

**NAME**

**vt** - virtual terminal system video console driver

**SYNOPSIS**

```
options TERMINAL_KERN_ATTR=_attribute_  
options TERMINAL_NORM_ATTR=_attribute_  
options VT_MAXWINDOWS=N  
options VT_ALT_TO_ESC_HACK=1  
options VT_TWOBUTTON_MOUSE  
options VT_FB_MAX_WIDTH=X  
options VT_FB_MAX_HEIGHT=Y  
options SC_NO_CUTPASTE  
device vt
```

In loader.conf(5):

```
hw.vga.textmode=1  
hw.vga.acpi_ignore_no_vga=1  
kern.vty=vt  
kern.vt.color.<colornum>.rgb="<colorspec>"  
kern.vt.fb.default_mode="<X>x<Y>"  
kern.vt.fb.modes.<connector>="<X>x<Y>"
```

In loader.conf(5) or sysctl.conf(5):

```
kern.vt.kbd_halt=1  
kern.vt.kbd_poweroff=1  
kern.vt.kbd_reboot=1  
kern.vt.kbd_debug=1  
kern.vt.kbd_panic=0  
kern.vt.enable_altgr=0  
kern.vt.enable_bell=1
```

**DESCRIPTION**

The **vt** device provides multiple virtual terminals with an extensive feature set:

Unicode UTF-8 text with double-width characters.

Large font maps in graphics mode, including support for Asian character sets.

Graphics-mode consoles.

Integration with KMS (Kernel Mode Setting) video drivers for switching between the *X Window System* and virtual terminals.

### Virtual Terminals

Multiple virtual terminals are provided on a single computer. Up to sixteen virtual terminals can be defined. A single virtual terminal is connected to the screen and keyboard at a time. Key combinations are used to select a virtual terminal. Alt-F1 through Alt-F12 correspond to the first twelve virtual terminals. If more than twelve virtual terminals are created, Shift-Alt-F1 through Shift-Alt-F4 are used to switch to the additional terminals.

### Copying and Pasting Text with a Mouse

Copying and pasting text from the screen with a mouse is supported. Press and hold down mouse button 1, usually the left button, while moving the mouse to select text. Selected text is highlighted with reversed foreground and background colors. To select more text after releasing mouse button 1, press mouse button 3, usually the right button. To paste text that has been selected, press mouse button 2, usually the middle button. The text is entered as if it were typed at the keyboard. The VT\_TWOBUTTON\_MOUSE kernel option can be used with mice that only have two buttons. Setting this option makes the second mouse button into the paste button. See `moused(8)` for more information.

### Scrolling Back

Output that has scrolled off the screen can be reviewed by pressing the Scroll Lock key, then scrolling up and down with the arrow keys. The Page Up and Page Down keys scroll up or down a full screen at a time. The Home and End keys jump to the beginning or end of the scrollbar buffer. When finished reviewing, press the Scroll Lock key again to return to normal use. Some laptop keyboards lack a Scroll Lock key, and use a special function key sequence (such as Fn + K) to access Scroll Lock.

## DRIVER CONFIGURATION

### Kernel Configuration Options

These kernel options control the `vt` driver.

TERMINAL\_NORM\_ATTR=*attribute*

TERMINAL\_KERN\_ATTR=*attribute*

These options change the default colors used for normal and kernel text. Available colors are defined in `<sys/terminal.h>`. See *EXAMPLES* below.

VT\_MAXWINDOWS=*N*

Set the number of virtual terminals to be created to *N*. The value defaults to 12.

VT\_ALT\_TO\_ESC\_HACK=1

When the Alt key is held down while pressing another key, send an ESC sequence instead of the Alt key.

#### VT\_TWOBUTTON\_MOUSE

If defined, swap the functions of mouse buttons 2 and 3. In effect, this makes the right-hand mouse button perform a paste. These options are checked in the order shown.

#### SC\_NO\_CUTPASTE

Disable mouse support.

#### VT\_FB\_MAX\_WIDTH=X

Set the maximum width to *X*.

#### VT\_FB\_MAX\_HEIGHT=Y

Set the maximum height to *Y*.

### BACKWARDS COMPATIBILITY

Several options are provided for compatibility with the previous console device, `sc(4)`. These options will be removed in a future FreeBSD version.

<b>vt Option Name</b>	<b>sc Option Name</b>
TERMINAL_KERN_ATTR	SC_KERNEL_CONS_ATTR
TERMINAL_NORM_ATTR	SC_NORM_ATTR
VT_TWOBUTTON_MOUSE	SC_TWOBUTTON_MOUSE
VT_MAXWINDOWS	MAXCONS
none	SC_NO_CUTPASTE

### START-UP OPERATION WITH X86 BIOS SYSTEMS

The computer BIOS starts in text mode, and the FreeBSD loader(8) runs, loading the kernel. If *hw.vga.textmode* is set, the system remains in text mode. Otherwise, `vt` switches to 640x480x16 VGA mode using `vt_vga`. If a KMS (Kernel Mode Setting) video driver is available, the display is switched to high resolution and the KMS driver takes over. When a KMS driver is not available, `vt_vga` remains active.

### LOADER TUNABLES

These settings can be entered at the loader(8) prompt or in `loader.conf(5)`.

#### *hw.vga.textmode*

Set to 1 to use virtual terminals in text mode instead of graphics mode. Features that require graphics mode, like loadable fonts, will be disabled.

If a KMS driver is loaded the console will switch to (and remain in) graphics mode.

