Dual Booting Ubuntu 16.04 and Windows

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1 Introduction

1.1 A Bit about Linux

Linux is a community-developed operating system for computers. Users can create variations of it called distributions or distros. Unlike Windows or macOS, different parts of the system – System services, graphical programs, terminal commands – are developed independently from another and different programs to do the same task exist. Different distros might choose to different programs and may have different settings. Some of the popular distributions in no particular order are Debian, Arch Linux, openSUSE, Ubuntu and its derivatives, Fedora and Gentoo.

1.2 Ubuntu

Ubuntu and its derivatives (elementaryOS and Linux Mint) are the most user-friendly of the tons of distros out there. Just use Ubuntu if in doubt.

Ubuntu releases major versions twice everywhere. LTS (Long Term Support) versions are those that are supported for five years and come out every two years. The latest LTS release is 18.04. The suggestion of this guide is to use 16.04.

2 Pre-installation

2.1 Backup

Backup all your important files, even though the installation procedure is mostly safe. You may want to create a Windows Bootable pendrive too.

2.2 Disable Fast Boot

Control Panel > **Hardware and Sound** > **Power Options** > **System Settings** > **Choose what the power buttons do** and uncheck the **Turn on fast startup box**.

2.3 Disable Secure Boot

1. Turn the laptop off. Then, turn it back on and press the BIOS enter key during the boot process (generally F1, F2, F12, Esc, or Del); Windows users can hold Shift while selecting Restart to enter the Advanced

Boot Menu. Then select **Troubleshoot** > **Advanced Options: UEFI Firmware Settings**.

2. Find the **Secure Boot**. If possible, set it to **Disabled**. The **Secure Boot** option is usually found in the **Security tab, Boot tab, or Authentication tab**.

3. **Save and Exit**. Your system will reboot.

4. You may need to Turn Legacy Support On/Off.

2.4 Partition

1. Open `diskmgmt.msc` in the Cmd prompt. Or using Search, Open "Create and Format Hard Disk Partitions".

2. Select the Partition from where you want to allocate Space, say `C:`. Right click on `C:` partition and select textbfShrink Volume in order to resize the partition.

3. This is not strictly necessary on most laptops as the inbuilt tool is sufficient to do the partition.

3 Installation

3.1 Single HDD/SSD Only

1. Enter Boot options. Select the USB(UEFI) or USB(UBUNTU) or USB option, in that order of decreasing preference.

2. Select the Language. Ignore the Update while Installing.

3. Select **Something Else**. Or You can choose to Install Ubuntu alongside **Windows Boot Manager**, option that will automatically take care of all the partition steps. Former preferred.

4. Choose swap (8GB). Allocate space to / and **/home** with **EXT4** journaling file system.

5. Set up login credentials and click install.

3.2 HDD + SSD

Most of the steps should be same, but give **/boot** around 100-500MB in the SSD and / on 50-60 GB. Let swap, **/var**, **/home** be on the HDD.
If above does not work, install bootloader in the fat32 partition in which Windows' bootloader lies.

4 Possible Problems

4.1 Boot Order

If after installing Ubuntu, you boot directly in Windows, check in UEFI settings for changing the boot order. If you see no option to set the boot to Ubuntu, you need to fix it from within Windows. When you are in Windows desktop, hover the mouse in left corner, right click and select administrator's command prompt. Then run the following command: `bcdedit /set "bootmgr" path \EFI\ubuntu\grubx64.efi`

4.2 GTX

`nouveau.modeset=0` to **grub.cfg** file in **\boot\grub** or add the parameter `nvidia-drm.modeset=1` to the line `GRUB_CMDLINE_LINUX_DEFAULT` in **/etc/default/grub**. Former preferred. Both of these are temporary solutions until proper drivers are installed.

5 Post-installation

1. `sudo apt update && sudo apt upgrade`
2. `sudo update-grub`
3. `sudo apt-get install ubuntu-restricted-extras` Optional. Media codecs.
4. `sudo apt install unity-tweak-tool` Optional. Useful. Do it.
5. `sudo apt install tlp tlp-rdw && sudo tlp start` Optional. Temp control.