System Information & Troubleshooting (Plus)

Linux Commands Course · Section 18

Goal

Learn how to gather system information, monitor performance, and inspect hardware using built-in Linux commands.

This helps you diagnose issues, verify configurations, and understand your system's environment.

System Facts - uname, hostnamectl, lsb_release

Kernel and architecture Example output: Linux workstation 6.8.0-45-generic #1 SMP x86 64 GNU/Linux Displays kernel name, version, architecture, and OS type. Host identity Output example: Static hostname: workstation Icon name: computer-laptop Chassis: laptop Machine ID: 3c68f3e8d9284f2d8b22a Boot ID: 86b9e1c9bbd64c83bb7e2 Operating System: Ubuntu 24.04 LTS Kernel: Linux 6.8.0-45-generic Architecture: x86-64 Distribution info or cat /etc/os-release

Shows distribution name, release, and codename.

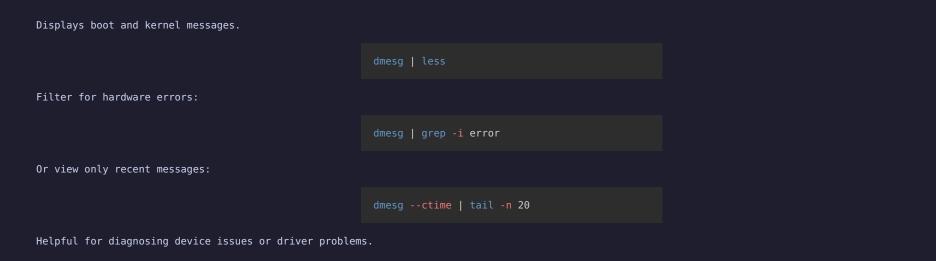
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Quick Health Snapshot

Uptime and load Output: 10:25:41 up 3 days, 2:41, 3 users, load average: 0.20, 0.25, 0.18 Shows system uptime and average CPU load over 1, 5, and 15 minutes. Memory usage Example: total used free shared buff/cache available 9.4Gi Mem: 3.5Gi 256Mi 2.2Gi 11Gi 2.0Gi 0.0Gi 2.0Gi Swap: System performance overview vmstat 2 5 • Displays CPU, memory, swap, and I/O stats every 2 seconds (5 times). Disk I/O stats iostat -x 2 3 • Requires sysstat package (sudo apt install sysstat). • Shows read/write rates and utilization per device.

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Kernel Messages — dmesg



Hardware Overview

PCI Devices - lspci

Lists hardware on the PCI bus (network cards, GPUs, etc.).

| lspci | less

| Example snippet:

00:02.0 VGA compatible controller: Intel Corporation UHD Graphics 01:00.0 3D controller: NVIDIA Corporation RTX 3060

Add -v or -vv for verbose details.

USB Devices — lsusb

Show all	connected	USB	devices
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lsusb

Example output:

Bus 001 Device 004: ID 046d:c52b Logitech USB Receiver Bus 002 Device 002: ID 0781:5567 SanDisk Cruzer Blade

Use lsusb -t for a tree view by USB port.

System BIOS and Hardware Metadata — dmidecode

Example - Quick System Summary

Combine tools for a complete picture:

```
echo "==== SYSTEM ===="
hostnamectl
echo "==== CPU ===="
lscpu | grep 'Model name'
echo "==== MEMORY ===="
free -h
echo "==== DISKS ===="
lsblk -f
echo "==== NETWORK ===="
ip a | grep inet
```

This gives an at-a-glance report of your machine.

Recap

- System facts: uname, hostnamectl, lsb_release, /etc/os-release
 Health: uptime, free -h, vmstat, iostat, dmesg
 Hardware: lscpu, lsmem, lspci, lsusb, dmidecode

These commands together let you audit, benchmark, and troubleshoot your Linux system effectively.

Practice

- Find your kernel version and CPU model.
 Check uptime and system load averages.
 View available memory and swap usage.
 List all PCI and USB devices.
 Get BIOS info using dmidecode -t bios.
 Run a quick system report combining the above tools.

Next Up

Security & Firewall