

DEBIAN 13 TRIXIE · APT · GNOME

Debian Handbook

For beginners

Don't fear the terminal. Start with a few commands. This section is for people who just installed Debian: what to do after installing, installing software with APT, basic terminal commands, desktop shortcuts and where each setting lives.

```
user@debian:~$ sudo apt update
```

user your username · **debian** 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.

After installing

After a clean Debian install, going through these in order is a good start. Debian ships deliberately minimal; you add what you need.

1 Check that sudo works

If you set a root password during installation, Debian doesn't add your user to the sudo group and sudo says you're "not in the sudoers file". Become root, add yourself, then log out and back in. (If you left the root password empty, skip this step.)

```
$ su -
```

```
$ usermod -aG sudo <user>
```

2 Enable contrib and non-free

Needed for the NVIDIA driver, some Wi-Fi firmware and Steam. Every `Components:` line in the file should read `main contrib non-free non-free-firmware`. On systems with the old format, the file is `/etc/apt/sources.list`.

```
$ sudo nano /etc/apt/sources.list.d/debian.sources
```

```
$ sudo apt update
```

3 Update the system

Gets the security updates waiting since installation.

```
$ sudo apt update && sudo apt upgrade
```

4 Install video and audio codecs

Debian carries most codecs in main; these fill the gaps.

```
$ sudo apt install ffmpeg gstreamer1.0-libav gstreamer1.0-plugins-ugly libavcodec-extra
```

5 Add Flatpak and Flathub

Apps in Debian stable can be a few years old. Add Flathub for current desktop apps, then restart.

```
$ sudo apt install flatpak gnome-software-plugin-flatpak
```

```
$ flatpak remote-add --if-not-exists flathub  
https://dl.flathub.org/repo/flathub.flatpakrepo
```

6 Install CPU microcode

Manufacturer patches for processor bugs. The installer usually adds it; to be sure, install the one for your CPU.

```
$ sudo apt install intel-microcode
```

```
$ sudo apt install amd64-microcode
```

7 Update firmware

Manufacturer updates for the BIOS/UEFI, SSD, touchpad and similar devices.

```
$ sudo apt install fwupd
```

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

```
$ fwupdmgr update
```

8 Install Tweaks and Extension Manager

For minimize/maximize buttons, fonts and GNOME extensions.

```
$ sudo apt install gnome-tweaks gnome-shell-extension-manager
```

9 Turn on a firewall

Debian has no firewall by default.

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

10 Set up backups

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

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

Meet the terminal

The terminal is the window where you give the computer commands by typing. On GNOME it is called Terminal or Console; on KDE, Konsole. To open it, press Super, type "terminal" and press Enter.

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 Debian.

```
$ 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 Debian'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.

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.

```
$ sudo apt install flatpak gnome-software-plugin-flatpak
```

Installs Flatpak and the GNOME Software plugin.

```
$ flatpak remote-add --if-not-exists flathub https://dl.flathub.org/repo/flathub.flatpakrepo
```

Adds the Flathub repository. Log out and back in afterwards.

```
$ 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 may need `sudo apt install libfuse2t64`.

Understanding Debian releases

Debian is developed in three branches, and each release is named after a Toy Story character. A new stable release comes out roughly every two years.

stable	The recommended branch for desktops and servers. The current stable release is Debian 13 "trixie". Packages are frozen; only security and bug fixes arrive.
---------------	---

oldstable	The previous stable release (Debian 12 "bookworm"). It keeps getting security updates for a while.
------------------	--

testing	Where the next stable release is prepared ("forky"). More up to date, but occasionally breaks.
----------------	--

unstable (sid)	Where packages land first. For experienced users.
-----------------------	---

backports	Selected packages rebuilt from newer releases for stable (e.g. a newer kernel, LibreOffice).
------------------	--

```
$ cat /etc/debian_version
```

The exact Debian version number.

```
$ lsb_release -a
```

Distribution name, release and codename.

WARNING Don't mix testing, unstable or Ubuntu PPA packages into stable. Debian calls this a "FrankenDebian"; updates break over time.

