Linux Commands Cheat Sheet for DevOps Engineers

(All commands + crisp explanations)

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1. File & Directory Management

`ls -l`

List files with detailed info.

`ls -la`

List all files including hidden ones.

`cd /path`

Change directory.

`pwd`

Show current directory.

`mkdir dir1`

Create a directory.

`mkdir -p app/logs`

Create nested directories.

`rm file.txt`

Delete a file.

`rm -rf folder/`

Force delete a folder.

`cp file1 file2`

Copy file.

`cp -r dir1 dir2`

Copy directory recursively.

`mv old new`

Rename or move a file/directory.

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2. File Viewing & Editing

`cat file.txt`

View file content.

`tac file.txt`

View file content in reverse.

`head -n 20 file.txt`

Show first 20 lines.

`tail -n 20 file.txt`

Show last 20 lines.

`tail -f /var/log/messages`

Live view logs (DevOps essential).

`nano file.txt`

Edit file using Nano.

`vi file.txt`

Edit file using Vim.

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3. Search & Filter Commands

`grep "error" logfile`

Search for a word.

`grep -i "error" logfile`

Case-insensitive search.

`grep -r "password" /etc`

Recursive search.

`grep -v "test" logfile`

Exclude matching lines.

`awk '{print $1}' file.txt`

Print 1st column.

`awk -F: '{print $1,$7}' /etc/passwd`

Print username & shell.

`sed 's/error/warning/g' file`

Replace “error” with “warning”.

`sort file.txt`

Sort lines.

`uniq file.txt`

Remove duplicate lines (must be sorted).

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4. File Permissions & Ownership

`chmod 755 script.sh`

Read+write+execute for owner, read+execute for others.

`chmod u+x script.sh`

Add execute permission for user.

`chown user:group file.txt`

Change owner and group.

`chown -R ubuntu:ubuntu app/`

Change ownership of a directory recursively.

`umask`

Show default file permission mask.

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5. Process and Service Management

`ps aux`

Show all running processes.

`top`

Real-time system monitor.

`htop`

Advanced system monitor (if installed).

`kill <PID>`

Terminate a process.

`kill -9 <PID>`

Force kill a process.

`systemctl status nginx`

Check service status.

`systemctl start nginx`

Start service.

`systemctl restart docker`

Restart service.

`systemctl enable jenkins`

Enable on boot.

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6. Networking Commands

`ip a`

Show network interfaces.

`ip r`

Show routing table.

`ping google.com`

Check connectivity.

`curl http://localhost:8080`

Check application running.

`wget https://file.com/file.zip`

Download file.

`ss -tulnp`

View all listening ports (super important for DevOps).

`netstat -tulnp`

Alternative for socket connections.

`nslookup google.com`

DNS lookup.

`dig google.com`

Detailed DNS query.

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7. Disk & Memory Monitoring

`df -h`

Show disk usage in human readable.

`du -sh folder/`

Show size of a directory.

`free -h`

Show free memory.

`iostat`

Check disk I/O performance.

`dmesg`

Kernel logs (useful for debugging).

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8. User Management

`useradd dev`

Create new user.

`passwd dev`

Set password.

`usermod -aG sudo dev`

Give sudo access.

`id dev`

Show user info.

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9. System Logs (Very Important for DevOps)

`/var/log/messages`

Main system logs.

`/var/log/syslog`

System activity logs.

`/var/log/secure`

Authentication logs.

`journalctl -u jenkins`

Logs for Jenkins service.

`journalctl -xe`

Show real-time error logs.

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10. Compression / Archiving

`tar -cvf backup.tar /var/www/`

Create tar archive.

`tar -xvf backup.tar`

Extract tar file.

`zip file.zip file.txt`

Create zip.

`unzip file.zip`

Extract zip.

