ULTRIX

Reference Pages Section 7: Macro Packages and Conventions

Order Number: AA-LY19B-TE
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Product Version: ULTRIX Version 4.0 or higher

This manual contains miscellaneous information, including ASCII character codes, mail addressing formats, text formatting macros, and a description of the root file system for both RISC and VAX platforms.

digital equipment corporation
maynard, massachusetts

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About Reference Pages

The *ULTRIX Reference Pages* describe commands, system calls, routines, file formats, and special files for RISC and VAX platforms.

Sections

The reference pages are divided into eight sections according to topic. Within each section, the reference pages are organized alphabetically by title, except Section 3, which is divided into subsections. Each section and most subsections have an introductory reference page called `intro` that describes the organization and anything unique to that section.

Some reference pages carry a one- to three-letter suffix after the section number, for example, `scan`(1mh). The suffix indicates that there is a "family" of reference pages for that utility or feature. The Section 3 subsections all use suffixes and other sections may also have suffixes.

Following are the sections that make up the *ULTRIX Reference Pages*.

Section 1: Commands

This section describes commands that are available to all ULTRIX users. Section 1 is split between two binders. The first binder contains reference pages for titles that fall between A and L. The second binder contains reference pages for titles that fall between M and Z.

Section 2: System Calls

This section defines system calls (entries into the ULTRIX kernel) that are used by all programmers. The introduction to Section 2, `intro`(2), lists error numbers with brief descriptions of their meanings. The introduction also defines many of the terms used in this section.

Section 3: Routines

This section describes the routines available in ULTRIX libraries. Routines are sometimes referred to as subroutines or functions.

Section 4: Special Files

This section describes special files, related device driver functions, databases, and network support.

Section 5: File Formats

This section describes the format of system files and how the files are used. The files described include assembler and link editor output, system accounting, and file system formats.

Section 6: Games

The reference pages in this section describe the games that are available in the unsupported software subset. The reference pages for games are in the document *Reference Pages for Unsupported Software.*

Section 7: Macro Packages and Conventions

This section contains miscellaneous information, including ASCII character codes, mail addressing formats, text formatting macros, and a description of the root file system.

Section 8: Maintenance

This section describes commands for system operation and maintenance.

Platform Labels

The *ULTRIX Reference Pages* contain entries for both RISC and VAX platforms. Pages that have no platform label beside the title apply to both platforms. Reference pages that apply only to RISC platforms have a "RISC" label beside the title and the VAX-only reference pages that apply only to VAX platforms are likewise labeled with "VAX." If each platform has the same command, system call, routine, file format, or special file, but functions differently on the different platforms, both reference pages are included, with the RISC page first.

Reference Page Format

Each reference page follows the same general format. Common to all reference pages is a title consisting of the name of a command or a descriptive title, followed by a section number; for example, `date`(1). This title is used throughout the documentation set.

The headings in each reference page provide specific information. The standard headings are:

Name	Provides the name of the entry and gives a short description.
Syntax	Describes the command syntax or the routine definition. Section 5 reference pages do not use the Syntax heading.
Description	Provides a detailed description of the entry's features, usage, and syntax variations.
Options	Describes the command-line options.
Restrictions	Describes limitations or restrictions on the use of a command or routine.
Examples	Provides examples of how a command or routine is used.

Return Values	Describes the values returned by a system call or routine. Used in Sections 2 and 3 only.
Diagnostics	Describes diagnostic and error messages that can appear.
Files	Lists related files that are either a part of the command or used during execution.
Environment	Describes the operation of the system call or routine when compiled in the POSIX and SYSTEM V environments. If the environment has no effect on the operation, this heading is not used. Used in Sections 2 and 3 only.
See Also	Lists related reference pages and documents in the ULTRIX documentation set.

Conventions

The following documentation conventions are used in the reference pages.

%	The default user prompt is your system name followed by a right angle bracket. In this manual, a percent sign (%) is used to represent this prompt.
#	A number sign is the default superuser prompt.
user input	This bold typeface is used in interactive examples to indicate typed user input.
`system output`	This typeface is used in text to indicate the exact name of a command, routine, partition, pathname, directory, or file. This typeface is also used in interactive examples to indicate system output and in code examples and other screen displays.
UPPERCASE lowercase	The ULTRIX system differentiates between lowercase and uppercase characters. Literal strings that appear in text, examples, syntax descriptions, and function definitions must be typed exactly as shown.
rlogin	This typeface is used for command names in the Syntax portion of the reference page to indicate that the command is entered exactly as shown. Options for commands are shown in bold wherever they appear.
filename	In examples, syntax descriptions, and routine definitions, italics are used to indicate variable values. In text, italics are used to give references to other documents.
[ ]	In syntax descriptions and routine definitions, brackets indicate items that are optional.
{ | }	In syntax descriptions and routine definitions, braces enclose lists from which one item must be chosen. Vertical bars are used to separate items.

. . .	In syntax descriptions and routine definitions, a horizontal ellipsis indicates that the preceding item can be repeated one or more times.
. . .	A vertical ellipsis indicates that a portion of an example that would normally be present is not shown.
`cat`(1)	Cross-references to the *ULTRIX Reference Pages* include the appropriate section number in parentheses. For example, a reference to `cat`(1) indicates that you can find the material on the `cat` command in Section 1 of the reference pages.

Online Reference Pages

The ULTRIX reference pages are available online if installed by your system administrator. The `man` command is used to display the reference pages as follows:

To display the `ls`(1) reference page:

```
% man ls
```

To display the `passwd`(1) reference page:

```
% man passwd
```

To display the `passwd`(5) reference page:

```
% man 5 passwd
```

To display the Name lines of all reference pages that contain the word "passwd":

```
% man -k passwd
```

To display the introductory reference page for the family of 3xti reference pages:

```
% man 3xti intro
```

Users on ULTRIX workstations can display the reference pages using the unsupported `xman` utility if installed. See the `xman`(1X) reference page for details.

Reference Pages for Unsupported Software

The reference pages for the optionally installed, unsupported ULTRIX software are in the document *Reference Pages for Unsupported Software*.

Name

intro – miscellaneous useful information pages

Description

This section contains miscellaneous documentation, mostly in the area of text processing macro packages for `nroff` and other `*roff` formatters.

ascii (7)

Name

ascii – map of ASCII character set

Syntax

cat /usr/pub/ascii

Description

The `ascii` file is a map of the ASCII character set, to be printed as needed. It contains:

```
|000 nul|001 soh|002 stx|003 etx|004 eot|005 enq|006 ack|007 bel|
|010 bs |011 ht |012 nl |013 vt |014 np |015 cr |016 so |017 si |
|020 dle|021 dc1|022 dc2|023 dc3|024 dc4|025 nak|026 syn|027 etb|
|030 can|031 em |032 sub|033 esc|034 fs |035 gs |036 rs |037 us |
|040 sp |041  ! |042  " |043  # |044  $ |045  % |046  & |047  ´ |
|050  ( |051  ) |052  * |053  + |054  , |055  - |056  . |057  / |
|060  0 |061  1 |062  2 |063  3 |064  4 |065  5 |066  6 |067  7 |
|070  8 |071  9 |072  : |073  ; |074  < |075  = |076  > |077  ? |
|100  @ |101  A |102  B |103  C |104  D |105  E |106  F |107  G |
|110  H |111  I |112  J |113  K |114  L |115  M |116  N |117  O |
|120  P |121  Q |122  R |123  S |124  T |125  U |126  V |127  W |
|130  X |131  Y |132  Z |133  [ |134  \ |135  ] |136  ^ |137  _ |
|140  ` |141  a |142  b |143  c |144  d |145  e |146  f |147  g |
|150  h |151  i |152  j |153  k |154  l |155  m |156  n |157  o |
|160  p |161  q |162  r |163  s |164  t |165  u |166  v |167  w |
|170  x |171  y |172  z |173  { |174  | |175  } |176  ~ |177 del|

| 00 nul| 01 soh| 02 stx| 03 etx| 04 eot| 05 enq| 06 ack| 07 bel|
| 08 bs | 09 ht | 0a nl | 0b vt | 0c np | 0d cr | 0e so | 0f si |
| 10 dle| 11 dc1| 12 dc2| 13 dc3| 14 dc4| 15 nak| 16 syn| 17 etb|
| 18 can| 19 em | 1a sub| 1b esc| 1c fs | 1d gs | 1e rs | 1f us |
| 20 sp | 21  ! | 22  " | 23  # | 24  $ | 25  % | 26  & | 27  ´ |
| 28  ( | 29  ) | 2a  * | 2b  + | 2c  , | 2d  - | 2e  . | 2f  / |
| 30  0 | 31  1 | 32  2 | 33  3 | 34  4 | 35  5 | 36  6 | 37  7 |
| 38  8 | 39  9 | 3a  : | 3b  ; | 3c  < | 3d  = | 3e  > | 3f  ? |
| 40  @ | 41  A | 42  B | 43  C | 44  D | 45  E | 46  F | 47  G |
| 48  H | 49  I | 4a  J | 4b  K | 4c  L | 4d  M | 4e  N | 4f  O |
| 50  P | 51  Q | 52  R | 53  S | 54  T | 55  U | 56  V | 57  W |
| 58  X | 59  Y | 5a  Z | 5b  [ | 5c  \ | 5d  ] | 5e  ^ | 5f  _ |
| 60  ` | 61  a | 62  b | 63  c | 64  d | 65  e | 66  f | 67  g |
| 68  h | 69  i | 6a  j | 6b  k | 6c  l | 6d  m | 6e  n | 6f  o |
| 70  p | 71  q | 72  r | 73  s | 74  t | 75  u | 76  v | 77  w |
| 78  x | 79  y | 7a  z | 7b  { | 7c  | | 7d  } | 7e  ~ | 7f del|
```

Files

`/usr/pub/ascii`

Name

environ – user environment

Syntax

extern char **environ;

Description

An array of strings, called the environment, is made available by `execve` when a process begins. By convention, these strings have the form "*name=value*". The following names are used by various commands:

PATH The sequence of directory prefixes that `sh`, `time`, and `nice` apply in searching for a file known by an incomplete path name. The prefixes are separated by a colon (:). The `login`(1) command sets `PATH=:/usr/ucb:/bin:/usr/bin`.

HOME A user's login directory, set by `login` from the password file `passwd`.

TERM The kind of terminal for which output is to be prepared. This information is used by commands, such as `nroff` or `plot`, which may exploit special terminal capabilities. See `/etc/termcap` in `termcap`(5) for a list of terminal types.

SHELL The file name of the user's login shell.

TERMCAP The string describing the terminal in TERM or the name of the termcap file. For further information, see `termcap`(5) and `termcap`(3x).

EXINIT A startup list of commands read by `ex`, `edit`, and `vi`.

USER The login name of the user.

