



POP!_OS 24.04 LTS · COSMIC · APT · FLATPAK

Pop!_OS Handbook

For beginners

Don't fear the terminal. Start with a few commands. This section is for people who just installed Pop!_OS: what to do after installing, COSMIC Store and Flatpak, window tiling, basic terminal commands, COSMIC shortcuts and where each setting lives.

```
user@pop-os:~$ sudo apt update
```

user your username · **pop-os** the computer name · **~** the folder you are in (your home folder) · **\$** means a normal user, **#** means root (administrator). Nothing appears on screen while you type a password; that is normal.

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Yellow italic text (like *<package>*) marks the parts you fill in. In the terminal, paste is Ctrl+Shift+V and copy is Ctrl+Shift+C. Commands that start with `sudo` change the system; read what they do before running them.



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After installing

After a clean Pop!_OS install, going through these in order is a good start.

1 Install the updates

Open **COSMIC Store** > **Updates** > **Update all**, or use the terminal.

```
$ sudo apt update && sudo apt full-upgrade
```

```
$ flatpak update
```

2 Check the graphics driver

If you installed the NVIDIA ISO, the driver is already there. On the Intel/AMD ISO with an NVIDIA card, install it from the terminal.

```
$ sudo apt install system76-driver-nvidia
```

3 Try window tiling

Click the tiling icon in the top panel, or press **Super** + **Y**, to switch automatic tiling on or off for the workspace.

4 Turn on the firewall

ufw is not installed by default.

```
$ sudo apt install ufw && sudo ufw enable
```

5 Set up backups

Timeshift takes system snapshots; Déjà Dup backs up your home folder.

```
$ sudo apt install timeshift deja-dup
```

6 Update firmware

System76 and many other computers get firmware updates through fwupd.

```
$ fwupdmgr refresh && fwupdmgr get-updates
```

```
$ fwupdmgr update
```

Meet the terminal

The terminal is the window where you give the computer commands by typing. On COSMIC the quickest way is **Super** + **T**. Or press Super and type "terminal".

TIP Linux is case-sensitive: **Documents** and **documents** are different folders. Put names with spaces in quotes: `cd "New Folder"`.

TIP Type part of a name and press **Tab**: the command or file name completes itself. Press it twice to list the options. This habit saves more time than anything else.

```
$ man <command>
```

Opens the manual page for a command. Quit with **q**, search inside with `/word`.

```
$ <command> --help
```

Shows a short help text and the command's options.

```
$ sudo <command>
```

Runs the command with administrator (root) rights. It asks for your own password; nothing shows while you type.

```
$ clear
```

Clears the screen. Shortcut: **Ctrl** + **L**.

```
$ history
```

Lists the commands you typed before. You can also step back with **↑**.

```
$ which <command>
```

Shows which file a command runs from.

```
$ exit
```

Closes the terminal (or a remote session).

WARNING To stop a running command, press **Ctrl** + **C**. In the terminal, copy is **Ctrl** + **Shift** + **C** and paste is **Ctrl** + **Shift** + **V**.

Files and folders

`~` means your home folder (/home/username). `.` is the current folder, `..` the one above it.

```
$ pwd
```

Prints the folder you are in.

```
$ ls
```

Lists the files in the current folder.

```
$ ls -la
```

Detailed list including hidden files (size, date, permissions). Names starting with a dot are hidden.

```
$ ls -lh
```

Shows sizes in readable KB/MB/GB.

```
$ cd <folder>
```

Enters a folder. Example: `cd Documents`.

```
$ cd ..
```

Goes up one folder.

```
$ cd
```

On its own, goes back to your home folder. `cd -` returns to the previous folder.

```
$ mkdir <folder>
```

Creates a folder. For nested folders: `mkdir -p a/b/c`.

```
$ touch <file>
```

Creates an empty file (or updates the date of an existing one).

```
$ cp <source> <target>
```

Copies a file. For folders use `cp -r`.

```
$ mv <source> <target>
```

Moves or renames. Example: `mv old.txt new.txt`.

```
$ rm <file>
```

Deletes a file. It does not go to the trash and cannot be undone.

```
$ rm -r <folder>
```

Deletes a folder and everything in it. Add `-i` to confirm each file.

```
$ gio trash <file>
```

Sends the file to the Trash instead of deleting it, so it can be restored like on the desktop.

```
$ find ~ -name "*.pdf"
```

Finds every file ending in .pdf in your home folder.

```
$ ln -s <target> <link-name>
```

Creates a shortcut (symbolic link) to a file or folder.

