NAME

mh-gen – generating the MH system

READ THIS

This documentation describes how to configure, generate, and install the UCI version of the RAND *MH* system. **Be certain** to read this document completely before you begin. You probably will also want to familiarize yourself with the *MH* Administrator's Guide before you install *MH*. A copy can be found in the file **doc/ADMIN.doc** is the *MH* sources.

DISCLAIMER

Although the *MH* system was originally developed by the RAND Corporation, and is now in the public domain, the RAND Corporation assumes no responsibility for *MH* or this particular modification of *MH*.

In addition, the Regents of the University of California issue the following **disclaimer** in regard to the UCI version of *MH*:

> ''Although each program has been tested by its contributor, no warranty, express or implied, is made by the contributor or the University of California, as to the accuracy and functioning of the program and related program material, nor shall the fact of distribution constitute any such warranty, and no responsibility is assumed by the contributor or the University of California in connection herewith.''

This version of *MH* is in the public domain, and as such, there are no real restrictions on its use. The *MH* source code and documentation have no licensing restrictions whatsoever. As a courtesy, the authors ask only that you provide appropriate credit to the RAND Corporation and the University of California for having developed the software.

GETTING HELP

MH is a software package that is neither supported by the RAND Corporation nor the University of California. However, since we do use the software ourselves and plan to continue using (and improving) *MH*, bug reports and their associated fixes should be reported back to us so that we may include them in future releases. The current computer mailbox for *MH* is **Bug–MH@ICS.UCI.EDU** (in the ARPA Internet), and **...!ucbvax!ucivax!bug–mh** (UUCP).

Presently, there are two Internet discussion groups, **MH–Users@ICS.UCI.EDU** and **MH–Workers@ICS.UCI.EDU**. **MH–Workers** is for people discussing code changes to *MH*. **MH-Users** is for general discussion about how to use *MH*. **MH–Users** is bi-directionally gatewayed into USENET as **comp.mail.mh**.

HOW TO GET MH

Since you probably already have *MH*, you may not need to read this unless you suspect you have an old version. There are two ways to get the latest release:

1. If you can FTP to the ARPA Internet, use anonymous FTP to ftp.ics.uci.edu [128.195.1.1] and retrieve the file pub/mh/mh-6.8.tar.Z. This is a tar image after being run through the compress program (approximately 1.8MB). There should also be a **README** file in that directory which tells what the current release of *MH* is, and how to get updates.

This tar file is also available on louie.udel.edu [128.175.1.3] in portal/mh-6.8.tar.Z. You may also find MH on various other hosts; to make sure you get the latest version and don't waste your time re-fixing bugs, it's best to get it from either ftp.ics.uci.edu or louie.udel.edu.

2. You can send $75 US to the address below. This covers the cost of a 6250 BPI 9-track magtape, handling, and shipping. In addition, you'll get a laser-printed hard-copy of the entire MH documentation set. Be sure to include your USPS address with your check. Checks must be drawn on U.S. funds and should be made payable to:

Regents of the University of California

The distribution address is:

Univeristy of California at Irvine
Office of Academic Computing
360 Computer Science
Irvine, CA 92717 USA

+1 714 856 5153

Sadly, if you just want the hard-copies of the documentation, you still have to pay the $75. The tar image has the documentation source (the manual is in roff format, but the rest are in TeX format). Postscript formatted versions of the TeX papers are available, as are crude tty-conversions of those papers.

SYNOPSIS

MAKE

DESCRIPTION

This is a description of how one can bring up an *MH* system. It is assumed that you have super-user privileges in order to (re–)install *MH*. Super-user privileges are not required to configure or generate *MH*.

Become the super-user and cd to /usr/src/local/ (or whatever you keep your local sources). The distribution tape contains the hierarchy for the mh.6-8/ directory. Bring the sources on-line:

```
# cd /usr/src/local
% tar xv
% cd mh-6.8
```

CONFIGURATION

First, go to the conf/ directory.

```
% cd conf/
```

This directory contains files that will produce source files tailored for your choice of *MH* configuration. You should edit only the file **MH**. This file contains configuration directives. These configuration directives are read by the *mhconfig* program to produce customized files.

For examples of various configurations, look in the directory **conf/examples/**. The file **MH** provided in **conf/** is a reasonable default. Lines beginning with '#' are comments, and are not otherwise interpreted.

Here are the *MH* configuration directives available. Be sure to read through this list completely before attempting to decide what directives are appropriate for your system.

More information on some of these options is available in the the *Administrator's Guide*. If you do not have a printed copy, you should configure your system with the default configuration file, **MH**, then generate and print a copy of the guide (as described below).

