🔼 LabEx labex.io **Linux Cheatsheet** Essential commands for system administration and daily operations This cheatsheet provides a quick reference to fundamental Linux commands, syntax, and advanced features, ideal for both beginners and experienced system administrators for efficient server management and automation. **System Information File Operations Process Management** Display system status and hardware Create, modify, and manage files Monitor and control running info processes **Package Management Network Operations** Configure and troubleshoot networking Install, update, and remove software **System Information & Status** System Information: `uname` Current Users: `who`, `w` Display system information including kernel and architecture. Display currently logged-in users and their activities. # Show kernel name # Show logged-in users who uname # Detailed user information with activities # Show all system information uname -a # Show kernel version # Show current username uname -r whoami # Show login history # Show architecture last uname -m # Show operating system uname -o Environment Variables: `env` Display and manage environment variables. Hardware Information: `lscpu`, `lsblk` View detailed hardware specifications and block devices. # Show all environment variables env # CPU information # Show specific variable echo \$HOME Iscpu # Block devices (disks, partitions) # Set environment variable export PATH=\$PATH:/new/path Isblk # Show PATH variable # Memory information echo \$PATH free -h

Date & Time: `date`, `timedatectl`

timedatectl set-timezone America/New_York

03

Create & Remove: `mkdir`,

Create and delete files and directories.

Create nested directories

mkdir -p path/to/nested/dir

Remove empty directory

Remove directory recursively

`rmdir`, `rm`

Create directory

mkdir newdir

rmdir dirname

Remove file

rm -rf dirname

Search for files and directories by name, type, or properties.

Find Files: `find`, `locate`

find /path -name "filename"

Find files modified in last 7 days

find /path -type f -name "*.txt"

Find and execute command

Locate files quickly (requires updatedb)

File Permissions: `chmod`, `chown`

find /path -name "*.log" -exec rm {} \;

Modify file permissions and ownership.

Change permissions (numeric)

chmod 755 filename

chmod +x script.sh

Change ownership

View file permissions

ls -l filename

List active jobs

Send job to background

Bring job to foreground

Detach from terminal

Check service status

Start service

systemctl status servicename

systemctl start servicename

systemctl enable servicename

Port & Connection Analysis: `netstat`, `ss`

Display network connections and listening ports.

Enable service at boot

Show all connections

Show listening ports

netstat -tuln | grep LISTEN

Modern replacement for netstat

Show processes using ports

File Transfer: `scp`, `rsync`

Securely transfer files between systems.

Copy file to remote host

Copy from remote host

Synchronize directories

Rsync with progress

characters.

Sort file contents

Sort numerically

sort -n numbers.txt

sort filename | uniq

Count only lines

Extract first column

Extract character range

Combine files side by side

cut -d',' -f1 file.csv

cut -c1-10 filename

paste file1.txt file2.txt

Use custom delimiter

cut -d':' -f1,3 /etc/passwd

Advanced Archives: `tar` Options

Create archive with compression

tar -czvf backup.tar.gz /home/user/

tar -xzf archive.tar.gz -C /destination/

Extract to specific directory

Add files to existing archive

tar -rf archive.tar newfile.txt

tar -uf archive.tar files/

Show directory sizes

Summary of total size

du -h --max-depth=1 /path/

Largest directories first

du -h | sort -hr | head -10

System Load: `top`, `htop`

Real-time process monitor

Enhanced process viewer

Show load averages

Show CPU information

Monitor specific process

View system logs

Follow logs in real-time

journalctl -u servicename

Kernel messages

Last boot messages

Show logs for specific service

Switch Users: `su`, `sudo`

Switch to root user

su - username

sudo command

Edit sudoers file

Change password

passwd username

chage -l username

Set password expiry

chage -M 90 username

passwd -e username

Snap Packages: `snap`

Install snap package

List installed snaps

snap list

snap refresh

snap install packagename

Update snap packages

Remove snap package

snap find packagename

Install flatpak

flatpak list

flatpak update

Remove flatpak

snap remove packagename

Search for snap packages

Flatpak Packages: `flatpak`

flatpak install packagename

Update flatpak packages

flatpak uninstall packagename

Search flatpak packages

flatpak search packagename

Input/Output Redirection

Redirect output to file

command > output.txt

Append output to file

command >> output.txt

Redirect input from file

command &> output.txt

command1 | command2

Edit bash configuration

Reload configuration

export VARIABLE=value

Set environment variable

export PATH=\$PATH:/new/path

Show environment variables

nano ~/.bashrc

source ~/.bashrc

Add to PATH

printenv

Boot & Installation: USB,

Create bootable media and perform

Create bootable USB (Linux)

