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How to Install Arch Linux

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ARCH LINUX LINUX

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Introduction

Arch Linux is currently one of the most popular Linux distributions, thanks to its versatility and minimal system requirements.

Arch Linux features a rolling release and always comes with the [latest Linux kernel](#) and functionalities.

This article is a step-by-step guide on how to install and configure Arch Linux on your computer.

How to Install Arch Linux 5.9.11



Prerequisites

- At least 1GB of RAM and 20GB of free hard-drive space
- An internet connection
- A blank DVD and the hardware and software necessary to burn it
- Alternatively, a USB drive with at least 2GB of free space



Note: The installation requires formatting your hard drive. Doing this removes all saved data. Make sure to back up relevant data before starting the installation process.

Arch Linux Install Guide

Install Arch Linux on your computer by following the steps outlined below.

Step 1: Download the Arch Linux ISO

Download the ISO from the [Arch Linux download page](#). There are two ways to do so:

- via BitTorrent
- as a direct download

To download the ISO via torrent, choose between adding a magnet link to your BitTorrent app or downloading the torrent file.

Alternatively, scroll through the page until you find a mirror that's closest to your current location.

Once you have the Arch Linux ISO, you can create a live USB or burn it to a DVD.

Create a Live USB of Arch Linux

The simplest way to create a live USB of Arch Linux is to use an app like [Etcher GUI](#). This app is available on both Linux and Windows systems.

If you are using Linux, create a live USB with the following command:

```
dd bs=4M if=/path/to/archlinux.iso of=/dev/sdx status=progress &&  
sync
```