Installation paths

bin: /usr/local
: The directory where user–invoked programs go (see manual section 1).

etc: /usr/local/lib/mh
: The directory where pgm–invoked programs go (see manual section 8).

mail: /usr/spool/mail
: The directory where the maildrops are stored. If this pathname is absolute (i.e., begins with a **/**), then the user's maildrop is a file called **$USER** in this directory. If the pathname is not absolute, then the user's maildrop is in the user's home directory under the given name.

mandir: /usr/man

The parent directory of the manual entries.

manuals: standard

Where manual entries should be installed, relative to the directory given with ‘‘mandir’’. Either ‘‘local’’ to install manual entries under **manl/**, or ‘‘new’’ to install manual entries under **mann/**, or ‘‘old’’ to install manual entries under **mano/**, or ‘‘standard’’ to install manual entries under **man?/**, or ‘‘bsd44’’ to install manual entries as **man?/***page***.0**, or ‘‘gen’’ to generate but not install them, or ‘‘none’’ to neither generate nor install them.

Any of these values may have the suffix ‘‘/cat’’ appended to it. In that case, the manual entries will be formatted with ‘‘nroff -man’’ and they will be installed in the corresponding ‘‘cat?’’ directories.

For example, to install manual entries under **/usr/man/u_man/man?**, use ‘‘standard’’ and **/usr/man/u_man** for ‘‘mandir’’. To install formatted manual entires under **/usr/contrib/man/cat?**, use ‘‘standard/cat’’ and **/usr/contrib/man** for ‘‘mandir’’. To install formatted manual entries using the BSD44 convention, use ‘‘bsd44/cat’’.

chown: /etc/chown

The location of the *chown* (8) on your system. If *chown* is in your search path, just use the value of ‘‘chown’’. On SYS5 systems, this should probably be ‘‘/bin/chown’’.

cp: cp

The command to copy files when installing, if not ‘‘cp’’. (Some sites use ‘‘cp –p’’.)

ln: ln

The command to link files together in the source tree, if not ‘‘ln’’. If you’re using something like **lndir** to keep your compile tree separate from your source tree, set this to ‘‘ln –s’’ or ‘‘cp’’.

remove: mv –f

How *MH* should make backup copies of existing files when installing new files. To simply remove the old files, use ‘‘rm –f’’.

Compiler/loader

cc: cc

The name of your C compiler, if not ‘‘cc’’.

ccoptions: –O

Options given directly to *cc* (1). The most common is ‘‘–M’’ if you’re running *MH* on an ALTOS. This defaults to ‘‘–O’’. If you define this and want to keep ‘‘–O’’, be sure to include it explicitly. If you’re using the *GNU* C compiler, it should include ‘–traditional’. See ‘‘options:’’ for ‘–D’ options.

curses: –lcurses –ltermlib

This should be the loader option required to load the *termcap* (3) and *curses* (3) libraries on your system. On SYS5 systems, it probably should be just ‘‘–lcurses’’. Some sites have reported that both ‘‘–lcurses’’ and ‘‘–ltermlib’’ are necessary.

ldoptions: –s

Options given directly to *ld* (1) (via *cc*) at the beginning of the command line. Useful for machines which require arguments to tell *ld* to increase the stack space (e.g. the Gould, which uses ‘‘–m 8’’). Usually, ‘‘–s’’ is a good choice in any event.

ldoptlibs:

Options given directly to *ld* (1) (via *cc*) at the end of the command line. The two most common are: ‘‘–ldbm’’ if you’re running MMDF with the *dbm* package; and, ‘‘–lndir’’ if you are generating *MH* on a system which does not load the new directory access mechanism by default (e.g., 4.1BSD, SYS5). If you don’t have *libndir* on your system, the sources are in **miscellany/libndir/**.

lex: lex –nt

Alternative version of *lex*. Used in **zotnet/tws/**.

oldload: off

This controls how *MH* will try to process library object files to eliminate local symbols. Support for the ALTOS loader if ‘‘on’’. Support for loaders not handling ‘–x –r’ correctly if ‘‘none’’.

ranlib: on

Support for systems with *ranlib* (1). For SYSTEM 5 systems, this should be ‘‘off’’ which tells *MH* to use *lorder* and *tsort* instead. Some SYSTEM 5 sites reported that running this isn’t always sufficient. If this is the case, then you should edit **conf/makefiles/uip** to include **../sbr/libmh.a** and **../zotnet/libzot.a** twice in the LIBES variable.

Message Transport System

mts: sendmail

Which message transport system to use. Either ‘‘mmdf’’ to use *MMDF* as the transport system, ‘‘mmdf2’’ to use *MMDF–II* as the transport system, ‘‘sendmail’’ to have *SendMail* as the transport system, ‘‘zmailer’’ to have *ZMAILER* as the transport system, or, ‘‘mh’’ to have *MH* as the transport system.