PRINTER The name of the default printer to be used by `lpr`, `lpq`, and `lprm`.

Further names may be placed in the environment by the `export` command and "name=value" arguments in `sh`, or by the `setenv` command if you use `csh`. Arguments can also be placed in the environment at the point of an `execve`. It is unwise to conflict with certain `sh` variables that are frequently exported by `.profile` files: `MAIL`, `PS1`, `PS2`, and `IFS`.

See Also

csh(1), ex(1), login(1), sh(1), execve(2), system(3), termcap(3x), passwd(5), termcap(5)

Name

hier – file system hierarchy

Description

The following is a brief description of the root file system. The major directory hierarchy and representative files are listed.

Symbolic links can be included in the files to provide backward compatibility. To display the links, type:

```
% ls -l
```

See the *Guide to Disk Maintenance* for more detailed information.

/ Directory for root file system. This file system is separated into nonsharable data, (`root` (/)) and sharable data, (`/usr`). These two file systems are each divided into the following types: static data, variable data, and executable data.

/bin Directory for the single user executable data files.

/bin/init Parent of all processes, `init`(8).

/bin/mount
Mount program, `mount`(8).

/dev Directory for devices.

- **MAKEDEV**
  Shell script to create special files
- **MAKEDEV.local**
  Site-specific part of MAKEDEV
- **console** Main console, `tty`(4)
- **rz** SCSI disks, `rz`(4)
- **rrz*** Raw SCSI disks, `rz`(4)
- **rmt*** Tapes
- **mrmt*** Tapes
- **tty*** Terminals, `tty`(4)

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/etc Directory for the machine-specific static data files and shell scripts for booting.

- **crontab** System clock daemon table, `crontab`(5)
- **disktab** Disk characteristics and partition tables, `disktab`(5)
- **fstab** File system configuration table, `fstab`(5)
- **group** Group file, `group`(5)
- **hosts** Host name-to-network address mapping file, `hosts`(5)
- **motd** Message-of-the-day file, `login`(1)
- **networks** Network name-to-network number mapping file, `networks`(5)
- **passwd** Password file, `passwd`(5)
- **protocols** Name-to-number mapping file, `protocols`(5)
- **rc** Shell script to bring the system to multiuser mode

rc.local Site-dependent portion of *rc*
remote Names and description of remote hosts for `tip`(1c) and `remote`(5)
services Network services definition file, `services`(5)
termcap Description of terminal capabilities, `termcap`(5)
ttys Properties of terminals, `ttys`(5)
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/lib Symbolic link to `/usr/lib`.

/lost+found
Directory for connecting detached files for `fsck`(8).

/sys Symbolic link, normally to `/usr/sys`.

/tmp Directory for temporary files (see also `/usr/tmp`).
e* Used by `ed`(1)
ctm* Used by `cc`(1)
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/usr General purpose directory, on which the `/usr` file system is normally mounted (see description that follows).

/var Directory for variable length files, such as spool, administrative, and temporary files. These files can also be located in `/usr/var`. See the *Guide to Disk Maintenance*.

/vmunix Kernel image

The `/usr` directory contains the sharable data. The following is a brief description of the `/usr` file system. The major directory hierarchy and representative files are listed.

/usr Root directory for `/usr` file system.

/usr/adm Directory for administrative information, which is now a symbolic link to `/var/adm`.
crash Directory for crash dumps
vmcore.?,vmunix.? Crash dump files
lpacct Line printer accounting, `lpr`(1)
tracct Phototypesetter accounting, `troff`(1)
wtmp Login history, `utmp`(5)
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/usr/bin Directory for the shared executable data files, including utility programs and Shell scripts.

- **as** assembler
- **cc** C compiler executive (see also `/usr/lib/ccom` and `/usr/lib/cpp`)
- **csh** C shell

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/usr/dict Directory for word lists.

- **spellhist** History file, `spell`(1)
- **words** Word list, `look`(1)

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/usr/doc Directories containing files for the Vol.2 documentation.

- **as** Assembler manual
- **c** C manual

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/usr/etc Directory for utility programs and shell scripts.

/usr/etc/cron
Clock daemon, `cron`(8).

/usr/etc/dump
Dump program, `dump(8)`.

/usr/examples
A directory where components of the base system and Digital's separately licensed products can locate code examples, scripts, and demos for customers to use. A typical use is to complement printed documentation.

/usr/games Directory for games.

- **hangman** Hangman game
- **lib** Library directory for games

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/usr/etc/getty
Part of *login*, `getty`(8).

/usr/include
Directory for standard #include files.

a.out.h	Object file layout, `a.out`(5)
math.h	`matherr`(3m)
stdio.h	Standard I/O, `intro`(3s)
sys	Symbolic link to `/sys/h` (system generation #include files)

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/usr/lib Directory for the shared static data files, such as object libraries.

atrun	System scheduler, `at`(1)
cpp	C preprocessor
libc.a	System calls and standard I/O (2,3,3S)
font	Directory for `*roff`(1) fonts
lint	Directory for utility files for `lint`(1)
tmac	Directory for `*roff`(1) macros
units	Data file of conversion tables for `units`(1)
uucp	Directory for `uucp`(1c) programs and data

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/usr/man Directory for unformatted and preformatted reference (manual) pages.

cat1	Section 1 (preformatted)
cat2	Section 2 (preformatted)
cat3	Section 3 (preformatted)

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man1	Section 1 (unformatted)
man2	Section 2 (unformatted)
man3	Section 3 (unformatted)

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/usr/mdec Directory for ULTRIX boot files.

/usr/msgs Directory for messages, `msgs`(1).

/usr/new Directory for binaries of new versions of programs.

/usr/preserve
Directory for editor `temp` files preserved after crashes or hangups.

/usr/skel Directory for sample *user* startup files.

.cshrc	Startup file for `csh`(1)
.login	Login startup file for `csh`(1)
.mailrc	Startup file for `mail`(1)
.profile	Startup file for `sh`(1)
.project	Lists information used by `finger`(1)

/usr/spool Directory for delayed execution files, which is now a symbolic link to `/var/spool`.
- **at** Directory used by `at`(1)
- **lpd** Directory used by `lpr`(1)
  - **lock** Present when line printer is active
  - **cf*** Copy of file to be printed, if necessary
  - **df*** Daemon control file, `lpd`(8)
  - **tf*** Transient control file (exists while `lpr` is working)
- **mail** Mailboxes for `mail`(1)
  - *name* Mail file for user *name*
  - *name.lock* Lock file (exists while *name* is receiving mail)
- **uucp** Work files and staging area for `uucp`(1c)
  - **LOGFILE** Summary log

/usr/src Generic sources.
- **usr.bin** User sources
  - **troff** `nroff` and `troff` sources
  - **term** Directory of description files for new printers

/usr/sys Directory for system files.
- **b.mips** BINARY for MIPS
- **b.vax** BINARY for VAX
- **fs** Filesystem SRC
- **net** Network SRC
- **mips** MIPS-specific SRC
- **vax** VAX-specific SRC
- **data** System data files
- **conf/{mips,vax}** Configuration files
- **h** #include files
- **SAS** Standalone system
- **sys** Machine independent SRC

/usr/tmp Symbolic link to `/var/tmp`.

See Also

apropos(1), find(1), finger(1), grep(1), ls(1), whatis(1), whereis(1), which(1), ncheck(8)
Guide to Disk Maintenance

Name

hier – file system hierarchy

Description

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- **MAKEDEV**
  Shell script to create special files
- **MAKEDEV.local**
  Site-specific part of MAKEDEV
- **console** Main console, `tty`(4)
- **hp*** disks, `hp`(4)
- **rhp*** Raw disks, `hp`(4)
- **ra*** UNIBUS disks, `ra`(4)
- **tty*** Terminals, `tty`(4)

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- **motd** Message-of-the-day file, `login`(1)
- **networks** Network name-to-network number mapping file, `networks`(5)
- **passwd** Password file, `passwd`(5)
- **protocols** Name-to-number mapping file, `protocols`(5)
- **rc** Shell script to bring the system to multiuser mode
- **rc.local** Site-dependent portion of *rc*

remote Names and description of remote hosts for `tip`(1c) and `remote`(5)
services Network services definition file, `services`(5)
termcap Description of terminal capabilities, `termcap`(5)
ttys Properties of terminals, `ttys`(5)

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/lib Symbolic link to `/usr/lib`.

/lost+found
Directory for connecting detached files for `fsck`(8).

/sys Symbolic link, normally to `/usr/sys`.

/tmp Directory for temporary files (see also `/usr/tmp`).
e* Used by `ed`(1)
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/usr General purpose directory, on which the `/usr` file system is normally mounted (see description that follows).

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/vmunix Kernel image

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vmcore.?,vmunix.? Crash dump files
lpacct Line printer accounting, `lpr`(1)
tracct Phototypesetter accounting, `troff`(1)
vaacct, vpacct
Varian and Versatec accounting for `vpr`(1), `vtroff`(1), `pac`(8)
wtmp Login history, `utmp`(5)

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/usr/bin Directory for the shared executable data files, including utility programs and Shell scripts.
as assembler
cc C compiler executive (see also `/lib/ccom`, `/lib/cpp`, and `/lib/c2`)

csh C shell

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/usr/dict Directory for word lists.

spellhist History file, `spell`(1)
words Word list, `look`(1)

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/usr/doc Directories containing files for the Vol.2 documentation.

as Assembler manual
c C manual

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/usr/etc Directory for utility programs and shell scripts.

/usr/etc/cron
Clock daemon, `cron`(8).

/usr/etc/dump
Dump program, `dump(8)`.

/usr/examples
A directory where components of the base system and Digital's separately licensed products can locate code examples, scripts, and demos for customers to use. A typical use is to complement printed documentation.

/usr/games Directory for games.

hangman Hangman game
lib Library directory for games

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/usr/etc/getty
Part of *login*, `getty`(8).

/usr/include
Directory for standard #include files.

a.out.h Object file layout, `a.out`(5)
math.h `matherr`(3m)
stdio.h Standard I/O, `intro`(3s)
sys Symbolic link to `/sys/h` (system generation #include files)

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/usr/lib Directory for the shared static data files, such as object libraries.

atrun System scheduler, `at`(1)
ccom C compiler proper

cpp C preprocessor
c2 C code improver
libc.a System calls and standard I/O (2,3,3S)
font Directory for `*roff`(1) fonts
lint Directory for utility files for `lint`(1)
tmac Directory for `nroff`(1) and `*roff`(1) macros
units Data file of conversion tables for `units`(1)
uucp Directory for `uucp`(1c) programs and data
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/usr/man Directory for unformatted and preformatted reference (manual) pages.
cat1 Section 1 (preformatted)
cat2 Section 2 (preformatted)
cat3 Section 3 (preformatted)
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man1 Section 1 (unformatted)
man2 Section 2 (unformatted)
man3 Section 3 (unformatted)
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/usr/mdec Directory for ULTRIX boot files.

