

NATTERMCP Utility

- General Settings
- Invoking NATTERMCP
- File
- Edit
- Search
- Test
- Options
- Help
- Terminal Capabilities - Overview
- Terminal Capabilities - Sorted by Name

The NATTERMCP utility is used to create, modify and test terminal capabilities described in the terminal database SAGtermcap.

As SAGtermcap contains various terminal types and there is no standard terminal type definition, Software AG does not assume any responsibility for the completeness and the correctness of these terminal types. A terminal type standard used for Digital Equipment Corporation's VT terminals is ANSI X3.64 (corresponds to ISO 6429).

General Settings

Environment Variables

For the NATTERMFCAP utility, you can set the following environment variables:

TERM	System environment variable used for the currently active terminal type.
NATTERM	Natural environment variable used for the Natural terminal type. If this environment variable is set, it overwrites the setting of TERM.
NATTCAP	Natural environment variable used to specify a different terminal database than SAGtermcap.
COLUMNS	Used for terminal-screen width. If this environment variable is not set, the current screen width is used. If the capability "co" is defined (means: has a value not equal to 0), this value is taken instead of the environment variable COLUMNS.
LINES	Used for terminal screen page size. If this environment variable is not set, the current screen page size is used. If the capability "li" is defined (means: has a value not equal to 0), this value is taken instead of the environment variable LINES.

Terminal Mode

NATTERMFCAP is a screen I/O application. Therefore, it needs a terminal database and a terminal type to display menus and dialogs on the screen. By default, it uses the same terminal database and type as Natural does.

Natural retrieves the terminal type as follows:

1. It takes the contents of the environment variable NATTERM.
2. If NATTERM is not set, it takes the contents of the system environment variable TERM.

Natural retrieves the terminal database as follows:

1. It takes the contents of the environment variable NATTCAP.
2. If NATTCAP is not set, it retrieves the database name from the NATTCAP entry in the local configuration file Natural.INI.
3. If this terminal database could not be found, NATTERMFCAP tries to locate a database named "SAGtermcap" in the current directory.

To avoid this automatism, NATTERMFCAP offers a predefined terminal database in the dynamic parameter TERMCAP with a limited number of terminal types. These types can be accessed by specifying the dynamic parameter DISPLAY.

Key Definitions

The NATTERMFCAP utility has the following predefined function keys:

Key	Explanation
CTRL+A	Inserts ANSI definitions.
CTRL+E	Evaluates keys automatically.
CTRL+N	Inserts non-graphic characters for frames.
CTRL+P	Gets help.
CTRL+V	Tests capabilities.

To modify the predefined function keys, choose the Options > Key Assignments. You can only specify control keys (CTRL+A to CTRL+Z).

Dynamic Parameters

The following dynamic parameters can be specified:

Dynamic Parameter	Explanation
DISPLAY	<p>The DISPLAY parameter is used to define the terminal type for the NATTERMCP utility itself. If no DISPLAY parameter is specified, the Natural terminal database SAGtermcap is used and the same terminal type tracking mechanism as for Natural is in effect.</p> <p>Format: DISPLAY = {#vt100 #vt100NG #vt220 #vt220ng wyse60 #tty <other>}</p> <p>Alternatives:</p> <p>#vt100 - Use the terminal entry 'DEC vt100' from the internal database.</p> <p>#vt100ng - Similar to #vt100, but graphic line characters will be replaced by single characters such as '-', ' ' and '+'.</p> <p>#vt220 - Use the terminal entry 'DEC vt220' from the internal database.</p> <p>#vt220ng - Similar to #vt220, but graphic line characters will be replaced by single characters such as '-', ' ' and '+'.</p> <p>#wyse60 - Use the terminal entry 'wyse60' from the internal database.</p> <p>#tty - Use the terminal entry 'tty' from the internal database. The tty terminal works in a line-oriented way without using escape control sequences. Only a few functions are available if this terminal entry is selected.</p> <p><other> - Use any other terminal type in the terminal database, for example 'xterm'.</p>
EDIT	<p>The parameter EDIT is used to view and/or modify a specific terminal capability. If the capability is found, the associated dialog is displayed and the cursor is positioned in the specified field. If the capability can not be found, an error message will be displayed and NATTERMCP terminates.</p> <p>Format: EDIT = capability</p> <p>Capability: Any terminal capability known in Natural can be specified. A list of capabilities can be found in the sections Terminal Capabilities - Overview and Terminal Capabilities - Sorted by Name.</p>
EXIT	<p>This parameter is used to terminate the utility after all parameters have been processed.</p> <p>Example: NATTERM EDIT = PF10 EXIT After modifying the function key PF10, the utility terminates immediately.</p>