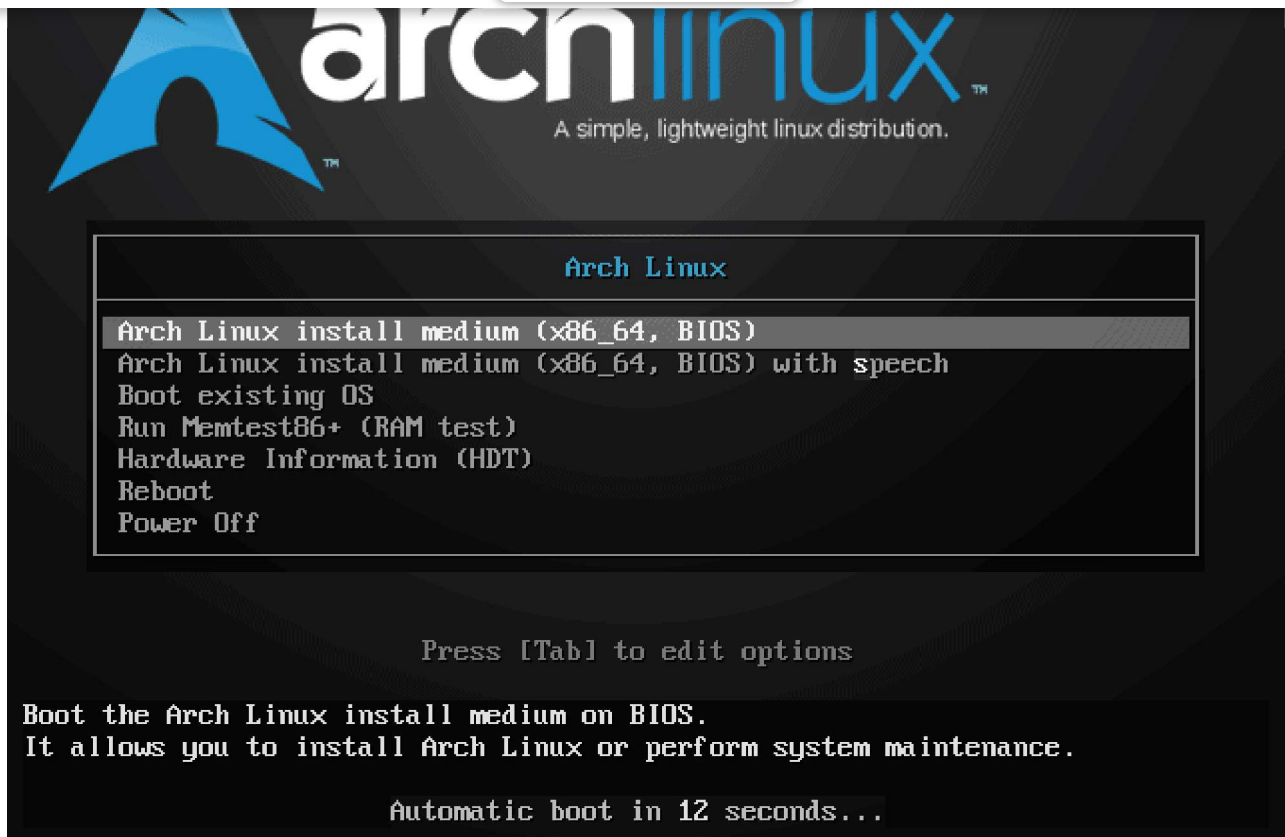
Burn the Arch Linux ISO to a DVD

You can also install Arch Linux from a DVD. Use a tool like [Brasero](#) or [AnyBurn](#) to burn the ISO you downloaded onto a blank DVD.

Step 3: Boot up Arch Linux

1. With the Arch Linux ISO burned on a DVD or stored as a live USB, insert the installation media into your computer and restart.
2. Depending on your system, pressing **F2**, **F10**, or **F12** lets you choose the device the system boots from.
3. With the boot settings open, select the preferred install media (live USB or DVD). The following screen shows up after Arch Linux boots:

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4. Select **Boot Arch Linux (x86_64)** and press **Enter** to start the setup process.

Step 4: Set the Keyboard Layout

During the Arch Linux installation, the default keymap is US. To list other available layouts, run:

```
ls /usr/share/kbd/keymaps/**/*.map.gz
```

To change the layout, use the appropriate layout file name with the **loadkeys** command. For example, run the following command to select a German keyboard layout:

```
loadkeys de-latin1
```

Step 5: Check Your Internet Connection

Check your Internet connection using the [ping command](#):

```
ping -c 3 google.com
```

Step 6: Enable Network Time Protocols (NTP)

Next, enable Network Time Protocols (NTP) and allow the system to update the time via the Internet:

```
timedatectl set-ntp true
```

To check the NTP service status, use:

```
timedatectl status
```

Step 7: Partition the Disks

1. Use the `fdisk` command to list all available [disk drives](#):

```
fdisk -l
```

2. Find the name of the disk you want to partition. The name is displayed in the `/dev/sdX` format, where X is the drive letter.

```
root@archiso ~ # fdisk -l
Disk /dev/sda 20 GiB, 21474836480 bytes, 41943040 sectors
Disk model: VBox HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop0: 559.54 MiB, 586719232 bytes, 1145936 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
root@archiso ~ # _
```



Note: When reviewing the list of available disk drives, ignore the ones ending in `rom`, `loop`, or `airoot`.

2. Partition the drive using the `cfdisk` command:

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Where **x** is the drive letter of the disk you want to partition.

3. Using the arrow keys, select **dos** as the label type, and press **Enter**.



4. The next screen shows how much free space you have on the selected disk and lets you allocate it. Select **New** at the bottom of the screen and press **Enter** to begin creating a new disk partition.

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```
>> Free space          2048      41943039      41940992      20G
```

```
[ New ] [ Quit ] [ Help ] [ Write ] [ Dump ]
```

```
Create new partition from free space
```

5. Select the partition size, shown in gigabytes. Once you enter the preferred size, press **Enter** to confirm.