WARNING Never run commands from the internet that start with `sudo rm -rf` unless you understand them. They can wipe the system in seconds.

Reading and editing files

A simple editor that runs in the terminal is enough for changing configuration files. nano is the easiest. It comes preinstalled on Pop!_OS.

```
$ cat <file>
```

Prints a short file to the screen.

```
$ less <file>
```

Reads a long file page by page. Space: next page, `/` search, `q` quit.

```
$ head -n 20 <file>
```

Shows the first 20 lines.

```
$ tail -n 50 <file>
```

Shows the last 50 lines. `tail -f` follows new lines live.

```
$ nano <file>
```

Opens the file in nano. For system files add sudo: `sudo nano /etc/hosts`.

```
Ctrl + O
```

nano: save (then Enter).

```
Ctrl + X
```

nano: quit. Asks if there are unsaved changes.

```
Ctrl + W
```

nano: search in the file.

```
Ctrl + K or Ctrl + U
```

nano: cut / paste a line.

```
$ xdg-open <file>
```

Opens the file with its default app (PDF, image, folder...). `xdg-open .` opens the current folder in the file manager.

Installing software: APT

APT is Pop!_OS's package manager: it downloads software from the repositories, installs, updates and removes it. `apt update` only refreshes the package list; `apt upgrade` does the actual updating.

```
$ sudo apt update
```

Refreshes the package list from the repositories. Run it before installing or upgrading.

```
$ sudo apt upgrade
```

Updates installed packages.

```
$ sudo apt full-upgrade
```

Also allows removing packages if an upgrade requires it (needed for kernel transitions).

```
$ sudo apt install <package>
```

Installs software. You can list several: `sudo apt install vlc gimp`.

```
$ sudo apt remove <package>
```

Removes software; system-wide config files stay.

```
$ sudo apt purge <package>
```

Removes software together with its config files.

```
$ sudo apt autoremove
```

Cleans up packages that nothing needs anymore.

```
$ apt search <word>
```

Searches package names and descriptions.

```
$ apt show <package>
```

Shows a package's version, size and description.

```
$ apt list --installed
```

Lists all installed packages. To filter: `apt list --installed | grep firefox`.

```
$ apt list --upgradable
```

Packages with pending updates.

```
$ sudo apt install ./<file>.deb
```

Installs a downloaded .deb file with its dependencies. The leading `./` matters.

TIP `apt` is for everyday use. `apt-get`, which you'll see in scripts and older guides, does the same job; its output doesn't change between versions, so scripts prefer it.

COSMIC Store and Flatpak

COSMIC Store shows APT packages and Flatpak apps from Flathub side by side, and installs updates for both.

Dock > COSMIC Store

Browse by category, search, install. **Installed apps** lists what you have.

COSMIC Store > Updates

Lists system packages and app updates; **Update all** installs them.

```
$ sudo apt install <package>
```

Installs an APT package from the terminal.

```
$ flatpak install flathub <app-id>
```

Installs a Flatpak app; the ID is shown on flathub.org.

TIP A downloaded **.deb** file installs with `sudo apt install ./file.deb`.

Installing apps with Flatpak

Flatpak apps run isolated from the system and bring their own libraries. When the distribution's version is old or missing, this is the easiest way to get desktop apps.

