



Linux Ubuntu 26.04 Manual Pages on command 'tic.1'

\$ man tic.1

tic(1) User commands tic(1)

NAME

tic - compile terminal descriptions for terminfo or termcap

SYNOPSIS

tic [-01acCDfgGIKLNqrstUVWx] [-e terminal-type-list] [-o dir] [-Q[n]] [-R subset] [-v[n]]
[-w[n]] file

DESCRIPTION

tic translates a terminfo file from source format into the compiled format used by the ncurses(3NCURSES) library.

As described in term(5), the database may be either a directory tree (one file per terminal entry) or a hashed database (one record per entry). The tic command writes only one type of entry, depending on how it was built.

? For directory trees, the top-level directory, such as /usr/share/terminfo, specifies the location of the database.

? For hashed databases, a filename is needed. If the given file is not found by that name, but can be found by adding the suffix ?.db?, then that is used.

The default name for the hashed database is the same as the default directory name (only adding a ?.db? suffix).

In either case (directory or hashed database), tic will create the container if it does not exist. For a directory, this would be the ?terminfo? leaf, versus a terminfo.db file.

The results are normally placed in the system terminfo database /etc/terminfo. The compiled terminal description can be placed in a different terminfo database. There are two ways to achieve this:

- ? First, you may override the system default either by using the -o option, or by setting the variable TERMINFO in the process environment to a valid database location.
- ? Secondly, if tic cannot write in /etc/terminfo or the location specified using your TERMINFO variable, it looks for the directory \$HOME/.terminfo (or hashed database \$HOME/.terminfo.db); if that location exists, the entry is placed there.

Libraries that read terminfo entries are expected to check in succession

- ? a location specified by the TERMINFO environment variable,
- ? \$HOME/.terminfo,
- ? directories listed in the TERMINFO_DIRS environment variable,
- ? a compiled-in list of directories (/etc/terminfo:/lib/terminfo:/usr/share/terminfo), and
- ? the system terminfo database (/etc/terminfo).

Section ?Fetching Compiled Descriptions? in terminfo(5) goes into further detail.

Aliases

tic is the same program as infotocap and captotinfo; usually those are linked to, or copied from, this program.

- ? When invoked as infotocap, tic sets the -l option.
- ? When invoked as captotinfo, tic sets the -C option.

OPTIONS

- 0 restricts the output to a single line.
- 1 restricts the output to a single column.
- a tells tic to retain commented-out capabilities rather than discarding them. Capabilities are commented by prefixing them with a period. -a implies -x, because tic treats the commented-out entries as user-defined names. If the source is in termcap format, tic accepts the 2-character names required by version 6. Otherwise these are ignored.
- C Force source translation to termcap format. Note: this option differs from the -C option of infocmp(1) in that it does not merely translate capability names, but also translates terminfo string capability values to termcap format. tic leaves capabilities that are not translatable in the entry under their terminfo names, but commented out with two preceding dots. The actual format used incorporates some improvements for escaped characters from terminfo format. For a stricter BSD-compatible translation, specify -K as well.

If -C is combined with -c, tic makes additional checks, reporting cases where term?

info capability values do not have an exact equivalent in termcap syntax. For exam?

ple:

? sgr usually does not convert, because termcap is unable to work with more than two parameters, and because termcap's language for encoding parameterized capabilities lacks many of terminfo's arithmetic and logical operators.

-c tells tic to perform only validation of file, including syntax problems and invalid ?use? references; no output is produced. If you specify -C (-l) with this option, tic warns about entries that, after ?use? resolution, exceed 1023 (4096) bytes. Due to a fixed buffer length in older termcap libraries, as well as buggy checking of the buffer length (and a documented limit in terminfo), these entries may cause core dumps with other implementations. tic checks string capabilities to ensure that those with parameters are valid expressions. It validates only standard string capabilities, ignoring those defined with the -x option.

-D tells tic to print the database locations that it knows about, and exit. The first location shown is the one to which it would write compiled terminal descriptions. If tic is not able to find a writable database location according to the rules summarized above, it will print a diagnostic and exit with an error rather than printing a list of database locations.

-e list

Limit writes and translations to the comma-separated list of terminal types. If any name or alias of a terminal matches one of the names in the list, the entry will be written or translated as normal. Otherwise no output will be generated for it. The option value is interpreted as a file containing the list if it contains a '/.

(Note: depending on how tic was compiled, this option may require -l or -C.)

-f Display complex terminfo strings which contain if/then/else/endif expressions indented for readability.

-G Display constant literals in decimal form rather than their character equivalents.

-g Display constant character literals in quoted form rather than their decimal equivalents.

-l Force source translation to terminfo format.

