$ cd reference / Linux commands by task

Linux commands by task

GNU coreutils and util-linux on a current distribution. Flags that differ on BSD or macOS are noted where it matters.

[01] Files and directories

TASK	COMMAND
List with sizes, hidden files, newest last	`ls -lahtr`
Find files by name, case-insensitive	`find . -iname "*.log"`
Files changed in the last 60 minutes	`find /var/log -mmin -60 -type f`
Files larger than 100 MB	`find / -xdev -type f -size +100M`
Copy preserving mode, owner and times	`cp -a src/ dest/`
Sync a directory, showing progress	`rsync -a --info=progress2 src/ dest/`
Symbolic link	`ln -s /opt/app/current/bin/app /usr/local/bin/app`
Details: size, mode, inode, times	`stat file`
Pack and compress a directory	`tar -czf backup.tar.gz dir/`
List an archive without extracting	`tar -tzf backup.tar.gz`

`rsync src/ dest/` copies the contents of `src`; `rsync src dest/` creates `dest/src`. The trailing slash on the source is the difference.

[02] Text

TASK	COMMAND
Search recursively with line numbers	`grep -rn "pattern" .`
Only filenames that match	`grep -rl "pattern" .`
Extended regex, case-insensitive	`grep -Ei "error|fail" app.log`
Follow a growing log	`tail -f /var/log/syslog`
Count lines	`wc -l file`
Count identical lines, most frequent first	`sort file | uniq -c | sort -rn | head`
Column 1 of a space-separated file	`awk '{print $1}' access.log`

TASK	COMMAND
Field 3 of a CSV without quotes	`cut -d, -f3 data.csv`
Replace in place, keep a backup	`sed -i.bak 's/old/new/g' file`
Unified diff of two files	`diff -u old.conf new.conf`

`uniq` only collapses adjacent duplicates, which is why it is almost always preceded by `sort`. On macOS, `sed -i` needs an explicit suffix argument: `sed -i '' 's/a/b/' file`.

[03] Processes and services

TASK	COMMAND
All processes with full command lines	`ps aux`
Process tree	`ps -ef --forest`
Find a process id by name	`pgrep -a python`
Ask a process to stop, then force it	`kill PID; sleep 5; kill -9 PID`
Interactive view sorted by CPU	`top -o %CPU`
Which process holds a file open	`lsof /path/to/file`
Service status and recent log lines	`systemctl status app.service`
Restart a service	`sudo systemctl restart app.service`
Follow a service's log	`journalctl -u app.service -f`
Errors since boot	`journalctl -b -p err`
Run detached from the terminal	`nohup ./job.sh > job.log 2>&1 &`

[04] Disks and memory

TASK	COMMAND
Free space per filesystem	`df -h`
Free inodes (when df shows space but writes fail)	`df -i`
Size of each item in a directory	`du -sh -- * | sort -h`
Block devices and mount points	`lsblk -f`
Where a path is mounted from	`findmnt -T /var/lib`
Memory, human-readable	`free -h`

TASK	COMMAND
Deleted files still held open (space not freed)	`lsof +L1`

When `df` and `du` disagree, a process usually still holds a deleted file, often a rotated log. `lsof +L1` lists such files; restarting the process frees the space.

[05] Basic network diagnostics

TASK	COMMAND
Addresses on all interfaces	`ip -br addr`
Routing table	`ip route`
Which route a destination would take	`ip route get 192.0.2.10`
Listening TCP and UDP sockets with processes	`sudo ss -tulpn`
Is a host reachable (4 packets)	`ping -c 4 192.0.2.10`
Path to a host, hop by hop	`tracepath 192.0.2.10`
DNS lookup, short answer	`dig +short example.com A`
DNS lookup against a specific resolver	`dig @192.0.2.53 example.com`
Is a TCP port open	`nc -zv 192.0.2.10 443`
HTTP status and headers	`curl -sI "$URL"`
TLS certificate dates and subject	`openssl s_client -connect host:443 -servername host </dev/null 2>/dev/null | openssl x509 -noout -dates -subject`

`ss` replaced `netstat`, and `ip` replaced `ifconfig` and `route`. The old tools are often not installed on current systems. ICMP may be blocked even when the service works, so a failed `ping` proves little; `nc -zv` tests the port you actually care about.

[06] Shell habits that save time

TASK	COMMAND
Re-run the last command with sudo	`sudo !!`
Last argument of the previous command	`cd !$`
Search command history	`Ctrl+R, then type`

TASK	COMMAND
Stop a script at the first error	`set -euo pipefail`
Time a command	`time ./build.sh`

The example addresses come from the ranges reserved for documentation (RFC 5737), and `example.com` is reserved for examples (RFC 2606).

[07] Sources

[1] GNU coreutils manual

[2] ss(8)

[3] ip-route(8)

[4] find(1)

[5] journalctl(1)

[6] Bash manual: set -e, -u and -o pipefail