TIP Flatpak and Flathub come set up on Pop!_OS; COSMIC Store shows Flatpak apps.

```
$ flatpak search <name>
```

Searches Flathub and shows the full app ID (e.g. `com.spotify.Client`).

```
$ flatpak install flathub <app-id>
```

Installs the app. Example: `flatpak install flathub com.discordapp.Discord`.

```
$ flatpak update
```

Updates all Flatpak apps.

```
$ flatpak list --app
```

Lists installed Flatpak apps.

```
$ flatpak uninstall <app-id>
```

Removes the app. Add `--delete-data` to remove its data too.

```
$ flatpak uninstall --unused
```

Frees space by removing runtimes nothing uses anymore.

```
$ flatpak run <app-id>
```

Starts the app from the terminal; handy for seeing error messages.

TIP To edit Flatpak permissions (file access, camera, etc.) visually, install Flatseal: `flatpak install flathub com.github.tchx84.Flatseal`.

TIP If you downloaded an AppImage, make it executable: `chmod +x App.AppImage`, then `./App.AppImage`. If it doesn't start, you need `sudo apt install libfuse2t64`.

System information and resources

The equivalent of Windows Task Manager is System Monitor on both GNOME and KDE. The same information is available in the terminal.

```
$ cat /etc/os-release
```

Distribution name and version.

```
$ hostnamectl
```

Computer name, operating system, kernel and hardware summary.

```
$ uname -r
```

Version of the running Linux kernel.

```
$ df -h
```

Shows how much free space is left on each disk.

```
$ du -sh *
```

Space used by each file and folder in the current folder.

```
$ free -h
```

RAM and swap usage.

```
$ top
```

Live process list. Quit with `q`. For a nicer one: `sudo apt install htop` or `bttop`.

```
$ sudo apt install fastfetch
```

A tool that shows a system summary with a logo; run `fastfetch` after installing.

```
$ lscpu
```

Processor information.

```
$ lspci
```

Lists PCI devices such as the graphics and network cards.

```
$ lsusb
```

Lists connected USB devices.

```
$ pkill <program-name>
```

Closes a frozen program by name. Example: `pkill firefox`.

```
$ kill -9 <PID>
```

Force-kills a process by number (PID). `top` or `pgrep firefox` gives you the PID.

Shut down, restart, sessions

You can also use the desktop's power menu; the terminal equivalents are:

```
$ systemctl poweroff
```

Shuts the computer down.

```
$ systemctl reboot
```

Restarts.

```
$ systemctl suspend
```

Puts it to sleep (suspend).

```
$ loginctl terminate-session $XDG_SESSION_ID
```

Logs out (works regardless of desktop).

Super + **L**

Locks the screen (GNOME and KDE).

Ctrl + **Alt** + **Delete**

Opens the log out / power off dialog.

COSMIC shortcuts

COSMIC is keyboard-friendly. Change shortcuts in Settings > Input Devices > Keyboard > Keyboard Shortcuts.

Super		Opens the Launcher. Type to search apps, settings and files; type ? to see what else it can do.			
Super	+	A	Opens the app library.		
Super	+	W	Shows all workspaces.		
Super	+	T	Opens a terminal.		
Super	+	F	Opens the file manager.		
Super	+	B	Opens the web browser.		
Super	+	Y	Turns automatic window tiling on or off for this workspace.		
Super	+	Arrow keys	Moves focus between windows; with Shift it moves the window.		
Super	+	Ctrl	+	Arrow keys	Switches workspace.
Super	+	M	Maximizes the window.		
Super	+	Q	Closes the window.		
Print		Takes a screenshot.			

Terminal and Bash shortcuts

The first group belongs to the terminal window (mostly the same in GNOME Terminal, Console, Konsole and Ptyxis), the second to the command line itself (Bash).

Ctrl + Shift + T	New tab.
Ctrl + Shift + N	New window.
Ctrl + Shift + W	Close tab.
Ctrl + Page Up or Ctrl + Page Down	Switch between tabs.
Ctrl + Shift + C or Ctrl + Shift + V	Copy / paste.
Ctrl + + or Ctrl + -	Bigger / smaller text. Ctrl+0 resets.
Ctrl + Shift + F	Search the output.
F11	Full screen.
Tab	Complete a command or file name. Twice: list the options.
↑ or ↓	Previous / next command.
Ctrl + R	Search history: finds an old command as you type. Ctrl+R again goes further back, Enter runs it.
Ctrl + C	Stop the running command or cancel the line you typed.
Ctrl + D	Log out (same as exit on an empty line).
Ctrl + L	Clear the screen.
Ctrl + A or Ctrl + E	Move to the start / end of the line.