```
                Disk: /dev/sda
              Size: 20 GiB, 21474836480 bytes, 41943040 sectors
              Label: dos, identifier: 0x5566d07e
```

Device	Boot	Start	End	Sectors	Size	Id	Type
>> Free space		2048	41943039	41940992	20G		

```
Partition size: 14G_

May be followed by M for MiB, G for GiB, T for TiB, or S for sectors.
```

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This partition requires at least two times the amount of RAM in disk space.

6. Once prompted, set the partition as **Primary** and press **Enter** to confirm.

```
Disk: /dev/sda
Size: 20 GiB, 21474836480 bytes, 41943040 sectors
Label: dos, identifier: 0x5566d07e

>>  Device      Boot      Start         End      Sectors      Size      Id Type
    Free space                2048         41943039      41940992      20G

                                [ primary] [extended]

                                0 primary, 0 extended, 4 free
```

The new partition is now displayed, along with the free space available on the disk drive.

7. Select the **Bootable** option at the bottom of the screen and press **Enter** to confirm. This way you make sure that Arch Linux boots from your primary partition installed.

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```
>> /dev/sda1      2048      29362175      29360128      14G      83 Linux
Free space      29362176      41943039      12580864      6G

Partition type: Linux (83)

[Bootable] [ Delete ] [ Resize ] [ Quit ] [ Type ] [ Help ] [ Write ] [ Dump ]

Toggle bootable flag of the current partition
```

8. Repeating the process outlined above, you need to create another partition using the remaining disk space. Instead of making the new partition bootable, select the **Type** option at the bottom of the screen and press **Enter**.

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```

/dev/sda1      *                2048      29362175      29360128      14G      83 Linux
>> /dev/sda2      29362176      41943039      12580864      6G      83 Linux

```

Partition type: Linux (83)

[Bootable] [Delete] [Resize] [Quit] [Type] [Help] [Write] [Dump]

Change the partition type

9. Scroll down on the list until you find **82 Linux swap / Solaris**. Press **Enter** to confirm. This creates a swap space partition.

```

Select partition type
4e QNX4.x 2nd part
4f QNX4.x 3rd part
50 OnTrack DM
51 OnTrack DM6 Aux1
52 CP/M
53 OnTrack DM6 Aux3
54 OnTrackDM6
55 EZ-Drive
56 Golden Bow
5c Priam Edisk
61 SpeedStor
63 GNU HURD or SysV
64 Novell Netware 286
65 Novell Netware 386
70 DiskSecure Multi-Boot
75 PC/IX
80 Old Minix
81 Minix / old Linux
82 Linux swap / Solaris
83 Linux
84 OS/2 hidden or Intel hibernation
85 Linux extended
86 NTFS volume set
87 NTFS volume set
88 Linux plaintext
8e Linux LVM
93 Amoeba
94 Amoeba BBT
9f BSD/OS
a0 IBM Thinkpad hibernation
a5 FreeBSD
a6 OpenBSD
a7 NeXTSTEP

```

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```
Disk: /dev/sda
Size: 20 GiB, 21474836480 bytes, 41943040 sectors
Label: dos, identifier: 0x5566d07e

Device      Boot      Start        End    Sectors    Size    Id Type
/dev/sda1   *          2048      29362175   29360128    14G    83 Linux
>> /dev/sda2          29362176   41943039   12580864     6G    82 Linux swap / Solaris

Partition type: Linux swap / Solaris (82)

[Bootable] [ Delete ] [ Resize ] [ Quit ] [ Type ] [ Help ] [ Write ] [ Dump ]

Write partition table to disk (this might destroy data)
```

11. Select **Quit** and press **Enter** to exit the **cfdisk** screen.

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```

/dev/sda1      *                2048    29362175    29360128    14G    83 Linux
>> /dev/sda2      29362176    41943039    12580864    6G    82 Linux swap / Solaris

```

```

Partition type: Linux swap / Solaris (82)

```

```

[Bootable] [ Delete ] [ Resize ] [ Quit ] [ Type ] [ Help ] [ Write ] [ Dump ]

```

```

Quit program without writing changes

```

Step 8: Create Filesystem

You need to format the new partitions to install Arch Linux. To do this, create a file system for each of the partitions.

1. Use the `mkfs` command to create an **ext4** filesystem for the bootable partition:

```
mkfs.ext4 /dev/sdX1
```



Where **X** is the drive letter of the disk the partition belongs to.

