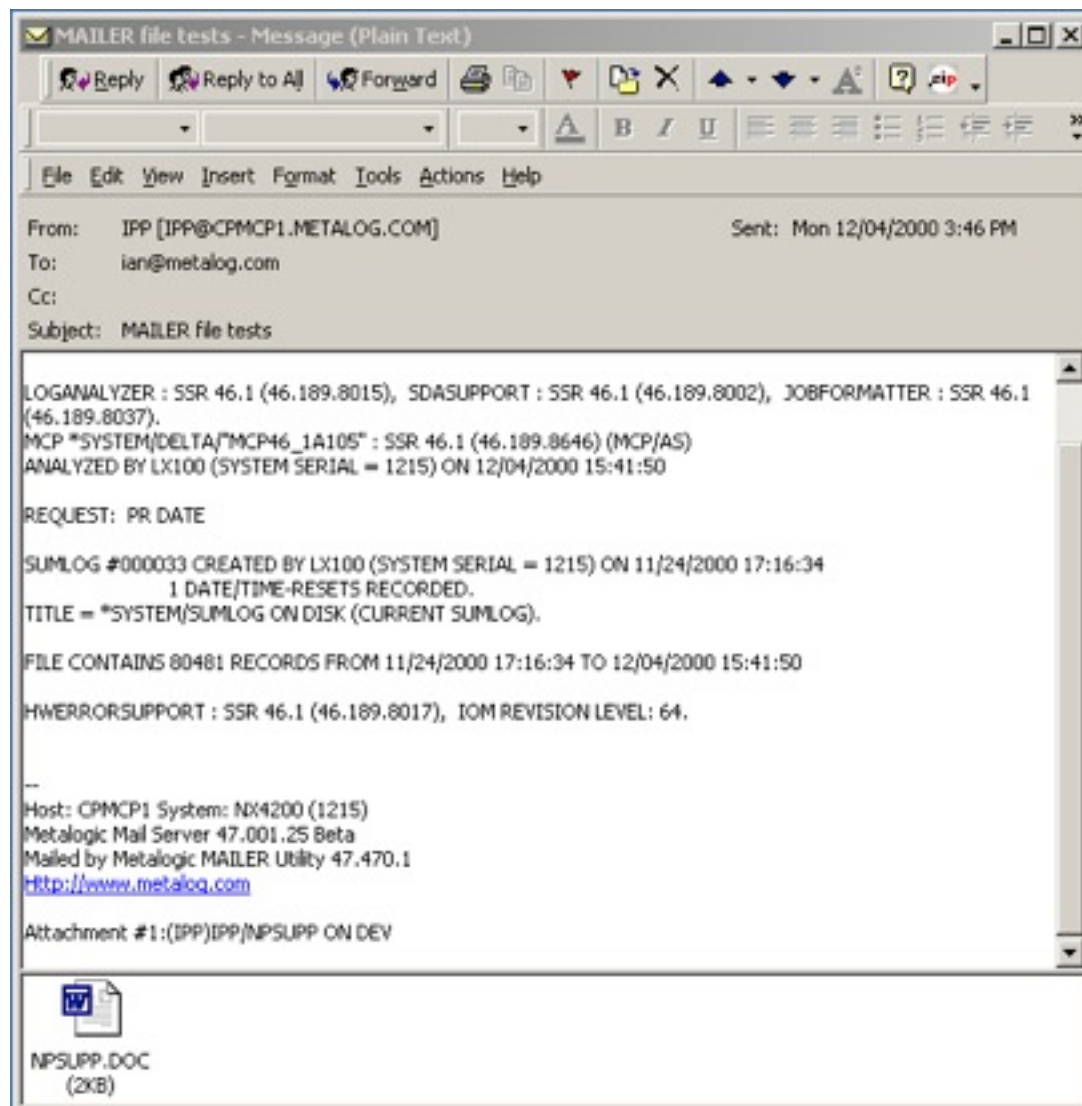
Will find all commands and messages with the string "MAILLIB:" anywhere in the analysed log record.

## Privilege

By default, the MAILER utility is released without any MP privilege status applied to the code file. This means that any attempt by a non-privileged usercode to access an unauthorised file will fail. It is recommended strongly that this status quo be preserved.



This a screen shot of an email constructed by MAILER and MAILLIB received by Outlook 2000:



Note that MAILER generated emails are easily recognisable because MAILLIB inserts the caller into the signature.

# Mailing Lists and Nicknames

MAILLIB allows the site to establish mailing lists where an identifier “maps” onto one or more email addresses. This is implemented by building a simple text file (any readable data or symbolic FILEKIND) with contents conforming to the following syntax:



The <nickname> must be a single identifier, 17 characters or less and represents a mailing list or real nickname.

The optional <id> field represents a meaningful alternative name and can be up to 60 characters in length. This field, if used, appears as the “From” header in the message body of the email.

The <address> field is used to identify a single recipient and can be used many times to build a mailing list. You can use other nicknames in an address list but they will not be translated. Each <address> must be delimited from the next by using commas; a semi-colon must terminate a list.

Construction of the file is free-format – except that the <id> field must appear immediately after the nickname, but that is the only restriction.

```
STIRLING =Local Metalogic Mailing:      % Our list
  ian@metalog.com,  bob@metalog.com;
METALOGIC = Metalogic mailing list:      % The whole team
  ian@metalog.com,  bob@metalog.com,
  brian@metalog.com, andrew@metalog.com,
  al@metalog.com,  roger@metalog.com;
TEST Testing list:
  ian@metalog.com, webmaster@metalog.com
  brian@metalog.com;
```

It is permitted to insert comments (prefixed by %) following any valid text or on a separate line of its own.

The filename must be called:

**\*METALOGIC/MAILLIB/NICKNAMES**

This file should reside in the same disk family as the file name that is SL-ed to MAILLIB. The NICKNAMES file is loaded automatically during MAILLIB initialisation and also in response to a [LOAD NICKNAMES](#) command.

If any errors are encountered during the load, the NICKNAMES file is discarded and is not used; the response to a [STATUS](#) command will highlight an error if this is the case.

If a test email was then sent to the nickname 'STIRLING', MAILLIB will search the nicknames and if a match is found, replaces the recipient 'STIRLING' with the specified email addresses.

#### TT MAIL TEST STIRLING

This email appears in the log as:

#### TT MAIL LOG

----- MAIL Log: 21 May 2001 -----

15:39:07 SND:00220:Sent OK to:ian@metalog.com,bob@metalog.com

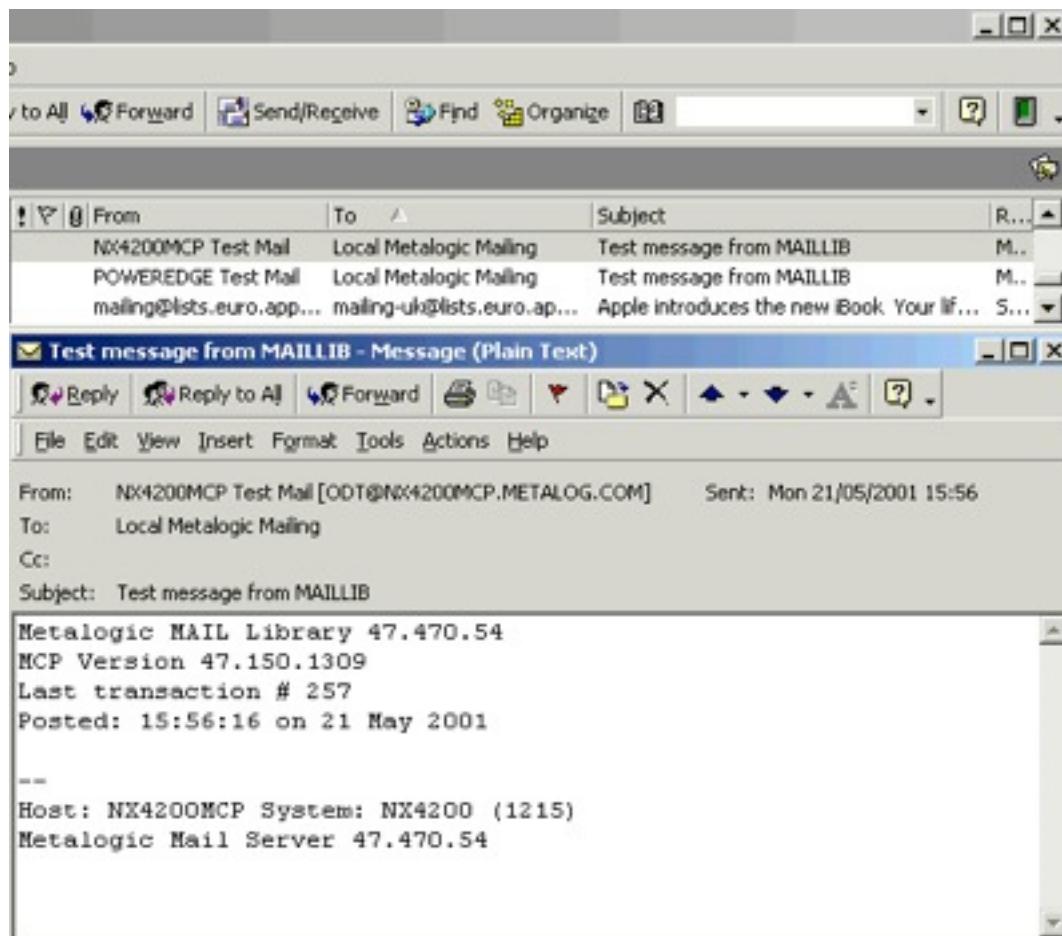
15:39:07 RCV:00220:To:STIRLING,Subject:Test message from  
MAILLIB

15:28:57 SND:00219:Sent OK to:ShipNote@metalog.com

Note that nicknames must be used without any '@' part; in the above example, MAILLIB will not lookup nicknames if the email address used is 'stirling@metalog.com'.

Test emails are a quick way of verifying the MAILLIB environment especially the mail server.

A test email typically appears in an Outlook client as:



Instead of STIRLING, "Local Metalogic Mailing" appears as the recipient though it was actually addresses 'ian@metalog.com' and 'bob@metalog.com' that received the test email.

# Operator interface

The primary interface into MAILLIB is currently implemented via the Supervisor TT command, which may be used from the ODT or a Supervisor COMS window. The TT MAIL variant communicates directly with MAILLIB.

If Supervisor is not available then a Marc directive is available.

See [Marc Directive](#).

If the Marc directive is being used then the TT prefix is not used.

The MAIL command set is shown below; each command is discussed in full in the rest of this chapter.

TT	MAIL
	<ABORT command>
	<ALTPORTNO command>
	<ALTSERVER command>
	<ATTACH command>
	<AUTH command>
	<CODESET command>
	<CONFIG command>
	<DEBUG command>
	<DOMAIN command>
	<DUMP command>
	<HELP command>
	<IPADDRESS command>
	<LC command>
	<LOAD command>
	<LOG command>
	<MAXSMTP command>
	<MINLINES command>
	<MODIFY command>
	<NUDGE command>
	<OP command>
	<PORTNO command>
	<POSTMASTER command>
	<QUIT command>
	<REBUILD command>
	<RESUME command>
	<SERVER command>
	<SHOW command>
	<SMTPFAMILY command>
	<STATUS command>
	<SUSPEND command>
	<TEST command>
	<TRANSNO command>
	<UNLOAD command>

The MAIL command has many variants, allowing the user to interrogate and configure all run-time options used to control the operation of the MAILLIB library. Users can dynamically assign a different mail server, suspend or disable it, abort in-

process transactions or send test emails to one or more recipients.

If the Supervisor-MAILLIB interface is inactive, any TT MAIL command will cause Supervisor to initiate a linkage to MAILLIB; any MAIL statement executed from a Supervisor OPAL script will also initiate this linkage and process the MAILHANDLER subtask to handle the email processing.

The MAIL command and its variants are used to control and interrogate the MAILLIB run-time configuration. Changes to the MAILLIB run-time configuration by commands such as SERVER, POSTMASTER, DOMAIN etc. are preserved over restarts and written to a local configuration file:

#### **\*METALOGIC/MAILLIB/CONFIG**

This is a single-record, 60-word file that may only be accessed by the MAILLIB library. Non-configurable information such as the current transaction number is also written into this file.

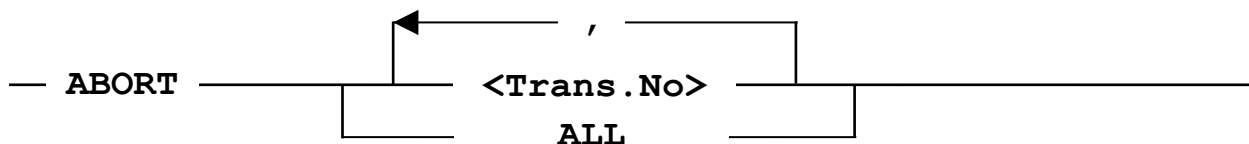
## **Marc Directive**

The COMS command :

```
DIRECTIVE MAIL = *METALOGIC/MAILLIB/DIRECTIVE
```

sets up the Directive. Thereafter the MAIL commands may be entered from a Marc screen.

## **ABORT**



The ABORT command is used to cancel any in-process emails or discard mails that are currently queued. Mails currently being processed are identified by a MAILLIB provided transaction number and are visible in a [STATUS](#) response.

Typically, ABORT may be used to clean up queued or exception emails, seen in the response to a [SHOW QUEUE](#) command. Mails will usually be queued if the server is off-line, unavailable or a [SUSPEND](#) command has been action-ed but there are many mail server-related reasons why an email is rejected.

ABORT can also be used to terminate an in-use transaction – these can be seen from in the response to a MAIL [STATUS](#) command.

#### **TT MAIL SHOW QUEUE**

```
--- MAIL Library response ---  
--- 1 Queued MAIL Messages ---  
#115 *SMTP/META/20010516/"ian@metalog.com"/00115 (3.2 Kb)  
Subject:File (IPP)IPP/T ON DEV
```

Thus, To cancel transaction 115:

```
TT MAIL ABORT 115
```

```
    --- MAIL Library response ---  
#115 *SMTP/META/20010516/"ian@metalog.com"/00115 removed  
Queued Transaction #115 has been Removed
```

ABORT can now cancel or discard multiple email transaction at a time; also, it may take some time to abort an in-use transaction that might be delayed by a network problem.