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11. Package Management

For Ubuntu/Debian

```
apt update
apt install nginx
apt remove docker
apt autoremove
```

For RHEL/CentOS/Amazon Linux

```
yum install httpd
yum update
yum remove git
```

---

12. Crontab (Automation)

`crontab -e`

Edit scheduler.

`crontab -l`

List cron jobs.

Example cron: run backup daily at 1 AM

```
0 1 * * * /home/ubuntu/backup.sh
```

---

13. Bash Scripting Basics

Run a script

```
bash script.sh
```

Make a script executable

```
chmod +x script.sh
```

Get script location

```
$0
```

Conditional example

```
if [ -f file.txt ]; then
  echo "File exists"
fi
```

Loop example

```
for i in {1..5}; do
  echo $i
done
```

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14. System Information

`uname -a`

OS version.

`hostname`

Show hostname.

`uptime`

System uptime.

`whoami`

Current user.

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15. SSH Commands

`ssh ubuntu@1.2.3.4`

Login to server.

`ssh -i key.pem ubuntu@ip`

Login using key.

`scp file ubuntu@ip:/home/ubuntu/`

Copy file to remote server.

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16. Firewall Commands

`ufw status`

Check firewall status.

`ufw allow 22`

Allow SSH.

`ufw allow 8080`

Allow application port.

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17. SELinux Commands (RHEL/CentOS)

`getenforce`

Check SELinux mode.

`setenforce 0`

Set to permissive.

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18. Environment Variables

`export VAR=value`

Set variable.

`echo $VAR`

See variable.

`env`

List all env variables.

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19. Useful Admin Commands

`history`

Show executed commands.

`last`

Show last logged-in users.

`uptime`

Show load average.

`which python3`

Find binary path.

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20. File Find Commands

`find / -name "file.txt"`

Find file anywhere.

`find /var/log -type f -size +50M`

Find files >50MB.

`find /tmp -mtime +30 -delete`

Delete files older than 30 days.

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21. Advanced Networking Commands

`ip neigh`

Shows ARP table entries.

`ip link set eth0 down`

Disable a network interface.

`ip link set eth0 up`

Enable a network interface.

`traceroute google.com`

Shows the path packets take to a destination.

`mtr google.com`

Combines ping + traceroute for live analysis.

`curl -I https://example.com`

Fetch only headers (used for debugging).

`curl -v https://example.com`

Verbose output for debugging connectivity issues.

`nc -zv ip 22`

Check if port 22 is open.

`telnet ip 80`

Check if port is responding.

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22. System Performance & Monitoring

`sar -u 1 5`

Check CPU usage 5 times at 1-second intervals.

`vmstat 1`

Print memory, CPU, IO every 1 second.

`uptime`

Shows load average (VERY important for performance issues).

`pidstat 1`

Monitor CPU usage per process.

`mpstat -P ALL 1`

CPU usage for each core.

`free -m`

Memory usage in MB.

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23. Disk & Partition Commands

`lsblk`

Shows block devices (disk layout).

`blkid`

Shows UUID of disks.

`fdisk -l`

Lists partitions on disks.

`mount /dev/xvdf /data`

Mount a disk.

`umount /data`

Unmount a disk.

`fsck /dev/xvdf`

Fix file-system errors (dangerous—use with caution).

---

24. Log & Debugging Commands

`journalctl -u docker`

Show Docker service logs.

`journalctl -f`

Live real-time logs (similar to tail -f).

`journalctl --since "2 hours ago"`

Logs from last 2 hours.

`journalctl -u kubelet`

Kubelet logs (Kubernetes debugging).

`grep -i "oom" /var/log/messages`

Check for Out-of-Memory issues.

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25. Network Interface Analysis

`ethtool eth0`

View NIC speed, duplex, etc.

`ethtool -S eth0`

NIC statistics (errors, drops, retries).

`tcpdump -i eth0`

Capture packets (powerful for deep debugging).

`tcpdump -i eth0 port 443`

Capture only HTTPS packets.