/usr/msgs Directory for messages, `msgs`(1).

/usr/new Directory for binaries of new versions of programs.

/usr/preserve
Directory for editor `temp` files preserved after crashes or hangups.

/usr/skel Directory for sample *user* startup files
.cshrc Startup file for `csh`(1)
.login Login startup file for `csh`(1)
.mailrc Startup file for `mail`(1)
.profile Startup file for `sh`(1)
.project Lists information used by `finger`(1)

/usr/spool Directory for delayed execution files, which is now a symbolic link to `/var/spool`.
at Directory used by `at`(1)
lpd Directory used by `lpr`(1)
lock Present when line printer is active
cf* Copy of file to be printed, if necessary
df* Daemon control file, `lpd`(8)
tf* Transient control file (exists while `lpr` is working)
mail Mailboxes for `mail`(1)
name Mail file for user *name*
name.lock Lock file (exists while *name* is receiving mail)
uucp Work files and staging area for `uucp`(1c)
LOGFILE Summary log

/usr/src Generic sources.
- **usr.bin** User sources
  - **troff** `nroff` and `troff` sources
  - **term** Directory of description files for new printers

/usr/sys Directory for system files.
- **BINARY** System object files, `make`(1)
- **cassette** Files for boot cassette
- **conf** Configuration files, `config`(8)
- **data** Drive partition tables
- **floppy** Files for floppy disk
- **h** `#include` files
- **mdec** Headers for 11/750 boot blocks
- **net** General network files
- **netimp** IMP network files
- **netinet** DARPA internet network files
- **netpup** PUP network files
- **stand** Standalone boot binaries
- **sys** Machine-dependent system files
- **vax** VAX-specific system files
- **vaxif** Network interface drivers for the VAX
- **vaxmba** Drivers for devices on the MASSBUS
- **vaxuba** Drivers for devices on the UNIBUS

/usr/tmp Symbolic link to `/var/tmp`.

See Also

apropos(1), find(1), finger(1), grep(1), ls(1), whatis(1), whereis(1), which(1), crontab(5), ncheck(8)
Guide to Disk Maintenance

mailaddr (7)

Name

mailaddr – mail addressing description

Description

Mail addresses are based on the ARPANET protocol listed in the SEE ALSO section of this reference page. In addition, the DECnet address format can be used, if DECnet is installed on your system.

To send mail to DECnet users, use the following address format:

```
nodename::username
```

In this case, *nodename* is the name of the DECnet system, or host, on which the target user resides.

Addresses based on the ARPANET protocol use the following general format:

```
user@domain
```

A domain is a hierarchical dot-separated list of subdomains. For example, the following address is interpreted from right to left:

```
eric@monet.Berkeley.ARPA
```

In the previous example, the message is directed to the ARPA name tables (which do not correspond exactly to the physical ARPANET). The message then proceeds to the Berkeley gateway, after which it is directed to the local host `monet`. When the message reaches `monet`, it is delivered to the user `eric`.

Unlike some other forms of addressing, this does not imply any routing. Thus, an address that is specified as an ARPA address can travel by an alternate route if that route is more convenient or efficient. For example, from Berkeley, the message could go directly to `monet` over the Ethernet, rather than using the Berkeley ARPANET gateway.

Abbreviations. In some instances, you do not have to type an entire domain name. Generally, any information that follows the first dot may be omitted if the sending and receiving domains are the same. For example, a user on calder.Berkeley.ARPA can eliminate the .Berkeley.ARPA when sending to eric@monet, because the sending and receiving hosts are the same.

Other abbreviations are permitted when conflicts do not exist. For example, Berkeley ARPANET hosts can be accessed without adding the .ARPA, if their names do not conflict with a local host name.

Compatible Addresses. To provide compatibility with the previous mail system, some old address formats are converted to the new format. In particular, host::user is converted to user@host providing consistency with the `rcp`(1c) command.

The syntax host!user is converted to user@host.UUCP. Before being sent on, user@host.UUCP is normally converted back to the host!user form. This conversion is done for compatibility with older UUCP hosts.

The current implementation cannot automatically route messages through the UUCP network. Thus, you must explicitly tell the mail system all the hosts your messages must be sent through to arrive at its final destination.

Case Distinctions. Domain names (that is, anything following the at sign (@)) can be a combination of upper- and lowercase characters with the exception of UUCP hostnames. Most hosts accept both upper- and lowercase in user names, with the exception of MULTICS sites.

Differences with ARPA Protocols. Although the UNIX addressing scheme is based on the ARPA mail addressing protocols, there are some significant differences.

Currently, the only top level domain defined by ARPA is the .ARPA domain itself. This is further restricted to having only one level of host specifier. That is, the addresses that ARPA accepts must be in the format user@host.ARPA (where 'host' is one word). For example, the following address is not legal under the ARPA protocols:

```
eric@monet.Berkeley.ARPA
```

Thus, the previous address would be converted to a different format on output to the ARPANET. For example:

```
eric%monet@Berkeley.ARPA
```

Route-addrs. In some instances, a message must be routed through several hosts to reach its final destination. Usually, this action is invisible to the sender; however, it is sometimes desirable to route a message manually. Addresses that are moved manually are called route-addrs. The syntax is as follows:

```
<@hosta,@hostb:user@hostc>
```

The previous example directs the message to *hosta*, to *hostb*, and finally to *hostc*. This route is used regardless of a more efficient path to hostc.

Route-addrs occur frequently on return addresses, because they are generally augmented by the software at each host. It is possible to ignore all but the user@host part of the address to determine the actual sender.

Postmaster. Every site must have a user or user alias designated as postmaster to which problems with the mail system can be addressed.

CSNET. To send messages to CSNET, use the following syntax:

```
user.host@UDel-Relay
```

See Also

mail(1), sendmail(8)
Crocker, D. H., Standard for the Format of Arpa Internet Text Messages, RFC822

man (7)

Name

man – the man macro package for online reference pages

Syntax

tbl *file...* | **nroff** [**–n***N*] [**–rl1**] **–man** | **col** | **...**
tbl *file...* | ***troff** [**–n***N*] [**–rl1**] **–man** | **...**

Description

The `man` macro package is used to format reference manual pages for online viewing or printing. The installed reference pages are formatted by the `man`(1) and the `catman`(8) commands, using the `man` macro package.

The page size is 80 columns by 66 lines for `nroff` output and is 8.5" x 11" when formatted with `*troff` text formatters. Page numbers appear at the bottom of each output page with odd page numbers appearing on the right side and even page numbers appearing on the left side.

The format of the ULTRIX online reference pages is determined by the `man.repro`(7) macro package. The `man` macros are a compatible subset of the `man.repro` macros.

Macros

The following describes the macros in the `man` macro package.

Any *text* argument can range from zero to six words. Quotation marks (" ") can be used to include blanks in words. If *text* is not specified, special treatment is applied to the next input line that has text to be printed. In this way, `.I` can be used to italicize a whole line or `.SM` followed by `.B` to make small bold letters.

A prevailing indent distance is remembered between successive indented paragraphs, and is reset to a default value upon reaching a nonindented paragraph. Default units for indents *i* are ens (an en is 1 `nroff` character or 1/2 em space in current point size).

Typeface and size are reset to default values before each paragraph, and after processing font and size setting macros.

.B [*text...*] Sets text *text* in boldface. If no text is specified, the next text line is set in boldface.

.BI *word1 word2* [*words...*]
Sets *word1* in boldface, *word2* in an italic typeface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.BR *word1 word2* [*words...*]
Sets *word1* in boldface, *word2* in a roman typeface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.CT *character*
Prints the keyboard control character indicator <CTRL/*character*>. For example, `.CT A` prints as <CTRL/A>.

.CW Sets text in constant width font until another font change is found.

.De Ends an unfilled display block (started by `.Ds`). Also ends automatic centering, if it was in effect.

.Ds Starts an unfilled display block. Text between `.Ds` and `.De` is printed in a roman typeface, with 'no fill' mode (no wrapping and blank lines allowed) in effect. The display block is set flush left.

.DT Restores default tabs. Default tabs are set to .5 inches, starting with .5i, 1i, ...

.EE Ends an example and restores basic text defaults and indents.

.EX [*i*] Starts an example. Text between `.EX` and `.EE` is printed in a constant width font with 'no fill' mode (no wrapping and blank lines allowed) in effect. The example is set flush left unless an indent *i* is specified. Units of *i* are ens.

.G [*text...*] Sets *text* in a sans-serif typeface. If no text is specified, the next text line is set in a sans-serif typeface.

.GL [*text...*] Sets *text* in a sans-serif italic typeface. If no text is specified, the next text line is set in a sans-serif italic typeface.

.HB [*words...*]
Sets the text in underline mode or in a sans-serif bold typeface, depending on the type of text formatter (`nroff` or `troff`). If the text formatter is of type `nroff`, the next 999 input lines are formatted in underline mode (`nroff` italic mode), or all the lines up to a font change are formatted in underline mode, depending on which limit is encountered first. If the text formatter is of type `troff`, text is set in a sans-serif bold typeface until a font change is encountered. Up to nine words can also be specified as arguments.

.HP *i* Begins a paragraph with a hanging indent of *i* ens.

.I [*text...*] Sets *text* in an italic typeface. If no text is specified, the next text line is set in an italic typeface.

.I1 *word* Sets a temporary indent to the length of the specified word.

.I2 *word* Reverses one line and then sets a temporary indent to the length of the specified word.

.IB *word1 word2* [*words...*]
Sets *word1* in an italic typeface, *word2* in boldface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.IP *x i* Sets the prevailing indent to *i*. Then begins the indented paragraph with a hanging tag given by the next text line. If the tag does not fit, the macro places the next text on a separate line. Tag *x* appears in bold typeface.

.IR *word1 word2* [*words...*]
Sets *word1* in an italic typeface, *word2* in a roman typeface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.LP Same as the `.PP` macro. This macro is obsolete, but is provided for backwards compatibility.

.MS *reference_page section_subsection* [*punctuation*]
Sets *reference_page* immediately followed by *section_subsection* in parentheses followed by optional *punctuation*, using fonts that distinguish this reference page reference from ordinary text. For example, `manual`(section).

.NE Ends a note. Also cancels automatic centering if it was in effect.

.NT [*header1*] [**C**]
.NT [**C**] [*header2*]
Starts a note. If no arguments are specified, the default header for the note is 'NOTE'. If the first argument is the letter 'C', all text in the note is centered, for the next 99 text lines or until the `.NE` macro is called, whichever comes first. If the first argument is not 'C', it becomes the header of the note, even if *header2* is also specified. The *header2* argument becomes the header of the note if the first argument is 'C'.

.PD [*v*] Sets the interparagraph distance to *v* vertical spaces. Resets the distance to the default value if *v* is omitted.