Create bootable USB (cross-

Use tools like Rufus, Etcher, or

dd if=linux.iso of=/dev/sdX

Network

bs=4M

platform)

UNetbootin

network installs

Network installation

Configure PXE boot for

system installation.

Redirect both stdout and stderr

Pipe output to another command

Environment Setup: `.bashrc`, `.profile`

Initial Configuration:

Users, Network, SSH

after installation.

newname

Set hostname

Configure static IP

/etc/network/interfaces

Enable SSH service

systemctl enable ssh

systemctl start ssh

Configure firewall

ufw enable

Keep system secure with regular updates and security patches.

System Updates: Security Patches

Ubuntu security updates

apt update && apt upgrade

unattended-upgrades

yum update --security

apt list --upgradable

List available updates

CentOS/RHEL updates

Automatic security updates

Log Monitoring: Security Events

grep "Failed password" /var/log/auth.log

Monitor authentication logs

Check failed login attempts

Check for suspicious activities

Service Issues: `systemctl`

systemctl status servicename

systemctl restart servicename

systemctl enable servicename

Performance Issues: Resource Analysis

Identify and resolve system performance bottlenecks.

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Check service status

journalctl -u servicename

Restart failed service

Enable service at boot

List failed services

systemctl --failed

Check disk space

Monitor I/O usage

Check memory usage

Identify CPU usage

List open files

df -h

iotop

free -h

Isof

Reference: This cheatsheet covers essential Linux commands and modern practices for efficient system administration, server

View service logs

Diagnose and fix service-related problems.

tail -f /var/log/auth.log

Monitor system logs

tail -f /var/log/syslog

View login history

journalctl -p err

last

Monitor system logs for security events and anomalies.

ufw allow ssh

Set up basic system configuration

hostnamectl set-hostname

Edit /etc/netplan/ (Ubuntu) or

Configure shell environment and startup scripts.

command < input.txt

Redirect command input and output to files or other commands.

List installed flatpaks

Manage Flatpak applications for sandboxed software.

Install and manage snap packages across distributions.

Show password aging info

visudo

Switch to specific user

Execute command as root

sudo -u username command

Execute command as specific user

Manage user passwords and account policies.

Change another user's password (as root)

Force password change on next login

su -

Switch users and execute commands with elevated privileges.

Password Management: `passwd`, `chage`

Log Files: 'journalctl', 'dmesg'

View and analyze system logs for troubleshooting.

top

htop

uptime

Iscpu

top -p PID

journalctl

journalctl -f

dmesg

dmesg | tail

Monitor system load, CPU usage, and running processes.

du -h /path/

du -sh /path/

Disk Space: `du`

Update archive with newer files

Analyze disk usage and directory sizes.

Show sizes of all subdirectories

Advanced tar operations for backup and restoration.

Remove duplicate lines

Sort and remove duplicates

Count lines, words, characters

Cut & Paste: `cut`, `paste`

Extract specific columns and combine files.

sort filename

uniq filename

wc filename

wc -l filename

scp file.txt user@host:/path/

scp user@host:/path/file.txt ./

rsync -avz --progress src/ dest/

rsync -avz localdir/ user@host:/remotedir/

Sort & Count: `sort`, `uniq`, `wc`

Sort data, remove duplicates, and count lines, words, or

netstat -tuln

ss -tuln

netstat -tulnp

Check specific port

netstat -tuln | grep :80

View system logs

journalctl -f

nohup command &

Run command in background

System Monitor: `htop`, `systemctl`

Monitor system resources and manage services.