The ABORT ALL modifier will cancel and remove all outstanding queued emails (as seen in a [SHOW QUEUE](#) response) but does NOT cancel in-use or active emails.

For example, if the queue had 4 pending emails (including one marked as exception):

```
TT MAIL SHOW QUEUE
```

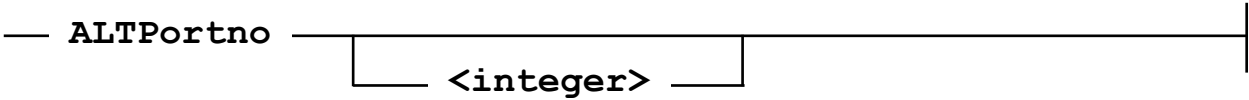
```
    --- MAIL Library response ---  
    --- 4 Queued MAIL Messages ---  
#9769 *SMTP/IPP/20040224/"ian@metalog.com"/09769 3.6 Kb  
  Subject:Print files from "Session" #7138  
  Mail marked exception (-554)  
#10507 *SMTP/SYSTEM-NODE/20040622/"IAN@METALOG.COM"/10507 1.2  
Kb  
  Subject:Test message from MAILLIB  
#10508 *SMTP/IPP/20040622/"ian@metalog.com"/10508 4.3 Kb  
  Subject:Print files from "Session" #9849  
#10509 *SMTP/IPP/20040622/"ian@metalog.com"/10509 1.7 Kb  
  Subject:Print files from "Session" #412
```

To delete all the above :

```
TT MAIL ABORT ALL
```

```
    --- MAIL Library response ---  
#9769 *SMTP/IPP/20040224/"ian@metalog.com"/09769 removed  
#10507 *SMTP/SYSTEM-NODE/20040622/"IAN@METALOG.COM"/10507  
removed  
#10508 *SMTP/IPP/20040622/"ian@metalog.com"/10508 removed  
#10509 *SMTP/IPP/20040622/"ian@metalog.com"/10509 removed  
4 queued emails were deleted
```

# ALTPORTNO



When an alternate server is first specified using [ALTSERVER](#), a default value of 25 is assumed for the SMTP port number. This may be overridden by the ALTPORTNO modifier.

# ALTSERVER



MAILLIB will now permit the specification of a secondary or alternate mail server allowing redundancy if the primary server has failed or is off-line. The server may be specified by the ALTSERVER command and its SMTP port is assigned with the [ALTPORTNO](#) modifier. These commands are syntactically similar to the existing [SERVER](#) and [PORTNO](#) commands.

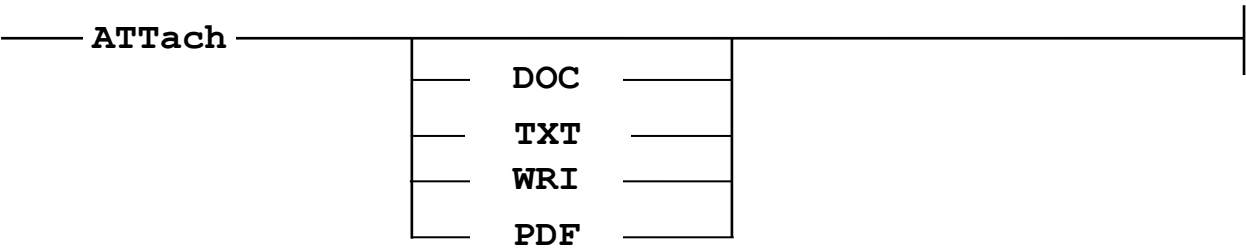
The alternate server may be cancelled at any time using the '-' modifier.

Example

**ALTP -**

When an email to the primary server fails and a secondary server has been assigned, MAILLIB will automatically route the email request to the secondary server without creating an interim \*SMTP disk file. If both servers fail, the email will then be written to disk. Note that the primary email server will \*always\* be used first even if the last email was known to have failed.

# ATTACH





By default, MAILLIB will automatically assign the .TXT extension to any “readable” attached file (i.e. data, symbol files, stream files). This default behaviour can be changed by using the ATTACH modifier:

```
TT MAIL ATTACH DOC
```

```
--- MAIL Library response ---  
Text attachments currently have .DOC extension
```

The above command changes the default extension to .DOC. Beware that some sites use anti-virus mail sweep servers to filter email and emails with .DOC attachments (because Word may have embedded macros) and may be rejected.

## AUTH

AUTH		
	-	
LOGIN		
PLAIN		
CRCAM-MD5		
USER	<User/Password>	

MAILLIB supports three modes of SMTP authentication, allowing access to protected SMTP mail servers. In this implementation, only LOGIN and PLAIN and CRCAM-MD5 modes are supported and there is no SSL or TLS security available for encrypting the login so these protocols are not available.

CRAM-MD5 is significantly more secure than the PLAIN and LOGIN methods also offered by MAILLIB.

If AUTH is set to PLAIN LOGIN or CRAM-MD5 then an AUTH USER command must also be used to establish security. MAILLIB will always expect a password to be provided after the user and must be separated by '/'.

```
MAIL AUTH CRAM-MD5
```

```
--- MAIL Library response ---  
SMTP Authentication is set to 'CRAM-MD5'  
Username and Password are NOT set!!!
```

If a password has not been previously assigned, as shown above, then:

```
MAIL AUTH USER TEST/PASSWORD
```

```
--- MAIL Library response ---  
SMTP Authentication is set to 'CRAM-MD5'  
Username is 'TEST'  
Password has been assigned
```

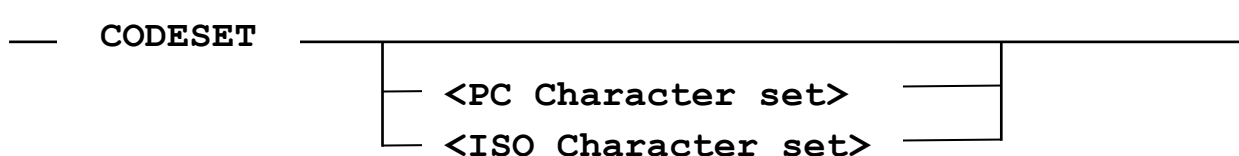
If the username and password (aka secret key) are incorrect, the mail server will reject any all email transmissions.

```
13:29:30 Err:02095:Server report #535 5.7.8 Authentication failed
```

Note that, at this time, MAILLIB only supports 23-characters passwords.

Appropriate steps within MAILLIB have been taken to secure the password. Note that the USER specification is case-sensitive. The authentication settings can be cancelled at any time by using the AUTH - command.

## CODESET



By default, MAILLIB will perform EBCDIC translation to ASCII, where necessary, for all file attachments and includes as well as email text. For international users, the code sets used for translation are controlled using the Unisys ODT commands SYSOPS CCSVERSION and SYSOPS CONVENTION.

If CCSVERSION is set to a value other than ASERIESNATIVE (the default), it is possible for the CODESET command to be used to change the default destination ISO or PC code set.

For example, CCSVERSION set to SWISS or SPANISH will automatically use the default EBCDIC format of LATIN1EBCDIC; this setting detected by MAILLIB and will be used to translate source text into, by default, ASCII.

By switching CODESET to LATIN1ISO, MAILLIB will automatically translate all EBCDIC-style text to LATIN1ISO instead of ASCII.

```
TT MAIL CODESET LATIN1ISO
```

```
--- MAIL Library response ---
```

```
Current CCSVERSION is SWISS
```

```
Base Code Set is LATIN1EBCDIC
```

```
Data translation to LATIN1ISO (13)
```

For each default A-Series code set, there are limited ISO or PC (Windows) code sets that can be used. There are too many to document here but some examples are shown in the table below:

NATIVE A-SERIES CODESET	AVAILABLE ISO or PC CHARACTER SETS
ASERIESEBCDIC	ASCII (default) CODEPAGE437 CODEPAGE1252
LATIN1EBCDIC	ASCII (default) CODEPAGE437 CODEPAGE850 LATIN1ISO

NATIVE A-SERIES CODESET	AVAILABLE ISO or PC CHARACTER SETS
LATIN5EBCDIC	ASCII CODEPAGE850 CODEPAGE 857 CODEPAGE 1252 CODEPAGE 1254 LATIN1ISO LATIN5ISO

MAILLIB calls routines in the Unisys library CENTRALSUPPORT to verify that the destination code set is valid AND compatible with the default EBCDIC code set for the specified CCSVERSION. Any failed CODESET change will include the error received from the CENTRALSUPPORT call – these values are provided for information only and are discussed in detail in Appendix A of the Unisys Multilingual System Administration, Operations and Programming Guide.

```
TT MAIL CODESET LATIN1ISO
```

```
--- MAIL Library response ---
```

```
No translation possible using LATIN1ISO (Code Set 13) #4002
```

Error #4002, returned by CENTRALSUPPORT, means “DATA NOT FOUND” i.e. no translation was possible between the two code sets.

The current CODESET setting can also be seen in the response to a [STATUS](#) command.

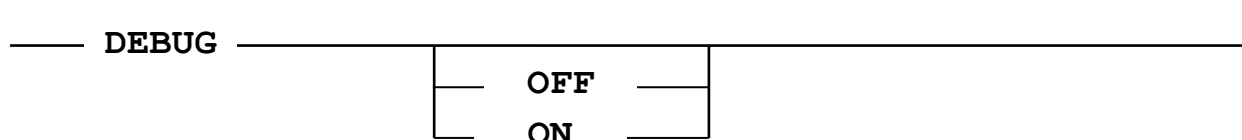
## CONFIG

The CONFIG command was once required as a prefix to the commands:

[ALTPortno](#), [ALTServer](#), [ATTach](#), [DOMain](#), [PORTno](#), [POSTmaster](#), [SERver](#).

It will still be accepted but is no longer required.

## DEBUG



The DEBUG command, using the ON and OFF modifiers, immediately toggles tracing of all SMTP dialogs between MAILLIB and the mail server. When DEBUG is active, MAILLIB writes to a global printer file, DEBUG, creating a backup file under the MAILLIB library mix number.

Using the **DEBUG OFF** command disables the tracing and closes the **DEBUG** file, making a print request in the process.

```
TT MAIL DEBUG OFF
```

```
    --- MAIL Library response ---  
SMTP debugging is OFF  
DEBUG trace file has been closed (39 records)  
MAILLIB session 7261
```

The **DEBUG** command should only be used at the request of Metalogic.

## DOMAIN

```
——— DOMAIN —————|  
                        |<Domain name>|
```

The **DOMAIN** modifier allows the assignment of a default domain name to any unqualified email addresses. For example, if **DOMAIN** was set to **METALOG.COM**, then any email address used in 'To:', 'Cc:' or 'Bcc' assignment that did not have a '@' part and did not match a loaded nickname, will be automatically suffixed with "@METALOG.COM".

For example, if **DOMAIN** was assigned "METALOG.COM" then a 'To:' address of 'support' would actually generate an email address of 'SUPPORT@METALOG.COM'.

```
TT MAIL DOMAIN METALOG.COM
```

```
    --- MAIL Library response ---  
Default domain address changed to METALOG.COM
```

Using the command [TEST](#) IAN would, assuming "IAN" was not already a valid nickname, initiate a mail to the address "IAN@METALOG.COM".

Configuration changes made with the **DOMAIN** modifier are applied immediately and the setting is preserved in the **MAILLIB** config file.

## DUMP

```
——— DUMP —————|
```

The **DUMP** modifier initiates a program dump of the **MAILLIB** library process. The generated backup file is closed immediately and released to the Print System as a print request.

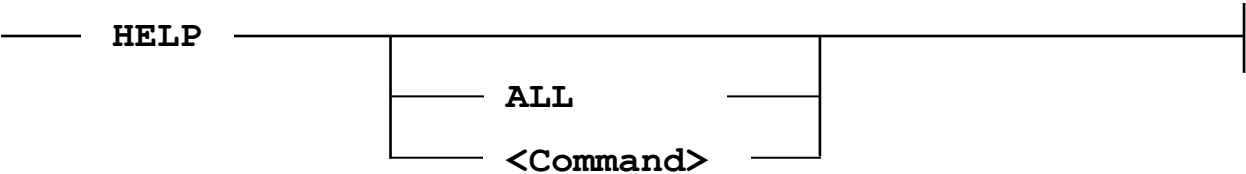
As with [DEBUG](#), the DUMP command should only be used when requested by Metalogic personnel.

```
TT MAIL DUMP
    --- MAIL Library response ---
A Program dump will be forced
```

The program dump will be immediately printed to email by MAILLIB if a default postmaster address has been assigned. For example:

```
TT MAIL LOG
    ----- MAIL Log: 10 Sep 2003 -----
12:47:02 SND:31136:Sent OK to:BOBNIAN@Metalog.com
12:47:01 ATT:31136:Attached *BD/0064199/001TASKFILE ON DISK
(149.4 Kb) 12:47:00 RCV:
31136:To:BOBNIAN@Metalog.com,Subject:Print files from
    *METALOGIC/MAILLIB #64199
```

HELP



The HELP modifier provides the user with information about MAIL commands. If no modifier is provided, a quick display is provided with a simplified command syntax diagram. If a valid modifier is provided then MAIL will show detailed syntax and semantic information about the requested command.

mail help

```
--- On-Line MAIL Help: General command ---
--- MAIL ---+-----+
+----- ABORT ----- <All/Trans>-----+
+----- ALTPortno ----- <PortNo> -----+
+----- ALTServer ----- <Server> -----+
+----- ATTach ----- <Extension> ----+
+----- AUTH ----- <Auth/User> ----+
+----- CODEset ----- <Codeset> -----+
+----- CONfig ----- <Modifier>-----+
+----- DEBUG ----- <On/Off> -----+
+----- DMain ----- <Domain> -----+
+----- DUMP ----- <Command> -----+
+----- HELP ----- <Command> -----+
+----- IPaddress ----- <IpAddr> -----+
+----- LC ----- <Text> -----+
+----- LOAD ----- <Modifier> -----+
+----- LOG ----- <Modifier> ----+
+----- MAXsmtp ----- <Integer> -----+
+----- MINlines ----- <Integer> -----+
+----- MODify ----- <All/Trans>-----+
+----- NUDge ----- <Option> -----+
+----- OPTION ----- <Option> -----+
+----- PORTno ----- <PortNo> -----+
+----- POSTmaster ---- <EmailAddr> ----+
+----- QUIT ----- <Modifier> -----+
+----- REBuild ----- <Modifier> -----+
+----- RESume ----- <Modifier> -----+
+----- SEArver ----- <Host/IpAddr> -+
+----- SHow ----- <Option> -----+
+----- SMTPfamily ---- <Family> -----+
+----- STATUS ----- <Option> -----+
+----- SUSPend ----- <REJECT> -----+
+----- TEST ----- <EmailAddr> ----+
+----- Transno----- <Integer> -----+
+----- UNload ----- <Addr/User> ----+
```

Most commands have both interrogation (marked by \*)  
where no <modifier> is required, and change capability.  
See 'MAIL HELP <Command>' for individual help info.