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 `btop`.

```
$ 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.

GNOME desktop shortcuts

Super is the Windows key on your keyboard. GNOME is designed to be used largely from the keyboard.

Super

Activities overview: open windows, workspaces and search. Start typing right away to find apps, files and settings.

Super + **A**

List of all apps.

Super + **1** ... **Super** + **9**

Opens or switches to the 1st ... 9th app in the dash.

Alt + **Tab**

Switch between apps. Super+Tab does the same.

Alt + **`**

Switch between windows of the same app (the key above Tab).

Super + **↑** or **Super** + **↓**

Maximize / restore the window.

Super + **←** or **Super** + **→**

Snap the window to the left / right half of the screen.

Super + **H**

Hide (minimize) the window.

Alt + **F4**

Close the window. In most apps Ctrl+Q quits the app.

Super + **Page Up** or **Super** + **Page Down**

Go to the previous / next workspace.

Super + **Shift** + **Page Up** or **Super** + **Shift** + **Page Down**

Move the window to the previous / next workspace.

Super + **Shift** + **←** or **Super** + **Shift** + **→**

Move the window to the other monitor.

Super + **V**

Notification list and calendar.

Super + **S**

Quick settings menu (Wi-Fi, sound, brightness, power mode).

Super + **Space**

Switch keyboard layouts.

Print Screen

Screenshot tool: area, window or full screen; picture or video.

Shift + **Print Screen**

Takes a full-screen screenshot immediately. Saved to Pictures > Screenshots.

Alt + **Print Screen**

Takes a screenshot of the active window.

Ctrl + **Alt** + **Shift** + **R**

Starts / stops screen recording. Saved to Videos > Screencasts.

Alt + **F2**

Run a command dialog.

TIP Ctrl+Alt+T may not open a terminal on GNOME by default. To add it, see the custom shortcut step in “Where is that setting?”.

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`.

Files (Nautilus) shortcuts

GNOME's file manager is the Files app. Most shortcuts are the same in KDE's Dolphin.

Ctrl + H

Show / hide hidden files.

Ctrl + L

Type a path into the address bar (e.g. `/etc`).

F2

Rename. With several files selected, batch rename opens.

Ctrl + Shift + N

New folder.

Delete or Shift + Delete

Move to Trash / delete permanently.

Ctrl + F

Search in the folder.

Alt + ↑	Go up to the parent folder.
Alt + ← or Alt + →	Back / forward.
Ctrl + T	New tab.
Ctrl + 1 or Ctrl + 2	List / grid view.
Ctrl + I	Properties of the selected item.
Space	Quick preview of the selected file (needs the sushi package: <code>sudo apt install sushi</code>).

TIP To add a folder to the sidebar, right-click it > Add to Bookmarks, or press Ctrl+D.

Where is that setting? (GNOME)

On GNOME almost everything is in the Settings app. The quickest way in: press Super and type the setting's name (e.g. "display", "sound", "bluetooth"). Menu names can differ slightly between GNOME versions.

Settings > Wi-Fi	Connect to wireless networks, forget saved ones, share with a QR code.
Settings > Network	Wired connection, adding a VPN, proxy.
Settings > Bluetooth	Pair headphones, mice, phones.
Settings > Displays	Resolution, refresh rate, scaling (125%, 150%...), multi-monitor layout, Night Light.
Settings > Sound	Output/input device, volume levels, per-app volume.
Settings > Power	Power mode (Power Saver / Balanced / Performance), screen blank timeout, automatic suspend, battery percentage.

Settings > Multitasking

Hot corner, number of workspaces, edge tiling.

Settings > Appearance

Light/dark style, accent color, wallpaper.

Settings > Apps

App permissions and notifications; Default Apps (browser, mail, music, video).

Settings > Notifications

Do Not Disturb, lock screen notifications, per-app notifications.

Settings > Online Accounts

Add Google, Microsoft or Nextcloud accounts; Drive/OneDrive appear in Files.

Settings > Mouse & Touchpad

Pointer speed, tap to click, natural scrolling.

Settings > Keyboard

Input sources, Compose key, View and Customize Shortcuts.

Settings > Keyboard >
View and Customize Shortcuts >
Custom Shortcuts

Add your own shortcut. Example: Name "Terminal", Command `gnome-terminal`, Shortcut Ctrl+Alt+T.

Settings > Printers

Add printers; network printers are usually found automatically.

Settings > Accessibility

Large text, zoom, screen reader, sticky keys, cursor size.

Settings > Privacy & Security

Screen lock delay, location services, file history and automatic trash emptying.

Settings > System > Region & Language

Interface language, date/number/currency formats.

Settings > System > Date & Time

Time zone, automatic time, 24-hour format.

Settings > System > Users

New users, passwords, administrator rights, automatic login.

Settings > System > About

Version, processor, RAM and disk information.

Tweaks > Windows Titlebars

Minimize / maximize buttons.

Tweaks > Fonts

Interface, document and monospace fonts; font scaling.

Tweaks > Startup Applications

Apps that start automatically when you log in.

Disks app

Format disks, create partitions, SMART health data, write disk images.

Look and feel, GNOME extensions

GNOME ships minimal; you add what you miss with extensions. Search and install them with one click in Extension Manager.