On UNIX systems supporting TCP/IP networking via sockets you can add the suffix ‘‘/smtp’’ to the mts setting. This often yields a superior interface as *MH* will post mail with the local *SMTP* server instead of interacting directly with *MMDF* or *SendMail*. Hence, for TCP/IP UNIX systems, the ‘‘/smtp’’ suffix to either ‘‘sendmail’’ or ‘‘mmdf2’’ is the preferred MTS configuration. The ‘‘/smtp’’ suffix is described in detail in the *Administrator’s Guide*; be sure to set ‘‘servers:’’ as described in *mh–tailor* (8) if you use this option.

mf: off

Support for mail filtering on those systems in which the message transport system isn’t integrated with *UUCP* This option is strictly for an *MH* system using either *MMDF–I* as its transport system or one using ‘‘stand–alone delivery’’.

UCI BBoards Facility

bboards: off

If ‘‘on’’, include support for the UCI BBoards facility. BBoards may be enabled with any mts setting. If ‘‘off’’, the BBoard reading program *bbc* will not be installed. If ‘‘nntp’’, include support for the UCI BBoards facility to read the Network News via the NNTP. If ‘‘pop’’ (formerly ‘‘popbboards: on’’), include support for the UCI BBoards facility via the POP3 service; this setting requires ‘‘pop: on’’.

bbdelivery: off

If ‘‘off’’, the BBoards delivery agent and library files will not be installed. If ‘‘on’’, and you set ‘‘bboards:’’ to something besides ‘‘off’’, then the BBoards delivery agent and library files will be installed in the *bbhome* directory (see below). To read remote BBoards, the usual configuration would have *bbc* talk to a *POP3* or *NNTP* server. However, it may be useful to set this to ‘‘off’’ if you NFS mount the *bbhome* directory from another host and want to use *bbc* to read those files directly.

bbhome: /usr/spool/bboards

The home directory for the BBoards user.

Post Office Protocol

pop: off

Support for POP service. This allows local delivery for non–local users (a major win). See **support/pop/pop.rfc** for more information on the POP. This option currently works only on UNIX systems with TCP/IP sockets. (It doesn't hurt to enable this option regardless of whether or not you intend to use POP.) See also ''bboards: pop'' to enable reading bboards with the POP.

popdir: /usr/etc

The directory where the POP daemon (**popd**) will be installed.

options:

'–D' options to *cc* (1).

APOP='''/etc/pop.auth'''

This option indicates that the POP daemon will support the non-standard **APOP** command, and specifies the name of **APOP** authorization database. The **APOP** command provides a challenge-based authentication system using the **MD5** message digest algorithm. This facility is documented in *The Internet Message* (ISBN 0–13–092941–7), a book by Marshall T. Rose.

This option also causes the **popauth** program to be installed, which allows the administrator to manipulate the **APOP** authorization database. For more details, see **support/pop/pop-more.txt** and the *Administrator's Guide*.

DPOP

This option indicates that POP subscribers do not have entries in the *passwd* (5) file, and instead have their own separate database (a win).

KPOP

Support for KERBEROS with POP. This code builds *popd*, *inc* and *msgchk* to support only the ''kpop'' protocol. This code is still experimental, but is available for those sites wishing to test it.

MPOP

This option indicates that the POP daemon will support the non-standard **XTND SCAN** command which provides performance enhancements when using the POP over low-speed connections. This option also causes an interactive POP client program, **popi**, to be compiled and installed. A man page for the **popi** program is also provided.

These extensions are described in *The Internet Message*, a book by Marshall T. Rose. For more details, see **support/pop/pop-more.txt**. **Note:** this option requires ''bboards: pop''.

POP2

Have the POP daemon understand the older POP2 protocol as well as the *MH* POP3 protocol – a major win. The POP daemon auto-magically determines which POP protocol your client is using. If you're enabling POP service, there's no reason not to enable this option as well. See also *POPSERVICE*.

POPSERVICE

The port name the *MH* POP will use. For historical reasons, this defaults to ''pop''.

In 1987, the *MH* POP protocol (POP version 3) was published as RFC1081 and was assigned its own port number (110), which differs from the original POP (version 1 and 2) port number (109).

To have *MH* POP use the new assigned port number, set POPSERVICE='‘‘pop3’’', and be sure that this service name is listed in your **/etc/services** file on both POP client and server hosts as ‘‘110/tcp’’. If you enable *POP2*, you can safely leave *POPSERVICE* undefined unless you are using POP3 clients besides *MH*.

RPOP

This option indicates that support for the UNIX variant of POP, RPOP, which uses privileged sockets for authentication be enabled. This peacefully co-exists with the standard POP.