---

26. Storage Commands

`du -ah | sort -hr | head -20`

Show top 20 largest files/directories.

`df -ih`

Show inode usage (useful when disk is full but df -h looks fine).

`lsof /var/log/syslog`

Check which process is using a file.

`lsof -i :8080`

See which process is using port 8080.

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27. SSH & Security Commands

`ssh-copy-id user@host`

Copy SSH key to remote server (passwordless login).

`fail2ban-client status`

Check intrusion/prevention bans.

`who`

Show logged-in users.

`w`

Show logged-in users + what they are doing.

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28. Kernel, System Runtime Commands

`uname -r`

Show kernel version.

`lsmod`

List loaded kernel modules.

`modprobe module_name`

Load a kernel module.

`sysctl -a`

List all kernel parameters.

`sysctl vm.swappiness=10`

Change swap behavior temporarily.

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29. Text Processing (Advanced DevOps Level)

`awk '$3 > 80 {print $1,$3}' cpu.log`

Print items where 3rd column value > 80.

`awk '/ERROR/{count++} END{print count}' app.log`

Count “ERROR” occurrences.

`sed -n '20,30p' file.txt`

Show lines 20 to 30.

`sed '/error/d' logfile`

Delete lines containing “error”.

---

30. Cron & Scheduled Jobs

`crontab -e`

Add or edit cron jobs.

`systemctl list-timers`

Show systemd timers (modern cron alternative).

`at now + 10 minutes`

Run a command once after 10 minutes.

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31. Package Analysis

`rpm -qa`

List installed RPM packages.

`dpkg -l`

List installed Debian packages.

`rpm -ql docker`

Show files installed by a package.

`dpkg -L nginx`

Same for Debian.

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32. Process Debugging

`strace -p <PID>`

Trace system calls for a running process.

`lsof -p <PID>`

See open files by a process.

`pmap <PID>`

Memory map of a process.

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33. Firewall Commands

`firewall-cmd --state`

Check firewalld status.

`firewall-cmd --add-port=8080/tcp --permanent`

Open port 8080 permanently.

`firewall-cmd --reload`

Apply changes.

---

34. Systemd Debugging

`systemctl daemon-reload`

Reload systemd units (after editing service files).

`systemctl cat docker`

View full service file.

`systemctl disable nginx`

Disable service from auto-start.

---

35. Useful Admin Commands (Advanced)

`watch -n 1 df -h`

Refresh disk usage every 1 sec.

`watch -n 1 kubectl get pods`

Monitor Kubernetes pods (very common).

`nohup command &`

Run command in background even after logout.

`disown -a`

Detach all running jobs from current terminal.

`history | grep ssh`

Search command history.

36. SSH Key & Access Management

`ssh-keygen -t rsa -b 4096`

Generate a new SSH key pair.

`ssh-add ~/.ssh/id_rsa`

Add private key to SSH agent.

`eval "$(ssh-agent -s)"`

Start SSH agent session.

`chmod 600 key.pem`

Required permission for SSH private key.

`scp -r project/ ubuntu@ip:/app/`

Copy folder to remote server.

---

37. System Boot & Runlevel Commands

`systemctl get-default`

Show default boot target.

`systemctl set-default multi-user.target`

Set system to boot without GUI.

`systemctl rescue`

Enter rescue mode (for system recovery).

`systemctl reboot`

Reboot system safely.

---

38. File Integrity & Checksum

`md5sum file.iso`

Generate MD5 checksum.

`sha256sum file.iso`

Generate SHA-256 checksum.

`cksum file.zip`

Print CRC checksum.

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39. Links (Hard & Soft Links)

`ln file1 file2`

Create a hard link.

`ln -s /etc/nginx/nginx.conf nginx-link`

Create a soft link (symlink).

`ls -li`

Show inode number (important for link identification).

---

40. File Permissions (Advanced)

`chmod 4755 script.sh`

Set SUID bit → runs with owner's privileges.