Dynamic Parameter	Explanation
HELP	<p>With parameter HELP, you can get help about a specific capability or about using the NATTCAP utility.</p> <p>Format: HELP = { CAP USAGE capability }</p> <p>Alternatives: CAP - Displays help for all capabilities sorted by capability name. USAGE - Displays all dynamic parameters in NATTERMCAP. capability - Displays help for a specific capability.</p>
REPORT	<p>With this parameter, a text file with a detailed description of the current terminal entry is created by default in the Natural TMP directory.</p> <p>Format: REPORT{= name} If no name is specified, terminal_entry.txt is used.</p>
SAVE	<p>Saves all modifications of the current terminal entry.</p> <p>Format: SAVE{= name}</p>
TERM	<p>This parameter is used to read in a different terminal entry. If this parameter is not specified, the current Natural terminal type is used (NATTERM or TERM).</p> <p>Format: TERM = entry_name where entry_name is any type of given terminal included in the terminal database.</p>
TERMCAP	<p>This parameter is used to work with a different terminal database. If this parameter is not specified, the current Natural terminal database is used (NATTCAP).</p> <p>Format: TERMCAP = database_name where database_name is the database path and file name.</p>
TEST	<p>With the parameter TEST, NATTERMCAP calls the specified test dialog.</p> <p>Format: TEST = { CONSISTENCY COLORS GRAPHICS KEYS VIDEO }</p> <p>Choices: CONSISTENCY - Checks whether the function keys are uniquely defined. COLORS - All available colors are displayed with sample text. GRAPHICS - A single line and a double line box are displayed. KEYS - A text on any pressed key will be displayed. The dialog can be terminated by pressing one of the letters 'E', 'Q', 'X', or '.'. VIDEO - Displays video attributes such as blinking, underlined and reversed video.</p>

Special Control Codes

The following table gives an overview of unprintable characters, as well as characters that have a special meaning in terminal capability syntax:

Control Code	Explanation
<code>\E</code>	Escape character
<code>\b</code>	Backspace character
<code>\n</code>	New line
<code>\r</code>	Carriage return character
<code>\t</code>	Tab character
<code>\xxx</code>	Octal value of xxx; must be three characters
<code>\072</code>	The character ':'; NATTERMCP uses ':' as internal separator
<code>^x</code>	Control-x, where x is any letter

Example:

If the function key PF10 is to be defined as F10 on a DEC VT220 terminal, the code of F10 is:

```
<ESCAPE>[21~
```

Specify the following for capability PF10:

```
\E[21~
```

If the character "~" (tilde) is not available on the keyboard, use the octal value of tilde instead. Tilde is defined as octal 176. The alternative specification is then:

```
\E[21\176
```

Terminal Copy Capabilities

Terminal copy capabilities (TCs) are capabilities transferred from another terminal entry, like the `#include` directive of a C program. However, if capabilities are already defined in the current entry, the transferred capabilities are ignored. This makes the entries more efficient, not only by reducing redundancies, but also by ensuring that related entries are kept consistent. Capabilities read from a terminal copy entry are marked "[TC]" to the right of the input field. Additionally, the name of the entry from where this capability is transferred is shown in the top right corner of the menu, above the terminal name.

Once a terminal capability has been modified, it loses the link to the transferred terminal entry and the modification is made to the current terminal entry. To display the current terminal entry without any terminal copy capabilities, select Options > Terminal Capabilities, Hide option.

Example:

Assume TERM is set to "vt100" and the vt100 (vt220) entry in the terminal database looks as follows:

vt100 entry:

```
ti = \E =
```

```
ESC = \E
```

```
ETO = 300
```

```
tc = vt220
```

vt220 entry:

```
ti = \E[0m
```

```
cr = \r
```

The combined terminal entry for the terminal type vt100 would be:

vt100:

ti = \E = /* taken from the original vt100 entry

ESC = \E /* taken from the original vt100 entry

ETO = 300 /* taken from the original vt100 entry

cr = \r /* transferred from vt220 entry

The capability "ti(= \E[0m)" from the vt220 terminal is ignored, because "ti" is already defined in the vt100 entry.

Invoking NATTERMCP

To invoke the NATTERMCP utility, at the operating system prompt enter "NATTERMCP" for UNIX or "nat51termcap" for OpenVMS. A menu will be displayed with the name of the currently active terminal entry in the top right-hand corner of the screen.