SHADOW

Indicates that the **popd** POP server can find encrypted passwords in the **/etc/shadow** file (and not in the **/etc/passwd** file). It should be used only for some (newer) SYSTEM 5 systems.

The ‘‘APOP’’ and ‘‘MPOP’’ non-standard POP facilities are documented in *The Internet Message* (ISBN 0–13–092941–7), a book by Marshall T. Rose. For more details, see **support/pop/pop-more.txt**. The ‘‘APOP’’ option peacefully co-exists with the standard POP. The ‘‘MPOP’’ option requires ‘‘bboards: pop’’.

Shared libraries

sharedlib: off

If ‘‘sun4’’, makes libmh.a into a SunOS 4.0 (and later) shared library. If you enable this, be sure to also use ‘‘options SUN40’’. If ‘‘sys5’’, makes libmh.a into a SYS5 R4 (and later) shared library. If you enable this, be sure to also use ‘‘options SVR4’’.

slflags: –pic

The compiler flags to produce position independent code.

slibdir: /usr/local/lib

The directory where the *MH* shared library should go.

Under SunOS (sun4)

Since some *MH* programs are setuid, they’ll only look for the library in ‘‘trusted’’ locations. Putting the library somewhere besides **/usr/lib** or **/usr/local/lib** is not advisable.

If you **must** do this, be sure that you add the path given by **slibdir** to the compiler’s library search list (e.g., ‘‘ldoptions: –L/usr/mh/lib’’) and make sure the path starts with a leading ‘/’.

You may need to run *ldconfig* (8) manually whenever a new shared object is installed on the system. See *ld* (1) for more information about using shared libraries.

Under Solaris 2.0 (and newer)

The above instructions for SunOS apply, except you should set the run-time library search path using ‘–R’ instead of ‘–L’ (e.g., ‘‘ldoptions: –R/usr/mh/lib’’).

General System Dependencies

You should include the following directives which are appropriate for your version of UNIX. If you don’t know what an option does, it probably doesn’t apply to you.

mailgroup: off

If set, *inc* is made set-group-id to this group name. Some SYS5 systems want this to be set to ‘‘mail’’. Set this if your **/usr/spool/mail** is not world-writeable.

Note that **slocal** doesn’t know how to deal with this, and will not work under these systems; just making it set-group-id will open a security hole. If you’re using ‘‘mailgroup’’, you should remove **slocal** (and its man page) from your system.

signal: int

The base type (int or void) of the function parameter/return value of *signal* (2). The default is **int**. Set ‘‘signal void’’ on systems which use this type (e.g., SYSTEM 5 V3.0 and later or Sun OS 4.0 and later).

sprintf: char *

The return value of the *sprintf* library routine. This defaults to ‘‘char *’’. Set this to ‘‘int’’ if you have an older version of SYSTEM 5 which has this routine return an ‘‘int’’ type.

options:

‘–D’ options to *cc* (1).

ALTOS

Use on XENIX/v7 systems. Also, be sure to use ‘‘options V7’’.

ATTVIBUG

This option causes *MH* to return to the ‘‘What now?’’ prompt if your initial editor is **vi** and it exits with non-zero status. Use on Sun OS 4.1 and other systems where the **/usr/ucb/vi** editor was changed to exit with its status equal to the number of pseudo-‘‘errors’’ encountered during the edit. This causes a problem for programs that test the exit status of their editor and abort if the status is non-zero. (This includes *MH* and programs like **/usr/etc/vipw**).

AUX

Use with AUX systems.

BIND

If you are running with the BIND code on UNIX systems with TCP/IP sockets (e.g. 4.{2,3}BSD), be sure to define this.

BSD41A

Use on 4.1a Berkeley UNIX systems.

BSD42

Use on Berkeley UNIX systems on or after 4.2BSD.

BSD43

Use on 4.3 Berkeley UNIX systems. Also, be sure to use ‘‘options BSD42’’. If *openlog* (3) (see ‘‘man 3 syslog’’) takes three arguments instead of two, and your *write* (1) command is set–group–id to group ‘‘tty’’, use this option. If only one of these conditions is true, you lose.

BSD44

Use on Berkeley UNIX systems on or after 4.4BSD. Also, be sure to use ‘‘options BSD43’’ and ‘‘options BSD42’’.

DBMPWD

Use this option if your *getpwent* (3) routines read a dbm database (such as with Yellow Pages) instead of doing a sequential read of **/etc/passwd**. Without DBMPWD the entire passwd file is read into memory one entry at a time for alias expansion. This is a performance improvement when reading a standard **/etc/passwd** file, but is *very* slow on systems with a dbm database. At one site that runs YP on a large passwd file, it showed a 6:1 performance improvement.

GCOS_HACK

The so-called ''gcos'' field of the password file is used as a last resort to find the user's full name (see *mh-profile* (5) for details). Enable this option if your *passwd* (5) man page notes that the '&' character in the ''gcos'' field stands for the login name.