.PN *x* [*y*] Sets *x* in an italic or constant width typeface (depending on the `*roff` formatter type) and then reverts to the previous typeface. The optional argument *y* is appended to *x* with no space, but printed in the previous typeface. The *x* argument is usually a path name; *y* is usually punctuation.

.Pn *x y* [*z*] Sets *x* in the current typeface, sets *y* in an italic or constant width typeface (depending on the `*roff` formatter type) and appends it to *x*, and finally reverts to the previous typeface. The optional argument *z* is appended to *y*, but printed in the previous typeface. Spaces are removed between *x*, *y*, and *z*, unless quotation marks (" ") are used to enclose strings with spaces. The *x* argument is usually a fixed path name; *y* is usually a variable path name; and *z* is usually punctuation.

.PP Starts a block paragraph. Sets the prevailing indent to .5i for `nroff` and four picas for `*troff` text formatters.

.R Sets the text in a roman typeface until another font change is encountered. Also ends `nroff` underline mode if it was in effect.

.RB *word1 word2* [*words...*]
Sets *word1* in a roman typeface, *word2* in boldface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.RE [*k*] Returns to the *k*th relative right shift indent level. (Restores the left margin to the position prior to the *k*th `.RS` call). Specifying *k*=0 is

equivalent to specifying *k*=1. If *k* is omitted, .RE restores the left margin to the most recent previous position. When *k*=1 or 0, the default .RS indent increment is restored.

.RI *word1 word2* [*words...*]
Sets *word1* in a roman typeface, *word2* in an italic typeface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.RN Prints the return character indicator, <RETURN> .

.RS [*i*] Shifts the left margin to the right (relatively) the amount of *i* ens. The .RS macro calls can be nested up to nine levels. If *i* is not specified for the first .RS call, the relative right shift increases .5 inch for nroff, and four picas for *troff text formatters. Nested .RS calls increment the relative indent by *i* ens, or by .25 inch for nroff, or by 2 picas for *troff text formatters.

.SH *text* Creates a section header.

.SM [*text*] Sets *text* to be two points smaller than the current point size. If no text is specified, the next text line is set in the smaller point size.

.SS *text* Creates a subsection header.

.TB [*words...*]
Same as the .HB macro. This macro is is obsolete, but is provided for backwards compatibility.

.TH *n c*[*s*] [*a*] [*f*] [*x*]
Begins a new reference page and sets the page title. Also sets up headers and footers for output pages, sets up all defaults and traps, and calls the .DT and .PD macros. The title appears as a header on all pages of the formatted reference page. The *n* argument is the reference page name. The *c* argument is the primary section number or letter. The *s* argument is the subsection, if any. The *a* argument is for an optional machine architecture specific label; for example ''VAX''. The *f* argument optionally alters a portion of the page footer. The *x* argument is for optional extra commentary; for example ''Unsupported''.

Fields *n*, *c*, and *s* appear together at the top of each output page (see the top of this page for an example). These fields alternate between the right top and left top of a page header, corresponding to odd and even page numbers. Field *a* appears opposing the page name in the header when formatted with nroff, but appears as a bleed tab when formatted with *troff text formatters. The *f* argument appears in the page footer on the inside edge of the page (left for odd page numbers, right for even). The *x* argument appears underneath the page name in the header.

The last three fields are optional. To skip a field, specify a pair of quotation marks ("") in the field to be skipped.

.TP *i* Sets the prevailing indent to *i*. Then begins the indented paragraph with a hanging tag given by the next text line. If the tag does not fit, the macro places the next text on a separate line.

.VE End a vertical margin bar.

.VS [4] Starts a vertical margin bar, if '4' is specified; otherwise, the macro does nothing.

Macros That Cause Line Breaks

The following macros cause line breaks:

De Ds EE EX HP IP
LP PP RE SH SS TH
TP

Macros That Need Text Lines

The following macros affect the following line of text if they are specified in the input without arguments:

B BI BR G GL I
IB IR RI RB SH SS
SM

Automatic hyphenation is turned on. However, *last* lines (ones that will cause a trap) are not hyphenated and the last and first two characters of a word are not split off.

Characters printed from the Special Font are artificially bolded by three units whenever the current font is '3'.

The default page size is 80 columns by 66 lines for `nroff` output and 8.5" x 11" for output generated by `*troff` text formatters. The text area is horizontally placed on the page so that the effective page margin is .5 inches for `nroff` and 7.5 picas for `*troff` text formatters.

The `.TH` macro sets up the following defaults:

- Text is set in "noadjust" mode; the right margin is ragged.
- The default interparagraph distance is 1v for `nroff` and .5v for `*troff` text formatters.
- The basic text indent is .5 inches for `nroff` and four picas for `*troff` text formatters, from the left margin.
- The maximum text line length is 7 inches for `nroff` and 36 picas for `*troff` text formatters.
- Sets tab stops every .5 inches.
- The basic text point size is 11 points, with line spacing set to 12 points.
- The basic text font is "R" (a roman typeface).
- Reference page headers, section headers, and subsection headers are set in a sans-serif bold typeface.

Options

-n*N* Numbers the first generated page as *N*.

-rl1 Turns on line double-spacing mode.

Restrictions

Predefined Registers

The following registers are predefined by the `man` macro package and should not be changed:

PO Page offset and page margin

IN Left margin indent relative to the section headers

LL Line length including `IN`

PL Page length

The register 'l' is predefined when you specify the `*roff -rl` option. Its default value is 0. The `man`(1) command does not use this option.

Reserved Registers

The following registers are reserved for internal use by the `man`, `man.nopage`, and `man.repro` macro packages:

A1 DX EX l p p#
PF

In addition, registers beginning with the characters ')', ']', and '}' are also reserved for internal use.

Registers predefined by the `nroff`(1), `tbl`(1), commands, and the `*eqn` and `*troff` text preprocessors and formatters should not be redefined.

Predefined Strings

The following strings are predefined by the `man` macro package and should not be changed:

lq " if `nroff`, `` if `*troff`

rq " if `nroff`, '' if `*troff`

S Command string to change type size to 10 points.

Reserved Strings and Macros

The following string and macro names are reserved for internal use by the `man`, `man.nopage`, and `man.repro` macro packages:

##	A1	BD	BK	CD	D
DE	DS	HH	ID	LD	NO
NX	P	UF	ya	yn	yl
ys					

In addition, names begining with the characters ')', ']', and '}' are also reserved for internal use.

Names predefined by the `nroff`(1), `tbl`(1), commands, and the `*eqn` and `*troff` text preprocessors and formatters should not be redefined.

.TH Macro Restrictions

The section number should only be 1-8, 'n', 'l', 'o', or 'p'. Other values might not be recognized by the man(1) or catman(8) commands.

Sections 6, 7, 'n', 'l', 'o', and 'p' do not currently have subsections, so subsections should not be specified.

The architecture field (*a*) should not exceed four characters. A value longer than four characters might print outside the right page margin.

Reference pages containing *eqn commands should be preprocessed by an *neqn text preprocessor before being installed on the system.

Reference pages containing tbl(1) commands must not be preprocessed before being installed on the system.

The Name Section

The catman(8) command assumes the Name section of a reference page has the following format:

```
name[, name, name ...] \- explanatory text
```

There should be at least one space after any comma and only one space following the "backslash hyphen" (\-). There should not be any *roff commands in the explanatory text. The explanatory text should be brief. The catman(8) command combines information in the Name section with parameters of the .TH macro to create an entry in a database searched by the apropos(1), man(1), and whatis(1) commands.

Portability Considerations

The ULTRIX man macro packages contain extensions and enhancements borrowed from other macro packages. If you have a need to write portable reference pages, you should not use the following macros:

CT	CW	De	Ds	EE	EX
G	GL	HB	HP	I1	I2
LP	MS	NE	NT	PN	Pn
R	RN	TB	UF		

The LP and TB macros are obsolete.

The ULTRIX man .TH macro differs from other implemenations of the .TH macro. The primary differences are in the placement of the page title, and third and fifth fields in the *roff output. The page title (the page name and section number) is commonly placed on both sides of the page header in other implementations. The more common placement of the third field is in the center of the page footer. The more common placement of the fifth field is in the center of the page header.

Use of the tbl(1) and *eqn commands should be avoided, because the version of the man(1) command in some other implementations might not preprocess reference pages through the tbl(1) command. The *eqn commands also might not be installed.

Files

`/usr/lib/tmac/tmac.an` The `man` macro package file

See Also

col(1), man(1), nroff(1), tbl(1), man.nopage(7), man.repro(7), catman(8)

man.nopage(7)

Name

man.nopage – the man.nopage macro package for printing reference pages

Syntax

tbl *file...* | **nroff** [**–n***N*] [**–rp***S*] [**–rl1**] **–man.nopage** | **col** | **...**
tbl *file...* | ***troff** [**–n***N*] [**–rp***S*] [**–rl1**] **–man.nopage** | **...**

Description

The `man.nopage` macro package is used to format reference manual pages for unpaginated viewing or for printing on line printers. The installed reference pages are formatted by the `man`(1) and the `catman`(8) commands, using the `man` macro package.

The page width is 80 columns when formatted by the `nroff`(1) command and is 8.5 inches when formatted with `*troff` text formatters. The output is unpaginated when formatted by the `nroff` command, hence the name 'nopage'. The output is paginated when formatted by `*troff` text formatters, with page numbers appearing at the bottom of each output page with odd page numbers appearing on the right side and even page numbers appearing on the left side. The `*troff` output is similar to the output generated with the `man.repro`(7) macro package.

The format of the ULTRIX online reference pages is determined by the `man.repro`(7) macro package. The `man.nopage` macros are a compatible subset of the `man.repro` macros.

Macros

The following describes the macros in the `man` macro package.

Any *text* argument can range from zero to six words. Quotation marks (" ") can be used to include blanks in words. If *text* is not specified, special treatment is applied to the next input line that has text to be printed. In this way, `.I` can be used to italicize a whole line or `.SM` followed by `.B` to make small bold letters.

A prevailing indent distance is remembered between successive indented paragraphs, and is reset to a default value upon reaching a nonindented paragraph. Default units for indents *i* are ens (an en is 1 `nroff` character or 1/2 em space in current point size).

Typeface and size are reset to default values before each paragraph, and after processing font and size setting macros.

.B [*text...*] Sets text *text* in boldface. If no text is specified, the next text line is set in boldface.

.BI *word1 word2* [*words...*]
Sets *word1* in boldface, *word2* in an italic typeface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.BR *word1 word2* [*words...*]
Sets *word1* in boldface, *word2* in a roman typeface, and then alternates

between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.CT *character*
Prints the keyboard control character indicator <CTRL/*character*> . For example, `.CT A` prints as <CTRL/A> .