The menu provides the following options:

Option	Explanation
File	Creates, reads, saves and deletes a terminal entry.
Edit	Views and sets terminal capabilities.
Search	Searches for a specific capability by name.
Test	Tests capabilities.
Options	Modifies the default key definition and shows or hides terminal copy capabilities. Terminal copy capabilities are capabilities included from another terminal entry.
Help	Provides help on each capability and on the usage of the dynamic parameters.

File

When you select File, a selection list containing the following functions is displayed:

Function	Explanation
New	Creates a new terminal entry in the current terminal database.
Read	Reads a terminal entry from the terminal database.
Save	Saves terminal capabilities to the current terminal entry.
Save As	Saves terminal capabilities to a different or new terminal entry.
Delete	Removes the current terminal entry from the terminal database.
Generate Report	Generates a text file including information about the description, aliases and capabilities of the current terminal entry. The text file will be stored by default in the Natural TMP directory as " <i>terminal-name.txt</i> ", for example "xterm.txt".
Move	Moves the terminal entry physically to the top of the terminal database. If a terminal is on top of the database, the access time during the terminal initialization will be improved.
Import Database	Allows working with a database other than Natural's SAGtermcap.
Export Database	Saves the whole database and all terminal entries with a different path and/or name than Natural's SAGtermcap.
Properties	Displays detailed information about the terminal database, terminal entry, environment variables and display type.
Exit	Exits the NATTERMCP utility.

Edit

When you select Edit, you get the following different types of input fields:

- boolean, where only "ON" or "OFF" may be specified;
- numeric, where only digits (0 to 9) may be specified;
- string, where 32 alphanumeric characters may be specified, with the exception of terminal capabilities "te" and "ti", for which 132 characters may be specified;
- description, where 132 alphanumeric characters may be specified.

For further information on the individual Natural capabilities to be edited, see the sections Terminal Capabilities - Overview and Terminal Capabilities - Sorted by Name.

Search

When you select Search, a selection list containing all capabilities sorted by name is displayed. After you have selected a capability, the corresponding dialog within the Edit option is displayed.

Test

When you select Test, a selection list containing the following functions is displayed:

Function	Explanation
Colors	Tests all foreground and background colors.
Consistency	Searches for inconsistent key definitions. A list of affected keys is displayed if they are not unique.
Keys	Displays the name of a pressed key. Leave this functions by pressing one of the following letters : 'E', 'Q', 'X', or '.'.
Line Graphics	Tests the graphic line capabilities used for drawing window frames.
Video Attributes	Tests all video attributes.

Options

When you select Options, a selection list containing the following functions is displayed:

Function	Explanation
Terminal Copy Capabilities	Shows or hides the terminal capabilities included from a different terminal entry specified by the capability "tc".
Key Assignments	Modifies the default key assignments of the utility.

Help

When you select Help, a selection list containing the following functions is displayed:

Function	Explanation
Help Topics	Invokes a detailed help section for a given topic, such as NAME, REPORT, TC or TEST.
Capabilities	Invokes a detailed help section for each capability.
Usage	Displays information on how the dynamic parameters are used.
About	Displays product information.

Terminal Capabilities - Overview

Colors

Name	Description
ct	Color terminal
bgbla	Screen background
fgblu	Foreground color blue; Natural color definition CD = BL
fggre	Foreground color green; Natural color definition CD = GR
fgmag	Foreground color pink; Natural color definition CD = PI
fgred	Foreground color red; Natural color definition CD = RE
fgcya	Foreground color turquoise; Natural color definition CD = TU
fgwhi	Foreground color white; Natural color definition CD = NE
fgyel	Foreground color yellow; Natural color definition CD = YE
bgblu	Background color blue
bggre	Background color green
bgmag	Background color pink
bgred	Background color red
bgcya	Background color turquoise
bgwhi	Background color white
bgyel	Background color yellow
ctres	Reset colors; Natural attribute definition AD = D

Cursor Keys and Modes

Name	Description
kd	Cursor key down (in normal mode)
kl	Cursor key left (in normal mode)
kr	Cursor key right (in normal mode)
ku	Cursor key up (in normal mode)
DK	Cursor key down (in application mode)
LK	Cursor key left (in application mode)
RK	Cursor key right (in application mode)
UK	Cursor key up (in application mode)
@7	Cursor key end
kh	Cursor key home
CKNO	Normal cursor key mode
CKAP	Application cursor key mode
cm	Cursor motion
CNL	Cursor next line
ve	Cursor visible
vi	Cursor invisible

Description and Comments

These fields can be used to describe the terminal entry or to add some comments.

