

# **mkisofs**

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# Chapter 1

## mkisofs

### 1.1 mkisofs help file

mkisofs - create a iso9660 filesystem with optional Rock Ridge attributes.

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### 1.2 Synopsis

Synopsis

```
mkisofs [-RTva cres12AB] [-V valid] [-p preparer] [-P publisher] [-x path ]  
[-D path] [-S system] [--cdtv] -o filename path
```

### 1.3 Description

mkisofs is effectively a pre-mastering program to generate the iso9660 filesystem

- it takes a snapshot of a given directory tree, and generates a binary image which will correspond to an iso9660 filesystem when written to a block device.

mkisofs is also capable of generating the System Use Sharing Protocol records specified by the Rock Ridge Interchange Protocol. This is used to further describe the files in the iso9660 filesystem to a unix host, and provides information such as longer filenames, uid/gid, posix permissions, and block and character devices.

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Each file written to the iso9660 filesystem must have a filename in the 8.3 format (8 characters, period, 3 characters, all upper case), even if Rock Ridge is in use. This filename is used on systems that are not able to make use of the Rock Ridge extensions (such as MS-DOS), and each filename in each directory must be different from the other filenames in the same directory.

mkisofs generally tries to form correct names by forcing the unix filename to upper case and truncating as required, but often times this yields unsatisfactory results when there are cases where the truncated names are not all unique.

mkisofs assigns weightings to each filename, and if two names that are otherwise the same are found the name with the lower priority is renamed to have a 3 digit number as an extension (where the number is guaranteed to be unique). An example of this would be the files foo.bar and foo.bar.~1~ - the file foo.bar.~1~ would be written as FOO.000;1 and the file foo.bar would be written as FOO.BAR;1 "path" is the path of the directory tree to be copied into the iso9660 filesystem.

## 1.4 options

- A Map file names.
- a Include all files.
- B Do not map file names.
- c Do not convert filenames.
- C Add CDTV trademark file.
- D Restrict conversion to certain subdirectories.
- e Sort file extents by common extensions.
- f Follow symlinks.
- o Output filename.
- P Publisher ID.
- p Preparer ID.
- r Inhibit relocation of directories.
- R Use Rock Ridge.
- s Preallocate space for output file.
- S System ID.
- T Generate translation table.
- V Volume ID.
- v Be verbose.
- x Exclude path.
- 1 Enforce ISO interchange level 1.
- 2 Enforce ISO interchange level 2.
- cdtv CDTV convenience option.

By default the options -1 and -A are active.

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## 1.5 Option -A

-A

Map filenames to ISO compliant file names.

Filenames which comply to ISO 9660 may only contain uppercase letters, digits or underscores.

## 1.6 Option -a

-a

Include all files on the iso9660 filesystem. Normally files that contain the characters '~' or '#' will not be included (these are typically backup files for editors under unix).

## 1.7 Option -B

-B

Do not map filenames to ISO compliant file names. (See option -A)

## 1.8 Option -c

-c

By default, all filenames are converted into ISO compliant names, with the following attributes:

- \* all letters are upper-case
- \* a filename contains up to 8 letters, a dot, and up to 3 letters after the dot.
- \* a directory name contains up to 8 letters.

If the -c option is given, no such transformation is performed. All file and directory names will be literally copied into the CDROM image.

This option turns off any previous settings of -1, -2, -A or -B.

A CDROM generated with the -c option is not compliant with ISO 9660.

## 1.9 Option -C

-C

Inserts a pointer to the extent of the top level file "cdtv.tm" into the primary volume descriptor.

The following hex sequence will be inserted into the application use area of the primary volume descriptor:

00 46 53 00 00 54 4D 00 14 00 00 LL LL PP PP PP PP

where LLLL is the length of the trademark file and P P P P P P P P is the location of the file extent of the trademark file.

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## 1.10 Option -D

-D dir

Only convert the names of those files that are in or beneath the directory dir. More than one -D option may appear on the command line.

## 1.11 Option -e

-e

Group file extents within a directory according to common file extensions, i.e. files with the same extension will occupy a contiguous area on the CDROM.

## 1.12 Option -f

-f

Follow symbolic links when generating the filesystem. When this option is not in use, symbolic links will be entered using Rock Ridge if enabled, otherwise the file will be ignored.

This options has no effect under AmigaDOS.

## 1.13 Option -o

-o filename

is the name of the file to which the iso9660 filesystem image should be written. This can be a disk file, a tape drive, or it can correspond directly to the device name of the optical disc writer. If not specified, stdout is used. Note that the output can also be a block special device for a regular disk drive, in which case the disk partition can be mounted and examined to ensure that the premastering was done correctly.

