

**Hardware Networking**

**Operate running systems**

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**1. View Running Processes with ps**

The ps command displays active processes running on the system.

**Basic Usage:**

ps

Shows processes for the current shell session.

**Common ps Options:**

1. **View All Processes:**
2. ps aux
   * a → Shows processes from all users
   * u → Displays user-related details
   * x → Includes background processes
3. **View Processes in a Hierarchical Format:**
4. ps -axjf

This shows the parent-child relationships between processes.

1. **Find a Specific Process:**
2. ps aux | grep apache

This filters only processes related to "apache".

1. **View Processes for a Specific User:**
2. ps -u username

**2. Terminate Processes with kill**

The kill command is used to stop running processes by sending signals.

**Basic Syntax:**

kill [signal] PID

**Find the Process ID (PID):**

ps aux | grep firefox

Example output:

user 1234 2.0 1.2 100000 50000 ? S 12:30 0:10 firefox

Here, 1234 is the PID.

**Kill a Process by PID:**

kill 1234

Sends the default **SIGTERM (15)** signal, which asks the process to terminate.

**Force Kill a Process:**

kill -9 1234

Sends **SIGKILL (9)**, immediately terminating the process.

**Kill All Processes by Name:**

pkill -9 firefox

**Kill All Processes Owned by a User:**

killall -u username

**3. Use top or htop to Monitor System Resources and Processes**

**Using top:**

top

Displays real-time system information, including CPU, memory usage, and running processes.

**Important Commands in top:**

* Press q → Exit
* Press k → Kill a process (enter PID)
* Press M → Sort by memory usage
* Press P → Sort by CPU usage

**Using htop (More User-Friendly Alternative):**

htop provides an interactive interface for monitoring system resources.

**Install htop (if not installed):**

sudo apt install htop # Debian-based (Ubuntu, Debian)

sudo yum install htop # RHEL-based (CentOS, Fedora)

**Run htop:**

htop

* **Arrow keys** → Navigate processes
* **F9** → Kill a process
* **F5** → View process tree

**4. Configure a Computer to Boot to CLI Using systemd and Reboot**

By default, most Linux distributions boot into a graphical environment (**GUI**). To configure a system to boot into **CLI mode**, follow these steps:

**Step 1: Check the Default Target**

systemctl get-default

Output:

graphical.target

This means the system is booting into GUI mode.

**Step 2: Change to CLI Boot Mode**

sudo systemctl set-default multi-user.target

This sets the system to boot into text-based mode.

**Step 3: Reboot the System**

sudo reboot

**Step 4: Confirm CLI Boot Mode**

After reboot, the system should land in the terminal login prompt.

**Step 5: If You Want to Revert Back to GUI**

sudo systemctl set-default graphical.target

Then reboot.