See 'MAIL HELP <Command>' for individual help info.

The basic HELP command will often show new commands and revised syntax diagrams before they are applied to this manual. Individual command help gives more detailed information and syntax diagram for each command. Where appropriate, command synonyms will be recognised i.e. HELP LOAD and HELP REBUILD return the same help content.



```
mail help load
```

```
--- On-Line MAIL Help: LOAD or REBUILD command ---
--+-+-- LOAd -----+---+-- NICKnames -----+-----+
+-+ REBuild --+      +-+ Queue -----+
                               +-+ ADDresses ----->>>>
                               +-+ USERlimits ----+

>>>---+-----+-----+-----+-----+-----+-----+
      +-+ FROM ----- <filename> -----+

```

The REBUILD command has four modifiers:

NICKNAMES forces an immediate reload of the nicknames file; the contents are NOT held in the MAILLIB config. By default, the file must be called:

```
*METALOGIC/MAILLIB/NICKNAMES
```

The QUEUE modifier requests the MAILLIB library to discard the current list of queued emails and construct a new queued by searching files in the \*SMTP directory on the H/L family. After the rebuild has finished, MAILLIB will attempt to re-connect to the server.

Both ADDRESSES and USERLIMITS allow loads from a user specified file name or, if FROM is not used, a default file name will be used:

```
*METALOGIC/MAILLIB/ADDRESSES
*METALOGIC/MAILLIB/USERLIMITS
```

LOAD ADDRESSES constructs a list of authorized email recipients (including wild-cards) that the MAILLIB library will validate before permitting any email to be sent. By default, all addresses are unvalidated.

USERLIMITS allows the assignment of message size limits to individual usercodes. Messages may be truncated or files may be skipped if this limit is exceeded.

The 'ALL' modifier allows the complete MAILLIB command set to be viewed in one response.

From SUPERVISOR, the PRINT modifier can be used to create a backup file for printing.

```
TT PRINT MAIL HELP ALL
```

## IPADDRESS



The IPADDRESS command has been implemented to allow a site with multi-homed IP addresses, to configure a default MYIPADDRESS setting for all SMTP connections to the network mail server. The IP address must be valid for the Clearpath sending out emails or indeterminate behaviour may result.

Using IPADDRESS in this way allows TCPIP dialogs with software, such as Microsoft Exchange, to apply IP security rules for incoming connections on restricted IP addresses.

```
TT MAIL IPADDRESS 10.0.0.2
```

MAIL Library response

```
IPADDRESS now assigned to 10.0.0.2
Passing REBUILD action to MAILLIB library
```

The <IP address> field must be the appropriate format e.g. 192.168.0.2 and cannot exceed 15 characters. Any assignment can be removed by using the delete command.

```
TT MAIL IPADDRESS -
```

MAIL Library response

```
Origin IPADDRESS of 10.0.0.2 will be deleted
Passing REBUILD action to MAILLIB library
```

Either assigning or removing an IP address will automatically initiate a [REBUILD QUEUE](#) action to process any queued emails.

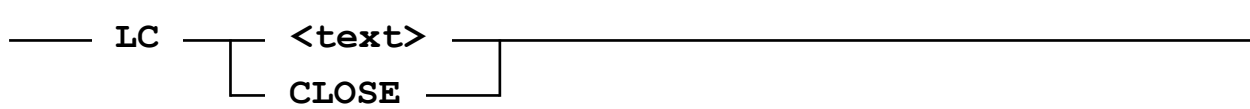
The current setting of IPADDRESS can be seen in response to a [STATUS](#) command with the legend 'Multihomed IP addr:'.

```
TT MAIL IPADDRESS 10.0.0.2
```

```
    --- Mail Library Status ---
Metalogic Mail Library 49.490.01 (Mix = 64199)
  Compiled at 16:17:20 on 18 Aug 2003
  Server assigned to : 10.0.0.4 [IP] via Port 25
  Multihomed IP addr : 10.0.0.2
  Current transaction: 31181                Last Server status: ONLINE
  Last successful msg: 14:59:18 11 Sep 2003
  Msgs sent = 94, Queued = 3, Rejected = 0
```



## LC

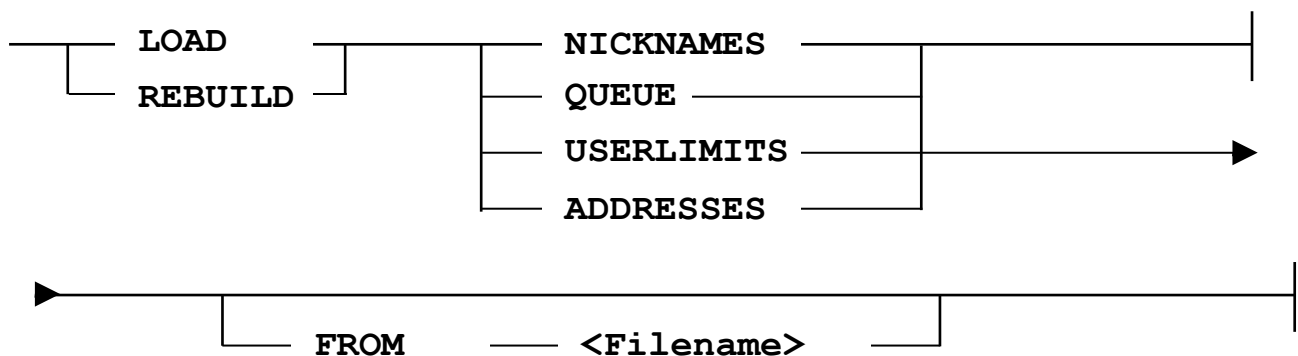


The LC command allows the operator or SUPERVISOR Opal to write information into the MAILLIB Log file. The log category associated with these entries is 'Log'.

If the keyword 'CLOSE' is used then the current MAILLIB log file will be closed and a new file created. The old log will be renamed with System Serial, internal log sequence number and system date:

```
*METALOGIC/MAILLIB/LOG/<Sys>/<LogNo>/<yymmdd>
```

## LOAD

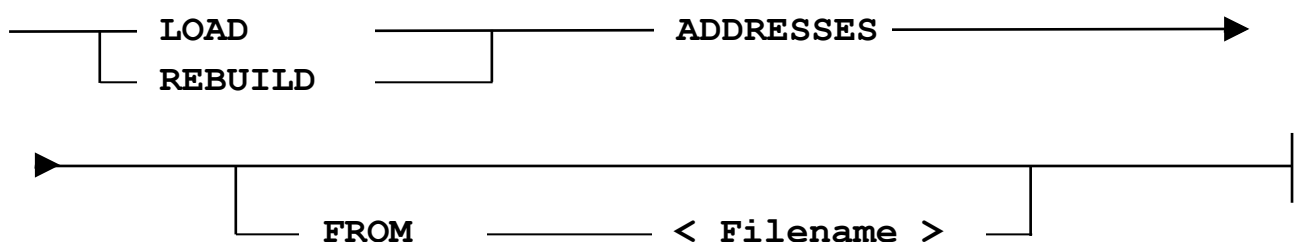


The LOAD command is used to configure various components of the MAILLIB environment including:

- Outgoing email address validation,
- Message size control
- Nicknames implementation
- Queued message handling.

REBUILD is a synonym for this command.

## LOAD ADDRESSES



The LOAD ADDRESSES command allows a site to impose validation rules on outgoing mail recipients, expressed as simple addresses or wild-carded strings. At

transmission time, each outgoing email address is validated against this list and must match one of the entries for forwarding to be approved.

By default, no email validation is performed unless at least one entry has been LOAD-ed.

If no file name is provided in the command, MAILLIB will use the default name in the same directory as the SL-ed codefile:

#### **\*METALOGIC/MAILLIB/ADDRESSES**

If 'FROM' is used then any external file can be used. The filekind of the file can be any symbolic, data or text format. Unlike the implementation of nicknames, the data from the ADDRESSES file are stored into the MAILLIB configuration file and preserved over restarts.

The ADDRESSES file consists of a list of valid email addresses maintained by the MAIL administrator. MAILLIB will attempt to check each address for validity and, if a bad entry is found, the LOAD will be aborted.

MAILLIB will recognise certain wild-card characters to allow, for example, all users at a single domain to be permitted. The permitted wild-cards are '=', '#' and '?' which map respectively to any string (0..n chars), a single numeric character and a single character of any type.

For example:

```
ian@metalog.com
support@meta=.com
=@unisys.com
meta=@tesco.net
```

The '@unisys.com' entry will permit any email address in the unisys.com domain to be allowed. All other email addresses that do not match the above list will be rejected. The SHOW ADDRESS command will show the current list of acceptable email addresses.

## **LOAD NICKNAMES**

```
┌ LOAD ────────────┐ NICKNAMES ────────────┐
└ REBUILD ─────────┘
```

The LOAD NICKNAMES command allows the user to re-load a default file named

#### **\*METALOGIC/MAILLIB/NICKNAMES**

This file should hold a list of local mailing list entries with one or more email addresses associated with each list entry.

The LOAD NICKNAMES command will attempt to load the file from the family to which MAILLIB is SL-ed.

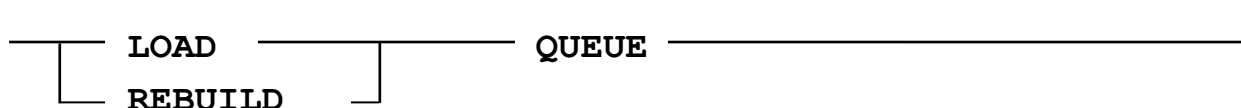
## TT MAIL LOAD NICKNAMES

```
    --- MAIL Library response ---  
Loaded STIRLING  
Loaded IAN  
Loaded HOME  
Loaded SUPUSERS  
4 nicknames loaded ok
```

If errors are incurred, the caller is informed and all list entries are discarded. The [STATUS](#) command shows how many nicknames are loaded or if there was an error the last time a LOAD NICKNAMES was actioned.

A re-load of the NICKNAMES file is performed for every new initiation of the MAILLIB library.

## LOAD QUEUE



The QUEUE variant of the LOAD command discards any knowledge of pending emails and will search the family, on which MAILLIB is SL-ed, for eligible saved files created by MAILLIB.

When an email is queued, it is held as a disk file under the \*SMTP directory; any [^INCLUDE](#) or [^ATTACH](#) control sequences will be processed during the write to disk. MAILLIB retains an internal list of queued emails for re-processing when the mail server is available again; this list can be viewed using the [SHOW QUEUE](#) command.

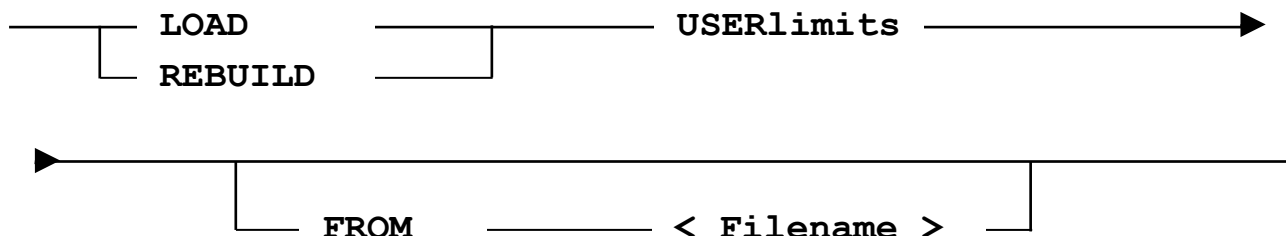
In the event of the list becoming corrupted or queued email files being migrated from another disk family, the REBUILD QUEUE command will re-scan the \*SMTP directory and re-generate the internal queue.

For example:

```
TT MAIL LOAD QUEUE  
    --- MAIL Library response ---  
Current mail queue has been discarded  
Queue will be rebuilt from directory search
```

As part of the rebuild process, MAILLIB will immediately attempt to send all queued emails to the current server. If the server is still unavailable, a message will be displayed and MAILLIB will re-test the server in 180 seconds intervals.

## LOAD USERLIMITS



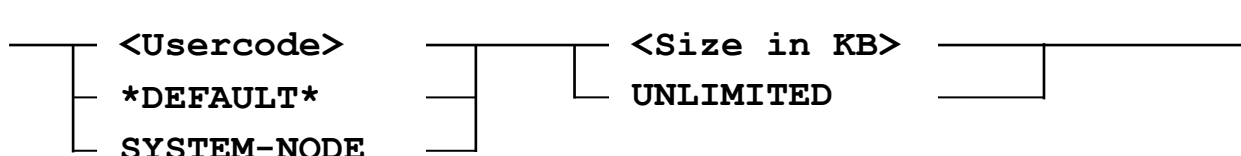
The **LOAD USERLIMITS** command allows a site to impose controls on message sizes allocated to individual users by the calling usercode. Without these restrictions, MAILLIB allows any message to be sent, regardless of size. The site can apply default message size limits for all or individual users.

If no file name is provided in the command, MAILLIB will use the default name in the same directory as the SL-ed codefile:

### **\*METALOGIC/MAILLIB/USERLIMITS**

Unlike the implementation of nicknames, the data from the **USERLIMITS** file are stored into the MAILLIB configuration and preserved over restarts.

Each record in the **USERLIMITS** file should appear as:



The **<Usercode>** modifier should be a valid entry in the Userdatafile. The **<Size in KB>** modifier can be any integer or real value and reflects the total permitted size for an individual email generated by the specified usercode.