-K Suppress some longstanding ncurses extensions to termcap format, e.g., "\s" for space.

- L Force source translation to terminfo format using the long C variable names listed in <term.h>
- N Disable smart defaults. Normally, when translating from termcap to terminfo, the compiler makes a number of assumptions about the defaults of string capabilities re? set1_string, carriage_return, cursor_left, cursor_down, scroll_forward, tab, newline, key_backspace, key_left, and key_down, then attempts to use obsolete termcap capabilities to deduce correct values. It also normally suppresses output of obsolete termcap capabilities such as bs. This option forces a more literal translation that also preserves the obsolete capabilities.
- odir Write compiled entries to given database location. Overrides the TERMINFO environment variable.
- Qn Rather than show source in terminfo (text) format, print the compiled (binary) format in hexadecimal or base64 form, depending on the option's value:
 - 1 hexadecimal
 - 2 base64
 - 3 hexadecimal and base64
- q Suppress comments and blank lines when showing translated source.
- Rsubset

Restrict output to a given subset. This option is for use with archaic versions of terminfo like those on SVr1, Ultrix, or HP-UX that do not support the full set of SVR4/XSI Curses terminfo; and outright broken ports like AIX 3.x that have their own extensions incompatible with SVR4/XSI.

Available subsets are

?SVr1?, ?Ultrix?, ?HP?, ?BSD?, and ?AIX?

See terminfo(5) for details.
- r Force entry resolution (so there are no remaining tc capabilities) even when doing translation to termcap format. This may be needed if you are preparing a termcap file for a termcap library (such as GNU termcap through version 1.3 or BSD termcap through 4.3BSD) that does not handle multiple tc capabilities per entry.
- s Summarize the compile by showing the database location into which entries are written, and the number of entries which are compiled.
- T eliminates size-restrictions on the generated text. This is mainly useful for testing and analysis, since the compiled descriptions are limited (e.g., 1023 for term?

cap, 4096 for terminfo).

- t tells tic to discard commented-out capabilities. Normally when translating from terminfo to termcap, untranslatable capabilities are commented-out.
- U tells tic to not post-process the data after parsing the source file. Normally, it infers data which is commonly missing in older terminfo data, or in termcaps.
- V reports the version of ncurses which was used in this program, and exits.
- vn specifies that (verbose) output be written to standard error trace information showing tic's progress.

The optional parameter n is a number from 1 to 9, inclusive, indicating the desired level of detail of information.

- ? If ncurses is built without tracing support, the optional parameter is ignored.
- ? If n is omitted, the default level is 1.
- ? If n is specified and greater than 1, the level of detail is increased, and the output is written (with tracing information) to the ?trace? file.

The debug flag levels are as follows:

- 1 Names of files created and linked
- 2 Information related to the ?use? facility
- 3 Statistics from the hashing algorithm
- 4 Details of extended capabilities
- 5 (unused)
- 6 (unused)
- 7 Entries into the string-table
- 8 List of tokens encountered by scanner
- 9 All values computed in construction of the hash table

- W By itself, the -w option will not force long strings to be wrapped. Use the -W option to do this.

If you specify both -f and -W options, the latter is ignored when -f has already split the line.
- wn specifies the width of the output. The parameter is optional. If it is omitted, it defaults to 60.

- x Treat unknown capabilities as user-defined (see user_caps(5)). That is, if you supply a capability name which tic does not recognize, it will infer its type (Boolean, number or string) from the syntax and make an extended table entry for that. User-

defined capability strings whose name begins with ?k? are treated as function keys.

Parameters

file contains one or more terminfo terminal descriptions in source format; see ter?

minfo(5). Each description in the file describes the capabilities of a particular terminal type.

If file is ?-?, the data are read from the standard input stream. The file parameter may also be the path of a character device.

Processing

terminfo(5) documents all but one of the capabilities recognized by tic. The exception is the use capability, which enables a terminal type description to incorporate others by reference.

tic serially reads and compiles terminal type descriptions; at any given time, the program compiles at most one current entry. When tic encounters a use=entry-name field in the current entry, it reads the compiled description of entry-name from /etc/terminfo to complete the current entry. If tic has already compiled a description of entry-name preceding the current entry in file, tic uses it preferentially. tic duplicates the capabilities in entry-name for the current entry, excepting those that the current entry explicitly defines.

The foregoing has implications for capability cancellation. When entry-1 declares ?use=entry-2?, any canceled capabilities in entry-2 must also appear in entry-1 prior to ?use=entry-2? for these capabilities to be canceled in entry-1.

Compiled entries cannot exceed 4096 bytes in the legacy storage format, or 32768 using the extended number format. The name field cannot exceed 512 bytes. Terminal names exceeding the maximum alias length (32 characters on systems with long filenames, 14 characters otherwise) will be truncated to the maximum alias length and a warning message will be printed.