.CW Sets text in a constant width font until another font change is encountered.

.De Ends an unfilled display block (started by `.Ds`). Also ends automatic centering, if it was in effect.

.Ds Starts an unfilled display block. Text between `.Ds` and `.De` is printed in a roman typeface, with 'no fill' mode (no wrapping and blank lines allowed) in effect. The display block is set flush left.

.DT Restores default tabs. Default tabs are set to .5 inches, starting with .5i, 1i, ...

.EE Ends an example and restores basic text defaults and indents.

.EX [*i*] Starts an example. Text between `.EX` and `.EE` is printed in a constant width font with 'no fill' mode (no wrapping and blank lines allowed) in effect. The example is set flush left unless an indent *i* is specified. Units of *i* are ens.

.G [*text...*] Sets *text* in a sans-serif typeface. If no text is specified, the next text line is set in a sans-serif typeface.

.GL [*text...*] Sets *text* in a sans-serif italic typeface. If no text is specified, the next text line is set in a sans-serif italic typeface.

.HB [*words...*]
Sets the text in underline mode or in a sans-serif bold typeface, depending on the type of text formatter (`nroff` or `troff`). If the text formatter is of type `nroff`, the next 999 input lines are formatted in underline mode (`nroff` italic mode), or all the lines up to a font change are formatted in underline mode, depending on which limit is encountered first. If the text formatter is of type `troff`, text is set in a sans-serif bold typeface until a font change is encountered. Up to nine words can also be specified as arguments.

.HP *i* Begins a paragraph with a hanging indent of *i* ens.

.I [*text...*] Sets *text* in an italic typeface. If no text is specified, the next text line is set in an italic typeface.

.I1 *word* Sets a temporary indent to the length of the specified word.

.I2 *word* Reverses one line and then sets a temporary indent to the length of the specified word.

.IB *word1 word2* [*words...*]
Sets *word1* in an italic typeface, *word2* in boldface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.IP *x i* Sets the prevailing indent to *i*. Then begins the indented paragraph with a hanging tag given by the next text line. If the tag does not fit, the macro places the next text on a separate line. Tag *x* appears in bold typeface.

.IR *word1 word2* [*words...*]
Sets *word1* in an italic typeface, *word2* in a roman typeface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.LP Same as the `.PP` macro. This macro is obsolete, but is provided for backwards compatibility.

.MS *reference_page section_subsection* [*punctuation*]
Sets *reference_page* immediately followed by *section_subsection* in parentheses followed by optional *punctuation*, using fonts that distinguish this reference page reference from ordinary text. For example, `manual`(section).

.NE Ends a note. Also cancels automatic centering if it was in effect.

.NT [*header1*] [**C**]
.NT [**C**] [*header2*]
Starts a note. If no arguments are specified, the default header for the note is 'NOTE'. If the first argument is the letter 'C', all text in the note is centered, for the next 99 text lines or until the `.NE` macro is called, whichever comes first. If the first argument is not 'C', it becomes the header of the note, even if *header2* is also specified. The *header2* argument becomes the header of the note if the first argument is 'C'.

.PD [*v*] Sets the interparagraph distance to *v* vertical spaces. Resets the distance to the default value if *v* is omitted.

.PN *x* [*y*] Sets *x* in an italic or constant width typeface (depending on the `*roff` formatter type) and then reverts to the previous typeface. The optional argument *y* is appended to *x* with no space, but printed in the previous typeface. The *x* argument is usually a path name; *y* is usually punctuation.

.Pn *x y* [*z*] Sets *x* in the current typeface, sets *y* in an italic or constant width typeface (depending on the `*roff` formatter type) and appends it to *x*, and finally reverts to the previous typeface. The optional argument *z* is appended to *y*, but printed in the previous typeface. Spaces are removed between *x*, *y*, and *z*, unless quotation marks (" ") are used to enclose strings with spaces. The *x* argument is usually a fixed path name; *y* is usually a variable path name; and *z* is usually punctuation.

.PP Starts a block paragraph. Sets the prevailing indent to .5i for `nroff` and four picas for `*troff` text formatters.

.R Sets the text in a roman typeface until another font change is encountered. Also ends `nroff` underline mode if it was in effect.

.RB *word1 word2* [*words...*]
Sets *word1* in a roman typeface, *word2* in boldface, and then alternates between these two fonts for the remaining words, up to six words.

Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.RE [*k*] Returns to the *k*th relative right shift indent level. (Restores the left margin to the position prior to the *k*th `.RS` call). Specifying *k*=0 is equivalent to specifying *k*=1. If *k* is omitted, `.RE` restores the left margin to the most recent previous position. When *k*=1 or 0, the default `.RS` indent increment is restored.

.RI *word1 word2* [*words...*]
Sets *word1* in a roman typeface, *word2* in an italic typeface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.RN Prints the return character indicator, <RETURN> .

.RS [*i*] Shifts the left margin to the right (relatively) the amount of *i* ens. The `.RS` macro calls can be nested up to nine levels. If *i* is not specified for the first `.RS` call, the relative right shift increases .5 inch for `nroff` and four picas for `*troff` text formatters. Nested `.RS` calls increment the relative indent by *i* ens, or by .25 inch for `nroff`, or by 2 picas for `*troff` text formatters.

.SH *text* Creates a section header.

.SM [*text*] Sets *text* to be two points smaller than the current point size. If no text is specified, the next text line is set in the smaller point size.

.SS *text* Creates a subsection header.

.TB [*words...*]
Same as the `.HB` macro. This macro is is obsolete, but is provided for backwards compatibility.

.TH *n c*[*s*] [*a*] [*f*] [*x*]
Begins a new reference page and sets the page title. Also sets up headers and footers for output pages, sets up all defaults and traps, and calls the `.DT` and `.PD` macros. The title appears as a header on all pages of the formatted reference page. The *n* argument is the reference page name. The *c* argument is the primary section number or letter. The *s* argument is the subsection, if any. The *a* argument is for an optional machine architecture specific label; for example "VAX". The *f* argument optionally alters a portion of the page footer. The *x* argument is for optional extra commentary; for example "Unsupported".

Fields *n*, *c*, and *s* appear together at the top of each output page (see the top of this page for an example). These fields alternate between the right top and left top of a page header, corresponding to odd and even page numbers. Field *a* appears opposing the page name in the header when formatted with `nroff`, but appears as a bleed tab when formatted with `*troff` text formatters. The *f* argument appears in the page footer on the inside edge of the page (left for odd page numbers, right for even). The *x* argument appears underneath the page name in the header.

The last three fields are optional. To skip a field, specify a pair of quotation marks ("") in the field to be skipped.

.TP *i* — Sets the prevailing indent to *i*. Then begins the indented paragraph with a hanging tag given by the next text line. If the tag does not fit, the macro places the next text on a separate line.

.VE — End a vertical margin bar.

.VS [4] — Starts a vertical margin bar, if '4' is specified; otherwise, the macro does nothing.

Macros That Cause Line Breaks

The following macros cause line breaks:

De Ds EE EX HP IP
LP PP RE SH SS TH
TP

Macros That Need Text Lines

The following macros affect the following line of text if they are specified in the input without arguments:

B BI BR G GL I
IB IR RI RB SH SS
SM

Automatic hyphenation is turned on. However, *last* lines (ones that will cause a trap) are not hyphenated and the last and first two characters of a word are not split off.

Characters printed from the Special Font are artificially bolded by three units whenever the current font is '3'.

The default page width is 80 columns `nroff` output and 8.5 inches for output generated by `*troff` text formatters. The text area is horizontally placed on the page so that the effective page margin is .5 inches for `nroff` and 7.5 picas for `*troff` text formatters.

The default page length is unlimited (unpaginated) for `neroff` output, but is 11 inches for output generated by `*troff` text formatters.

The `.TH` macro sets up the following defaults:

- Text is set in ''noadjust'' mode; the right margin is ragged.
- The default interparagraph distance is 1v for `nroff` and .5v for `*troff` text formatters.
- The basic text indent is .5 inches for `nroff` and four picas for `*troff` text formatters, from the left margin.
- The maximum text line length is 7 inches for `nroff` and 36 picas for `*troff` text formatters.
- Sets tab stops every .5 inches.
- The basic text point size is 11 points, with line spacing set to 12 points.
- The basic text font is ''R'' (a roman typeface).
- Reference page headers, section headers, and subsection headers are set in a sans-serif bold typeface.

The default section number, which apepras like a ''chapter'' number in page footers is 0 for `*troff` output. There are no page footers for `nroff` output.

Options

–n*N* Numbers the first generated page as *N*.

–rl1 Turns on line double-spacing mode.

–rp*S* Sets the section number fo *S*. Section numbers appear in output page footers as *S–N* (chapter–page-number).

Restrictions

Predefined Registers

The following registers are predefined by the `man` macro package and should not be changed:

PO Page offset and page margin

IN Left margin indent relative to the section headers

LL Line length including `IN`

PL Page length

The register 'l' is predefined when you specify the `*roff -rl` option. Its default value is 0. The `man`(1) command does not use this option.

The register 'p' is predefined when you specify the `*roff -rp` option. Its default value is 0. The `man`(1) command does not use this option.

Reserved Registers

The following registers are reserved for internal use by the `man`, `man.nopage`, and `man.repro` macro packages:

A1 DX EX l p p#
PF

In addition, registers beginning with the characters ')', ']', and '}' are also reserved for internal use.

Registers predefined by the `nroff`(1), `tbl`(1), commands, and the `*eqn` and `*troff` text preprocessors and formatters should not be redefined.

Predefined Strings

The following strings are predefined by the `man` macro package and should not be changed:

lq " if `nroff`, `` if `*troff`

rq " if `nroff`, '' if `*troff`

S Command string to change type size to 10 points.

Reserved Strings and Macros

The following string and macro names are reserved for internal use by the man, man.nopage, and man.repro macro packages:

##	A1	BD	BK	CD	D
DE	DS	HH	ID	LD	NO
NX	P	UF	ya	yn	yl
ys					

In addition, names begining with the characters ')', ']', and '}' are also reserved for internal use.

Names predefined by the nroff(1), tbl(1), commands, and the *eqn and *troff text preprocessors and formatters should not be redefined.

.TH Macro Restrictions

The section number should only be 1-8, 'n', 'l', 'o', or 'p'. Other values might not be recognized by the man(1) or catman(8) commands.

Sections 6, 7, 'n', 'l', 'o', and 'p' do not currently have subsections, so subsections should not be specified.

The architecture field (*a*) should not exceed four characters. A value longer than four characters might print outside the right page margin.

Reference pages containing *eqn commands should be preprocessed by an *neqn text preprocessor before being installed on the system.

Reference pages containing tbl(1) commands must not be preprocessed before being installed on the system.