```
$ sudo apt install gnome-tweaks
```

Tweaks: fonts, title bar buttons, startup applications.

```
$ sudo apt install gnome-shell-extension-manager
```

Extension Manager: search, install and configure extensions.

TIP Popular extensions: **Dash to Dock** (always-visible dock), **AppIndicator and KStatusNotifierItem Support** (tray icons for apps like Discord and Steam), **Blur my Shell** (blurred panel), **Clipboard Indicator** (clipboard history), **Caffeine** (keeps the screen on).

```
$ gsettings set org.gnome.desktop.wm.preferences button-layout 'appmenu:minimize,maximize,close'
```

Adds minimize and maximize buttons without Tweaks.

```
$ gsettings set org.gnome.desktop.interface show-battery-percentage true
```

Shows the battery percentage in the top bar.

```
$ gnome-extensions list --enabled
```

Lists enabled extensions.

WARNING After a big GNOME update some extensions may stop working for a while. If the desktop acts strangely, try disabling extensions first.

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 Debian users most often get stuck on, and the first thing to try.

TIP **"user is not in the sudoers file"**. A root password was set during installation. Become root with `su -`, run `usermod -aG sudo username`, then log out and back in.

TIP “Unable to locate package”. Run `sudo apt update` first. If it's still missing, the package may be in contrib/non-free or not in Debian at all; check Flathub.

TIP “Could not get lock /var/lib/dpkg/lock-frontend”. Another APT process or the Software app is running. Wait for it to finish; don't delete the lock file.

```
$ sudo dpkg --configure -a
```

Finishes an interrupted install after the “dpkg was interrupted” error.

TIP Wi-Fi or graphics don't work. Usually firmware is missing. See which file is missing with `sudo dmesg | grep -i firmware`; with non-free-firmware enabled, install the matching package from `firmware-iwlwifi`, `firmware-realtek`, `firmware-atheros`, `firmware-amd-graphics` or `firmware-misc-nonfree`. For Broadcom: `broadcom-sta-dkms`.

TIP A program's version is very old. Normal on stable. Install it from Flathub or look in backports.

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

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

TIP The whole desktop froze. Switch to a text console with Ctrl+Alt+F3, log in and run `sudo systemctl restart display-manager`. Open work will be lost.

TIP “command not found”. The command isn't installed. Search with `apt search`, or install `sudo apt install command-not-found` and reopen the terminal; from then on it tells you which package you need.

Glossary

Words you'll often see in forums and documentation.

Terminal / shell

The terminal is the window you type in; the shell is the program that interprets the commands. Debian's default shell is Bash.

root

The all-powerful administrator account. You become root with `su -` or get temporary rights with `sudo`.

Package / .deb	The installable form of a program. On Debian the format is .deb.
APT / dpkg	APT downloads packages from repositories and resolves dependencies; dpkg installs the package on disk.
Repository	A server packages are downloaded from. Definitions live under <code>/etc/apt/sources.list.d/</code> .
main / contrib / non-free / non-free-firmware	Free software / free software that depends on something non-free / non-free software / non-free firmware.
Flatpak / Flathub	A distribution-independent, sandboxed app format / its main app store.
Kernel	The core of the operating system that talks to the hardware.
GNOME / KDE / Xfce	Desktop environments. The Debian installer asks which one you want.
AppArmor	A security layer that limits what programs can access; on by default in Debian.
/etc, /usr, /var, /home	System settings / programs / changing data and logs / user folders.

Commands are written for Debian 13 “trixie” (APT 3, GNOME); most work unchanged on Debian 12. Menu names follow the English interface. Commands that start with `sudo` change the system; read what they do before running them.