Dual Boot with Ubuntu and Windows

Dual booting Linux with Windows is one of the most convenient way of enjoying the two operating systems on the same computer. You have both OS installed on the disk, on real hardware and when you power on your system, you can choose which operating system to use.

#linux

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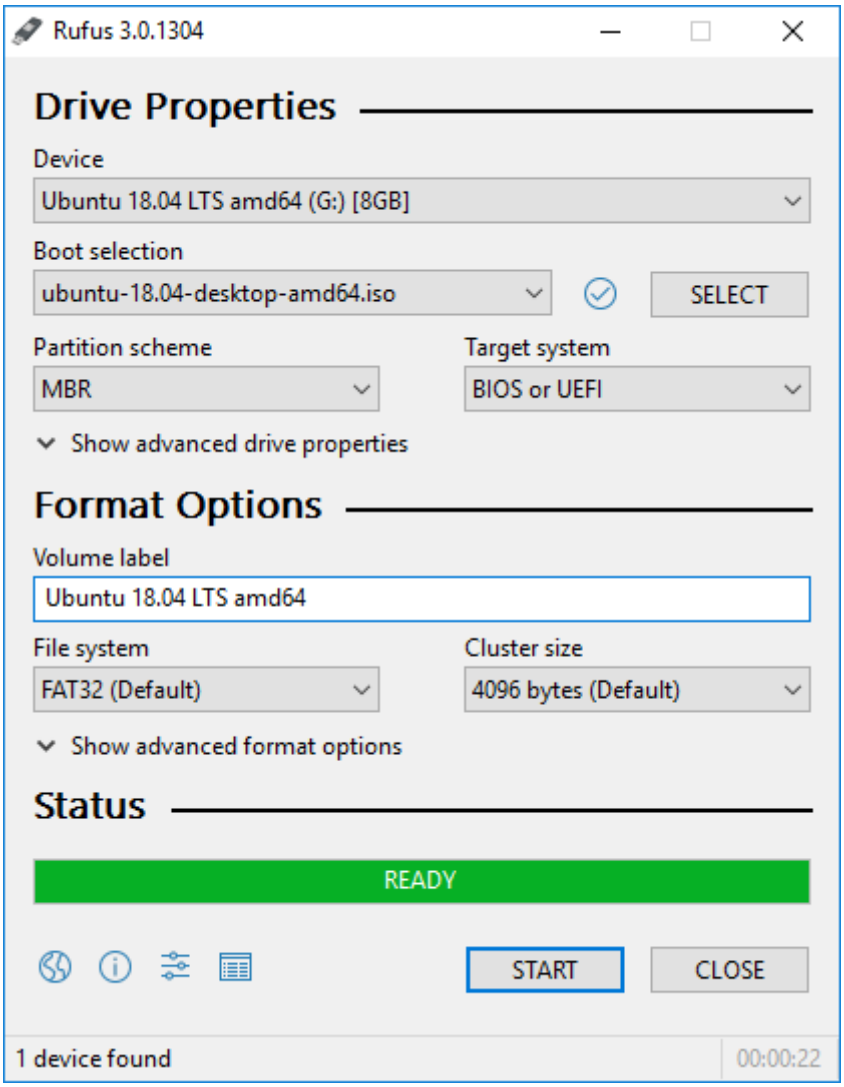
1. Installation

1.1. Download an ISO image

Download the latest Ubuntu Desktop version from https://ubuntu.com/download/desktop, or visit https://old-releases.ubuntu.com/releases/ see the list of prebuilt images for older versions.

1.2. Create bootable USB

USB boot is created using Rufus.



Create a bootable USB

1.3. Boot from live Ubuntu USB

Press `F2` or `F12` or any special key mentioned in BIOS guide to change the boot device.

1.4. Start installing Ubuntu

The first few steps are simple as it guides to choose the language and keyboard layout.

> **Installation Mode**
>
> There are two installation modes:
>
> 1. **Normal mode**
>
>   All pre-built and packed things will be installed. This mode has smallest installation time
> 2. **Minimal mode**
>
>   All pre-built and packed things will be installed, but many extra packages (office, tools, etc.) will be uninstalled (using apt) to create a lightweight version. Due the un-installation, this mode takes long time to complete

No need to download updates or install third-party software just yet.

1.5. Select destination partition

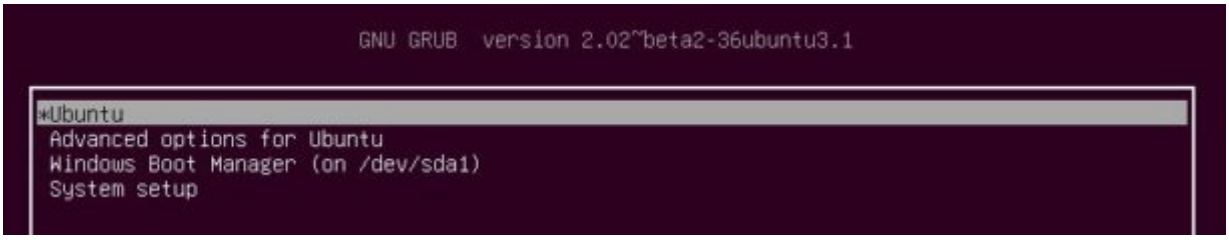
Most of time, Ubuntu will automatically detects the pre-installed Windows and offer an option *Install Ubuntu alongside Windows Boot Manager*.

