DMESG COMMAND

dmesg command is used to display the kernel related messages on Unix like systems. dmesg stands for "**display message or display driver** ". dmesg command retrieve its data by reading the kernel ring buffer. While doing troubleshooting on Linux systems, dmesg command becomes very handy, it can help us to identify hardware related errors and warnings, apart from this it can print daemon related messages on your screen.

Display all message from kernel ring buffer

```
[root@vivek ~]# dmesg
[    0.000000] Linux version 4.18.0-193.el8.x86_64 (mockbuild@x86-vm-08.build.eng.bos.redhat.com) (gcc ve
[    0.000000] Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-4.18.0-193.el8.x86_64 root=/dev/mapper/rhel-
rhel/swap rhgb quiet
[    0.000000] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
[    0.000000] x86/fpu: xstate_offset[2]:  576, xstate_sizes[2]:  256
[    0.000000] x86/fpu: Enabled xstate features 0x7, context size is 832 bytes, using 'compacted' format.
[    0.000000] BIOS-provided physical RAM map:
```

Display message related to RAM, HDD, USB

```
[root@vivek ~]# dmesg | grep -i memory
[    0.000000] kexec: Reserving the low 1M of memory for crashkernel
[    0.000000] Reserving 160MB of memory at 1872MB for crashkernel (System RAM: 2047MB)
[    0.000000] Early memory node ranges
[    0.000000] PM: Registered nosave memory: [mem 0x00000000-0x00000fff]
```

```
[root@vivek ~]# dmesg | grep -i DMA
[    0.000000]   DMA      [mem 0x0000000000001000-0x0000000000ffffff]
[    0.000000]   DMA32    [mem 0x0000000001000000-0x00000000ffffffff]
[    0.000000]   DMA zone: 64 pages used for memmap
```

```
[root@vivek ~]# dmesg | grep -i usb
[    0.171959] ACPI: bus type USB registered
[    0.171971] usbcore: registered new interface driver usbfs
[    0.172029] usbcore: registered new interface driver hub
[    0.172086] usbcore: registered new device driver usb
```

```
[root@vivek ~]# dmesg | grep -i tty
[    0.001000] printk: console [tty0] enabled
[    1.132169] 00:05: ttyS0 at I/O 0x3f8 (irq = 4, base_baud = 115200) is a 16550A
```

Read and clear dmesg

```
[root@vivek ~]# dmesg -C
```

Display coloured message

```
[root@vivek ~]# dmesg -L
[    0.000000] Linux version 4.18.0-193.el8.x86_64 (mockbuild@x86-vm-08.build.eng.bos.redhat.com) (gcc versio
[    0.000000] Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-4.18.0-193.el8.x86_64 root=/dev/mapper/rhel-root
rhel/swap rhgb quiet
[    0.000000] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
[    0.000000] x86/fpu: xstate_offset[2]:  576, xstate_sizes[2]:  256
[    0.000000] x86/fpu: Enabled xstate features 0x7, context size is 832 bytes, using 'compacted' format.
[    0.000000] BIOS-provided physical RAM map:
```

Limit the dmesg output to specific facility like daemon

```
[root@vivek ~]# dmesg --facility=daemon
[    1.864595] systemd[1]: systemd 239 running in system mode. (+PAM +AUDIT +SELINUX +IMA -APPARMOR +SMACK +SYSVINIT
TILS +KMOD +IDN2 -IDN +PCRE2 default-hierarchy=legacy)
[    1.864626] systemd[1]: Detected virtualization vmware.
[    1.864630] systemd[1]: Detected architecture x86-64.
[    1.864632] systemd[1]: Running in initial RAM disk.
[    1.867979] systemd[1]: Set hostname to <localhost.localdomain>.
[    2.017803] systemd[1]: Listening on Journal Socket.
[    2.019365] systemd[1]: Starting Setup Virtual Console...
[    2.019408] systemd[1]: Reached target Swap.
[    2.019567] systemd[1]: Listening on udev Kernel Socket.
[    2.020768] systemd[1]: Started Hardware RNG Entropy Gatherer Daemon.
```


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DMESG COMMAND

Restrict dmesg command output to specifc list of levels

```
[root@vivek ~]# dmesg --level=err,warn
[    9.523993] printk: systemd: 20 output lines suppressed due to ratelimiting
[   13.826516] piix4_smbus 0000:00:07.3: SMBus Host Controller not enabled!
[   15.075395] Decoding supported only on Scalable MCA processors.
[root@vivek ~]#
```

Enable timestamp in dmesg logs

```
[root@vivek ~]# dmesg -T
[Sun Feb 20 08:27:33 2022] Linux version 4.18.0-193.el8.x86_64 (mockbuild@x86-vm-08.build.eng.bos.re
 UTC 2020
[Sun Feb 20 08:27:33 2022] Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-4.18.0-193.el8.x86_64 root=
t rd.lvm.lv=rhel/swap rhgb quiet
[Sun Feb 20 08:27:33 2022] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
[Sun Feb 20 08:27:33 2022] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
[Sun Feb 20 08:27:33 2022] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
[Sun Feb 20 08:27:33 2022] x86/fpu: xstate_offset[2]:  576, xstate_sizes[2]:  256
```

timestamps along with decode facility and levels

```
[root@vivek ~]# dmesg -Tx
kern  :notice: [Sun Feb 20 08:27:33 2022] Linux version 4.18.0-193.el8.x86_64 (mockbuild@x86-vm-08.build.eng.bos.re
Mar 27 14:35:58 UTC 2020
kern  :info  : [Sun Feb 20 08:27:33 2022] Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-4.18.0-193.el8.x86_64 root=
lvm.lv=rhel/root rd.lvm.lv=rhel/swap rhgb quiet
kern  :info  : [Sun Feb 20 08:27:33 2022] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
kern  :info  : [Sun Feb 20 08:27:33 2022] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
kern  :info  : [Sun Feb 20 08:27:33 2022] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
```

Monitor real time dmesg logs

```
[root@vivek ~]# dmesg --follow
[    0.000000] Linux version 4.18.0-193.el8.x86_64 (mockbuild@x86-vm-08.build.eng.bos.redhat.com) (gcc versio
[    0.000000] Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-4.18.0-193.el8.x86_64 root=/dev/mapper/rhel-root
rhel/swap rhgb quiet
[    0.000000] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
[    0.000000] x86/fpu: xstate_offset[2]:  576, xstate_sizes[2]:  256
[    0.000000] x86/fpu: Enabled xstate features 0x7, context size is 832 bytes, using 'compacted' format.
```

Display raw message buffer

```
[root@vivek ~]# dmesg -r
<5>[    0.000000] Linux version 4.18.0-193.el8.x86_64 (mockbuild@x86-vm-08.build.eng.bos.redhat.com) (gcc ver
<6>[    0.000000] Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-4.18.0-193.el8.x86_64 root=/dev/mapper/rhel-r
lv=rhel/swap rhgb quiet
<6>[    0.000000] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
<6>[    0.000000] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
<6>[    0.000000] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
<6>[    0.000000] x86/fpu: xstate_offset[2]:  576, xstate_sizes[2]:  256
<6>[    0.000000] x86/fpu: Enabled xstate features 0x7, context size is 832 bytes, using 'compacted' format.
```

Force dmesg command to use syslog

```
[root@vivek ~]# dmesg -S
[    0.000000] Linux version 4.18.0-193.el8.x86_64 (mockbuild@x86-vm-08.build.eng.bos.r
[    0.000000] Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-4.18.0-193.el8.x86_64 root
rhel/swap rhgb quiet
[    0.000000] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
```


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