Enhanced process viewer (if installed)

jobs

bg %1

fg %1

htop

command &

Add execute permission

chown user:group filename

Change ownership recursively

chown -R user:group directory/

Background Jobs: 'jobs', 'bg', 'fg'

Manage background and foreground processes.

Find by name

find /path -mtime -7

Find by file type

locate filename

rm filename

Display and set system date and time.

Current date and time

Set system time (as root)

date MMddhhmmyyyy

Time zone information

date

timedatectl

Set timezone

Disk usage by filesystem df -h

System Uptime: `uptime` Show system uptime and load averages. # System uptime and load uptime

More detailed uptime information uptime -p # Show uptime since specific date uptime -s

File & Directory Operations

Navigate, create, and manage files and directories effectively. 01 02 Navigate Directories: `cd`, List Files: `ls` `pwd` Display files and directories with various # List files in current directory cd # Detailed listing with permissions # Show hidden files ls -la # Human-readable file sizes cd .. Is -Ih # Sort by modification time pwd ls -lt

Change directories and display current formatting options. location. # Go to home directory # Go to specific directory cd /path/to/directory # Go up one level # Show current directory # Go to previous directory cd -File Content & Manipulation View File Contents: `cat`, `less`, `head`, `tail` Display file contents using various methods and pagination. # Display entire file cat filename # View file with pagination

less filename # Show first 10 lines head filename # Show last 10 lines tail filename # Follow file changes in real-time tail -f logfile Copy & Move: `cp`, `mv` Copy and move files and directories.

Copy file

cp source.txt destination.txt

Copy directory recursively

mv oldname.txt newname.txt

Move to different directory

mv file.txt /path/to/destination/

Copy with preservation of attributes

Process Management

Display running processes and their details.

Show all processes with details

cp -r sourcedir/ destdir/

cp -p file.txt backup.txt

Process Listing: `ps`

Show user processes

Show process tree

Show processes by user

Real-time process monitor

Kill Processes: `kill`, `killall`

Terminate processes by PID or name.

Kill process by PID

Force kill process

killall processname

Send specific signal

Network Operations

Display and configure network interfaces.

Configure interface (temporary)

Legacy interface configuration

ip addr add 192.168.1.10/24 dev eth0

Network Testing: `ping`, `traceroute`

Test network connectivity and trace packet routes.

Text Processing & Search

Manipulate text files and search for patterns efficiently.

Search for patterns in files and command output.

Show network interfaces

Bring interface up/down

Show routing table

ip addr show

ip route show

ip link set eth0 up

Test connectivity

Ping with count limit

traceroute google.com

Text Search: `grep`

Search for pattern in file

grep "pattern" filename

Case-insensitive search

grep -i "pattern" filename

grep -r "pattern" /path/

Count matching lines

Replace text in file

sed 's/old/new/g' filename

sed '/pattern/d' filename

Sum values in column

Create Archives: `tar`

Create tar archive

Extract archive

tar -xf archive.tar

tar -tf archive.tar

gzip filename

tar -xzf archive.tar.gz

List archive contents

tar -cf archive.tar files/

Create compressed archive

Extract compressed archive

Compression: `gzip`, `zip`

Compress file with gzip

Decompress gzip file

zip archive.zip file1 file2

gunzip filename.gz

Create zip archive

Extract zip archive

unzip archive.zip

List zip contents

unzip -l archive.zip

Compress and decompress files using various algorithms.

System Monitoring & Performance

Monitor system performance, resources, and troubleshoot issues.

Memory Usage: `free`, `vmstat`

Memory usage summary

Detailed memory stats

Virtual memory statistics

Memory usage every 2 seconds

Disk I/O: `iostat`, `iotop`

I/O statistics (requires sysstat)

I/O stats every 2 seconds

Monitor disk I/O by process

Show I/O usage for specific device

Create, modify, and delete user accounts.