Using this mode, Ubuntu will do everything automatically, for example, it will create one partition then have `/root` with `/home` and a swapfile of 2 GB in size under `/root` itself.

One other option which is more advanced is *Something else*. In this mode, user has to create and assign mount points manually.

2. Change default boot order

When booting up, Ubuntu will show a Grub boot menu for user to select the target OS. By default, Ubuntu will be listed on the top with `index = 0`. Windows boot entry is located at the `index = 2`:



Grub boot menu

Edit the grub by running:

```
sudo nano /etc/default/grub
```

Then change the default OS entry at `GRUB_DEFAULT=2` to select Windows.

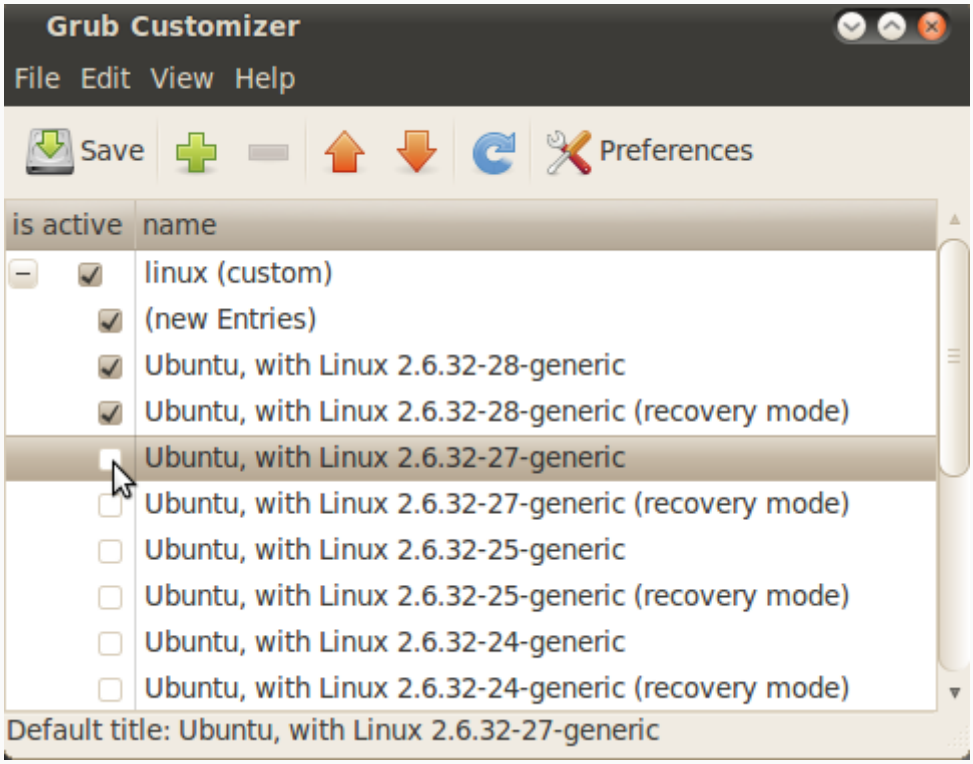
To reduce the waiting time to 2 seconds, edit `GRUB_TIMEOUT=2`.

Update grub to apply the configuration changes:

```
sudo update-grub
```

> **Grub Customizer**
>
> This GUI tool is an easy-to-use application which can be installed by:

```
sudo apt-get install grub-customizer
```



Grub Customizer

3. Settings

3.1. Fix Datetime settings

When using dual boot, after switching from and to an OS, the system time will not be the same. Sometimes, Linux shows correct time, but Windows does not.

This strange behavior is because of using internet with auto-update datetime function.

A computer has two main clocks: a system clock and a hardware clock:

- A hardware clock which is also called RTC or CMOS/BIOS clock. This clock is outside the operating system, on your computer's motherboard. It keeps on running even after your system is powered off.
- The system clock is what is shown inside your operating system.

When a computer is powered on, the hardware clock is read and used to set the system clock. Afterwards, the system clock is used for tracking time. If the operating system makes any changes to system clock, like changing time zone etc, it tries to sync this information to the hardware clock.

By default, Linux assumes that the time stored in the hardware clock is in UTC, not the local time. On the other hand, Windows thinks that the time stored on the hardware clock is local time. That's where the trouble starts.

There are two ways you can go about handling this issue:

- Make Windows use UTC time for the hardware clock
- Make Linux use local time for the hardware clock

It is easier to make the changes in Linux:

```
timedatectl set-local-rtc 1
```

That's simple as it is.