The Name Section

The catman(8) command assumes the Name section of a reference page has the following format:

```
name[, name, name ...] \- explanatory text
```

There should be at least one space after any comma and only one space following the "backslash hyphen" (\-). There should not be any *roff commands in the explanatory text. The explanatory text should be brief. The catman(8) command combines information in the Name section with parameters of the .TH macro to create an entry in a database searched by the apropos(1), man(1), and whatis(1) commands.

Portability Considerations

The ULTRIX man macro packages contain extensions and enhancements borrowed from other macro packages. If you have a need to write portable reference pages, you should not use the following macros:

CT	CW	De	Ds	EE	EX
G	GL	HB	HP	I1	I2
LP	MS	NE	NT	PN	Pn
R	RN	TB	UF		

The LP and TB macros are obsolete.

The ULTRIX man .TH macro differs from other implemenations of the .TH macro. The primary differences are in the placement of the page title, and third and fifth fields in the *roff output. The page title (the page name and section number) is commonly placed on both sides of the page header in other implementations. The more common placement of the third field is in the center of the page footer. The more common placement of the fifth field is in the center of the page header.

Use of the tbl(1) and *eqn commands should be avoided, because the version of the man(1) command in some other implementations might not preprocess reference pages through the tbl(1) command. The *eqn commands also might not be installed.

Files

/usr/lib/tmac/tmac.an.nopage
The man.nopage macro package file

See Also

col(1), man(1), nroff(1), tbl(1), man(7), man.repro(7), catman(8)

man.repro (7)

Name

man.repro – the man.repro macro package for typesetting reference pages

Syntax

tbl *file...* | **nroff** [**–n***N*] [**–rp***S*] [**–rl1**] **–man.repro** | **col** | **...**
tbl *file...* | ***troff** [**–n***N*] [**–rp***S*] [**–rl1**] **–man.repro** | **...**

Description

The `man.repro` macro package is used to format reference manual pages for printing or typsetting. This reference page was formatted by a `*troff` text formatter, using the `man.repro` macro package. `nroff`(1) command, using the `man.repro` macro package, or was formatted by the `man`(1) and the `catman`(8) commands, using the `man` macro package.

The page size is 80 columns by 66 lines for `nroff` output and is 8.5" x 11" when formatted with `*troff` text formatters. Page numbers appear at the bottom of each output page with odd page numbers appearing on the right side and even page numbers appearing on the left side. Page footers can optionally include the name of the reference page section.

The format of the ULTRIX online reference pages is determined by the `man.repro` macro package.

Macros

The following describes the macros in the `man.repro` macro package.

Any *text* argument can range from zero to six words. Quotation marks (" ") can be used to include blanks in words. If *text* is not specified, special treatment is applied to the next input line that has text to be printed. In this way, `.I` can be used to italicize a whole line or `.SM` followed by `.B` to make small bold letters.

A prevailing indent distance is remembered between successive indented paragraphs, and is reset to a default value upon reaching a nonindented paragraph. Default units for indents *i* are ens (an en is 1 `nroff` character or 1/2 em space in current point size).

Typeface and size are reset to default values before each paragraph, and after processing font and size setting macros.

.B [*text...*] Sets text *text* in boldface. If no text is specified, the next text line is set in boldface.

.BI *word1 word2* [*words...*]
Sets *word1* in boldface, *word2* in an italic typeface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.BR *word1 word2* [*words...*]
Sets *word1* in boldface, *word2* in a roman typeface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.CT *character*
Prints the keyboard control character indicator <CTRL/*character*> . For example, `.CT A` prints as <CTRL/A> .

.CW Sets text in a constant width font until another font change is encountered.

.De Ends an unfilled display block (started by `.Ds`). Also ends automatic centering, if it was in effect.

.Ds Starts an unfilled display block. Text between `.Ds` and `.De` is printed in a roman typeface, with 'no fill' mode (no wrapping and blank lines allowed) in effect. The display block is set flush left.

.DT Restores default tabs. Default tabs are set to .5 inches, starting with .5i, 1i, ...

.EE Ends an example and restores basic text defaults and indents.

.EX [*i* **]** Starts an example. Text between `.EX` and `.EE` is printed in a constant width font with 'no fill' mode (no wrapping and blank lines allowed) in effect. The example is set flush left unless an indent *i* is specified. Units of *i* are ens.

.G [*text...* **]** Sets *text* in a sans-serif typeface. If no text is specified, the next text line is set in a sans-serif typeface.

.GL [*text...* **]** Sets *text* in a sans-serif italic typeface. If no text is specified, the next text line is set in a sans-serif italic typeface.

.HB [*words...* **]**
Sets the text in underline mode or in a sans-serif bold typeface, depending on the type of text formatter (`nroff` or `troff`). If the text formatter is of type `nroff`, the next 999 input lines are formatted in underline mode (`nroff` italic mode), or all the lines up to a font change are formatted in underline mode, depending on which limit is encountered first. If the text formatter is of type `troff`, text is set in a sans-serif bold typeface until a font change is encountered. Up to nine words can also be specified as arguments.

.HP *i* Begins a paragraph with a hanging indent of *i* ens.

.I [*text...* **]** Sets *text* in an italic typeface. If no text is specified, the next text line is set in an italic typeface.

.I1 *word* Sets a temporary indent to the length of the specified word.

.I2 *word* Reverses one line and then sets a temporary indent to the length of the specified word.

.IB *word1 word2* [*words...*]
Sets *word1* in an italic typeface, *word2* in boldface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.IP *x i* Sets the prevailing indent to *i*. Then begins the indented paragraph with a hanging tag given by the next text line. If the tag does not fit, the macro places the next text on a separate line. Tag *x* appears in bold typeface.

.IR *word1 word2* [*words...*]
Sets *word1* in an italic typeface, *word2* in a roman typeface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.LP Same as the `.PP` macro. This macro is obsolete, but is provided for backwards compatibility.

.MS *reference_page section_subsection* [*punctuation*]
Sets *reference_page* immediately followed by *section_subsection* in parentheses followed by optional *punctuation*, using fonts that distinguish this reference page reference from ordinary text. For example, `manual`(section).

.NE Ends a note. Also cancels automatic centering if it was in effect.

.NT [*header1*] [**C**]
.NT [**C**] [*header2*]
Starts a note. If no arguments are specified, the default header for the note is 'NOTE'. If the first argument is the letter 'C', all text in the note is centered, for the next 99 text lines or until the `.NE` macro is called, whichever comes first. If the first argument is not 'C', it becomes the header of the note, even if *header2* is also specified. The *header2* argument becomes the header of the note if the first argument is 'C'.

.PD [*v*] Sets the interparagraph distance to *v* vertical spaces. Resets the distance to the default value if *v* is omitted.

.PN *x* [*y*] Sets *x* in an italic or constant width typeface (depending on the `*roff` formatter type) and then reverts to the previous typeface. The optional argument *y* is appended to *x* with no space, but printed in the previous typeface. The *x* argument is usually a path name; *y* is usually punctuation.

.Pn *x y* [*z*] Sets *x* in the current typeface, sets *y* in an italic or constant width typeface (depending on the `*roff` formatter type) and appends it to *x*, and finally reverts to the previous typeface. The optional argument *z* is appended to *y*, but printed in the previous typeface. Spaces are removed between *x*, *y*, and *z*, unless quotation marks (" ") are used to enclose strings with spaces. The *x* argument is usually a fixed path name; *y* is usually a variable path name; and *z* is usually punctuation.

.PP Starts a block paragraph. Sets the prevailing indent to .5i for `nroff` and four picas for `*troff` text formatters.

.R Sets the text in a roman typeface until another font change is encountered. Also ends `nroff` underline mode if it was in effect.

.RB *word1 word2* [*words...*]
Sets *word1* in a roman typeface, *word2* in boldface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.RE [*k*] Returns to the *k*th relative right shift indent level. (Restores the left margin to the position prior to the *k*th `.RS` call). Specifying *k*=0 is

equivalent to specifying *k*=1. If *k* is omitted, .RE restores the left margin to the most recent previous position. When *k*=1 or 0, the default .RS indent increment is restored.

.RI *word1 word2* [*words...*]
Sets *word1* in a roman typeface, *word2* in an italic typeface, and then alternates between these two fonts for the remaining words, up to six words. Blanks between words are stripped unless the string is enclosed in quotation marks (" ").

.RN Prints the return character indicator, <RETURN> .

.RS [*i*] Shifts the left margin to the right (relatively) the amount of *i* ens. The .RS macro calls can be nested up to nine levels. If *i* is not specified for the first .RS call, the relative right shift increases .5 inch for nroff and four picas for *troff text formatters. Nested .RS calls increment the relative indent by *i* ens, or by .25 inch for nroff, or by 2 picas for *troff text formatters.

.SH *text* Creates a section header.

.SM [*text*] Sets *text* to be two points smaller than the current point size. If no text is specified, the next text line is set in the smaller point size.

.SS *text* Creates a subsection header.

.TB [*words...*]
Same as the .HB macro. This macro is is obsolete, but is provided for backwards compatibility.

.TH *n c*[*s*] [*a*] [*f*] [*x*]
Begins a new reference page and sets the page title. Also sets up headers and footers for output pages, sets up all defaults and traps, and calls the .DT and .PD macros. The title appears as a header on all pages of the formatted reference page. The *n* argument is the reference page name. The *c* argument is the primary section number or letter. The *s* argument is the subsection, if any. The *a* argument is for an optional machine architecture specific label; for example ''VAX''. The *f* argument optionally alters a portion of the page footer. The *x* argument is for optional extra commentary; for example ''Unsupported''.

Fields *n*, *c*, and *s* appear together at the top of each output page (see the top of this page for an example). These fields alternate between the right top and left top of a page header, corresponding to odd and even page numbers. Field *a* appears opposing the page name in the header when formatted with nroff, but appears as a bleed tab when formatted with *troff text formatters. The *f* argument appears in the page footer on the inside edge of the page (left for odd page numbers, right for even). The *x* argument appears underneath the page name in the header.

The last three fields are optional. To skip a field, specify a pair of quotation marks ("") in the field to be skipped.

.TP *i* Sets the prevailing indent to *i*. Then begins the indented paragraph with a hanging tag given by the next text line. If the tag does not fit, the macro places the next text on a separate line.

.UF *footer* Replaces the section name (adjacent to the 'chapter-page_number' pair in the page footer), defined by the `-rpS` option, with the text *footer*. This macro must not be called before the `.TH` macro.

.VE End a vertical margin bar.

.VS [4] Starts a vertical margin bar, if '4' is specified; otherwise, the macro does nothing.

Macros That Cause Line Breaks

The following macros cause line breaks:

De Ds EE EX HP IP
LP PP RE SH SS TH
TP

Macros That Need Text Lines

The following macros affect the following line of text if they are specified in the input without arguments:

B BI BR G GL I
IB IR RI RB SH SS
SM

Automatic hyphenation is turned off.