Ctrl + **U** or **Ctrl** + **K**

Delete from the cursor to the start / end of the line.

Ctrl + **W**

Delete the word before the cursor.

Alt + **B** or **Alt** + **F**

Move back / forward one word.

Ctrl + **Z**

Pause the running command and send it to the background. **fg** brings it back.

!!

Repeats the last command. Common use: **sudo !!** reruns the last command with sudo.

Where is that setting?

Everything is in Settings (the gear in the dock, or the menu at the top right).

Settings > Desktop > Appearance	Dark or light, accent color, window corners and gaps.
Settings > Desktop > Panel / Dock	Position, size, auto-hide and which applets they show.
Settings > Desktop > Workspaces	One set of workspaces for all screens or one per screen; vertical or horizontal.
Settings > Displays	Resolution, scaling, refresh rate and multiple monitors.
Settings > Sound	Output and input devices.
Settings > Network & Wireless	Wired, Wi-Fi and VPN.
Settings > Time & Language	Time zone, date format and language.
Settings > System & Accounts > Users	Add users and change passwords.

USB drives and disks

USB drives appear in the file manager's sidebar and are mounted under `/media/` or `/run/media/`. Click the  icon next to it before unplugging.

```
$ lsblk
```

Shows all disks and partitions as a tree (sda, nvme0n1, etc.).

```
$ lsblk -f
```

Also shows each partition's file system (ext4, btrfs, ntfs, exfat) and label.

```
$ udisksctl mount -b /dev/<sdb1>
```

Mounts a partition without sudo.

```
$ udisksctl unmount -b /dev/<sdb1>
```

Unmounts it safely.

Disks > select the device > ⋮ > Format Disk

Wipes the USB drive. To use it on both Windows and Linux, create an exFAT partition.

```
$ flatpak install flathub  
io.gitlab.adhami3310.Impression
```

Impression: writes an ISO file to a USB drive to make an install drive.

WARNING When writing a disk with `dd` in the terminal, picking the wrong target (`/dev/sdX`) erases that whole disk. Check twice with `lsblk` first.

Common problems

The situations new Pop!_OS users most often get stuck on, and the first thing to try.

TIP "Could not get lock /var/lib/dpkg/lock-frontent". COSMIC Store is busy. Wait until it finishes; don't delete the lock file.

TIP Black screen or low resolution with an NVIDIA card. You may have used the Intel/AMD ISO; install `system76-driver-nvidia` and restart.

TIP An Applimage won't start. `sudo apt install libfuse2t64`.

```
$ systemctl --user restart pipewire wireplumber
```

If sound suddenly stops, restarts the sound system without logging out.

TIP Windows jump into a grid. That's automatic tiling; press **Super** + **Y** to turn it off for the workspace.

TIP The screen goes dark and the mouse doesn't wake it. Press any key.

Glossary

Words you'll often see in forums and documentation.

COSMIC The desktop System76 wrote for Pop!_OS, in Rust. It replaced the GNOME-based desktop in Pop!_OS 24.04.

System76 The American computer maker behind Pop!_OS.

Base Pop!_OS 24.04 is built on Ubuntu 24.04 LTS, so most Ubuntu “noble” instructions also work.

Tiling Windows arrange themselves side by side automatically, without overlapping.

Terminal / shell The terminal is the window you type in; the shell is the program that interprets the commands. The default shell is Bash.

sudo Means “run this command as administrator”.

APT / .deb The package system Pop!_OS inherits from Ubuntu, and its package format.

Flatpak / Flathub A distribution-independent app format / its main store, built into COSMIC Store.

Commands are written for Pop!_OS 24.04 LTS (based on Ubuntu 24.04 LTS; COSMIC, APT, Flatpak). Menu names follow the English interface. Commands that start with `sudo` change the system; read what they do before running them.