ARCH LINUX · ROLLING · PACMAN · AUR

Arch Linux Handbook

Installation guide

Install Arch with archinstall. Downloading the ISO and preparing a USB drive, firmware and Secure Boot, installing alongside Windows, the live environment, the archinstall menu and common installation problems.

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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.

Preparation

Set aside half an hour for preparation before installing; most installation problems come from skipping these steps.

TIP **System requirements.** 64-bit processor, at least 2 GB RAM (4 GB or more for a desktop), at least 20 GB of disk (40 GB or more for a desktop). An internet connection is required during installation.

TIP **Back up.** Installation can wipe the disk. Copy your documents, photos and browser bookmarks to an external drive or the cloud, and check once that the backup opens.

TIP **Download the ISO:** `archlinux-x86_64.iso` from a nearby mirror at archlinux.org/download. The ISO is rebuilt every month; an old ISO can cause keyring errors during installation.

```
$ sha256sum <file>.iso
```

Computes the ISO's checksum on Linux. It must match the CHECKSUM/SHA256 value on the download page.

```
Get-FileHash <file>.iso -Algorithm SHA256
```

The same check in Windows PowerShell.

```
$ shasum -a 256 <file>.iso
```

The same check on macOS.

TIP Get a **USB drive of 8 GB or more**. Everything on it will be erased.

TIP **If you are coming from Windows**, note your BitLocker recovery key (in an admin Terminal: `manage-bde -protectors -get C:`) and write down your Wi-Fi password; the installer will need it.

Making the install USB

An ISO file isn't copied to the USB like a normal file; it's written with a dedicated tool.

```
winget install --id Rufus.Rufus -e
```

Rufus on Windows: choose the device and the ISO, partition scheme GPT, target system UEFI, Start. If it asks for a write mode, take the recommended one; if the USB won't boot, rewrite it in "DD image mode".

TIP **balenaEtcher** works the same on Windows, macOS and Linux: choose the ISO, choose the USB, Flash.

TIP With **Ventoy** you prepare the USB once, then just copy several ISO files onto it and choose between them at boot. Handy for trying several systems.

```
$ lsblk
```

On Linux, find the USB's name (e.g. /dev/sdb). Use the disk itself, not a partition (sdb1).

```
$ sudo dd if=<file>.iso of=/dev/<sdX> bs=4M status=progress oflag=sync
```

Writes the ISO straight to the USB on Linux.

WARNING `dd` and Rufus erase the selected disk completely without asking. Make sure your external backup drive or system disk isn't selected.

Booting from USB and firmware settings

To boot from USB you open the boot menu while the computer starts. The key depends on the brand; press it repeatedly while the logo is showing.

Boot menu key	Dell F12 · HP F9 or Esc · Lenovo F12 (Novo button on some models) · ASUS F8 or Esc · Acer F12 · MSI F11 · Gigabyte F12
Firmware setup key	Usually F2 or Delete; F10 on HP, F1 or F2 on Lenovo.

TIP You can also boot the USB from Windows: hold Shift and choose Start > Restart > Use a device > USB.

TIP **Secure Boot.** The Arch install ISO is not signed for Secure Boot; turn Secure Boot off in the firmware before installing. After installation you can turn it back on with your own keys using `sbctl`.

TIP **UEFI mode.** Use UEFI on modern computers. If the USB shows up twice in the boot menu, pick the one starting with "UEFI:". The old "Legacy/CSM" mode is only for very old hardware.

WARNING **Intel RST / VMD.** Some laptops ship with the disk in "RAID" or "Intel VMD" mode and the installer can't see it. Set SATA mode to AHCI or turn off VMD in the firmware. If Windows is on the same disk, prepare Windows first (booting once into Safe Mode is enough), or Windows won't boot.

Installing alongside Windows

You can install both Windows and Arch Linux on the same disk and choose which one to start at boot. Make room on the Windows side first.

1 Turn off Fast Startup

When it's on, Windows leaves the disk half shut down, and files written from Linux can get corrupted. Control Panel > Power Options > Choose what the power buttons do > untick "Turn on fast startup". Or in an admin Terminal:

```
$ powercfg /h off
```

2 Write down the BitLocker key, suspend it if needed

Boot changes can make BitLocker ask for the recovery key.

```
$ manage-bde -protectors -get C:
```

```
$ Suspend-BitLocker -MountPoint C: -RebootCount 3
```

3 Make room in Windows

In Disk Management, right-click the C: partition > Shrink Volume. Set aside at least 50 GB, 100 GB or more for comfortable use. Leave the new space "Unallocated"; don't format it.

```
$ diskmgmt.msc
```

4 Choose the free space in the installer

Pick the option that uses the free space, not the one that erases the disk: in archinstall, use “Manual partitioning” to create a new partition in the free space and mount Windows' EFI partition as /boot without formatting it. Windows' EFI partition is shared.