Characters printed from the Special Font are artificially bolded by three units whenever the current font is '3'.

The default page size is 80 columns by 66 lines for `nroff` output and 8.5" x 11" for output generated by `*troff` text formatters. The text area is horizontally placed on the page so that the effective page margin is .5 inches for `nroff` and 7.5 picas for `*troff` text formatters.

The `.TH` macro sets up the following defaults:

- Text is set in ''noadjust'' mode; the right margin is ragged.
- The default interparagraph distance is 1v for `nroff` and .5v for `*troff` text formatters.
- The basic text indent is .5 inches for `nroff` and four picas for `*troff` text formatters, from the left margin.
- The maximum text line length is 7 inches for `nroff` and 36 picas for `*troff` text formatters.
- Sets tab stops every .5 inches.
- The basic text point size is 11 points, with line spacing set to 12 points.
- The basic text font is ''R'' (a roman typeface).
- Reference page headers, section headers, and subsection headers are set in a sans-serif bold typeface.

Options

–n*N* Numbers the first generated page as *N*.

–rl1 Turns on line double-spacing mode.

–rp*S* Sets the section number to *S*. The section number determines if the name of a section will appear in the page footer. If the value of *S* is 0, no name appears in the page footer. When *S* is specified, that number determines the name that will appear in the footer. The section number appears in output page footers as *S–N* (chapter–page-number). If *S* is not 0, the name of the section appears on the inside of the page footer, adjacent to the chapter–page-number sequence.

Restrictions

Predefined Registers

The following registers are predefined by the `man` macro package and should not be changed:

PO Page offset and page margin

IN Left margin indent relative to the section headers

LL Line length including `IN`

PL Page length

The register 'l' is predefined when you specify the `*roff -rl` option. Its default value is 0. The `man`(1) command does not use this option.

The register 'p' is predefined when you specify the `*roff -rp` option. Its default value is 0. The `man`(1) command does not use this option.

The register 'p' should be set to a range 1-8 or 11-18 for unsupported reference pages. It cannot be set to values 'l', 'n', 'o', or 'p'.

Reserved Registers

The following registers are reserved for internal use by the `man`, `man.nopage`, and `man.repro` macro packages:

A1 DX EX 1 p p#
PF

In addition, registers beginning with the characters ')', ']', and '}' are also reserved for internal use.

Registers predefined by the `nroff`(1), `tbl`(1), commands, and the `*eqn` and `*troff` text preprocessors and formatters should not be redefined.

Predefined Strings

The following strings are predefined by the `man` macro package and should not be changed:

lq " if `nroff`, `` if `*troff`

rq " if `nroff`, '' if `*troff`

S Command string to change type size to 10 points.

Reserved Strings and Macros

The following string and macro names are reserved for internal use by the man, man.nopage, and man.repro macro packages:

##	A1	BD	BK	CD	D
DE	DS	HH	ID	LD	NO
NX	P	ya	yn	yl	ys

In addition, names begining with the characters ')', ']', and '}' are also reserved for internal use.

Names predefined by the nroff(1), tbl(1), commands, and the *eqn and *troff text preprocessors and formatters should not be redefined.

.TH Macro Restrictions

The section number should only be 1-8, 'n', 'l', 'o', or 'p'. Other values might not be recognized by the man(1) or catman(8) commands.

Sections 6, 7, 'n', 'l', 'o', and 'p' do not currently have subsections, so subsections should not be specified.

The architecture field (*a*) should not exceed four characters. A value longer than four characters might print outside the right page margin.

Reference pages containing *eqn commands should be preprocessed by an *neqn text preprocessor before being installed on the system.

Reference pages containing tbl(1) commands must not be preprocessed before being installed on the system.

The Name Section

The catman(8) command assumes the Name section of a reference page has the following format:

```
name[, name, name ...] \- explanatory text
```

There should be at least one space after any comma and only one space following the "backslash hyphen" (\-). There should not be any *roff commands in the explanatory text. The explanatory text should be brief. The catman(8) command combines information in the Name section with parameters of the .TH macro to create an entry in a database searched by the apropos(1), man(1), and whatis(1) commands.

Portability Considerations

The ULTRIX man macro packages contain extensions and enhancements borrowed from other macro packages. If you have a need to write portable reference pages, you should not use the following macros:

CT	CW	De	Ds	EE	EX
G	GL	HB	HP	I1	I2
LP	MS	NE	NT	PN	Pn
R	RN	TB	UF		

The LP and TB macros are obsolete.

The ULTRIX man .TH macro differs from other implemenations of the .TH macro. The primary differences are in the placement of the page title, and third and fifth fields in the *roff output. The page title (the page name and section number) is commonly placed on both sides of the page header in other implementations. The more common placement of the third field is in the center of the page footer. The more common placement of the fifth field is in the center of the page header.

Use of the tbl(1) and *eqn commands should be avoided, because the version of the man(1) command in some other implementations might not preprocess reference pages through the tbl(1) command. The *eqn commands also might not be installed.

Examples

The following example processes this manual page for a character-cell device:

```
% cd /usr/man/man7
% tbl man.repro.7 | nroff -rp7 -n39 -man.repro | col | lpr -Plp
```

In this example, the -rp7 option for nroff initializes number register p to specify that this page is from Section 7 of the *Reference Pages*. The -n39 option specifies a starting page number of 39. The first page printed is numbered '7–39'.

Files

/usr/lib/tmac/tmac.an.repro The man.repro macro package file

See Also

col(1), man(1), nroff(1), tbl(1), man(7), man.nopage(7), catman(8)

me(7)

Name

me – macros for formatting papers

Syntax

nroff –me [*options*] *file ...*
***roff –me** [*options*] *file ...*

Description

This package of `nroff` and `*roff` macro definitions provides a formatting facility for technical papers in various formats. When producing 2-column output on a terminal, filter the output through `col`(1).

Many `nroff` and `*roff` requests are unsafe in conjunction with this package; however, these requests can be used with impunity after the first .pp:

.bp	Begin new page
.br	Break output line here
.sp n	Insert n spacing lines
.ls n	Line spacing: n=1 single, n=2 double space
.na	No alignment of right margin
.ce n	Center next n lines
.ul n	Underline next n lines
.sz +n	Add n to point size

Output of the `eqn`, `neqn`, `refer`, and `tbl` preprocessors for equations and tables is acceptable as input.

Requests

In the following list, ''initialization'' refers to the first .pp, .lp, .ip, .np, .sh, or .uh macro. This list is incomplete; see the *–me Reference Manual, ULTRIX Supplementary Documents* Vol. I: General User, for further details.

Request	Initial Value	Cause Break	Explanation
.(b	-	yes	Begin block.
.(c	-	yes	Begin centered block.
.(d	-	no	Begin delayed text.
.(f	-	no	Begin footnote.
.(l	-	yes	Begin list.
.(q	-	yes	Begin major quote.
.(x *x*	-	no	Begin indexed item in index. *x*
.(z	-	no	Begin floating keep.
.)b	-	yes	End block.
.)c	-	yes	End centered block.
.)d	-	yes	End delayed text.
.)f	-	yes	End footnote.
.)l	-	yes	End list.
.)q	-	yes	End major quote.
.)x	-	yes	End index item.
.)z	-	yes	End floating keep.

.++ *m H*	-	no	Define paper section. *m* defines the part of the paper, and can be C (chapter), A (appendix), P (preliminary; for example, an abstract, table of contents, and so on), B (bibliography), RC (chapters renumbered from page one each chapter), or RA (appendix renumbered from page one).
.+c *T*	-	yes	Begin chapter (or appendix, etc., as set by .++). *T* is the chapter title.
.1c	1	yes	One-column format on a new page.
.2c	1	yes	Two-column format.
.EN	-	yes	Space after equation produced by *eqn* or *neqn*.
.EQ *x y*	-	yes	Precede equation; break out and add space. Equation number is *y*. The optional argument *x* may be *I* to indent equation (default), *L* to left-adjust the equation, or *C* to center the equation.
.TE	-	yes	End table.
.TH	-	yes	End heading section of table.
.TS *x*	-	yes	Begin table; if *x* is H, table has repeated heading.
.ac *A N*	-	no	Set up for ACM style output. *A* is the Author's name(s), *N* is the total number of pages. Must be given before the first initialization.
.b *x*	no	no	Print *x* in boldface; if there is no argument, switch to boldface.
.ba +*n*	0	yes	Augments the base indent by *n*. This indent is used to set the indent on regular text (like paragraphs).
.bc	no	yes	Begin new column.
.bi *x*	no	no	Print *x* in bold italics (nofill only).
.bx *x*	no	no	Print *x* in a box (nofill only).
.ef *'x'y'z'*	''''	no	Set even footer to x y z.
.eh *'x'y'z'*	''''	no	Set even header to x y z.
.fo *'x'y'z'*	''''	no	Set footer to x y z.
.hx	-	no	Suppress headers and footers on next page.
.he *'x'y'z'*	''''	no	Set header to x y z.
.hl	-	yes	Draw a horizontal line.
.i *x*	no	no	Italicize *x;* if *x* missing, italic text follows.
.ip *x y*	no	yes	Start indented paragraph, with hanging tag *x*. Indentation is *y* ens (default 5).
.lp	yes	yes	Start left-blocked paragraph.
.lo	-	no	Read in a file of local macros of the form .*x. Must be given before initialization.
.np	1	yes	Start numbered paragraph.
.of *'x'y'z'*	''''	no	Set odd footer to x y z.
.oh *'x'y'z'*	''''	no	Set odd header to x y z.
.pd	-	yes	Print delayed text.
.pp	no	yes	Begin paragraph. First line indented.
.r	yes	no	Roman text follows.
.re	-	no	Reset tabs to default values.
.sc	no	no	Read in a file of special characters and diacritical marks. Must be given before initialization.
.sh *n x*	-	yes	Section head follows, font automatically bold. *n* is level of section, *x* is title of section.
.sk	no	no	Leave the next page blank. Only one page is remembered ahead.
.sz +*n*	10p	no	Augment the point size by *n* points.
.th	no	no	Produce the paper in thesis format. Must be given before initialization.
.tp	no	yes	Begin title page.

.u *x*	-	no	Underline argument (even in **roff*). (Nofill only).
.uh	-	yes	Like .sh, but unnumbered.
.xp *x*	-	no	Print index *x*.

Files

```
/usr/lib/tmac/tmac.e
/usr/lib/me/*
```

See Also

refer(1), tbl(1), nroff(1)
–me Reference Manual, *ULTRIX Supplementary Documents,* Vol. I: General User
Writing Papers with Nroff Using –me *ULTRIX Supplementary Documents* Vol. I: General User

Name

ms – text formatting macros

Syntax

nroff –ms [*options*] *file* ...
***roff –ms** [*options*] *file* ...