FILES

/etc/terminfo

compiled terminal description database

NOTES

There is some evidence that historic tic implementations treated description fields with no whitespace in them as additional aliases or short names. This tic does not do that, but it does warn when description fields may be treated that way and check them for dangerous characters.

EXTENSIONS

Unlike the SVr4 tic command, ncurses tic can compile termcap sources. In fact, entries in terminfo and termcap syntax can be mixed in a single source file. See terminfo(5) for the list of termcap capability names ncurses tic treats as equivalent to terminfo names.

The SVr4 man pages are not clear on the resolution rules for ?use? capabilities. ncurses's tic finds ?use? targets anywhere in the source file, or anywhere in the file tree rooted at the location in the TERMINFO environment variable (if TERMINFO is defined), or in the user's \$HOME/.terminfo database (if it exists), or (finally) anywhere in the system's collection of compiled entries.

The error messages from ncurses tic have the same format as GNU C error messages, and can be parsed by GNU Emacs's ?compile? facility.

Aside from -c and -v, options are not portable.

? Most of ncurses tic's options are not supported by SVr4 tic.

-0 -1 -C -G -I -N -R -T -V -a -e -f -g -o -r -s -t -x

? NetBSD tic supports a few of the ncurses tic options.

-a -o -x

? NetBSD tic also adds -S, a feature which does the same thing as ncurses infocmp's -e and -E options.

SVr4 tic's -c mode does not report bad ?use? links.

SVr4 does not compile entries to or read entries from your \$HOME/.terminfo database unless the TERMINFO environment variable is explicitly set to it.

PORTABILITY

X/Open Curses Issue 7 (2009) provides a brief description of tic. It lists one option: -c.

The omission of -v is unexpected. The change history states that the description is derived from Tru64. According to its manual pages, that system also supported the -v option.

Shortly after Issue 7 was released, Tru64 was discontinued. As of 2019, the surviving implementations of tic are SVr4 (AIX, HP-UX and Solaris), ncurses and NetBSD curses. The SVr4 tic programs all support the -v option. The NetBSD tic program follows X/Open's documentation, omitting the -v option.

The X/Open rationale states that some implementations of tic read terminal descriptions from the standard input if the file parameter is omitted. None of these implementations do that.

Further, it comments that some may choose to read from ?./terminfo.src? but that is obsolete behavior from SVr2, and is not (for example) a documented feature of SVr3.

HISTORY

System V Release 2 provided a tic utility. It accepted a single option: -v (optionally followed by a number). According to Ross Ridge's comment in mytinfo, this version of tic was unable to represent canceled capabilities.

System V Release 3 provided a different tic utility, written by Pavel Curtis, (originally named ?compile? in pcurses). This added an option -c to check the file for errors, with the caveat that errors in ?use=? links would not be reported. System V Release 3 documented a few warning messages which did not appear in pcurses. While the program itself was changed little as development continued with System V Release 4, the table of capabilities grew from 180 (pcurses) to 464 (Solaris).

In early development of ncurses (1993), Zeyd Ben-Halim used the table from mytinfo to extend the pcurses table to 469 capabilities (456 matched SVr4, 8 were only in SVr4, 13 were not in SVr4). Of those 13, 11 were ultimately discarded (perhaps to match the draft of X/Open Curses). The exceptions were memory_lock_above and memory_unlock (see user_caps(5)). Eric Raymond incorporated parts of mytinfo into ncurses to implement the termcap-to-terminfo source conversion, and extended that to begin development of the corresponding terminfo-to-termcap source conversion, Thomas Dickey completed that development over the course of several years.

In 1999, Thomas Dickey added the -x option to support user-defined capabilities.

In 2010, Roy Marples provided a tic program and terminfo library for NetBSD. That implementation adapts several features from ncurses, including tic's -x option.

The -c option tells tic to check for problems in the terminfo source file. Continued development provides additional checks:

- ? pcurses had 8 warnings.
- ? ncurses in 1996 had 16 warnings.
- ? Solaris (SVr4) curses has 28 warnings.
- ? NetBSD tic in 2019 has 19 warnings.
- ? ncurses in 2019 has 96 warnings.

The checking done in ncurses's tic helps with the conversion to termcap, as well as pointing out errors and inconsistencies. It is also used to ensure consistency with the user-defined capabilities. There are 527 distinct capabilities in ncurses's terminal database; 128 of those are user-defined.

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SEE ALSO

captoinfo(1), infocmp(1), infotocap(1), toe(1), ncurses(3NCURSES), term(5), terminfo(5),
user_caps(5)

ncurses 6.6

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