FCNTL

Directs *MH* to use the **fcntl()** system call for kernel-level locking. If you're using a SYS5 system, you may want this option. (See also 'FLOCK' and 'LOCKF').

FLOCK

Directs *MH* to use the **flock()** system call for kernel-level locking. If you're on a BSD42 system, and you're not using NFS to read or write maildrops, you should enable this option. (See also 'FCNTL' and 'LOCKF').

HESIOD

Support for HESIOD. This code was contributed, and included no documentation.

LOCKF

Directs *MH* to use the **lockf()** system call for kernel-level locking. If you're using NFS to read or write maildrops, you should enable this option. (See also 'FLOCK' and 'FCNTL').

locname

Hard-wires the local name for the host *MH* is running on. For example, locname='''PICKLE'''. It's probably better to either let UNIX tell *MH* this information, or to put the information in the host specific **mtstailor** file.

MORE

Defines the location of the *more* (1) program. On ALTOS and DUAL systems, set MORE='''/usr/bin/more'''. The default is ''/usr/ucb/more''.

NDIR

For non-Berkeley UNIX systems, this *MH* will try to find the new directory access mechanism by looking in **<ndir.h>** if this option is given. Otherwise, *MH* will try **<dir.h>**. If you still can't get this to work on your system, edit **h/local.h** as appropriate. (See also 'SYS5DIR'.)

NFS

Tells *MH* to hack around a problem in the NFS C library. If you get an undefined symbol ''ruserpass'' when compiling *MH*, you probably need this option. If, however, you include this option and get an undefined symbol ''__ruserpass'' when compiling, then you should omit this option. (See also 'NORUSERPASS'.)

NOIOCTLH

Tells *MH* not to include the file **<sys/ioctl.h>**. To be used on systems where this file is not present.

NORUSERPASS

Tells *MH* that your system doesn't have the *ruserpass* (3) routine; *MH* will include its own copy of this routine in its library. (See also 'NFS'.)

NTOHLSWAP
Tells *MH* to use the **ntohl()** macro when processing *msh* binary map files. *MH* can use this macro on systems with the include file **netinet/in.h**, to byte-swap the binary information in these map files. If you're using the same map files on machines of different architectures, enable this option.

RENAME
Include this option if your system has a **rename()** library call. This is true on BSD42 and newer and some SYS5 systems.

SENDMAILBUG
Causes SMTP reply code 451 (failure) to be considered the same as code 250 (OK). Since this might cause problems, only enable this if you are certain that your SendMail will return this code even when it doesn't mean to indicate a failure.

SOCKETS
Indicates the availability of a socket interface for TCP/IP networking that is compatible with 4.{2,3}BSD UNIX. It is not necessary to define this when BSD42 is already defined, but it might be useful for SYSTEM 5 or HPUX systems with TCP/IP sockets.

SUN40
Use on Sun OS 4.0 (and later?) systems. You also will need ‘‘options BSD42’’, ‘‘options BSD43’’, and ‘‘signal void’’.

If you're using Sun's brain-damaged approach to offering Domain Name Service through NIS, be sure to include ‘‘options BIND’’ and ‘‘ldoptions –lresolv’’ to work around some NIS/DNS bugs.

SYS5
Use on AT&T SYSTEM 5 R3 (and newer?) UNIX systems. See also *mailgroup*.

SYS5DIR
Define this if your system uses ‘‘struct dirent’’ instead of ‘‘struct direct’’. This is true of System V Release 3.0 and later. Uses include file **<dirent.h>** and the routines *mkdir*, *rmdir* and *getcwd*.

SVR4
Use on AT&T SYSTEM 5 R4 (and newer?) UNIX systems. You should also include ‘‘options SYS5’’ and ‘‘options SYS5DIR’’. See also *mailgroup*. You will also need to include ‘‘oldload none’’ if your **ld** doesn't handle '–x –r' correctly.

TERMINFO
Define TERMINFO if you have it. You get it automatically if you're running SYS5, and you don't get it if you're not. (If you're not SYS5, you probably have termcap.)

TZNAME
Use time zone names from the *tzname* variable, set via *tzset*. Only applicable on SYSTEM 5 systems and only effective when you have asked for alpha–timezones (see the ATZ option). See also ZONEINFO.

UNISTD

Include this option if your system has the file **<unistd.h>**. If not specified, the LOCKF option will include **<sys/fcntl.h>**.

V7

Use on V7 UNIX systems. Also, be sure to use ‘‘options void=int’’.

VSPRINTF

Include this option if your system has the *vsprintf* (3) library routine; otherwise, *_doprnt* (3) will be used.