The **\*DEFAULT\*** modifier allows a 'default maximum' message size to be associated with all other usercodes **\*not\*** appearing in the **USERLIMITS** file. And, the **SYSTEM-NODE** identifier reflects any email generated by jobs with the **'\*'** usercode.

Example:

<b>META</b>	<b>4000</b>
<b>*DEFAULT*</b>	<b>1000</b>
<b>SYSTEM-NODE</b>	<b>10000</b>
<b>TAPELIB</b>	<b>2000</b>
<b>IPP</b>	<b>UNLIMITED</b>

In the above case, all usercodes by default will be assigned a limit of 1 megabyte (1000 KB). If a **\*DEFAULT\*** entry does **\*not\*** appear in the **USERLIMITS** file then all other usercodes have **UNLIMITED** as their default.

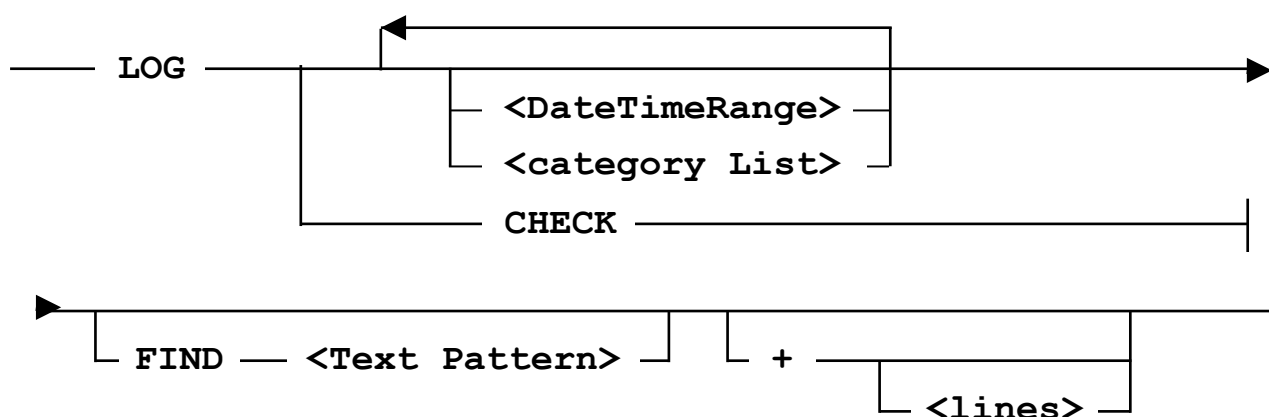
When the **LOAD USERLIMITS** command has been performed, the revised limits active immediately and can be seen using the command:

### **TT MAIL SHOW USER**

When enforced, MAILLIB will attempt to calculate the size of the message including file attachments includes and body text. With a mixture of files, [^INCLUDE](#) statements and body text are always processed first. MAILLIB will include a warning message into the body of the text if a file could not be processed because of limits.

The USERLIMITS mechanism also applies to email generated by the Virtual Mail server. In this case, MAILLIB uses the number of lines determined from each backup file, multiplied by 132, to "guess-estimate" the message size in characters. Note that email clients such as Microsoft Outlook will often report emails as much larger than they are in reality.

## LOG



MAILLIB now logs all command and message activity into a dedicated file called \*METALOGIC/MAILLIB/LOG on a nominated family configured using the INSTALL utility. By default, this family is set to that of DL LOG.

The LOG command allows varied access to these log files; searching by category, wild card text patterns or time and date ranges is permitted.

### <Category List>

Each MAILLIB log entry is identified by a <Category> field which consists of a 3-character text string and is used to filter any log search by message type. The following categories exist for all logs:

ALL	returns all logs records regardless of category
ERR	returns all error messages
LGC	returns all LC (Log Comment) entries
MSG	returns all solicited and unsolicited messages

[LOG](#) command requests can select multiple categories separated by a comma. For example:

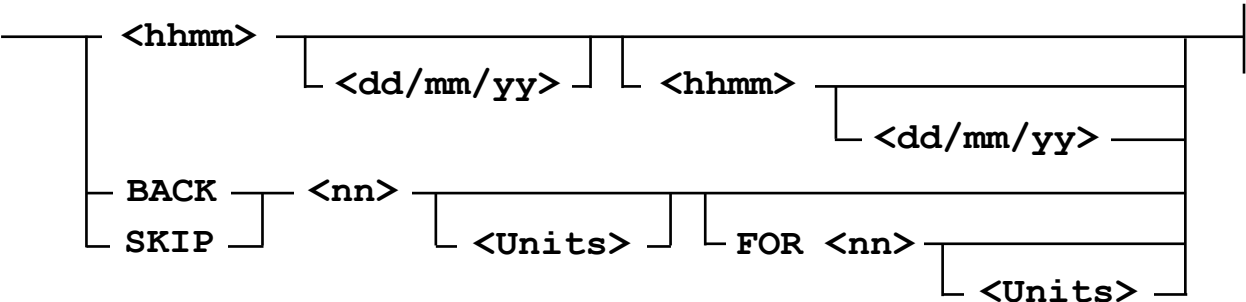
**LOG ERR,MSG,LGC**

MAILLIB-specific categories are shown below:

ATT	returns all email file attachment entries
CMD	returns all non-interrogation commands
INC	returns all emails with included files
QUE	returns all queued email log entries
RCV	returns all email entries received by MAILLIB
SND	returns all successful email requests

By default, MAILLIB will only show one page of information for each of the above commands (except for ALL) but note this may not always be complete if MAILLIB fails to find enough entries. Only the current MAILLIB log file is searched unless '+' is used.

<DateTimeRange>



The <dd/mm/yy> format depends on the global setting of the Metalogic configuration variable SYS\_USDATES and can be set with the INSTALL utility. The LOG CHECK command forces the SYS\_USDATES system-wide setting to be validated at any time.

The BACK and SKIP modifiers respectively allow specific start and end time points to be more easily assigned without having to use explicit values. BACK allows a simple log start time to be assigned whereas SKIP assigns a log End time. The FOR specifies an optional duration associated with the Start or End time. If FOR is omitted then both BACK and SKIP will assign default search range periods of 24 hours.

## <Units>

DAYS	
HOURS	
HRS	
MINUTES	
MINS	

By default, MINUTES will be used if no <Units> is given. A minimum of one character may be used to specify any <Units> type. BACK and FOR may be used in any combination with valid date and times.

If the '+' modifier is used, an optional count may be used to control the number of response lines returned to the caller. This modifier has a limit of 500 lines and should be used with care if a filter is used with many logs present. Note that '+' cannot be used as part of a <Text Pattern> unless the pattern is quoted.

If a <DateTimeRange> is specified or the '+' modifier is used in the command text, then all available log files will be searched until a maximum of 4,000 log entries have been returned or 20,000 log file reads have been performed.

The FIND modifier permits the searching of each log entry for the specified text. The FIND automatically encloses the target with '=' at both ends of the text and is NOT case-sensitive, therefore finding both lower-case and upper-case matches.

FIND must be used after all other modifiers as spaces are permitted within the FIND text.

The <Text Pattern> modifier may be quoted (single- or double- quotes) allowing targets with embedded spaces to be searched.

### LOG FIND RETRY

LOG FIND 'RETRY FOR'

The log files are automatically released when the file size exceeds 50,000 records or the [LC CLOSE](#) command is used.

Examples:

```
LOG ALL
LOG ODT +30
LOG 0001-2359
LOG BACK 2 HOURS FOR 10 MIN
LOG SKIP 1 HOUR FOR 1 HOUR
LOG 0800 1/1/07 FOR 2 DAYS +
LOG 0400 12/7/07 FIND SUMLOG +
```



The following is a typical response:

#### TT MAIL LOG

```
----- MAIL Log: 11 Sep 2003 -----
11:07:01 SND:31169:Sent OK to:bobnian@metalog.com
11:07:01 RCV:31169:To:bobnian@metalog.com,Subject:Container made for
        Software Maintenance(BOB) 1425
11:03:39 SND:31168:Sent OK to:BOBNIAN@Metalog.com
11:03:38 INC:31168:Included *BD/0065185/000PRINTER ON DISK (10.8 Kb)
11:03:38 RCV:31168:To:BOBNIAN@Metalog.com,Subject:Print files from
        (META)MAGUSGEN #65185
10:59:17 SND:31167:Sent OK to:HEARTBEAT@METALOG.COM
10:59:16 RCV:31167:To:HEARTBEAT@METALOG.COM,Subject:SMTP heartbeat
10:30:55 SND:31166:Sent OK to:bobnian@metalog.com
10:30:55 RCV:31165:To:BOB@METALOG.COM,Subject:Metalogic TRIAL Keys
        for Software Maintenance(BOB) 490.02
```

When using an additional keyword for filtering:

#### TT MAIL LOG SND

```
----- MAIL Log: 11 Sep 2003 -----
10:29:23 SND:31164:Sent OK to:bobnian@metalog.com
10:29:23 SND:31163:Sent OK to:BOB@METALOG.COM
10:24:24 SND:31162:Sent OK to:BOBNIAN@Metalog.com
09:59:17 SND:31161:Sent OK to:HEARTBEAT@METALOG.COM
08:59:17 SND:31160:Sent OK to:HEARTBEAT@METALOG.COM
07:59:15 SND:31159:Sent OK to:HEARTBEAT@METALOG.COM
06:59:15 SND:31158:Sent OK to:HEARTBEAT@METALOG.COM
04:00:13 SND:31157:Sent OK to:ian@METALOG.COM
00:00:06 SND:31156:Sent OK to:HEARTBEAT@METALOG.COM
----- MAIL Log: 10 Sep 2003 -----
23:59:01 SND:31155:Sent OK to:bob@metalog.com,ian@metalog.com
23:50:32 SND:31154:Sent OK to:bobnian@metalog.com
23:00:26 SND:31153:Sent OK to:bob@metalog.com,ian@metalog.com
22:59:21 SND:31152:Sent OK to:HEARTBEAT@METALOG.COM
21:59:21 SND:31151:Sent OK to:HEARTBEAT@METALOG.COM
20:59:22 SND:31150:Sent OK to:HEARTBEAT@METALOG.COM
```

Each email is assigned a transaction number that remains associated with the mail until processing is complete. A 5-digit number signifies this transaction number, seen in the above log after the 'RCV:' and 'SND:' prefixes. These numbers range from 1-9999; when the limit is reached, MAILLIB will restart from 1. The transaction number is retained even if the email has been re-queued multiple times or a [REBUILD QUEUE](#) has been issued.

MAILLIB is responsible for transaction number assignment and the current value is held in the CONFIG file, allowing continuity after a H/L and MAILLIB restarts.

Normally, the default email signature also shows the MAILLIB transaction number but, if this is overridden, it will always be visible in

The transaction number can also be seen in the email “Message-ID” header and, if the default signature has not been overridden, in the email signature; most email clients will have an option to display this kind of information:

```
Message-ID: <T00129_79A05877F82@POWEREDGE.METALOG.COM>
```

Internet RFC standards require the Message-ID field to be unique; MAILLIB constructs its own identity by using the string ‘Tnnnnn’ (where nnnnn is the MAILLIB generated transaction number), followed by “\_” and a 12-character hex timestamp constructed using the Unisys ALGOL TIME(6) intrinsic.

To return all log entries associated with transaction 1822:

```
TT MAIL LOG FIND 1822
```

```
----- MAIL Log: 31 Jul 2001 -----
12:40:01 SND:01822:Sent OK to:PATCHREL@METALOG.COM
12:40:00 ATT:01822:Attached (RELEASE) PATCH/010731BOB ON DEV (1.3 Kb)
12:40:00 RCV:01822:To:PATCHREL@METALOG.COM,Subject:010731BOB
```

Or use the [TRANSNO](#) command.

## MAXSMTP

— MAXSMTP ————— |  
                          | < Integer > |

Used to address the issue of too many concurrent MAILLIB SMTP requests requests flooding the email server.

The default value is 10 connections but can take any value between 1 and 100.

Ex.

```
MAIL MAXSMTP 5
--- MAIL Library response ---
Maximum concurrent SMTP connections is now 5
```

When an email request is received by MAILLIB which will exceed the MAXSMTP limit, MAILLIB unconditionally holds up the request for 30 seconds before retrying. If the limit would still be exceeded, the request is queued with a result of -997 (not -999) and a \*SMTP disk file is created.

The MAILLIB log will show entries such as:

```
10:18:59 Msg:2900:Max connections exceeded:mail queued
10:19:02 Que:02900:Message Queued test@metallogic.eu.com (-997):Too
many SMTP connections:mail queued
```

The -997 SMTP files are treated in the same way as normal queued files and MAILLIB attempts to reprocess them during the next 'nudge' cycle.

## MINLINES

```
— MINLINES —————|
                        |
                        | < Integer > |
                        |—————|
```

By default, all print file processed by the MAILLIB Virtual Mail system are automatically handled as file attachments, regardless of size. The MINLINES command allows the mail administrator to control this behaviour by assigning a minimum threshold value, as a line count, for each individual print file.

During the processing of each backup file, MAILLIB determines the number of lines by reading the Control Block in each backup file and, if the value is less than the threshold, the file will instead be handled as [^ATTACH](#).

```
TT MAIL MINLINES 10
```

```
--- MAIL Library response ---
Minimum Virtual Mail attachment size is now set to 10 lines
```

Typically, this handling may not always be precise and should be considered as a rule-of-thumb rather than a strict enforcement.

## MODIFY

```
— MODIfy ————|
               |
               | <Trans list> |
               | ALL          |
               |—————|
               |               |
               | <Addr list>  |
               |—————|
```

MAILLIB will now better handle certain failed emails that originally aborted with an error that may be retried. Typically, these specific errors require some form of operator action to resolve the problem e.g. the error -550 means that the server does not recognise an address specified in a 'To:', 'Cc:' or 'Bcc:' address.