Description

This package of `nroff` and `*roff` macro definitions provides a formatting facility for various styles of articles, theses, and books. When producing 2-column output on a terminal or lineprinter, or when reverse line motions are needed, filter the output through `col`(1). All external `-ms` macros are defined in the following section. Many `nroff` and `*roff` requests are unsafe in conjunction with this package. However, the first four requests in the list that follows can be used with impunity after initialization, and the last two may be used even before initialization:

.bp	Begin new page
.br	Break output line
.sp n	Insert n spacing lines
.ce n	Center next n lines
.ls n	Line spacing: n=1 single, n=2 double space
.na	No alignment of right margin

Font and point size changes with \f and \s are also allowed; for example, \fIword\fR italicize *word*. Output of the `tbl`, `*eqn`, and `refer`(1) preprocessors for equations, tables, and references is acceptable as input.

Requests

Macro Name	Initial Value	Break? Reset?	Explanation
.AB *x*	–	y	Begin abstract; if *x*=no, do not label abstract.
.AE	–	y	End abstract.
.AI	–	y	Author's institution.
.AM	–	n	Better accent mark definitions.
.AU	–	y	Author's name.
.B *x*	–	n	Embolden *x*; if no *x*, switch to boldface.
.B1	–	y	Begin text to be enclosed in a box.
.B2	–	y	End boxed text and print it.
.BT	date	n	Bottom title, printed at foot of page.
.BX *x*	–	n	Print word *x* in a box.
.CM	if t	n	Cut mark between pages.
.CT	–	y,y	Chapter title: page number moved to CF (TM only).
.DA *x*	if n	n	Force date *x* at bottom of page; today if no *x*.
.DE	–	y	End display (unfilled text) of any kind.
.DS *x y*	I	y	Begin display with keep; *x*=I,L,C,B; *y*=indent .
.ID *y*	8n,.5i	y	Indented display with no keep; *y*=indent.
.LD	–	y	Left display with no keep.
.CD	–	y	Centered display with no keep.
.BD	–	y	Block display; center entire block.
.EF *x*	–	n	Even page footer *x* (3 part, as for .tl).

.EH *x*	–	n	Even page header *x* (3 part, as for .tl).
.EN	–	y	End displayed equation produced by **eqn*.
.EQ *x y*	–	y	Break out equation; *x*=L,I,C; *y*=equation number.
.FE	–	n	End footnote to be placed at bottom of page.
.FP	–	n	Numbered footnote paragraph; may be redefined.
.FS *x*	–	n	Start footnote; *x* is optional footnote label.
.HD	undef	n	Optional page header below header margin.
.I *x*	–	n	Italicize *x*; if no *x*, switch to italics.
.IP *x y*	–	y,y	Indented paragraph, with hanging tag *x*; *y*=indent.
.IX *x y*	–	y	Index words *x*, *y* and so on (up to five levels).
.KE	–	n	End keep of any kind.
.KF	–	n	Begin floating keep; text fills remainder of page.
.KS	–	y	Begin keep; unit kept together on a single page.
.LG	–	n	Larger; increase point size by 2.
.LP	–	y,y	Left (block) paragraph..
.MC *x*	–	y,y	Multiple columns; *x*=column width.
.ND *x*	if t	n	No date in page footer; *x* is date on cover.
.NH *x y*	–	y,y	Numbered header; *x*=level, *x*=0 resets, *x*=S sets to *y*.
.NL	10p	n	Set point size back to normal.
.OF *x*	–	n	Odd page footer *x* (3 part, as for .tl).
.OH *x*	–	n	Odd page header *x* (3 part, as for .tl).
.P1	if TM	n	Print header on first page.
.PP	–	y,y	Paragraph with first line indented.
.PT	- % -	n	Page title, printed at head of page.
.PX *x*	–	y	Print index (table of contents); *x*=no, suppresses title.
.QP	–	y,y	Quote paragraph (indented and shorter).
.R	on	n	Return to Roman font.
.RE	5n	y,y	Retreat: end level of relative indentation.
.RP *x*	–	n	Released paper format; *x*=no, stops title on first page.
.RS	5n	y,y	Right shift: start level of relative indentation.
.SH	–	y,y	Section header, in boldface.
.SM	–	n	Smaller; decrease point size by two.
.TA	8n,5n	n	Set tabs to 8n 16n ... (nroff) 5n 10n ... (*roff).
.TC *x*	–	y	Print table of contents at end; *x*=no, suppresses title.
.TE	–	y	End of table processed by *tbl*.
.TH	–	y	End multipage header of table.
.TL	–	y	Title in boldface and two points larger.
.TM	off	n	UC Berkeley thesis mode.
.TS *x*	–	y,y	Begin table; if *x*=H, table has multipage header.
.UL *x*	–	n	Underline *x*, even in **roff*.
.UX *x*	–	n	UNIX; trademark message first time; *x* appended.
.XA *x y*	–	y	Another index entry; *x*=page or no for none; *y*=indent.
.XE	–	y	End index entry (or series of .IX entries).
.XP	–	y,y	Paragraph with first line exdented, others indented.
.XS *x y*	–	y	Begin index entry; *x*=page or no for none; *y*=indent.
.1C	on	y,y	One-column format, on a new page.
.2C	–	y,y	Begin two-column format.
.]-	–	n	Beginning of *refer* reference.
.[0	–	n	End of unclassifiable type of reference.
.[N	–	n	N= 1:journal-article, 2:book, 3:book-article, 4:report.

Registers

Formatting distances can be controlled in `-ms` by means of built-in number registers. For example, this sets the line length to 6.5 inches:

```
.nr LL 6.5i
```

Here is a table of number registers and their default values:

Name	Register Controls	Takes Effect	Default
PS	Point size	paragraph	10
VS	Vertical spacing	paragraph	12
LL	Line length	paragraph	6i
LT	Title length	next page	same as LL
FL	Footnote length	next .FS	5.5i
PD	Paragraph distance	paragraph	1v (if n), .3v (if t)
DD	Display distance	displays	1v (if n), .5v (if t)
PI	Paragraph indent	paragraph	5n
QI	Quote indent	next .QP	5n
FI	Footnote indent	next .FS	2n
PO	Page offset	next page	0 (if n), ~1i (if t)
HM	Header margin	next page	1i
FM	Footer margin	next page	1i
FF	Footnote format	next .FS	0 (1, 2, 3 available)

When resetting these values, make sure to specify the appropriate units. Setting the line length to 7, for example, results in output with one character per line. Setting FF to 1 suppresses footnote superscripting; setting it to 2 also suppresses indentation of the first line; and setting it to 3 produces an .IP-like footnote paragraph.

Here is a list of string registers available in `-ms`; they can be used anywhere in the text:

Name	String's Function
*Q	Quote (" in *nroff*, `` in *troff*)
*U	Unquote (" in *nroff*, '' in *troff*)
*–	Dash (-- in *nroff*, — in *troff*)
*(MO	Month (month of the year)
*(DY	Day (current date)
**	Automatically numbered footnote
*´	Acute accent (before letter)
*`	Grave accent (before letter)
*^	Circumflex (before letter)
*,	Cedilla (before letter)
*:	Umlaut (before letter)
*~	Tilde (before letter)

When using the extended accent mark definitions available with .AM, these strings should come after, rather than before, the letter to be accented.

Restrictions

Floating keeps and regular keeps are diverted to the same space, so they cannot be mixed together with predictable results.

Files

```
/usr/lib/tmac/tmac.s
/usr/lib/ms/s.???
```

See Also

refer(1), tbl(1)

Name

term – conventional names for terminals

Description

Certain commands use these terminal names. They are maintained as part of the shell environment. For further information, see `sh`(1), and `environ`(7).

adm3a	Lear-Siegler ADM-3a
2621	Hewlett-Packard HP262? series terminals
hp	Hewlett-Packard HP264? series terminals
c100	Human Designed Systems Concept 100
h19	Heathkit H19
mime	Microterm mime in enhanced ACT IV mode
1620	Diablo 1620 (and others using HyType II)
300	DASI/DTC/GSI 300 (and others using HyType I)
33	Teletype Model 33
37	Teletype Model 37
43	Teletype Model 43
735	Texas Instruments TI735 (and TI725)
745	Texas Instruments TI745
dumb	Terminals with no special features
dialup	A terminal on a phone line with no known characteristics
network	A terminal on a network connection with no known characteristics
4014	Tektronix 4014
vt52	Digital Equipment Corp. VT52
vt100	Digital Equipment Corp. VT100
vt200	Digital Equipment Corp. VT200 - used on VT220, VT240
vt300	Digital Equipment Corp. VT300 - used on VT330, VT340
xterm	xterm terminal emulator, X window system

See `/etc/termcap` for an up-to-date and locally correct list. See `termcap`(5) for more information on `/etc/termcap`.

Commands whose behavior may depend on the terminal, either consult TERM in the environment, or accept arguments of the form `-Tterm`, where *term* is one of the names given above.

See Also

clear(1), ex(1), plot(1g), more(1), sh(1), stty(1), tabs(1), nroff(1), tset(1), ul(1), termcap(3x), termcap(5), environ(7)

Index

A

article
  formatting, 7–43
ASCII character set
  map, 7–2t
ascii keyword, 7–2

B

book
  formatting, 7–43

C

CSNET site
  sending mail to, 7–15

E

environ global variable, 7–3
environment
  strings, 7–3
EXINIT string, 7–3

F

formatting
  article, 7–43
  book, 7–43
  thesis, 7–43

H

hier keyword, 7–4, 7–9
hierarchy
  root file system, 7–4, 7–9
HOME string, 7–3

I

intro(7) keyword, 7–1

M

mail
  abbreviating address, 7–14
  address protocol, 7–14 to 7–15
  ARPA protocol and, 7–15
  compatible addresses, 7–14
  routing, 7–15
  uucp and, 7–14
mailaddr keyword, 7–14
man macro package
  macros, 7–16 to 7–20, 7–16, 7–16 to 7–23
man.nopage macro package
  macros, 7–24 to 7–28, 7–24 to 7–31
man.repro macro package
  macros, 7–32 to 7–36, 7–32
manual page
  formatting, 7–16, 7–24, 7–32
me macro package, 7–40
  requests, 7–40t
ms macro package
  floating keep restriction, 7–45
  number registers, 7–45, 7–43
  requests, 7–43t
  string registers, 7–45

P

PATH string, 7–3
postmaster
  defined, 7–15
PRINTER string, 7–3

R

root file system
  hierarchy, 7–4 to 7–5, 7–9

S

SHELL string, 7–3

T

technical paper
  formatting, 7–40
term command, 7–47
TERM string, 7–3
TERMCAP string, 7–3
terminal
  conventional names, 7–47t
thesis
  formatting, 7–43

U

USER string, 7–3
/usr file system
  hierarchy, 7–5 to 7–8, 7–10

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