WAITINT

BSD42 based systems call the *wait* (2) system routine with a pointer to type *union wait*. Include this option if you included ‘‘options BSD42’’, but your system calls the *wait* (2) system routine with a pointer to type *int* (the non-BSD42 default).

ZONEINFO

Specify this if you have a BSD43 based system that keeps time zone information /etc/zoneinfo or /usr/lib/zoneinfo (SunOS), and where the *struct tm* returned by *localtime* (3) contains a *tm_gmtoff* element (see **/usr/include/time.h**). With this fix the GMT offset specified in outgoing mail will be corrected when the TZ enviornment variable is set to a different time zone. See also TZNAME.

Site Preferences

These options change the default behavior of *MH* or enable optional features. Add the options which are appropriate for your configuration or your site preferences.

editor: prompter

The default editor for *MH*.

options:

‘–D’ options to *cc* (1).

ATZ

Directs *MH* to use alpha–timezones whenever possible. You should not use this option if you are on the Internet, since it will make your host non-compliant with RFC-1123 (Requirements for Internet Hosts).

ATHENA

Makes *repl* ‘–nocc all’ the default instead of ‘–cc all’. You may want to enable this if you’re using *xmh*.

BANG

Directs *MH* to favor ‘!’ over ‘@’ in addressing.

BERK

Optional for for 4.{2,3}BSD sites running SendMail. Disables nearly all of the RFC822 address and header-parsing routines in favor of recognizing such formats as ASCnet, and so on. If you don’t need to disable the parser for this reason, you probably want to use ‘‘options DUMB’’ instead.

COMPAT

If you previously ran a version of *MH* earlier than mh.4 use this option. After a short grace period, remove it and re-{configure,generate,install} everything.

DUMB

Directs *MH* not to try and rewrite addresses to their ‘‘official’’ form.

FOLDPROT

Defines the octal value for default folder-protection. For example, FOLDPROT=’‘‘0700’’’. The default is ‘‘0711’’.

ISI

When using ‘‘repl –ccme’’, only ‘‘cc:’’ the first address found which belongs to the user; any other *Alternate-Mailboxes* do not receive ‘‘cc:’’s.

LINK

Defines the filename for alternate file name for *dist* and *repl*. For example, LINK=’‘‘\\043’’’ to use the pound–sign character. The default is ‘‘@’’.

MHE

Enables crude support for Brien Reid’s MHE interface. Recommended for use with the GNU Emacs mh-e package.

MHRC

Enables *MH* to recognize the *CShell*’s ‘˜’–construct. This is useful for sites that run with a ˜/.mhrc for their users.

MIME

Enables support for multi-media messages, as specified in RFC 1341 — a major win. This allows you to include things like audio, graphics, and the like, in your mail messages. Several *MH* commands are extended to support these multi-media messages, and the *mhn* command is provided to encode and decode **MIME** messages. For more details, see **miscellany/multi-media/READ-ME** and *mhn* (1).

MSGID

Enables **slocal** to detect and surpress duplicate messages received. This code uses the **<ndbm.h>** library, and requires ‘‘options BSD42’’ since it uses the *flock* (2) system call for locking. (Note that this means its database locking does not work over NFS.) It has only been tested under SUN40.

MSGPROT

Defines the octal value for default folder-protection. For example, MSGPROT=’‘‘0600’’’. The default is ‘‘0644’’.

NOMHSEQ

Directs *MH* to make private sequences the default.

OVERHEAD

Enable *MH* commands to read profile/context from open fd:s without doing an open(); see *mh-profile* (5) for the details.

RPATHS

Directs *inc* to note UNIX ‘‘From ’’ lines as Return-Path: info.

SBACKUP

Defines the prefix string for backup file names. For example, SBACKUP=' ''\\043'''. The default is '',''.

TMA

Support for the TTI *trusted mail agent* (TMA). Although the TTI TMA is **not** in the public domain, the *MH* support for the TTI TMA **is** in the public domain. You should enable this option only if you are licensed to run the TMA software (otherwise, you don't have the software in your *MH* source tree).

TTYD

Support for TTYD. This is no longer in wide use, and is not recommended.

UCI

First, ''_'' and ''#'' are recognized as the prefixes for scratch files. Second, support for the UCI group–leadership mechanism is enabled in *conflict*. Third, the first line of the file file **$HOME/.signature** is used as the *Full Name* part of your ''From:'' header. This may conflict with the interpretation of this file by *News*. If you're not at UCI, you probably don't want this option.

UK

Directs the *scan* program to generate UK-style dates by default.

WHATNOW

Enable certain *MH* commands to act differently when $mhdraft set.