*hw.vga.acpi\_ignore\_no\_vga*

Set to 1 to force the usage of the VGA driver regardless of whether ACPI IAPC\_BOOT\_ARCH signals no VGA support. Can be used to workaround firmware bugs in the ACPI tables. Note no VGA support is only acknowledged when running virtualized. There is too many broken firmware that wrongly reports no VGA support on physical hardware.

*kern.vty*

Set this value to 'vt' or 'sc' to choose a specific system console, overriding the default. The *GENERIC* kernel uses **vt** when this value is not set. Note that 'sc' is not compatible with UEFI(8) boot.

*kern.vt.color.colormap.rgb*

Set this value to override default palette entry for color *colormap* which should be in a range from 0 to 15 inclusive. The value should be either a comma-separated triplet of red, green, and blue values in a range from 0 to 255 or HTML-like hex triplet. See *EXAMPLES* below.

Note: The **vt** VGA hardware driver does not support palette configuration.

*kern.vt.fb.default\_mode*

Set this value to a graphic mode to override the default mode picked by the **vt** backend. The mode is applied to all output connectors. This is currently only supported by the **vt\_fb** backend when it is paired with a KMS video driver.

*kern.vt.fb.modes.connector\_name*

Set this value to a graphic mode to override the default mode picked by the **vt** backend. This mode is applied to the output connector *connector\_name* only. It has precedence over *kern.vt.fb.default\_mode*. The names of available connector names can be found in *dmesg*(8) after loading the KMS driver. It will contain a list of connectors and their associated tunables. This is currently only supported by the **vt\_fb** backend when it is paired with a KMS video driver.

## KEYBOARD SYSCTL TUNABLES

These settings control whether certain special key combinations are enabled or ignored. The specific key combinations can be configured by using a *keymap*(5) file.

These settings can be entered at the *loader*(8) prompt or in *loader.conf*(5) and can also be changed at runtime with the *sysctl*(8) command.

*kern.vt.enable\_altgr*

Enable AltGr key (do not assume right Alt key as Alt).

*kern.vt.kbd\_halt*

Enable halt keyboard combination.

*kern.vt.kbd\_poweroff*

Enable power off key combination.

*kern.vt.kbd\_reboot*

Enable reboot key combination, usually Ctrl+Alt+Del.

*kern.vt.kbd\_debug*

Enable debug request key combination, usually Ctrl+Alt+Esc.

*kern.vt.kbd\_panic*

Enable panic key combination.

## OTHER SYSCTL TUNABLES

These settings can be entered at the loader(8) prompt, set in loader.conf(5), or changed at runtime with sysctl(8).

*kern.vt.enable\_bell*

Enable the terminal bell.

## FILES

*/dev/console*

*/dev/conslectl*

*/dev/ttyv\** virtual terminals

*/etc/ttys* terminal initialization information

*/usr/share/vt/fonts/\*.fnt* console fonts

*/usr/share/vt/keymaps/\*.kbd*  
keyboard layouts

## DEVCTL MESSAGES

System	Subsystem	Type	Description
VT	BELL	RING	Notification that the console bell has rung.

### Variable Meaning

*duration\_ms*

Length of time the bell was requested to ring in milliseconds.

enabled true or false indicating whether or not the bell was administratively enabled when rung.  
hushed true or false indicating whether or not the bell was quieted by the user when rung.  
hz Tone that was requested in Hz.

## EXAMPLES

This example changes the default color of normal text to green on a black background, or black on a green background when reversed. Note that white space cannot be used inside the attribute string because of the current implementation of `config(8)`.

```
options TERMINAL_NORM_ATTR=(FG_GREEN|BG_BLACK)
```

This line changes the default color of kernel messages to be bright red on a black background, or black on a bright red background when reversed.

```
options TERMINAL_KERN_ATTR=(FG_LIGHTRED|BG_BLACK)
```

To set a 1024x768 mode on all output connectors, put the following line in `/boot/loader.conf`:

```
kern.vt.fb.default_mode="1024x768"
```

To set a 800x600 only on a laptop builtin screen, use the following line instead:

```
kern.vt.fb.modes.LVDS-1="800x600"
```

The connector name was found in `dmesg(8)`:

```
info: [drm] Connector LVDS-1: get mode from tunables:  
info: [drm] - kern.vt.fb.modes.LVDS-1  
info: [drm] - kern.vt.fb.default_mode
```

To set black and white colors of console palette

```
kern.vt.color.0.rgb="10,10,10"  
kern.vt.color.15.rgb="#f0f0f0"
```

## SEE ALSO

`kbdcontrol(1)`, `login(1)`, `vidcontrol(1)`, `atkbd(4)`, `atkbdc(4)`, `kbdmux(4)`, `keyboard(4)`, `screen(4)`, `splash(4)`, `syscons(4)`, `ukbd(4)`, `kbdmap(5)`, `rc.conf(5)`, `ttys(5)`, `config(8)`, `getty(8)`, `kldload(8)`, `moused(8)`, `vtfontcv(8)`

**HISTORY**

The **vt** driver first appeared in FreeBSD 9.3.

**AUTHORS**

The **vt** device driver was developed by Ed Schouten <ed@FreeBSD.org>, Ed Maste <emaste@FreeBSD.org>, and Aleksandr Rybalko <ray@FreeBSD.org>, with sponsorship provided by the FreeBSD Foundation. This manual page was written by Warren Block <wblock@FreeBSD.org>.

**CAVEATS**

Paste buffer size is limited by the system value {MAX\_INPUT}, the number of bytes that can be stored in the terminal input queue, usually 1024 bytes (see `termios(4)`).