```

root@archiso ~ # mkfs.ext4 /dev/sda1
mke2fs 1.45.6 (20-Mar-2020)
Creating filesystem with 3670016 4k blocks and 917504 inodes
Filesystem UUID: a590b315-1206-4616-a9bf-27e39180d4ec
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208

Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done

root@archiso ~ #

```

2. Next, create a file system for the swap space partition using the `mkswap` command:

Again, replace **X** with the drive letter of the disk the partition belongs to.

```
root@archiso ~ # mkswap /dev/sda2
Setting up swapspace version 1, size = 6 GiB (6441398272 bytes)
no label, UUID=521f93bf-ab45-4eb5-9187-a38cb9cddf0e
root@archiso ~ # _
```

Step 9: Mount the Filesystem

Now, mount the filesystems you created by running the following commands:

```
mount /dev/sdX1 /mnt
swapon /dev/sdX2
```

Where:

- **mount** – Mounts the filesystem on the bootable partition.
- **swapon** – Activates the swap space filesystem.
- **X** – The drive letter of the disk the partition belongs to.

```
1 root@archiso ~ # mount /dev/sda1 /mnt
root@archiso ~ # swapon /dev/sda2
root@archiso ~ # _
```

Step 10: Check the Mirror List for an Appropriate Mirror

The Arch Linux installation downloads the necessary files through a mirror. Downloading files from a mirror that's far away from your location slows down the process, which eventually causes the installation to fail.

To speed up the download, you need to set up the mirror list to make the fastest mirrors at the top.

1. Start by syncing the **pacman** repository:

```
pacman -Syy
```

2. Installing a reflector lets you update the mirror and sorts it by download speed. Add a reflector by typing:

```
pacman -S reflector
```

```
root@archiso ~ # pacman -S reflector
resolving dependencies...
looking for conflicting packages...

Packages (1) reflector-2020.12.7.1-1

Total Download Size:   0.02 MiB
Total Installed Size:  0.08 MiB
Net Upgrade Size:      0.00 MiB

:: Proceed with installation? [Y/n] y
:: Retrieving packages...
  reflector-2020.12.7.1-1-any      24.2 KiB   0.00   B/s   00:00 [#####] 100%
(1/1) checking keys in keyring [#####] 100%
(1/1) checking package integrity [#####] 100%
(1/1) loading package files [#####] 100%
(1/1) checking for file conflicts [#####] 100%
(1/1) checking available disk space [#####] 100%
:: Processing package changes...
(1/1) upgrading reflector [#####] 100%
:: Running post-transaction hooks...
(1/2) Reloading system manager configuration...
(2/2) Arming ConditionNeedsUpdate...
root@archiso ~ #
```

3. If necessary, create a backup of the mirror list:

```
cp /etc/pacman.d/mirrorlist /etc/pacman.d/mirrorlist.bak
```

4. Use the reflector to update the mirror list:

```
reflector -c "XX" -f 12 -l 10 -n 12 --save /etc/pacman.d/mirrorlist
```

Where "XX" is the code of your country (for example, enter "US" if you are located in The United States).

Note: The mirror list is located in `/etc/pacman.d/mirrorlist`.

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Use the **pacstrap** script to install Arch Linux to the bootable partition:

```
pacstrap /mnt base linux linux-firmware
```

Depending on your download speed, the installation process might take some time.

Step 12: Configure Arch Linux

Once the Arch Linux installation is complete, you need to configure the settings.

Generate the **fstab** File

The **fstab** file defines the order in which disk partitions, block devices, remote devices, and other data sources are mounted.

Create a **fstab** file by running:

```
genfstab -U /mnt >> /mnt/etc/fstab
```

Use Arch-Chroot and Enter the Mounted Disk as Root

Change the root to the newly installed Arch Linux system with the **arch-chroot** command:

```
arch-chroot /mnt
```

Set the Time Zone

1. First, list all the available time zones:

```
timedatectl list-timezones
```

2. Find your time zone and make a note of the name.

3. Run the command:

Replace **Time/Zone** with the appropriate name.

Set the Locale

Setting up the locale determines the language, date, numbering, and currency format for your system.

1. The **locale.gen** file contains a list of all available locales. Open it and find the name of your preferred locale:

```
sudo nano /etc/locale.gen
```

2. Uncomment the name of your preferred locale and any other you would like to use.

3. Press **Ctrl + X** to exit and type **Y** to save the changes.

4. Generate a locale configuration file by typing:

```
locale-gen  
echo [locale_name] > /etc/locale.conf
```

Where **[locale_name]** is the name of your preferred locale.



Note: You can also change the time zone and locale later while using your Arch Linux system.

Set the Hostname File

1. Create a **hostname** file and add your hostname to it by running the following [hostname command](#):

```
echo [your_hostname] > /etc/hostname
```

2. Then, create a **hosts** file via [touch command](#):

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3. Add the following content to the new [hosts file](#):

```
127.0.0.1    localhost
::1         localhost
127.0.1.1    [your_hostname]
```

4. To enable the Dynamic Host Configuration Protocol (DHCP), type:

```
systemctl enable dhcpcd
```

Set the Root Password

Set up a new root password with the [passwd](#) command:

```
passwd
```

Running this command prompts you to type and then retype [your new password](#).

Step 13: Install Grub Bootloader

Next, install the GRUB bootloader. There are two ways to install GRUB, depending on whether you are using a non-UEFI or UEFI system.

Install GRUB Bootloader on a Non-UEFI System

1. Add the GRUB bootloader packages by using the **pacman** manager:

```
pacman -S grub os-prober
```

2. Install the GRUB bootloader:

```
grub-install /dev/sdX
```

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```
grub-mkconfig -o /boot/grub/grub.cfg
```

Install GRUB Bootloader on a UEFI System

1. Add the GRUB bootloader packages by using the **pacman** manager:

```
pacman -S grub efibootmgr
```

2. Create a directory for the EFI partition:

```
mkdir /boot/efi
```

3. Mount your bootable partition to the directory you created:

```
mount /dev/sdX1 /boot/efi
```

Where **X** is the drive letter of the disk the partition belongs to.