YEARMOD

This option makes the *mh-format* **%(year)** function always return a value less than 100. Enable this option if you have local *mh-format* (5) files which cannot handle 4-digit years. You should convert these files to use a 4-character field width, or use the **%(modulo 100)** function to obtain a 2-digit year value. After a short grace period, remove 'YEARMOD' and re-{configure,generate,install} everything.

Testing/debugging

debug: off

Support for debug mode of *MH*. Don't use this unless you know what you're doing, which isn't likely if you're reading this document!

regtest: off

Set this to ''on'' if you are doing regression testing among different compilations of *MH*, and you do not want the hostname and compile date included in *MH* binaries.

Now edit **conf/config/mtstailor**, depending on your choice of the setting for mts in the *MH* configuration file. for an mts setting of ''mh'', look at the file **conf/tailor/mhmts**; for an mts setting of ''sendmail'', ''sendmail/smtp'', ''mmdf/smtp'', or ''mmdf2/smtp'', look at the file **conf/tailor/sendmts**; and, for an mts setting of ''mmdf'', or ''mmdf2'', look at the file **conf/tailor/mmdf**.

Now install the configured files into the source areas. (On SYS5 systems, or other systems where you get complaints about ''_index'' and ''_rindex'' being undefined, you should use ''make sys5'' to compile mhconfig.)

```
% make
% ./mhconfig MH
```

Before proceeding, you should familiarize yourself with the *Administrator's Guide*. To generate an *nroff* version, go to the doc/ directory and type:

% (cd ../doc/; make ADMIN.doc)

If you're already running *MH* at your site, you should also read the *mh* changes document **CHANGES**. The source is in **papers/changes/**.

After reading the *Administrator's Guide*, you may decide to change your MH configuration. If so, cd back to the **conf/** directory, re-edit the files **MH** and **conf/config/mtstailor**, and re-run *mhconfig*.

You now proceed based on your choice of a transport system (the setting for mts above). The best interface is achieved with ''sendmail'' followed by ''mmdf'' or (''mmdf2''), and then ''mh'' (stand–alone delivery, not recommended).

SENDMAIL

If you have not enabled BBoards or POP then no further MTS–specific action is required on your part!

If you have enabled POP, but you want to let *SendMail* deliver mail POP mail using its standard delivery program **/bin/mail**, then, again, no further MTS–specific action is required on your part!

Otherwise, go to the mts/sendmail/ directory.

% cd ../mts/sendmail/

This directory contains files whose definitions correspond to the configuration of your *SendMail* system. If you have enabled BBoards or POP service, then you will need to re–configure *SendMail*. First, in the ''local info'' section of your site's *SendMail* configuration file, choose a free macro/class (B is used in this distribution), and add these lines:

```
# BBoards support
DBbboards
CBbboards
```

Second, immediately after the inclusion of the zerobase file, in the ''machine dependent part of ruleset zero'' section, add these lines:

```
# resolve names for the BBoards system
R$+<@$=B>	$#bboards$@$2$:$1	topic@bboards
```

Be sure to use tabs when separating these fields. Third, add the line

```
include(bboardsMH.m4)
```

after the line

```
include(localm.m4)
```

in your site's *SendMail* configuration file. Finally, you should link the file **mts/sendmail/bboardsMH.m4** into your *SendMail* cf/ directory and re–configure *SendMail*.

If you have enabled POP service, a similar procedure must be used on the POP service host, to re–configure *SendMail*. First, in the ''local info'' section of your site's *SendMail* configuration file, choose a free macro/class (P is used in this distribution), and add these lines:

```
# POP support
DPpop
CPpop
```

Second, immediately after the inclusion of the zerobase file, in the ‘‘machine dependent part of ruleset zero’’ section, add these lines:

```
# resolve names for the POP system
R$+&lt;@$=P>	$#pop$@$2$:$1	subscriber@pop
```

Be sure to use tabs when separating these fields. Third, add the line

```
include(popMH.m4)
```

after the line

```
include(localm.m4)
```

in your site’s *SendMail* configuration file. Finally, you should link the file **mts/sendmail/popMH.m4** into your *SendMail* cf/ directory and re–configure *SendMail*.

MMDF

If you want *MMDF* to be your transport service, and have **NOT** specified ‘‘mmdf/smtp’’ (or ‘‘mmdf2/smtp’’) as your mts setting, then go to the mmdf/ directory. (If you’re using ‘‘mmdf/smtp’’ or ‘‘mmdf2/smtp’’ as your mts setting, then skip to the next section.)

```
% cd ../mts/mmdf/
```

This directory contains files whose definitions correspond to the configuration of your *MMDF* system.

If you’re running *MMDF–I*, then copy the following files from wherever you keep the *MMDF* sources to this directory: mmdf/h/ch.h, mmdf/h/conf.h, utildir/conf_util.h, utildir/ll_log.h, mmdf/h/mmdf.h, utildir/util.h, mmdf/mmdf_lib.a, and utildir/util_lib.a.