Editing Keys

Name	Description
BC	Backspace key
BCVT	Alternative backspace key
BT	Backtab key
CR	Carriage return key
DC	Delete character key
ESC	Escape key
ETO	Escape timeout value in milliseconds
KDEL	Delete to end of field key
KL	Insert or overstrike mode key
KN	Page down (next) key
KP	Page up (previous) key
NLFF	Next line first field key
PD	Alternative page down (next) key
PU	Alternative page up (previous) key
TA	Tab key
%1	Help key
&2	Refresh key

Initialization and Reset

Name	Description
TE	Additional sequence after termination
TECL	Clear screen after termination
TERA	Reset video attributes after termination
TENL	Cursor next to line after termination
TECV	Cursor visible after termination
TECI	Cursor invisible after termination
TEAK	Application keypad after termination
TENK	Numeric keypad after termination
TEAC	Application cursor key mode after termination
TENC	Normal cursor key mode after termination
TEDB	Dark background after termination
TI	Additional initialization sequence
TICL	Clear screen after initialization
TIRA	Reset attributes after initialization
TIGR	Enable line graphics after initialization
TICI	Cursor invisible after initialization
TICV	Cursor visible after initialization
TIAK	Application keypad after initialization
TINK	Numeric keypad after initialization
TIAC	Application cursor key mode after initialization
TINC	Normal cursor key mode after initialization
TIDB	Dark background after initialization
TILB	Light background after initialization
TIIM	Insert mode after initialization
TIOM	Overstrike mode after initialization

Keypad Keys for Mathematical Operations

Keypad	Description
KP01	Single Null
KP1	One
KP2	Two
KP3	Three
KP4	Four
KP5	Five
KP6	Six
KP7	Seven
KP8	Eight
KP9	Nine
KPADD	Add
KPSUB	Subtract
KPDIV	Divide
KPMUL	Multiply
KPTS	Thousand Separator
KPDP	Decimal Point
KPRES	Result

Line Graphics

Name	Description
eA	Enable line graphics
as	Graphics mode on
ae	Graphics mode off
G1	Single upper right corner character
G2	Single upper left corner character
G3	Single lower left corner character
G4	Single lower right corner character
GH	Single horizontal bar character
GV	Single vertical bar character
GD1	Double upper right corner character
GD2	Double upper left corner character
GD3	Double lower left corner character
GD4	Double lower right corner character
GDH	Double horizontal bar character
GDV	Double vertical bar character

Miscellaneous

Name	Description
bl	Audio bell
vb	Visual bell
cl	Clear screen
ce	Clear to end of line
ks	Keypad mode application
ke	Keypad mode numeric
xi	Scroll glitch
TCS	External terminal/printer character set, for more information, see the section Support of Different Character Sets , section External Character Sets.
tc	Terminal copy

Name and Aliases

A name and up to 30 aliases can be defined for each entry.

PA and PF Keys

Key	Description
PA1	Attention key PA1
PA2	Attention key PA2
PA3	Attention key PA3
PF1	Function key PF1
PF2	Function key PF2
...	
PF47	Function key PF47
PF48	Function key PF48

Right-To-Left Support

Name	Description
RTLFL	Right-to-left language toggle key for fields
RTLSS	Right-to-left screen toggle key

Screen Dimension and Appearance

Name	Description
li	Number of screen rows (if not specified, take the current screen size)
co	Number of screen columns (if not specified, take the current screen size)
DAR	Dark background, light text
LIG	Light background, dark text

Video Attributes

Name	Description
mb	Blinking on; Natural attribute definition AD = B
adc	Cursive/italics on; Natural attribute definition AD = C
md	Intensified (bold) on; Natural attribute definition AD = I
mr	Reversed on; Natural attribute definition AD = V
us	Underline on; Natural attribute definition AD = U
me	Reset attributes; Natural attribute definition AD = D
so	Standout mode on
xs	Standout glitch
BR	Blinking off
adc0	Cursive/italics off
HR	Intensified off
mr0	Reversed off
ue	Underlined off
se	Standout mode off

