

## NAME

**mtree** — format of mtree dir hierarchy files

## DESCRIPTION

The **mtree** format is a textual format that describes a collection of filesystem objects. Such files are typically used to create or verify directory hierarchies.

### General Format

An **mtree** file consists of a series of lines, each providing information about a single filesystem object. Leading whitespace is always ignored.

When encoding file or pathnames, any backslash character or character outside of the 95 printable ASCII characters must be encoded as a backslash followed by three octal digits. When reading mtree files, any appearance of a backslash followed by three octal digits should be converted into the corresponding character.

Each line is interpreted independently as one of the following types:

|           |   |
|-----------|---|
| Signature | The first line of any mtree file must begin with “#mtree”. If a file contains any full path entries, the first line should begin with “#mtree v2.0”, otherwise, the first line should begin with “#mtree v1.0”.   |
| Blank     | Blank lines are ignored.  |
| Comment   | Lines beginning with # are ignored.   |
| Special   | Lines beginning with / are special commands that influence the interpretation of later lines.   |
| Relative  | If the first whitespace-delimited word has no / characters, it is the name of a file in the current directory. Any relative entry that describes a directory changes the current directory.                       |
| dot-dot   | As a special case, a relative entry with the filename . . changes the current directory to the parent directory. Options on dot-dot entries are always ignored.   |
| Full      | If the first whitespace-delimited word has a / character after the first character, it is the pathname of a file relative to the starting directory. There can be multiple full entries describing the same file. |

Some tools that process **mtree** files may require that multiple lines describing the same file occur consecutively. It is not permitted for the same file to be mentioned using both a relative and a full file specification.

### Special commands

Two special commands are currently defined:

|               |   |
|---------------|---|
| <b>/set</b>   | This command defines default values for one or more keywords. It is followed on the same line by one or more whitespace-separated keyword definitions. These definitions apply to all following files that do not specify a value for that keyword. |
| <b>/unset</b> | This command removes any default value set by a previous <b>/set</b> command. It is followed on the same line by one or more keywords separated by whitespace.  |

### Keywords

After the filename, a full or relative entry consists of zero or more whitespace-separated keyword definitions. Each such definition consists of a key from the following list immediately followed by an '=' sign and a value. Software programs reading mtree files should warn about unrecognized keywords.

Currently supported keywords are as follows:

|                 |  |
|-----------------|--|
| <b>cksum</b>    | The checksum of the file using the default algorithm specified by the cksum(1) utility.  |
| <b>contents</b> | The full pathname of a file that holds the contents of this file.  |
| <b>flags</b>    | The file flags as a symbolic name. See chflags(1) for information on these names. If no flags are to be set the string “none” may be used to override the current default. |

|                        |  |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
|------------------------|--|--------------|----------------------|-------------|--------------------------|------------|-----------|-------------|------|-------------|--------------|-------------|---------------|---------------|--------|
| <b>gid</b>             | The file group as a numeric value.   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>gname</b>           | The file group as a symbolic name.   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>ignore</b>          | Ignore any file hierarchy below this file.   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>link</b>            | The target of the symbolic link when type=link.  |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>md5</b>             | The MD5 message digest of the file.  |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>md5digest</b>       | A synonym for <b>md5</b> .   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>mode</b>            | The current file's permissions as a numeric (octal) or symbolic value.   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>nlink</b>           | The number of hard links the file is expected to have.   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>nochange</b>        | Make sure this file or directory exists but otherwise ignore all attributes.   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>ripemd160digest</b> | The RIPEMD160 message digest of the file.  |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>rmd160</b>          | A synonym for <b>ripemd160digest</b> .   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>rmd160digest</b>    | A synonym for <b>ripemd160digest</b> .   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>sha1</b>            | The FIPS 160-1 ( "SHA-1" ) message digest of the file.   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>shaldigest</b>      | A synonym for <b>sha1</b> .  |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>sha256</b>          | The FIPS 180-2 ( "SHA-256" ) message digest of the file.   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>sha256digest</b>    | A synonym for <b>sha256</b> .  |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>size</b>            | The size, in bytes, of the file.   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>time</b>            | The last modification time of the file.  |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>type</b>            | The type of the file; may be set to any one of the following: <table> <tr> <td><b>block</b></td><td>block special device</td></tr> <tr> <td><b>char</b></td><td>character special device</td></tr> <tr> <td><b>dir</b></td><td>directory</td></tr> <tr> <td><b>fifo</b></td><td>fifo</td></tr> <tr> <td><b>file</b></td><td>regular file</td></tr> <tr> <td><b>link</b></td><td>symbolic link</td></tr> <tr> <td><b>socket</b></td><td>socket</td></tr> </table> | <b>block</b> | block special device | <b>char</b> | character special device | <b>dir</b> | directory | <b>fifo</b> | fifo | <b>file</b> | regular file | <b>link</b> | symbolic link | <b>socket</b> | socket |
| <b>block</b>           | block special device   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>char</b>            | character special device   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>dir</b>             | directory  |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>fifo</b>            | fifo   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>file</b>            | regular file   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>link</b>            | symbolic link  |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>socket</b>          | socket   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>uid</b>             | The file owner as a numeric value.   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |
| <b>uname</b>           | The file owner as a symbolic name.   |              |                      |             |                          |            |           |             |      |             |              |             |               |               |        |

**SEE ALSO**

cksum(1), find(1), mtree(8)

**BUGS**

The FreeBSD implementation of mtree does not currently support the **mtree** 2.0 format. The requirement for a "#mtree" signature line is new and not yet widely implemented.

## HISTORY

The **mtree** utility appeared in 4.3BSD-Reno. The MD5 digest capability was added in FreeBSD 2.1, in response to the widespread use of programs which can spoof `cksum(1)`. The SHA-1 and RIPEMD160 digests were added in FreeBSD 4.0, as new attacks have demonstrated weaknesses in MD5. The SHA-256 digest was added in FreeBSD 6.0. Support for file flags was added in FreeBSD 4.0, and mostly comes from NetBSD. The “full” entry format was added by NetBSD.