In such cases, MAILLIB will now queue the email and it will appear 'Mail marked exception', with the original error number, in the response to a [SHOW QUEUE](#) command:

```
TT MAIL SHOW QUEUE
```

```
--- MAIL Library response ---
--- 3 Queued MAIL Messages ---
#30543 *SMTP/META/20030829/"BEHEER@METALOG.CO"/30543 1.4 Kb
Subject:ALERT files van vandaag en gisteren
Mail marked exception (-550)
#30544 *SMTP/META/20030829/"BEHEER@METALOG.CO"/30544 1.4 Kb
Subject:DSED files van vandaag en gisteren
Mail marked exception (-550)
#30539 *SMTP/META/20030829/"BEHEER@METALOG.CO"/30539 1.4 Kb
Subject:DSED files van vandaag en gisteren
Mail marked exception (-550)
```

In the above case, the –550 error means that the user is not known or the mailbox is unavailable. If this problem is subsequently corrected on the server and the mailbox 'BEHEER@METALOG.COM' is made available, these queued emails can then be modified:

```
TT MAIL MODIFY 30539
```

```
--- MAIL Library response ---
```

```
#30539 *SMTP/META/20030829/"BEHEER@METALOG.CO"/30539 modified  
Queued transaction #30539 has been modified
```

The MODIFY command resets the exception flag and MAILLIB will automatically re-send the email when the next opportunity arises (e.g. a [NUDGE](#) command).

Typical retryable errors include -554 (failed transaction) and -452 (insufficient storage) etc. Note that any emails that appear in a [SHOW QUEUE](#) response without 'Mail marked exception' were queued with error –999 due to server availability.

The 'ALL' modifier allows all queued email transactions that are marked as exception to be processed simultaneously. Optionally, as with MODIFY <Trans.No>, the MODIFY ALL command will accept one or more email addresses allowing these exception emails to be re-routed.

```
MAIL MODIFY ALL Test,Shipping@metalog.com  
MAIL MODIFY ALL
```

Note that the optional email address list associated with the MODIFY command permits unqualified addresses (i.e. no '@' part) to be used. MAILLIB will automatically add the default domain in these cases. Nicknames are not looked up.

## NUDGE

---

### NUDGE

The NUDGE command allows the operator to request MAILLIB to process any queued emails immediately. Normally, if the current mail server is unavailable, MAILLIB will always retry queued emails (status of –999) under the following circumstances:

- Every 180 seconds
- New email received
- NUDGE command
- Mail server reassignment to another system ([SERVER](#) command)

- [REBUILD or LOAD QUEUE](#) command is processed
- [RESUME](#) command is processed (after previous [SUSPEND](#))

MAILLIB will only attempt to send the first pending email; if this attempt fails then no further processing is performed.

#### TT MAIL NUDGE

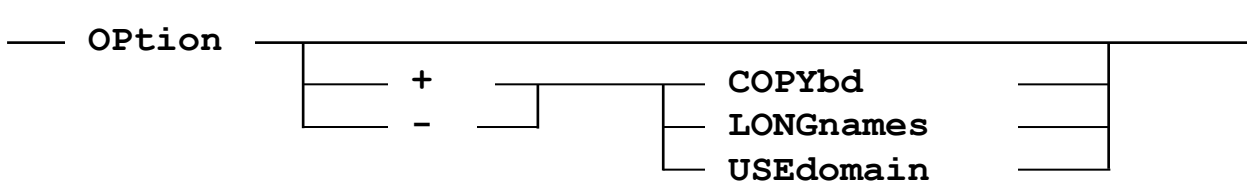
```

    --- MAIL Library response ---
Nudging MAILLIB to process Queued emails....

```

If no emails are pending, then [NUDGE](#) is ignored.

## OPTION



## COPYBD

MAILLIB does not preserve backup files printed by the Virtual Mail Server regardless of the settings of the PS DEFAULT PRINTCOMPLETION and PS DEFAULT PRINTRETENTION settings. This meant that print requests could persist in the PS SH COMPLETED list but their backup files would have already been removed. The only way to prevent this behaviour previously was to mark the request or individual files with SAVEBACKUPFILE attribute set to TRUE.

When the COPYBD option is set, all print files printed by MAILLIB's Virtual Mail server will be first copied as new files with the prefix MAILBD as the first level of the name, prefixed by the owning usercode if applicable. For example, files could be copied as:

```

*MAILBD/BD/0002113/000LINE
(META)MAILBD/BD/0014567/000TASKFILE

```

Once MAILLIB has copied the file, the file copy will be printed and automatically removed. The original, intact backup file is then handled by the Print System, according to PRINTCOMPLETION and PRINTRETENTION, for subsequent retention and removal.

This procedure has been adopted because it is not practical to retrieve the system settings of PRINTCOMPLETION and PRINTRETENTION because the mail server interface is not presented with these settings by the PRINTS software.

The default setting for OP COPYBD is false.

## LONGNAMES

If the OP LONGNAMES option is set, all file attachments will be created with long PC file names, constructed out of the entire A-series file name. If LONGNAMES is reset, only the last level of the filename is used. Please note that changing this value has system-wide effect and will take place immediately. It can be overridden by using [^OP LONG](#) or [^OP SHORT](#) in the body of the email, before any [^ATTACH](#) statements.

For example, an attach of the file

```
*BD/0002113/00TASKFILE
```

If LONGNAMES is set, then the attached would appear in the email client as:

```
BD_0002113_000TASKFILE.TXT
```

If LONGNAMES is reset (default), the file appears in its normal form as:

```
TASKFILE.TXT
```

This assumes that the default attachment extension is .TXT.

## USEDOMAIN

— OPTion — + — USEDmain —————|  
          | — - |

By default, if no 'From:' is provided, MAILLIB constructs a default address using the local TCPIP domain and the calling usercode

e.g. SYSTEM-NODE@METALOG.COM.

The TCPIP domain will usually be different from the 'Default Domain' that is assigned to MAILLIB for email recipients without a '@' component.

This mechanism can cause problems for mail servers/firewalls that may reject 'From:' addresses using an invalid email address domain. To detour the issue, a new OPTION has been added to MAILLIB's configuration.

For example, if the email address domain assigned to MAILLIB was 'METALOGIC.EU.COM' and the TCPIP domain was 'METALOG.COM', then setting USEDOMAIN on (MAIL OP + USEDOMAIN) causes all default 'From:' addresses to be 'USERCODE@METALOGIC.EU.COM' instead of 'USERCODE@METALOG.COM'. If the option is set, the normal [STATUS](#) display will show the 'Default domain' as:

```
'Default Domain Address is 'METALOGIC.EU.COM' used for default From'
```

## PORTNO

\_\_\_\_\_ PORTNO \_\_\_\_\_  
                                  |\_\_\_\_\_ < Integer > \_\_\_\_\_|

The PORTNO modifier allows the site to change the normal default port number of 25, used for SMTP mail dialogs, to a site-specific alternative. This may happen if two mail servers are running in parallel on the same server (and a secondary SMTP port must be used) or if the normal port 25 has been deactivated by a firewall.

```
TT MAIL PORT 1025
    --- MAIL Library response ---
SMTP port number now assigned to 1025
```

The MAILLIB configuration is immediately updated with the new port number; any subsequent email request will use the new port. The MAILLIB configuration file is updated with the new setting and can be seen in a response the MAIL [STATUS](#) command:

```
TT MAIL
    --- Mail Library Status ---
Metalogic Mail Library 49.490.01 (Mix = 64199)
  Compiled at 16:17:20 on 18 Aug 2003
  Server assigned to : 10.0.0.4 [IP] via Port 1025
  Current transaction: 31170
  Last Server status : ONLINE
```

This command should be used with care and not changed indiscriminately. The assigned server must be configured to accept incoming requests on the new port. This command is also available with the CONFIG prefix.

## POSTMASTER

\_\_\_\_\_ POSTMASTER \_\_\_\_\_  
                                  |\_\_\_\_\_ < Email address > \_\_\_\_\_|

POSTMASTER command permits the assignment of a default 'Reply-To' address for every email, handled by MAILLIB, that does not have its own 'Reply-To' header, already assigned by SUPERVISOR or the MAILER utility.



It is important that a default POSTMASTER address is assigned because attempts to reply to any email sent by MAILLIB, without a 'Reply-To', will be automatically assigned a return address created associated with the calling usercode and the local Clearpath TCPIP domain name e.g.

```
META@METALOGIC.CPMCP1.COM  
SUPERVISOR@POWEREDGE.METALOG.COM  
SYSTEM-NODE@MICROSOFT.COM
```

POSTMASTER can be changed at any time and will take immediate effect. The new setting is retained in the MAILLIB configuration file and is preserved over halt-loads.

```
TT MAIL POSTMASTER ian@metalog.com
```

```
--- MAIL Library response ---  
Default Postmaster reply address is 'ian@metalog.com'
```

## QUIT

```
----- QUIT -----
```

The QUIT command forces the MAILLIB library to close down as soon as possible, depending on the number of linked clients. No further operator AX commands will be accepted.

SUPERVISOR will detect the use of QUIT, initiates a library de-link from MAILLIB and closes the MAILHANDLER process down. Note that, due to MCP changes on library closedown on MCP 48.1 and later, the MAILLIB library can take up to a minute to go to EOJ.

Unless the MAILLIB function has been SL-ed, any subsequent MAIL command or email request will then initiate a new copy of the MAILLIB library.

```
TT MAIL QUIT
```

```
--- MAIL Library response ---  
MAILLIB will terminate as soon as possible
```

In practice, the termination of MAILLIB should only be necessary when directed by Metalogic personnel.

## REBUILD

See [LOAD](#)

# RESUME

RESUME

The RESUME command can be used to re-activate the MAILLIB library after a [SUSPEND](#) command has been previously processed. Any pending queued emails will be immediately sent (a [NUDGE](#) command is simulated), if the mail server is available, otherwise they will remain queued.

```
TT MAIL RESUME

    --- MAIL Library response ---
Mail interface has been RESUMED
Passing REBUILD request to control interface
```

This command has no effect unless MAILLIB has been previously subjected to a [SUSPEND](#) command. MAILLIB will not preserve the suspended status across a restart of the MAILLIB library.

```
TT MAIL RESUME

    --- MAIL Library response ---
Mail interface is already ACTIVE
```

# SERVER

SERVER

<IP Address>
<Host name>

The SERVER command is the most important command that must be performed during the set up of MAILLIB. This allows the user to provide the computer name or the IP address of the mail server on the local network or even the Internet.

The SERVER name should be a valid IP address, TCPIP mapped hostname or DNS-resolvable computer (if the Unisys RESOLVERSUPPORT library is active). For a local computer name, it may be necessary to add the complete domain name unless the shortened version is resolvable.

As of the current release, the new server is not verified at the time of assignment. When a new email request arrives, MAILLIB will attempt to use the new server in the usual way. Even if this email request fails because of unavailability then MAILLIB will always retain the current assignment.

```
TT MAIL SERVER BADNAME

    --- MAIL Library response ---
Mail SERVER now assigned to BADNAME
Passing REBUILD action to MAILLIB library
```

If the server is unavailable, then any subsequent emails will be queued and a [STATUS](#) command will show:

```
TT MAIL

    --- Mail Library Status ---
Metalogic Mail Library 49.490.01 (Mix = 64199)
  Compiled at 16:17:20 on 18 Aug 2003
  Server assigned to : BADNAME via Port 25
  Current transaction: 31172                Last Server status : OFFLINE
  Last successful msg: 11:59:17 11 Sep 2003
  Msgs sent = 84, Queued = 4, Rejected = 0
  .....
```

For validated servers by hostname or IP address, the status will show as 'ONLINE':

```
TT MAIL

    --- Mail Library Status ---
Metalogic Mail Library 49.490.01 (Mix = 64199)
  Compiled at 16:17:20 on 18 Aug 2003
  Server assigned to : 10.0.0.4 [IP] via Port 25
  Current transaction: 31172                Last Server status :
ONLINE
  Last successful msg: 12:27:10 11 Sep 2003
```

Once the server name has been changed, MAILLIB will immediately attempt to use the new server if queued mail is already pending. All new email requests will use the new server.

Before assigning a new server, it is good practice to verify that the new server is visible by PING the host from the ODT or a SUPERVISOR window.

NW TCPIP PING MAIL.SCREAMING.NET

Some examples:

```
TT MAIL SERVER POWEREDGE
TT MAIL SERVER POWEREDGE.METALOG.COM
TT MAIL SERVER 192.168.0.5
```

SHOW

SHOW	ADDresses
	NICKnames
	Queue
	USERlimits
	<Trans.No>

The SHOW command has four variants, allowing the user to inspect various environment and run-time information. These areas include the list of valid outgoing email addresses, the current list of local nicknames addresses, the list of

mail transactions which are pending transmission but have been queued by a server problem and, lastly, the message size limit, per email, imposed on all users.

## SHOW ADDRESSES

The SHOW ADDRESSES command displays the list of valid outgoing email recipients, as configured by the administrator. If such a list is present, loaded by a [LOAD ADDRESSES](#) command, then any email address that does not appear in this list will be rejected by MAILLIB.

This is an example response returned by a SHOW ADDRESSES command:

```
TT MAIL SHOW ADDRESSES

    --- MAIL Library response ---
    --- 5 Authorized Email Addresses ---
metallogic@hotmail.com
=@metalog.com
ian=@tesco.net
=@unisys.com
ian@tiscali.co.uk
```

Several of the above addresses include the wild card '=' character which allows one or more recipients (or even domains) to match the address pattern.

If no addresses are configured then SHOW ADDRESSES returns the response:

```
TT MAIL SHOW ADDR
    --- MAIL Library response ---
Outgoing email addresses are not being authorized
```

## SHOW NICKNAMES

The SHOW NICKNAMES command returns all currently assigned nicknames and their lists of associated email addresses.

```
TT MAIL SHOW NICKNAMES

    --- MAIL Library response ---
    --- 3 Nicknames ---
STIRLING "Local Metalogic Mailing":
  ian@metalog.com,  bob@metalog.com
METALOGIC "Metalogic mailing list":
  ian@metalog.com,  bob@metalog.com,
  brian@metalog.com,  andrew@metalog.com,
  al@metalog.com,  roger@metalog.com
```

```
TEST "Testing list":
    ian@metalog.com, webmaster@metalog.com
    brian@metalog.com
```

Note that each nickname e.g. STIRLING can be assigned an identity in the NICKNAMES file i.e. "Local Metalogic Mailing" which is then depicted as the "To:" header in the body of the message.