If you’re running *MMDF–II*, then copy the following files from where you keep the *MMDF* sources to this directory: h/ch.h, h/conf.h, h/dm.h, h/ll_log.h, h/mmdf.h, h/util.h, and lib/libmmdf.a

If you have enabled bboards, then the directories **support/bboards/mmdfI** and **support/bboards/mmdfII** contain information you’ll need to put a UCI BBoards channel in your *MMDF* configuration. Similarly, if you have enabled option ‘‘mf’’ and are running *MMDF–I*, then the **zotnet/mf/mmdfI/** directory contains information you’ll need to put a *UUCP* channel in your *MMDF–I* configuration. Finally, the directory **support/pop/mmdfII** contains information you’ll need to put a POP channel in your *MMDF–II* configuration.

Note that *MMDF–II* is distributed with the BBoards channel, although the version in the *MH* distribution might be more current, the version in the *MMDF–II* distribution has been tested with that revision of *MMDF*.

MMDF/SMTP

If you are using ‘‘mmdf/smtp’’ as your mts setting, then no further MTS–specific action is required on your part!

MMDF2/SMTP

If you are using ‘‘mmdf2/smtp’’ as your mts setting, then no further MTS–specific action is required on your part!

STAND–ALONE DELIVERY

If, instead, you want *MH* to handle its own mail delivery, then no further MTS–specific action is required on your part!

GENERATION

Go to the *MH* top-level directory and generate the system.

```
% cd ../; make
```

This will cause a complete generation of the *MH* system. If all goes well, proceed with installation. If not, complain, as there ‘‘should be no problems’’ at this step.

INSTALLATION

If the directories you chose for the user–programs, support–programs and manuals (‘‘bin’’, ‘‘etc’’, ‘‘popdir’’, ‘‘slibdir’’, and ‘‘mandir’’ in the **conf/MH** file) don’t exist, you should create them at this point.

Next, if you enabled support for the UCI BBoards facility, then create a login called ‘‘bboards’’ with the following characteristics: home directory is **/usr/spool/bboards/** with mode 755 (actually, use the value for ‘‘bbhome’’ given in the *MH* configuration file), login shell is **/bin/csh** (or **/bin/sh**), and, encrypted password field is ‘‘*’’. The ‘‘bboards’’ login should own the **/usr/spool/bboards/** directory. In addition to creating **/usr/spool/bboards/**, also create **/usr/spool/bboards/etc/** and **/usr/spool/bboards/archive/**. These directories should also be owned by the ‘‘bboards’’ login.

If you enabled support for POP, then on the POP service host, create a login called ‘‘pop’’ with the following characteristics: home directory is **/usr/spool/pop/** with mode 755, login shell is **/bin/csh**, and, encrypted password field is ‘‘*’’. If you don’t have **/bin/csh** on your system (V7), then **/bin/sh** is just fine. The ‘‘pop’’ login should own the **/usr/spool/pop/** directory. You’ll also need to add a line to the **/etc/services** file and the **/etc/rc.local** file, see the *Administrator’s Guide* for more details.

If this is not the first time you have installed *MH*, these files will need particular attention:

Directory	*Files*
‘‘etc/’’	MailAliases, BBoardAliases, mtstailor
/usr/spool/bboards/	BBoards, .cshrc, .mh_profile
/usr/spool/bboards/etc/	*

The **MailAliases**, **BBoardAliases**, **mtstailor** and **BBoards** files will **NOT** be installed over existing copies; you will need to edit these by hand and merge in any changes from your previous *MH* release. The other files under **/usr/spool/bboards/** will be overwritten if they exist. You may wish to preserve your old versions of these before installing *MH*.

As the super-user, and from the mh.6/ directory, install the system.

```
# make inst–all
```

This will cause the *MH* processes and files to be transferred to the appropriate areas with the appropriate attributes.

TAILORING

See the *Administrator’s Guide* for information on tailoring *MH* for the MTS, BBoards, and POP.

DOCUMENTATION

In addition to this document, the *Administrator’s Guide*, and the *User’s Manual*, there are several documents referenced by the user’s manual which may be useful. The sources for all of these can be found under the **papers/** directory.

OTHER THINGS

Consult the directory **miscellany/** for the sources to a number of things which aren’t part of the mainstream *MH* distribution, but which are still quite useful.

FILES

Too numerous to mention. Really.

SEE ALSO

make(1)

BUGS

The *mhconfig* program should be smarter.

There’s no way to print the *Administrator’s Guide* until after you have configured the system; it is difficult to configure the system without the *Administrator’s Guide*.

The Makefiles should know when *mhconfig* has been run and force ‘‘make clean’’ behavior.