4. Install GRUB by using:

```
grub-install --target=x86_64-efi --bootloader-id=GRUB --efi-directory=/boot/efi
```

5. Finally, create a GRUB configuration file:

```
grub-mkconfig -o /boot/grub/grub.cfg
```

Step 14: Exit Arch-Chroot Environment and Reboot

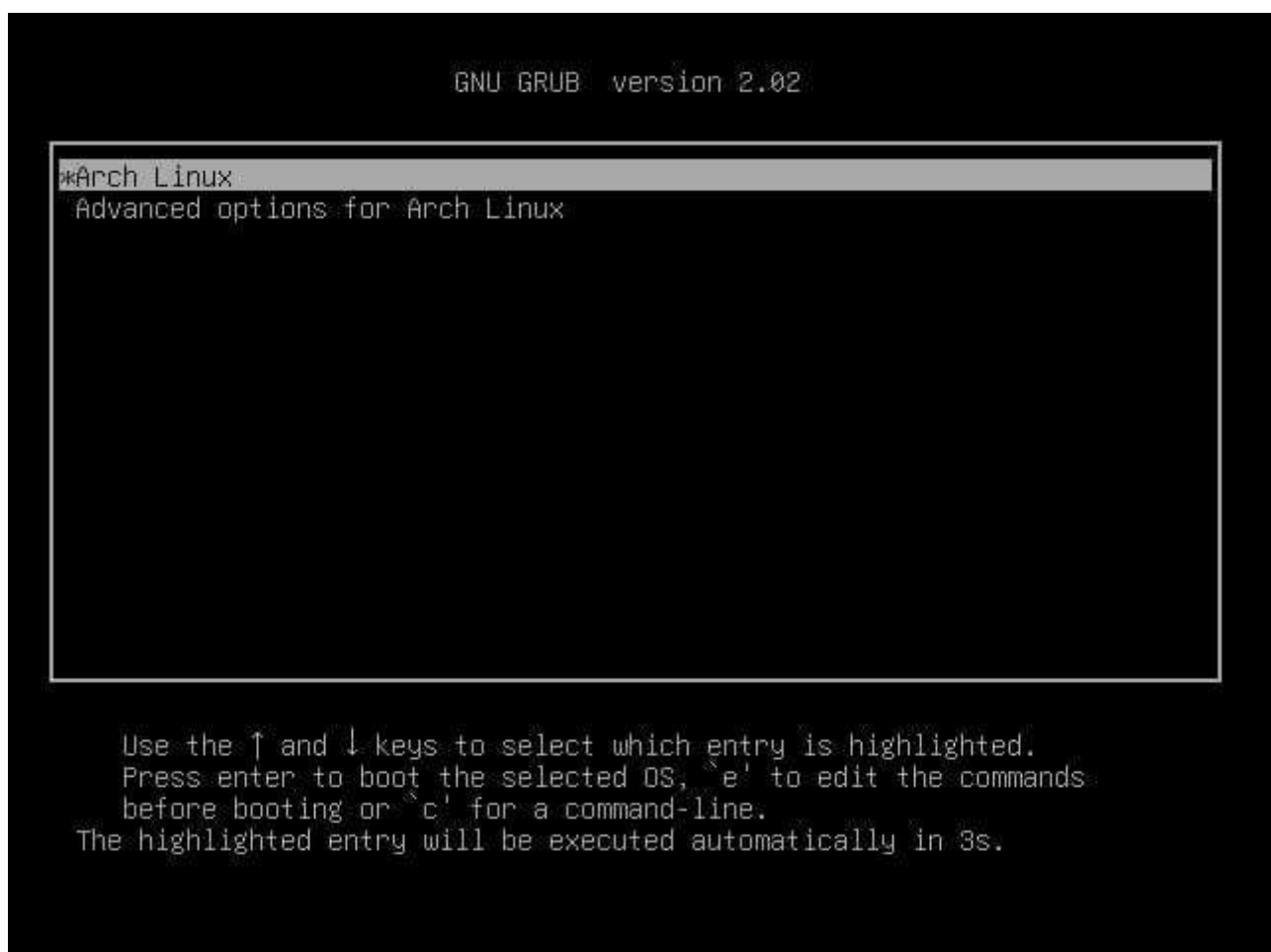
1. Exit the **arch-chroot** environment:

2. Then, reboot the system:

```
sudo reboot
```

Step 15: Login to Arch Linux

Once the system reboots, GRUB loads and offers you the option of loading Arch Linux. Press **Enter** to load the system. Use the password you set up to log in.



Conclusion

After following this guide, you should have successfully installed and configured Arch Linux on your computer. If you need an Arch Linux desktop environment, refer to our guide [How To Install GNOME In Arch Linux](#).

Have fun working on this versatile and lightweight Linux distribution!



Aleksandar Kovačević

With a background in both design and writing, Aleksandar Kovacevic aims to bring a fresh perspective to writing for IT, making complicated concepts easy to understand and approach.

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