## SHOW QUEUE

The SHOW QUEUE command allows the user to see which emails are currently queued for transmission but cannot be sent because the server is temporarily unavailable or a [SUSPEND](#) command is in force.

For example:

```
TT MAIL SHOW QUEUE
```

```
    --- MAIL Library response ---
    --- 2 Queued MAIL Messages ---
#166 *SMTP/META/20010518/"ian@metalog.com"/00166 (3.2 Kb)
    Subject:File (IPP)IPP/T ON DEV
#167 *SMTP/META/20010518/"ian@tesco.net"/00167 (24.1 Kb)
    Subject:File *SUPERVISOR/PATCHLIST ON DEV
```

The above response shows two queued transactions 166 and 167. In each case, the size and subject of the message is also displayed with the name of the queued email. At this point, any of the above queued entries can be discarded by using the [ABORT](#) command e.g.

```
TT MAIL ABORT 166
```

Would cancel the pending transaction and permanently remove the associated \*SMTP file.

## SHOW USERLIMITS

The SHOW USERLIMITS command displays the current list of usercodes restricted by site-specific email message limits, as built by a [LOAD USERLIMITS](#) command.

An example response is shown below:

```
TT MAIL SHOW USERLIMITS
    --- MAIL Library response ---
    --- 3 User Message Limits (KB) ---
*DEFAULT*          1000
META                5000
TEST                100
```

Here, usercodes META and TEST have 5MB and 100KB limits respectively whereas all other users (denoted by \*DEFAULT\*) are limited to 1MB.

See [LOAD USERLIMITS](#) for more information.

## SHOW <Trans No>

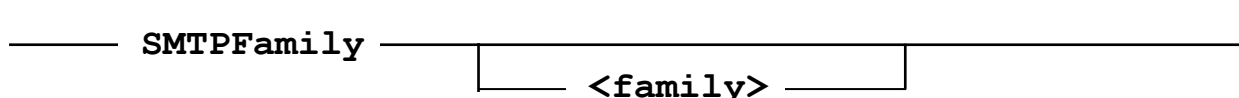
Returns detailed information for a queued email

```
MAIL SHOW 4912
--- MAIL Library response ---
--- Searching for Queued Email #4912 ---
#4912 *SMTP/SUPERVISOR/20081126/"ian.patterson@met"/04912 1303.4 Kb
To:ian.patterson@metallogic.eu.com release@metalog.com
Subj:'Attach *SOURCE/NEWTAPE ON DEV'
Reason: Queued (-999)
#1 : File *SOURCE/NEWTAPE ON DEV      (1273.3 Kb)
-> Attachment processed ok
```

Each file entry will show status information about each attached or included file.

MAILLIB will indicate adjusted file sizes when an attachment has been MIME-encoded. This has an effect for User Limit and Server storage limit considerations since MIME-encoded attachments are 33% larger than the original file length. Where appropriate, MAILLIB will indicate in the attachment details entry if a file has been encoded.

## SMTPFAMILY



SMTPfamily allows the site to control the location of the \*SMTP disk files created for email requests that have been queued (e.g. because of Mail server unavailability). Previously the SMTP files would have been directed to the family specified in the MAILLIB SL, typically the H/L unit, which may be undesirable.

The SMTP family is changed immediately but the command may only be used when the SMTP mail queue is empty (as seen by MAIL [SHOW QUEUE](#)). A default value will be automatically assigned using the SL family when this version of MAILLIB is first used. The current setting can always be viewed in a MAIL [STATUS](#) response. To assign an alternate family:

```
MAIL SMTP CDIMAGE
--- MAIL Library response ---
Default family for SMTP files will be CDIMAGE
```

MAILLIB checks all SMTP file writes to the SMTP family ensuring that sufficient disk space is available. In the event that MAILLIB is unable to complete the write of a SMTP file because of disk shortage, the email request is aborted and the following will be seen:

```
13:34:31 Err:04480:Unable to create *SMTP disk file on CDIMAGE
13:34:31 Err:04480:Rejected (-112):Insufficient Disk space for *SMTP
13:34:30 Att:04480:Attached *BD/0029353/0029355/000OUTFILE ON DISK
13:34:30 Que:04480:Message Queued [194] (-999):Mail Server unavailable
13:34:30 Rcv:04480:To:Ian.Patterson@metalog.com,Subject:Print files
        from "Session" #29353
```

New MAILLIB errors have been included for the above:

```
-112  Insufficient Disk space for *SMTP file
-113  I/O error writing *SMTP file
-114  SMTP family <family> Unavailable of Off-line
```

If error -114 is returned, this means that the Mail server is offline and the disk family used to hold \*SMTP files is also unavailable. In this serious situation, all email requests are rejected and Virtual printing will fail.

## STATUS

The STATUS command gives a complete configuration and run-time report on the MAILLIB library, including email transaction information. A MAIL command without any modifier will always be processed as a STATUS modifier.

### TT MAIL

```
--- Mail Library Status ---
Metalogic Mail Library 49.490.01 (Mix = 64199)
Compiled at 16:17:20 on 18 Aug 2003
Server assigned to : 10.0.0.4 [IP] via Port 25
Current transaction: 31174          Last Server status : ONLINE
Last successful msg: 12:46:40 11 Sep 2003
Msgs sent = 87, Queued = 3, Rejected = 0
Minimum Virtual Mail attachment size is 200 lines
Default Postmaster reply address is 'BOBNIAN@METALOG.COM'
Default domain address is 'METALOG.COM'
Default document attachment extension is .TXT
7 NickName(s) loaded
Data will be translated to Code Set ASCII (5)
Debug SMTP tracing is OFF

--- Messaging Authorization ---
** Outgoing email addresses will NOT be validated **
Default Max allowed Message size is UNLIMITED
Message size restrictions in operation for 1 Usercode
Debug SMTP tracing is OFF
Mail(s) in progress: 1
#31174  Bytes sent: 317.4 Kb
```



Information displayed includes server availability, messages sent, queued or rejected and settings such as postmaster, default domain and default attachment extension. A section on email authorization by out-going email address or email size is also presented.

In the above response, the STATUS command will also show any in-process email threads by transaction number (the above is 31174); the current amount of data processed displayed is also shown.

## SUSPEND



The SUSPEND command allows the user to temporarily disable the MAILLIB mail facilities. When used, SUSPEND immediately diverts all new email transactions to disk, as if the server was off-line. All such mail requests will return error -999 (mail server queued) but an additional status entry of [DOWN] appears in the QD message category generated in the log.

Emails that are currently being processed will continue their transmission unless cancelled by an ABORT.

### TT MAIL SUSPEND

```
--- MAIL Library response ---  
** Mail interface is now SUSPENDED **  
** All Email requests will be QUEUED **  
Emails in-progress are NOT affected
```

Any attempts to send emails whilst MAILLIB is suspended will show log entries such as:

### TT MAIL LOG

```
----- MAIL Log: 18 May 2001 -----  
10:35:27 QD :00188:Message Queued [DOWN] :(-999) Mail Server unavailable  
10:35:27 ATT:00188:Attached *SUPERVISOR/PATCHLIST ON DEV (22.0 Kb)  
10:35:27 RCV:00188:To:ian@metalog.com,Subject:File *SUPERVISOR/PATCHLIST  
10:34:47 MSG:** Mail interface is now SUSPENDED **  
10:34:47 CMD:Operator command input:SUSPEND
```

As with server unavailability, all queued emails will be held on disk under the \*SMTP directory until a [RESUME](#) command has been input or the MAILLIB library has been restarted.

If the SUSPEND command is used with the '&REJECT' modifier, the handling of new email requests is much more aggressive. In this state, MAILLIB will reject all emails with error code -110 and the message is immediately discarded - no queuing will take place.

TT MAIL LOG

```

----- MAIL Log: 18 May 2001 -----
12:05:00 ERR:00190:Rejected ian@metalog.com :(-110) Mail interface is
disabled
12:05:00 RCV:00190:To:ian@metalog.com,Subject:File *SUPERVISOR/NEWTAPE
12:04:44 MSG:** Mail interface is now DISABLED **
12:04:44 CMD:Operator command input:SUSPEND &REJECT

```

If the SUSPEND command is used, MAILLIB will report its status as SUSPENDED. If a SUSPEND&REJECT command has been applied, MAILLIB is considered to have a status of DISABLED.

TT MAIL

```

--- Mail Library Status ---
Metalogic Mail Library 49.490.01 (Mix = 64199)
Compiled at 16:17:20 on 18 Aug 2003
Server assigned to : 10.0.0.4 [IP] via Port 25
Current transaction: 31175                Last Server status : ONLINE
  ** Warning!! MAIL Interface has been SUSPENDED **
  ** All EMAIL requests will be QUEUED **
Last successful msg: 12:54:56 11 Sep 2003
Msgs sent = 88, Queued = 3, Rejected  = 0

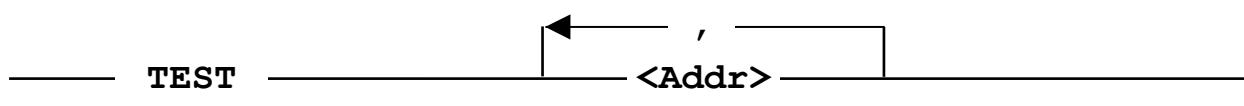
```

The SUSPEND&REJECT command must be used with extreme caution; all emails received by MAILLIB in this state will be permanently lost. It is very likely that Metalogic will restrict its use in future releases.

It is possible to switch status between SUSPEND and SUSPEND&REJECT, without using [RESUME](#) first, just by using the appropriate command. That is, if MAILLIB was currently DISABLED then using the [SUSPEND](#) command will change the library status to SUSPENDED (and vice versa).

The [RESUME](#) command will immediately re-activate a SUSPENDED or DISABLED server.

## TEST



The TEST command allows a simple email to be sent to one or more selected email recipients from any ODT or Supervisor COMS window. Nicknames may be used in the recipient list. A standard, pre-formatted message is generated by MAILLIB and relayed to the email recipient.

Note that Supervisor's main stack does not itself handle the email but, instead, the request is passed onto the main MAILLIB control process. This is to avoid holding Supervisor up during normal processing, in case the mail server is unavailable or network problems exist. It is necessary to use the `LOG` command to determine the success or failure of the test email.

```
TT MAIL TEST IAN@METALOG.COM
```

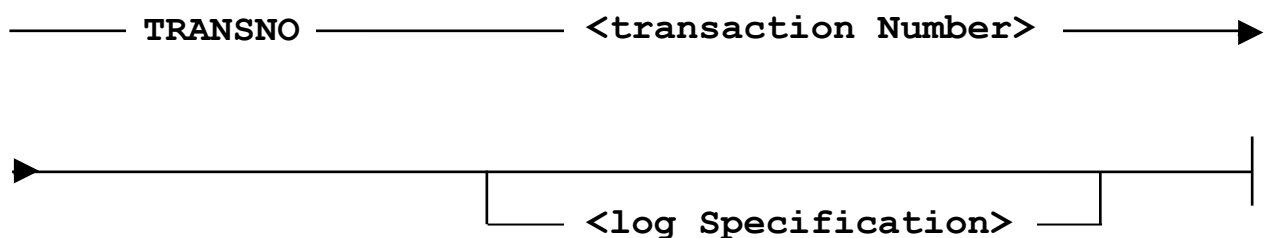
```
    --- Mail Server Test Message ---  
Sending test message to IAN@METALOG.COM  
Using 10.0.0.13 as Mail Server  
---  
Generating asynchronous SUPERVISOR test message  
Please use 'TT MAIL LOG' to check mail result
```

Any errors, such as server unavailable, invalid user or malformed email address, will be displayed. The `LOG` command should be used to show all the information concerning the test message transmission:

```
TT MAIL LOG  
    ----- MAIL Log: 11 May 2001 -----  
10:31:14 SND:00034:Sent OK to:IAN@METALOG.COM  
10:31:13 RCV:00034:To:IAN@METALOG.COM,Subject:Test message from  
          MAILLIB
```

The `TEST` command is a very quick and useful way to determine if the mail server is working correctly, verifying MAILLIB run-time configuration or ensuring that nicknames and email validation implementations are working correctly.

## TRANSNO



`TRANSNO`, allows the user to conveniently search the Metalogic MAILLIB logs for a specific email transaction number. Since this command uses the [LOG](#) `FIND` facility, additional log filtering can be appended to the command.

For example:

```
MAIL TRANSNO 1234
---- MAILLIB Log at 17:03 ----
---- Search 'All' ----
---- 15/06/10 LOG ----
16:46:05 Snd:07025:Sent OK to:Ian.Patterson@metalog.com
16:46:03 Att:07025:Attached *TEST/FILE ON DEV (864.0 Kb)
16:46:02 Rcv:07025:To:Support@metalog.com,Subject:Test

MAIL TRANSNO 5678 BACK 2 DAYS

MAIL TR 1234 +
```

## UNLOAD



User limits and address validation controlled by the [LOAD ADDRESSES](#) and [LOAD USERLIMITS](#) commands, can be deactivated using the UNLOAD command:

The selected control will be immediately disabled and will apply to all new email requests. The change is also updated in MAILLIB's CONFIG file and applies across future restarts of the MAILLIB library.

The usage of [LOAD](#) and UNLOAD commands are always logged in the SUMLOG and can be easily monitored or reviewed.

```
TT MAIL UNLOAD USERLIMITS
--- MAIL Library response ---
All USERLIMITS controls have been removed
```

If no USERLIMITS or ADDRESS enforcement is available:

```
TT MAIL UNLOAD ADDRESSES
--- MAIL Library response ---
No ADDRESS list present
```

# Virtual Mail Server

The Virtual Mail Interface is, in principle, similar to the basic implementation of the Unisys DEPCON package that provides facilities to print requests to email. Although the facilities are similar, Virtual Mail does not require an additional PC server to be configured only access to a suitable mail server on the network that must be visible to the Unisys system.

Using pre-defined PRINTS attributes, assigned directly to the PRINTDEFAULTS attribute of the usercode or directly in WFL jobs, Virtual Mail enables automatic printing of print requests direct to a client mailbox. This can be achieved in many ways and some examples are discussed later in this section.