5 Check the boot menu

After installing, Windows should appear in the boot menu too. If the computer boots straight into Windows, change the boot order in the firmware.

> TIP If the clock is off between the two systems (Windows shows the wrong hour), run this in an admin Terminal on Windows: `reg add HKLM\SYSTEM\CurrentControlSet\Control\TimeZoneInformation /v RealTimeIsUniversal /t REG_DWORD /d 1 /f` .

Prepare the live environment

The Arch install ISO boots to a command line and you're already logged in as root. Set up the keyboard, the internet and the clock first.

```
# loadkeys us
```

Sets the console keyboard layout (e.g. `de`, `fr`, `trq`). `localectl list-keymaps` lists them all.

```
# cat /sys/firmware/efi/fw_platform_size
```

If it prints 64 you booted in UEFI mode. If the file doesn't exist you're in BIOS mode; pick the “UEFI:” entry in the boot menu.

```
# iwctl device list
```

The Wi-Fi interface name (usually wlan0). Skip the Wi-Fi steps if a cable is plugged in.

```
# iwctl station wlan0 connect "<SSID>"
```

Connects to a Wi-Fi network and asks for the password.

```
# ping -c 3 archlinux.org
```

Checks the internet connection.

```
# timedatectl
```

Shows that the clock is synchronized over the network (System clock synchronized: yes).

`# pacman -Sy archinstall`	Optional: updates archinstall to the latest version.
`# archinstall`	Starts the menu-driven installer.

The archinstall menu

Move through the menu with the arrow keys and select with Enter. Menu names can differ slightly between archinstall versions; the order below is for a desktop install. For a manual install, follow the "Installation guide" page on the Arch Wiki.

Locales	Keyboard layout and locale language (e.g. `en_US.UTF-8`).
Mirrors and repositories	Mirror region: your country and its neighbors. Optional repositories: `multilib` (for Steam and Wine).
Disk configuration	For the whole disk, "Use a best-effort default partition layout", pick the disk, file system **btrfs** (subvolumes and compression: yes) or ext4. For installing next to Windows, "Manual partitioning".
Disk encryption	Optional LUKS encryption; recommended on laptops.
Swap	Leave zram on.
Bootloader	On UEFI, **systemd-boot** is simple and fast and finds Windows on the same EFI partition by itself. If Windows' EFI partition is small (e.g. 100 MB) or you're in BIOS mode, choose **GRUB**.
Hostname	The computer name (e.g. archlinux).
Root password	You can leave it empty; a user with sudo is enough.
User account	Add a user and answer yes to "superuser (sudo)".

Profile	Type: Desktop, then GNOME or KDE Plasma. Graphics driver: pick the one for your card (the open kernel module option for NVIDIA).
Applications	Audio: Pipewire. Bluetooth: yes.
Kernels	`linux`; add `linux-lts` as a fallback.
Network configuration	"Use NetworkManager" (the desktop network menu uses it).
Additional packages	Any extra packages you want, e.g. `firefox nano git`.
Timezone / NTP	Your time zone; automatic time sync: yes.

> TIP When everything is set, choose **Install**. At the end it asks whether to chroot into the new system; say no, type `reboot` and remove the USB.

Right after installing

Once the system boots, update it first. Then continue with the "After installing" list in the Beginner tab.

`$ sudo pacman -Syu`	Installs all pending updates.
`$ sudo reboot`	Restart if the kernel was updated.
`$ lsblk -f && df -h /`	Check that the partitions and free space look as expected.
`$ ls /sys/firmware/efi`	If the folder exists, the system was installed in UEFI mode.

Installation problems

TIP **The USB doesn't show up in the boot menu.** Plug it into another port (preferably one directly on the motherboard), check that USB boot is enabled in the firmware, and rewrite the USB with Rufus or Etcher.

TIP **Black screen or freeze (especially NVIDIA).** Highlight the entry in the boot menu, press `e`, add `nomodeset` to the end of the line starting with `linux`, and boot with Ctrl+X (or F10). Install the graphics driver after installation; the parameter isn't permanent.

TIP **The installer can't see the disk.** Intel RST/VMD may be on in the firmware (see the firmware section).

TIP **Secure Boot or signature error.** Turn Secure Boot off in the firmware; the Arch ISO is not signed.

TIP **No Wi-Fi in the installer.** Use an Ethernet cable or USB tethering from your phone; install the missing Wi-Fi driver after installation.

TIP **Windows boots straight after installing.** In the firmware boot order, move Arch Linux (or "GRUB", "Linux Boot Manager") to the top.

TIP **archinstall reports a keyring or signature error.** The ISO may be old. Run `pacman -Sy archlinux-keyring` in the live environment and restart archinstall, or download a current ISO.

Commands are written for current Arch Linux (pacman 7, a GNOME or KDE Plasma desktop installed with archinstall). Package names can change over time on a rolling release; when in doubt, the Arch Wiki wins. Commands that start with `sudo` change the system; read what they do before running them.