## 1.14 Option -P

-P publisher\_id

Specifies a text string that will be written into the volume header. This should describe the publisher of the CDROM, usually with a mailing address and phone number. There is space on the disc for 128 characters of information.

## 1.15 Option -p

-p preparer\_id

Specifies a text string that will be written into the volume header. This should describe the preparer of the CDROM, usually with a mailing address and phone number. There is space on the disc for 128 characters of information.

## 1.16 Option -r

-r

Normally, "deep directories" will be relocated, such that there are no more than eight directory levels on the CDROM.

If the option -r is used, this relocation procedure will be suppressed.

A CDROM generated with the -r option is not compliant with ISO 9660.

## 1.17 Option -R

-R

Generate SUSP and RR records using the Rock Ridge protocol to further describe the files on the iso9660 filesystem.

## 1.18 Option -s

-s

Preallocates space for the output file. If this option is given, then it will be checked whether there is enough free space on the output device for the generated ISO 9660 image.

## 1.19 Option -S

-S system\_id

Specifies a text string that will be written into the volume header. This should describe the identification of the system which can recognize and act upon the content of the logical sectors with logical sector numbers 0 to 15 of the volume.

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## 1.20 Option -T

-T

Generate a file TRANS.TBL in each directory on the CDROM, which can be used on non-Rock Ridge capable systems to help establish the correct file names.

There is also information present in the file that indicates the major and minor numbers for block and character devices, and each symlink has the name of the link file given.

If a file called TRANS.TBL is already present in a directory, then this file contains name conversion rules such as

NonIsoName -> NAME.ISO

for some or all files in the directory.

Each line must have the format "O -> I", where "O" is the original file name and "I" is a ISO9660 level 1 file name. For directories, "I" may consist of up to 8 alphanumeric characters (including "\_"). For files, "I" may consist of up to 8 alphanumeric characters (+ "\_"), a dot ("."), and up to 3 alphanumeric characters (+ "\_") for the extension; the dot must be present!

Special characters in the "O" filename (spaces, tabs, "\", and the combination "->") have to be escaped with a backslash ("\").

Spaces and tabs within a line will be ignored. Blank lines will be skipped.

## 1.21 Option -V

-V valid

Specifies the volume ID to be written into the master block.

## 1.22 Option -v

-v

Verbose execution. If this option is given once (-v), then information is displayed for each directory. If this option is given twice (-vv), information is displayed for each file.

## 1.23 Option -x

-x path

Exclude

"path"

from being written to CDROM.

"path"

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must be the complete pathname that results from concatenating the pathname given as command line argument and the path relative to this directory.

Multiple paths may be excluded (up to 1000).

Example:

```
mkisofs -o cd -x /local/dir1 -x /local/dir2 /local
```

## 1.24 Options -1 and -2

-1

-2

Enforce ISO interchange level 1 or 2.

ISO interchange level 1 requires that

- \* a filename contains not more than 8 characters
- \* a filename extension contains not more than 3 characters
- \* a directory identifier contains not more than 8 characters

ISO interchange level 2 requires that

- \* a filename plus extension contains not more than 30 characters
- \* a directory identifier contains not more than 31 characters

## 1.25 Option --cdtv

--cdtv

Is an abbreviation for the options **-a -c -C -r -S CDTV** .

## 1.26 Author

mkisofs is not based on the standard mk\*fs tools for linux, because we must generate a complete copy of an existing filesystem on a disk in the iso9660 filesystem. The name mkisofs is probably a bit of a misnomer, since it not only creates the filesystem, but it also populates it as well.

Eric Youngdale <ericy@gnu.ai.mit.edu> wrote both the linux isofs9660 filesystem and the mkisofs utility, and is currently maintaining them. The copyright for the mkisofs utility is held by Yggdrasil Computing, Incorporated.

Frank Munkert <ln\_fmu@pki-nbg.philips.de> ported mkisofs to AmigaDOS.

## 1.27 Bugs

Continuation records are not generated - program dies with message if record overflows.

Any files that have hard links to files not in the tree being copied to the iso9660 filesystem will have an incorrect file reference count.

There may be some other ones. Please, report them to the author.

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## 1.28 Future Improvements

Allow specification of multiple paths on the command line to be included in iso9660 filesystem. Can be tricky - directory entries in the root directory need to be properly sorted.

Allow for transparently compressed files in some form or another.

## 1.29 Availability

mkisofs

is available for anonymous ftp from tsx-11.mit.edu in /pub/linux/BETA/cdrom/mkisofs. It is considered to be in late beta testing - a number of people have generated one-off discs with versions 0.98, and only extremely minor problems were reported and corrected in version 0.99.