`chmod 2755 folder`

Set SGID bit → new files inherit group.

`chmod 1755 /tmp`

Set sticky bit → only owner can delete their file.

---

41. NFS & Remote Storage Commands

`showmount -e serverIP`

Show NFS exports.

`mount -t nfs serverIP:/data /mnt`

Mount NFS share.

`umount /mnt`

Unmount NFS share.

---

42. Linux Firewall (iptables) Commands

`iptables -L`

List all firewall rules.

`iptables -A INPUT -p tcp --dport 22 -j ACCEPT`

Allow SSH access.

`iptables -A INPUT -j DROP`

Drop all inbound connections.

`iptables-save > rules.v4`

Export firewall rules.

---

43. Disk Benchmarking (DevOps Important)

`dd if=/dev/zero of=testfile bs=1G count=1 oflag=dsync`

Test disk write speed.

`hdparm -Tt /dev/xvda`

Test disk performance.

---

44. Processes & Background Jobs

`jobs`

Show background jobs.

`bg %1`

Resume job in background.

`fg %1`

Bring job to foreground.

`nohup command &`

Run a long process without interruption.

---

45. CPU & Memory Debugging

`top -c`

Show processes with full command line.

`ps -eo pid,ppid,cmd,%mem,%cpu --sort=-%cpu`

Sort processes by CPU usage.

`ps -eo pid,cmd,%mem --sort=-%mem | head`

Top memory-consuming processes.

---

46. Docker & Container Debugging (Linux Level)

`ps -ef | grep docker`

Check Docker daemon process.

`systemctl status containerd`

Check container runtime.

`iptables -L -n -v`

Check Docker/K8s network rules.

`df -h /var/lib/docker`

Find Docker disk usage.

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47. Kubernetes Node-Level Commands

`kubeadm reset`

Reset Kubernetes cluster config.

`kubelet --version`

Check kubelet version.

`systemctl status kubelet`

Check kubelet logs/service.

`cat /etc/kubernetes/kubelet.conf`

Review node kubelet config.

---

48. Package Tracking & History

`rpm -q --changelog docker`

Show Docker package changelog.

`yum history`

List package installation history.

`apt-cache policy nginx`

Check the available version & installed version.

---

49. File System ACLs (Advanced Permission Control)

`setfacl -m u:dev:rw file.txt`

Give user "dev" read/write to file.

`getfacl file.txt`

View ACLs on file.

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50. Linux Backup & Restore Commands

`rsync -avz source/ dest/`

Backup or sync files efficiently.

`rsync -avz --delete source/ dest/`

Mirror directories exactly.

`dd if=/dev/sda of=/backup.img`

Disk-level backup.

---

51. Time & Date Commands

`timedatectl`

Show system clock info.

`timedatectl set-timezone Asia/Kolkata`

Change timezone.

`date -u`

Show UTC time.

---

52. Swap Memory Management

`swapon -s`

Show active swap.

`fallocate -l 4G /swapfile`

Create swap file.

`mkswap /swapfile`

Format swap file.

`swapon /swapfile`

Enable swap.

---

53. Kernel Memory, Cache & Buffers

`sync && echo 3 > /proc/sys/vm/drop_caches`

Clear cache (useful for performance testing).

`sysctl vm.swappiness=10`

Adjust how aggressively system swaps.

---

54. Network Routing Commands

`route -n`

Show routing table.

`ip route add 10.0.0.0/24 via 192.168.1.1`

Add static route.

`ip route del 10.0.0.0/24`

Delete route.

---

55. Environment & Profile Files

`cat ~/.bashrc`

User shell config.

`cat /etc/profile`

System-wide shell config.

`source ~/.bashrc`

Reload shell config.

---

56. Linux System Update Commands

Ubuntu/Debian

```
apt update
apt upgrade -y
```

RHEL/CentOS/Amazon Linux

```
yum update -y
```