Virtual Mail is implemented by configuring a simple virtual print device to use an endpoint, called PRINTTOMAIL, in the MAILLIB library. A PRINTS virtual device for MAILLIB, here called MAIL, can be set up as follows:

```
PS CONFIG MAIL SERVER "PRINTTOMAIL IN SL MAILLIB"
MAIL
    Status:                Idle
    Status Reason:         PS Configure creation by * User from 17
    Device Type:           Virtual Server
    AutoConnect:           BYSYSTEM
    Blocksize:             256 (Limit 10000) bytes
    Accessibility:         By DESTINATION only
    Server Priority:        CP 80 (Control Program)
    VFU:                   Present on device
    Request Limits:        None
    FormID:                *DONTCARE*
    Header/Trailer:        Both printed by default
    Server:                "PRINTTOMAIL IN SL MAILLIB"
    Extmode:               EBCDIC, ASCII, and LATIN1EBCDIC treated as EBCDIC
    Translation:           NONE (Default)
```

It may be necessary to use the PS ACTIVE command to change the default status of VIRTUAL to 'ENABLED' (on MCP 47.1 or later):

```
PS ACTIVE VIRTUAL +
```

No other configuration is necessary and the virtual printer is available for immediate use.

If you wish to assign your own names to printed file attachments, then MAILLIB will automatically use the FORMID file attribute, if assigned, to override the PC-style names chosen by MAILLIB. However, the FORMID of the MAIL printer device must be configured as above:

```
PS CONFIG MAIL FORMID "*DONTCARE*"
```

This forces any print requests for the MAIL device, which have backup files with assigned FORMIDs, to always print automatically, instead of waiting for the explicitly formed device.

MAILLIB will print both kinds of printer backup files - including the stream file variant when the MCP SYSOPS option BACKUPFSDFLT is set to STREAM.

## Using DESTINATION and NOTE

The MAIL device can be used as a Print System DESTINATION for any selected print request, either by using the PS MODIFY command, or by using PRINTDEFAULTS directly set in the job or inherited from the usercode.

However, to actually force the print request to be printed to email, one or more recipients must be specified; the PRINTS attribute NOTE is used to specify one or more email addresses by prefixing the names with the string "To:"

e.g.

```
NOTE="To:stirling@metalog.com,support@metalog.com"
```

By assigning both DESTINATION and NOTE to a job or usercode, the MAIL device will automatically be used by the Print System to "print" the associated backup files to email.

For example, within a WFL job:

```
BEGIN JOB PRINTME;  
CLASS=1 ;  
PRINTDEFAULTS=(DESTINATION="MAIL",NOTE="To:support@metalog.com") ;  
RUN *SYSTEM/DUMPALL("\L MYFILE") ;  
END JOB
```

Alternatively, individual print requests can be modified using the PS MODIFY command; for example, to send print request 12345 to email via the MAIL virtual server:

```
PS MODIFY 12345 DESTINATION="MAIL",NOTE="To:ian@metalog.com"
```

Each printed file will appear as a separate attachment in the generated email. Unless the SAVEBACKUPFILE attribute has been previously set, either programmatically for individual files or via a PS MODIFY command, the Virtual Mail Server will first "print" each file to email and automatically remove them.

Note that any SUMMARY files (because of the PS DEFAULT JOBSUMMARY setting or a JOBSUMMARY assignment in the WFL) associated with the print request are also printed.

The Virtual Mail server will only process a print request if a valid NOTE has been detected otherwise the server will leave all files intact and the print request will be marked as exception. A PS MODIFY, setting NOTE or DESTINATION to the appropriate values, will be needed to re-queue the request for printing.

Individual usercodes can be assigned default PRINTDEFAULTS settings of DESTINATION and NOTE directly in the USERDATAFILE. These can be conveniently set using the SYSTEM/MAKEUSER or USERCENTER utilities.

For example, to set the above DESTINATION and NOTE for the usercode META in the USERDATAFILE using the SYSTEM/MAKEUSER utility, the following complex syntax is necessary:

```
PRINTDEFAULTS="DESTINATION=" "MAIL" " ",  
              NOTE=" " "To:ian@metalog.com" " " "
```

Signature controls can also be provided to override the MAILLIB default setting. This can be achieved by using the Print System attribute PRINTCHARGE:

```
PS MODIFY 12345 DESTINATION="MAIL" ,  
NOTE="To:ian@metalog.com" ,  
  PRINTCHARGE="DATETIME"
```

In the above example, the default signature will be overridden as if a different ^SIG control has been inserted into the message body.

The PRINTCHARGE attribute replaced the functionality of REQUESTNOTE in MAILLIB release 470.71. Note that PRINTCHARGE can be automatically assigned to the PRINTDEFAULTS definition for a usercode in addition to a task.

The REQUESTNOTE attribute can be used to assign an alternative 'Subject:' heading instead of the usual 'Print files from JOBNAME' e.g.

```
PS MODIFY 12346 REQUESTNOTE="""Live files print for Metalogic""""
```

## Using the EMAIL USERCODE attribute

If a 'To:' header is absent from the NOTE attribute, MAILLIB will check the calling usercode (PRINTS always assumes the owner usercode of the request when printing) and checks the USERDATAFILE to see the EMAIL attribute is assigned. If found, the Virtual Mail Server will use this setting as a destination email address.

The EMAIL attribute must be set by your Security Administrator using the MAKEUSER mainframe utility or the UserCenter software from a PC. For example, the following MAKEUSER input changes EMAIL attribute for the usercode META:

```
USER META EMAIL = "metamail@metalog.com";
```

Any printing generated by jobs running under this usercode, which have a DESTINATION set to a Virtual Mail Server device, will be sent to the the email address 'metamail.metalog.com'.

## Printing to email from CANDE

The Virtual Mail server is very useful for printing from CANDE sessions, especially if a PDEF has already been assigned for the session usercode or the USERCODE has an EMAIL attribute assigned. Note that a PrintS DESTINATION using a MAILLIB Virtual Server device must be established either manually or inherited from PDEF.



Consider the following typical CANDE session:

**PDEF**

```
#PRINTDEFAULTS: DESTINATION="MAIL",NOTE="To:ian@metalog.com"
```

The PDEF command shows a **PRINTDEFAULTS** retrieved from the **USERDATAFILE** for this user. The **DESTINATION** of **MAIL** and **NOTE** set to an email address specifies that the Virtual Mail server will be responsible for handling any print requests generated in this session.

**FILES TRIM**

```
(IPP) ON DEV
```

```
. TRIM
```

```
. . DEBUG : DCALGOL
```

```
. . DEBUG
```

```
. . . REMOTE : DCALGOL
```

```
. . RULES : JOB
```

```
. . RULES
```

```
. . . TESTING : JOB
```

```
#
```

```
WR TRIM/=
```

```
#RUNNING 7895
```

```
#
```

**SPL**

```
#SPLIT SESSION 54693 ET=54:45.6 PT=7.3 IO=2.9
```

```
#NEW SESSION 54702 15:28:45 Thursday, January 18, 2001 (GMT)
```

If the Virtual Mail destination **MAIL** is configured and ready, then backup files associated with session 54693 will be automatically “printed” to the specified mail server for the user “ian@metalog.com”. This print will appear as a single email with 4 attachments.

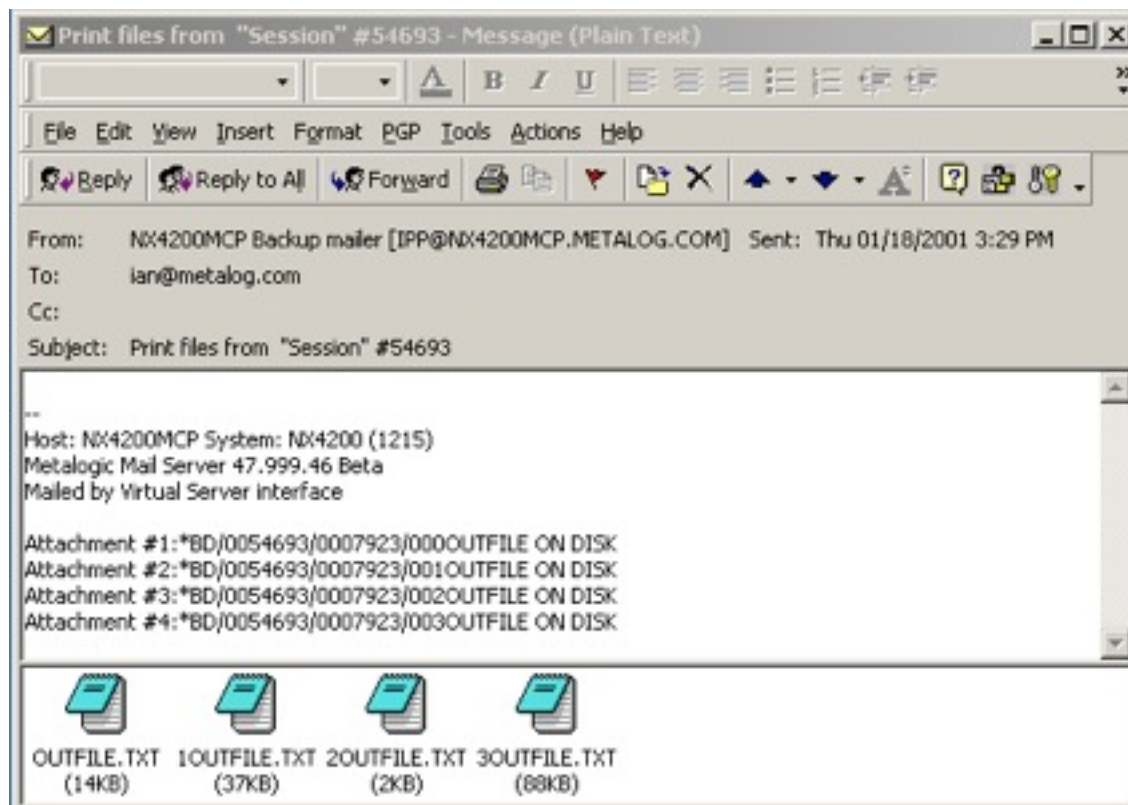
Because the session has a valid **PRINTDEFAULTS** assigned, the action of the **CANDE SPLIT** command causes a print request to be generated. Normally, this occurs because the default system-wide **PRINTDISPOSITION** is set to **EOJ**; however, if the **PRINTDISPOSITION** associated with the session **PDEF** is set to **CLOSE**.

i.e.

**PDEF**

```
#PRINTDEFAULTS: PRINTDISPOSITION=CLOSE, DESTINATION="MAIL",  
NOTE="To:ian@metalog.com"
```

Repeating the procedure above, each CANDE WRITE of a file in the above directory would generate a separate email, giving four in total. The following email shows the general case where PRINTDISPOSITION is set to EOJ and one email is generated:



Note the file number from each backup file is retained in the PC-generated filename to help avoid the problem of duplicates. By specifying a TRANSFORM in the PRINTDEFAULTS declaration, you can add a prefix to each PC file name e.g.

#### **PDEF**

```
#PRINTDEFAULTS: PRINTDISPOSITION=CLOSE, DESTINATION="MAIL",  
NOTE="To:ian@metalog.com",TRANSFORM="MYFILE"
```

This would generate local PC file names, in the above case, as MYFILE\_OUTFILE.TXT, MYFILE\_OUTFILE2.TXT etc.

## **Zipped attachments**

For Virtual Mail server printing, it is possible to use a zip printer device:

```
PS CONFIG MAILZIP SERVER "PRINTTOZIP IN SL MAILLIB"
```

All files in the print request will be zipped into a single archive when this DESTINATION is used.

The normal Virtual Mail server may still be used but zip file creation is possible by specifying the TRANSFORM attribute as "ZIP". For example:

```
WFL PRINT *TESTDIR/FILE (DESTINATION="MAIL",TRANSFORM="ZIP")
```

# Mail Queues

If the selected mail server is unavailable for any reason or the attempted SMTP connection times out, MAILLIB will automatically queue the email to the family where the library codefile, METALOGIC/MAILLIB, is currently SL-ed. MAILLIB will also queue 'failed' email transmissions for a number of reasons e.g. no mailbox available space, MAILLIB-to-server dialog failure.

MAILLIB will give a READ TIMEOUT error if, during the SMTP protocol exchange, the mail server fails to respond within 60 seconds. It has been reported that the MAILLIB thread can hang indefinitely with a connection open to a mail server that has died or hung with TCP connection open.

In such cases, the TCPIP connection persisted and could not be closed unless the caller was DS-ed. The email in process will be automatically queued and marked with an error of -554 (requiring a MODIFY command to allow re-processing).

MAILLIB creates a job file with a pre-defined name:

```
*SMTP/<usercode>/<yyyymmdd>/"<email address(es)>"/<trans no>
```

Even if the SYSOPS LONGFILENAME option is set, MAILLIB will only insert up to 17 characters for the <email address> level; <message-id> is a unique identity for the queued message constructed from the datestamp and a MAILLIB-assigned transaction number e.g.

```
*SMTP/SUPERVISOR/20001107/"support@metalog.co"/01045
```

Any file attachments are automatically processed and encoded into the job file; this means that when the queued mail is eventually re-processed, the original files need not be present.

The MAILLIB control library process will attempt to re-send all queued messages, by default, every 3 minutes until the server can become available. In summary, the mail is checked when:

- Every 180 seconds
- New email received
- [NUDGE](#) command
- Mail server reassignment to another system ([SERVER](#) command)
- [REBUILD](#) or [LOAD QUEUE](#) command is processed
- [RESUME](#) command is processed (after previous [SUSPEND](#))

If a queued email is successfully sent, the \*SMTP file will be automatically removed. It should be noted that \*SMTP files have a FILEKIND=JOBSYMBOL but they cannot easily be viewed from a CANDE session.

If the current server is permanently unavailable, an alternative server can be selected by changing the [SERVER](#) assignment – this will register the new server and will immediately attempt to send any pending queued mails.