Add user with home directory

usermod -aG groupname username

Delete user with home directory

Group Management: `groupadd`, `groups`

User & Permission Management

User Operations: `useradd`, `usermod`,

Monitor disk input/output performance and identify

cat /proc/meminfo

Show swap usage

swapon --show

free -h

vmstat

vmstat 2

bottlenecks.

iostat

iostat 2

iotop

`userdel`

Add new user

useradd username

useradd -m username

Modify user account

Delete user account

userdel username

userdel -r username

Create new group

groupadd groupname

Show user's groups

groups username

Show all groups

Add user to group

usermod -aG groupname username

usermod -g groupname username

Package Management

APT (Debian/Ubuntu): `apt`, `apt-get`

Manage packages on Debian-based systems.

Update package list

Upgrade all packages

apt install packagename

apt remove packagename

apt search packagename

apt show packagename

Install package

yum update

yum install packagename

yum remove packagename

yum search packagename

Shell & Scripting

Command History: `history`

Show command history

Show last 10 commands

Execute previous command

Execute command by number

Search history interactively

Aliases & Functions: `alias`

Create shortcuts for frequently used commands.

Make alias permanent (add to .bashrc)

System Installation & Setup

Install Linux distributions and configure system settings.

Security & Best Practices

Firewall Configuration: `ufw`, `iptables`

Configure firewall rules to protect system from network threats.

Implement security measures and follow system administration best practices.

echo "alias II='ls -la'" >> ~/.bashrc

Distribution Options:

for different use cases.

Ubuntu Server

CentOS Stream

Debian Stable

wget debian.iso

Verify ISO integrity

sha256sum linux.iso

Enable UFW firewall

Allow specific port

Allow service by name

Show firewall status

Advanced rules with iptables

File Integrity: `checksums`

Generate MD5 checksum

Generate SHA256 checksum

sha256sum -c checksums.txt

sha256sum *.txt > checksums.txt

Boot Issues: GRUB Recovery

Access GRUB menu during boot

Boot from rescue mode

Mount root filesystem

mount /dev/sda1 /mnt

Chroot into system

grub-install /dev/sda

Check file system

Force file system check

Check all mounted filesystems

management, and automation in production environments.

fsck/dev/sda1

fsck -f /dev/sda1

fsck -y /dev/sda1

fsck -A

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Automatic repair

Update GRUB configuration

File System Repair: `fsck`

Check and repair file system corruption.

chroot/mnt

update-grub

Reinstall GRUB

Recover from boot loader and kernel problems.

md5sum filename

sha256sum filename

Create checksum file

Verify checksum

Verify file integrity and detect unauthorized changes.

Troubleshooting & Recovery

Diagnose and resolve common Linux system issues.

ufw status verbose

ufw allow 22/tcp

ufw allow ssh

Deny access

ufw deny 23

iptables -L

ufw enable

wget ubuntu-server.iso

wget centos-stream.iso

Ubuntu, CentOS, Debian

Choose and install Linux distributions

history

!123

Ctrl+R

Create alias

alias II='ls -la'

alias

unalias II

Show all aliases

Remove alias

history 10

Access and manage command line history.

List installed packages

Update all packages

Search for packages

Remove package

yum list installed

Show package information

YUM/DNF (RHEL/Fedora): `yum`, `dnf`

Manage packages on Red Hat-based systems.

Search for packages

apt update

apt upgrade

Install package

Remove package

Install, update, and manage software packages across different distributions.

Change user's primary group

cat /etc/group

Create and manage user groups.

iostat -x /dev/sda

Monitor memory usage and virtual memory statistics.

tar -czf archive.tar.gz files/

Create and extract compressed archives.

awk '{print \$1, \$3}' filename

Print specific fields

Delete lines containing pattern

awk '{sum += \$1} END {print sum}' filename

Archive & Compression

grep -n "pattern" filename

grep -c "pattern" filename

Text Manipulation: `sed`, `awk`

Edit and process text using stream editors and pattern scanners.

Show line numbers

Recursive search in directories

Trace route to destination

MTR - network diagnostic tool

ping -c 4 192.168.1.1

ping google.com

mtr google.com

ifconfig

Network Configuration: `ip`, `ifconfig`

Configure networking, troubleshoot connections, and transfer data.

List all signals

kill -HUP 1234

Kill by process name

kill 1234

kill -9 1234

kill -l

ps -ef --forest

ps -u username

ps aux

top

Move/rename file