Terminal Capabilities - Sorted by Name

Name	Description
%1	Help key
&2	Refresh key
@7	Cursor key end
adc	Cursive/italic on; Natural attribute definition AD = C
adc0	Cursive/italic off
ae	Graphics mode off
as	Graphics mode on
bc	Backspace key
bcvt	Alternative backspace key
bgbla	Screen background
bgblu	Background color blue
bgcya	Background color turquoise
bggre	Background color green
bgmag	Background color pink
bgred	Background color red
bgwhi	Background color white
bgyel	Background color yellow
bl	Audio bell
BR	Blinking off
bt	Backtab key
ce	Clear to end of line
CKAP	Application cursor key mode
CKNO	Normal cursor key mode
cl	Clear screen
cm	Cursor motion
CNL	Cursor next line
co	Number of screen columns; if not specified, take the current screen size
cr	Carriage return key
ct	Color terminal
ctres	Reset colors; Natural attribute definition AD = D
DAR	Dark background, light text
dc	Delete character key
DK	Cursor key down (in application mode)

Name	Description
eA	Enable line graphics
ESC	Escape key
ETO	Escape timeout value
fgblu	Foreground color blue; Natural color definition CD = BL
fgcya	Foreground color turquoise; Natural color definition CD = TU
fggre	Foreground color green; Natural color definition CD = GR
fgmag	Foreground color pink; Natural color definition CD = PI
fgred	Foreground color red; Natural color definition CD = RE
fgwhi	Foreground color white; Natural color definition CD = NE
fgyel	Foreground color yellow; Natural color definition CD = YE
G1	Single upper right corner character
G2	Single upper left corner character
G3	Single lower left corner character
G4	Single lower right corner character
GD1	Double upper right corner character
GD2	Double upper left corner character
GD3	Double lower left corner character
GD4	Double lower right corner character
GDH	Double horizontal bar character
GDV	Double vertical bar character
GH	Single horizontal bar character
GV	Single vertical bar character
HR	Intensified off
kd	Cursor key down (in normal mode)
kE	Delete to end of field key
ke	Keypad mode numeric
kh	Cursor key home
kI	Insert or overstrike mode key
kl	Cursor key left (in normal mode)
kN	Page down (next) key
kP	Page up (previous) key
KP01	Single Null
KP1	One
KP2	Two
KP3	Three

Name	Description
KP4	Four
KP5	Five
KP6	Six
KP7	Seven
KP8	Eight
KP9	Nine
KPADD	Add
KPSUB	Subtract
KPDIV	Divide
KPMUL	Multiply
KPTS	Thousand Separator
KPDP	Decimal Point
KPRES	Result
kr	Cursor key right (in normal mode)
ks	Keypad mode application
ku	Cursor key up (in normal mode)
li	Number of screen rows; if not specified, take the current screen size
LIG	Light background, dark text
LK	Cursor key left (in application mode)
mb	Blinking on; Natural attribute definition AD = B
md	Intensified (bold) on; Natural attribute definition AD = I
me	Reset attributes; Natural attribute definition AD = D
mr	Reversed on; Natural attribute definition AD = V
mr0	Reversed off
NLFF	Next line first field key
PA1	Attention key PA1
PA2	Attention key PA2
PA3	Attention key PA3
PD	Alternative page down (next) key
PF1	Function key PF1
PF2	Function key PF2
...	
PF47	Function key PF47
PF48	Function key PF48
PU	Alternative page up (previous) key

Name	Description
RK	Cursor key right (in application mode)
RTLFL	Right-to-left language toggle key for fields
RTLS	Right-to-left screen toggle key
se	Standout mode off
so	Standout mode on
ta	Tab key
tc	Terminal copy
TCS	External terminal/printer character set.
te	Additional sequence after termination
TEAC	Application cursor key mode after termination
TEAK	Application keypad after termination
TECI	Cursor invisible after termination
TECL	Clear screen after termination
TECV	Cursor visible after termination
TEDB	Dark background after termination
TELB	Light background after termination
TENC	Normal cursor key mode after termination
TENK	Numeric keypad after termination
TENL	Cursor next to line after termination
TERA	Reset video attributes after termination
ti	Additional initialization sequence
TIAC	Application cursor key mode after initialization
TIAK	Application keypad after initialization
TICI	Cursor invisible after initialization
TICL	Clear screen after initialization
TICV	Cursor visible after initialization
TIDB	Dark background after initialization
TIGR	Enable line graphics after initialization
TIIM	Insert mode after initialization
TILB	Light background after initialization
TINC	Normal cursor key mode after initialization
TINK	Numeric keypad after initialization
TIOM	Overstrike mode after initialization
TIRA	Reset attributes after initialization
ue	Underlined off

Name	Description
UK	Cursor key up (in application mode)
us	Underline on; Natural attribute definition AD = U
vb	Visual bell
ve	Cursor visible
vi	Cursor invisible
xi	Scroll glitch
xs	Standout glitch