The [SHOW QUEUE](#) command will display the names of any queued email files along with the subject, sender and file size information.

```
TT MAIL SHOW QUEUE
```

```
    --- MAIL Library response ---
    --- 2 Queued MAIL Messages ---
#166 *SMTP/META/20010518/"ian@metalog.com"/00166 (3.2 Kb)
    Subject:File (IPP)IPP/T ON DEV
#167 *SMTP/META/20010518/"ian@tesco.net"/00167 (24.1 Kb)
    Subject:File *SUPERVISOR/PATCHLIST ON DEV
#30543 *SMTP/META/20030829/"BEHEER@METALOG.CO"/30543 1.4 Kb
    Subject:ALERT files van vandaag en gisteren
    Mail marked exception (-550)
```

In the above response, transactions #166 and #167 have been queued because of server unavailability. However, email transactions #30543 and #30544 have been marked as exception because their transmission failed for a different reason e.g. lack of mailbox space.

In this case, these emails will not be automatically retried unless a MODIFY command has been applied.

```
TT MAIL MODIFY 30544
```

```
    --- MAIL Library response ---
#30544 *SMTP/META/20030829/"BEHEER@METALOG.CO"/30544 modified
Queued transaction #30544 has been modified
```

If the problem blocking the original transmission is resolved at the server endpoint, the email will be successfully sent when a [NUDGE](#) is issued or the next 3-minute server check occurs.

To change the email address of queued transaction #63136:

```
MAIL MODIFY 63136 support@metalog.com
```

MAILLIB will immediately perform a [NUDGE](#) so that the modified email will be immediately reprocessed. If the revised 'To:' address also fails, a [SHOW QUEUE](#) command address will also show the revised address.

The original content of each modified email will remain intact though any 'Cc:' or 'Bcc:' headers will be ignored. Additional information will appear in the MAIL LOG:

```
12:44:08 Snd:63136:ReSent OK to:support@metalog.com
12:44:08 Msg:Processing #63136 SMTP file original'To:ian.patterson@metalog.com'
12:44:08 Msg:Trans #63136 *SMTP/SYSTEM-NODE/20080729/"fake@metal"/63136
modified
12:44:08 Cmd:MODIFY 63136 support@metalog.com
```

The <Return-path> header in the redirected message will appear as <RedirectedMail@mydomain.com> where mydomain.com is the MAILLIB's local default domain.

Selected queued emails can be manually removed by using [ABORT](#) command:

```
TT MAIL ABORT 30538
```

```
--- MAIL Library response ---
```

```
#30538 *SMTP/META/20030829/"BEHEER@METALOG.CO"/30538 removed  
Queued transaction #30538 has been aborted
```

# MAILLIB errors

All MAILLIB errors are negative; they are a mixture of three category types and maybe recoverable or fatal. If OPAL scripts are generating mail, it is possible to use the MAILERROR function to interpret the error value into text.

All MAILLIB errors are reported as entries in the SYSTEM/SUMLOG as display messages and have a LOG modifier of 'ERR'.

TT MAIL LOG ERR

```
----- MAIL Log: 11 Sep 2003 -----
12:23:55 ERR:SERVER name already assigned
----- MAIL Log: 10 Sep 2003 -----
12:39:24 ERR:No translation possible using LATIN1ISO(Code Set 13) #4002
12:39:12 ERR:Invalid Code Set name LATINISO #3004
09:12:48 ERR:30544:Server report #550 5.1.1 user BEHEER@METALOG.COM
not known
```

## Specific Supervisor errors

Both Supervisor and MAILLIB can generate these errors. The SUPERVISOR process MAILHANDLER performs it's own validation on email content passed by the MAIL function.

Error	Meaning
-100	Bad message header format
-101	No 'To:' address header found
-102	Mail subject header too long
-103	Mail transmission aborted due to FAULT or DS
-104	Missing ':' from header
-105	'To:' address is empty
-106	'Cc:' address is empty
-107	'Bcc:' address is empty
-108	'From:' address is empty
-109	'Reply:' address is empty
-110	Mail interface is disabled
-111	Mail transaction aborted by user
-112	Insufficient Disk space for *SMTP file
-113	I/O error writing *SMTP file
-114	SMTP family <family> Unavailable or Off-line

## Mail server errors

These are the main errors that MAILLIB can encounter during dialogs with a mail server. Usually they are generated by local storage problems or, less likely, incompatibility issues between the server and MAILLIB.

Error	Meaning	Can be Retried
-421	Mail Server is unreachable	Yes
-450	Requested mail action not done: Mailbox unavailable	No
-451	Requested action aborted: local processing error	Yes
-452	Requested action - not done: insufficient storage	Yes
-500	Syntax error: SMTP command unrecognized	No
-501	Syntax error in parameters or arguments	No
-502	Command Not implemented	No
-503	Bad sequence Of commands	No
-504	Command parameter not implemented	No
-530	Relay to this address is prohibited	No
-550	User not known or mailbox unavailable	Yes
-551	User not local please try <forward-path>	No
-552	Requested action aborted: exceeded storage	No
-553	Requested action Not taken: Mailbox not allowed	No
-554	Transaction failed	Yes

## Special -552 handling

-552 errors (server storage exceeded) are handled in a special way by MAILLIB. Also, User Limit controls by usercode are now better handled and provide better information both to the Postmaster and recipients when an email exceeds its limit.

-552 errors are not retryable and will be automatically rejected; no SMTP file is created.

MAILLIB will notify by email both Postmaster and intended recipients when a -552 error has been encountered. The email provides detailed information about the failure, including attachment and include file details.



An example email is shown below:

```
--
Subject:MAILLIB Alert! SERVER storage exceeded
        for ian.patterson@metalog.com [-552]
The following email exceeded Storage limits on Mail Server
DELL8500
  To:ian.patterson@metalog.com
  Subject:Test
  Estimated Mail size: 1273.3 Kb
  Transaction No: 4902
  Maillib returned: -552
The above email transaction was Rejected
#1  *SOURCE/NEWTAPE ON DEV    (1273.3 Kb)
-> Attachment was processed ok
--
```

For emails that exceed Maillib User Limits restrictions, the recipient receives the email intact but with warning messages indicating the reasons that any files/ includes have been skipped or truncated. In addition, the Postmaster will also receive an advisory email similar to that for a -552 error.

In the event that a large email is sent to an offline server and the email is not restricted by MAILLIB User Limits, MAILLIB is obliged to retain the \*SMTP file but when the server subsequently becomes available and fails the queued email with a -552 error, MAILLIB will now also automatically remove the associated \*SMTP file.

Both system messages and entries in the MAILLIB log will show this behaviour:

```
10:48:24 Snd:04906:Sent OK to:ian.patterson@metalog.com,
        POSTMASTER@METALOGIC.EU.COM
10:48:24 Rcv:04906:To:ian.patterson@metalog.com,Subject:MAILLIB Alert!
        SERVER storage exceeded for ian.patterson@metalog.com [-552]
10:48:24 Err:04904:*SMTP file removed due to SERVER storage limit exceeded
10:48:24 Err:04904:Rejected ian.patterson@metalog.com (-552):Requested
        action aborted:Exceeded storage
10:48:24 Err:04904:Server report #552 Message too large - contact your
        administrator
10:48:14 Msg:Checking SMTP mail Queue (2 messages)
```

## Other MAILLIB error messages

Error	Meaning	Can be Retried
-301	Email address has invalid format	No
-302	Recipient Unauthorized	No
-304	No 'To:' address provided	No
-306	User has zero message limit	No
-989	Bad message text in a corrupted *SMTP file	No
-990	Invalid *SMTP mail file	No
-991	No valid server list provided	No

Error	Meaning	Can be Retried
-992	Mail Server hostname is invalid	Yes
-994	*SMTP file not JOBSYMBOL	No
-995	*SMTP file attribute error	No
-996	Bad read of *SMTP message header	No
-997	Illegal alternate server name	No
-998	*SMTP file missing	No
-999	Mail Server host unavailable or suspended	Yes

# Calling the Library

The following library entrypoints in MAILLIB are available for any program to programmatically email and attachments. This procedure is used by the MAILER utility and Supervisor.

## MAILMAN

The ALGOL declaration of MAILLIB is shown below:

```
LIBRARY MAILLIB (LIBACCESS=BYFUNCTION) ;

REAL PROCEDURE MAILMAN (ML_TO, ML_CC, ML_BCC, ML_FROM,
ML_REPLY,
                        ML_SUBJECT, ML_TEXT, OPTION) ;

VALUE OPTION ;
STRING ML_TO, ML_CC, ML_BCC, ML_FROM, ML_REPLY, ML_SUBJECT ;
STRING ARRAY ML_TEXT[0] ;
BOOLEAN OPTION ;
    LIBRARY MAILLIB ;
```

ML\_FROM has restricted use; MAILLIB will only permit 'From:' addresses which map to the default domain or the actual TCPIP domain.

The description of each parameter is discussed below:

Parameter	Type	Description	
ML_TO	String	'To:' address	Required
ML_CC	String	'Cc:' address	Optional
ML_BCC	String	'Bcc:' address	Optional
ML_FROM	String	'From:' address	Optional
ML_REPLY	String	"Reply-To:" address	Optional
ML_SUBJECT	String	"Subject:"	Optional
ML_TEXT	String Array	Body of message	Optional
OPTION	Boolean	User selectable options	Optional

The OPTION word has the following bit fields:

```
LONGNAMESF  = [0:1] #, % Value 1 => Invokes ^OP LONG
TRIMBLANKSF = [1:1] #, % Value 1 => Invokes ^OP COMPRESS
DEFAULTSIGF = [3:1] #, % Value 1 => Invokes ^SIG DEFAULT
DEBUGF      = [4:1] #, % Value 1 => Sets DEBUGMODE to ON
```

The other fields in OPTION are either unavailable or should not be used. Indeterminate results will occur if other undocumented fields are misused.

An example ALGOL program is shown below:

```
BEGIN
  STRING ML_TO, ML_SUBJ;   STRING ARRAY ML_TEXT[0:999];
  LIBRARY MAILLIB (LIBACCESS=BYFUNCTION);
  REAL PROCEDURE MAILMAN (ML_TO, ML_CC, ML_BCC, ML_FROM,
    ML_REPLY, ML_SUBJECT, ML_TEXT, OPTION);
  VALUE OPTION;
  REAL RES;
  STRING ML_TO, ML_CC, ML_BCC, ML_FROM, ML_REPLY,
ML_SUBJECT;
  STRING ARRAY ML_TEXT[0];
  BOOLEAN OPTION;
  LIBRARY MAILLIB;
    BOOLEAN OPTION;
  ML_SUBJ:= "MAILLIB symbolic";
  ML_TEXT[0]:= "^OP LONG";
  ML_TEXT[1]:= "^ATTACH *MAILLIB/NEWTAPE ON DEV";
  ML_TEXT[2]:= "Latest MAILLIB symbolic";
  RES:=MAILMAN (ML_TO, Empty, Empty, Empty, Empty,
    ML_SUBJ, ML_TEXT, OPTION);
END.
```

MAILMAN returns a negative value if the mail fails for any reason (see [MailLib Errors](#)). If the mail is successfully sent then MAILMAN returns, as a procedure value, the number of recipients used.

If the email has been queued for any reason, the MAILMAN entry point will return a flag in bit [47:1] indicating that the email has been saved to disk. This means that the user can take appropriate action to reprocess the email instead of the caller attempting to retry what maybe already a lost cause.

## QUICKMAIL

An easier to use entryptpoint than MAILMAN.

Ex.

```
LIBRARY MAILLIB (LIBACCESS=BYFUNCTION); Real Procedure
QUICKMAIL(MAILHDRS,MAILTEXT,OPT);
  Value OPT;
  Ebcdic Array MAILHDRS, MAILTEXT [0];
  Boolean OPT;
  Library MAILLIB;
```

The MAILHDRS and MAILTEXT array are used in the same way that the Opal MAIL function operates; that is, MAILHDRS holds a string of email headers whilst MAILTEXT hold multiple lines of text for the mail body each line delimited by a CR (48"0D"). Both arrays should be terminated by a NULL (48"00") character. All header contents are validated by MAILLIB and error values are returned if an illegal header is seen.

The OPTION parameter allows the user to specify additional controls and operates as in the MAILMAN entrypoint. The OPTION parameter does not require any mandatory settings.

Example ALGOL program:

```
BEGIN
  LIBRARY MAILLIB (LIBACCESS=BYFUNCTION);
  Real Procedure QUICKMAIL(MYHDRS,MYTEXT,OPTION);
  Value OPT;
  Ebcdic Array MYHDRS, MYTEXT [0];
  Boolean OPT;
  LIBRARY MAILLIB;
  Ebcdic Array HDRS,TXT[0:29999];
  Boolean OPTION;
  Replace HDRS By
    "To:Support@metalog.com;Subject:QuickMail";
  Replace TXT By "First line",48"0D",
    "Second line of body text",48"00";
  QUICKMAIL(HDRS,TXT,OPTION);
End.
```

QUICKMAIL returns a negative value if the mail fails for any reason (see [MailLib Errors](#)) If the mail is successfully sent then Quickmail returns, as a procedure value, the number of recipients used.

If the email has been queued for any reason,the MAILMAN entry point will return a flag in bit [47:1] indicating that the email has been saved to disk. This means that the user can take appropriate action to reprocess the email instead of the caller attempting to retry what maybe already a lost cause.

## QUICKMAILC74

Allows COBOL74 programs to call a modified version of the QUICKMAIL entrypoint.

The parameters used are basically the same: headers, email body and an options word.

A simple example COBOL74 program is shown below:

```
IDENTIFICATION DIVISION.
PROGRAM-ID.  MAILLIB-EXAMPLE.
ENVIRONMENT DIVISION.
INPUT-OUTPUT SECTION.
FILE-CONTROL
DATA DIVISION.  FILE SECTION.  WORKING-STORAGE SECTION.  77 RSLT
USAGE REAL.  77 OPT USAGE REAL VALUE 0.
01 MAIL-TXT PIC X(250) .
01 MAIL-HDRS PIC X(250) .
PROCEDURE DIVISION.
THE-ONLY SECTION.  GLOBAL-INITIALIZE.
CALL-QUICKMAIL.
MOVE "To:Test@metalog.com;Subject:Test message" TO MAIL-HDRS.
MOVE "^ATTACH TEST/FILE" TO MAIL-TXT.
CHANGE ATTRIBUTE LIBACCESS OF "MAILLIB" TO BYFUNCTION CALL
"QUICKMAILC74 OF MAILLIB"
        USING MAIL-HDRS,
            MAIL-TXT,
            OPT
            GIVING RSLT.
```

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