

How to get started with Linux

(plus some words that get thrown around)





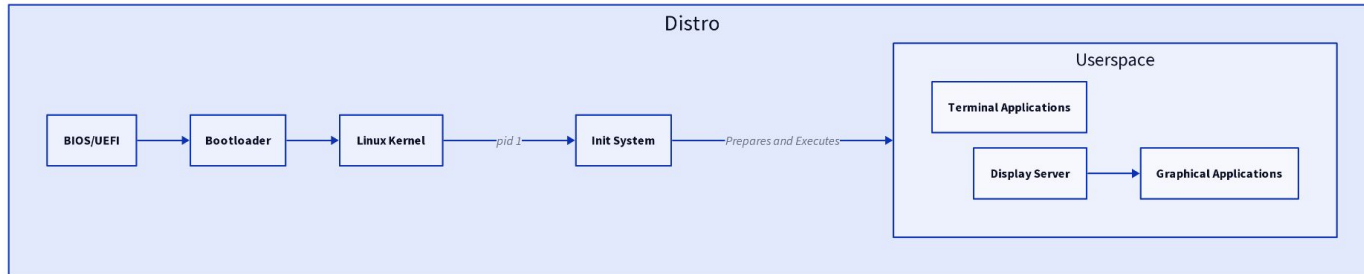
Part 1

Linux and Distributions

First off, what even is Linux?

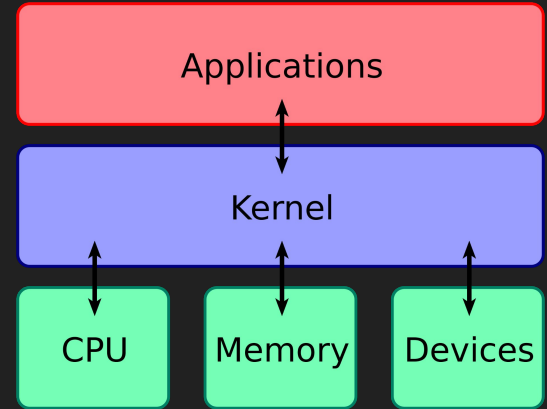
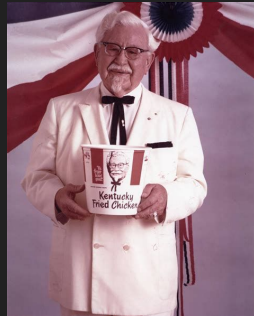
Many people say they use “Linux”, but what does that mean?

- Linux is a family of operating systems built around the Linux kernel and including various other software
- A Linux Distribution is a particular collection of programs, shipped along with other software



Kernel

- Interface between programs and hardware
- Controls access to resources
 - Devices
 - Filesystem
 - User accounts
 - Processes
 - Permissions



Init System

- First process run by the kernel
 - Runs until shutdown
 - Supervises all other processes on the system
 - Direct or indirect owner of all other processes on the system
 - The Init System is only process started by the kernel
 - Every other process is started by the Init System

**SysV
init**

Project:OpenRC

[● ◀]
systemd

Userspace

- Collection of all processes excluding the init system
 - Display Server
 - Shells
 - Browsers
 - Networking
 - Logging
 - Package Manager
 - Etc...
- All programs that run as a User
- This collection of software is what comprises a distro! (More on that later)

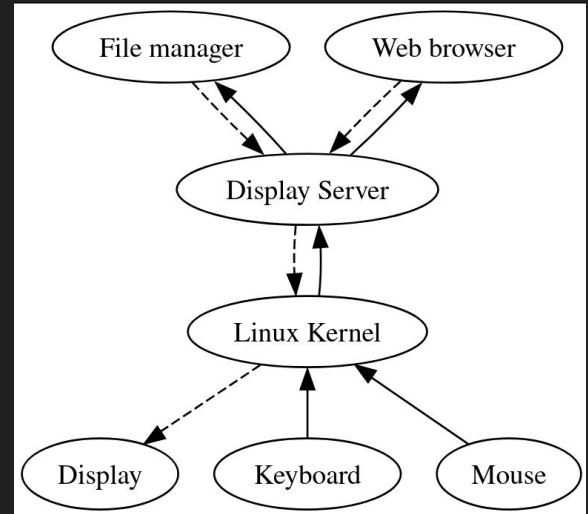


Display server

- Passes inputs (keyboard, mouse) to the active program
- Tells the kernel what to draw to the screen
- X11 or Wayland



(not x.com)

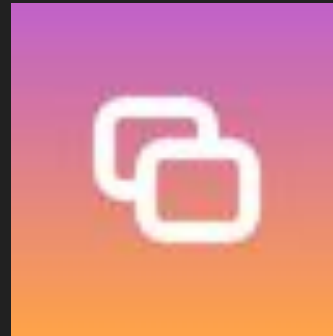


Window Manager

- Program that manages windows in a GUI environment
- Natively uses one Display Protocol
 - WMs are built with only **one** protocol
 - Wayland can run X11 apps through XWayland



Sway



Mutter (GNOME)

Desktop Environment

- Collection of GUI packages and the Window Manager
 - Provides full desktop experience
- Built with a Graphics Toolkit in mind
 - GTK, QT, or Iced, Motif
 - Used for theming



GNOME



KDE



Cinnamon

Package Manager

- Software used to install other packages
 - Package - Collection of Software
- Uses mirrors to find packages
 - Mirror - Server that hosts packages
- Usually shouldn't be mixed
 - Using other managers could cause dependency conflicts



APT



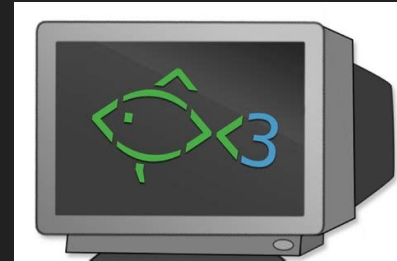
PACMAN



yum

Shell

- Allows a user to interact with the Operating System
 - Usually refers to a text shell
 - Can also refer to graphical shell (gnome-shell)
- Text Shell - Runs programs on the system
 - Command refers to a program with its passed arguments



Distribution (Distro)

- Collection of software used to build a full Operating System
 - Linux Kernel
 - Init System
 - Userspace



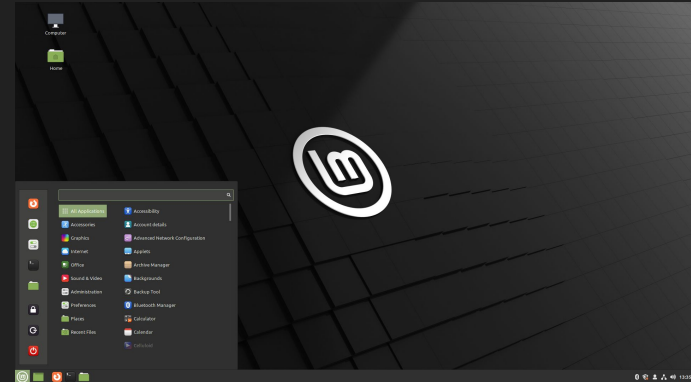
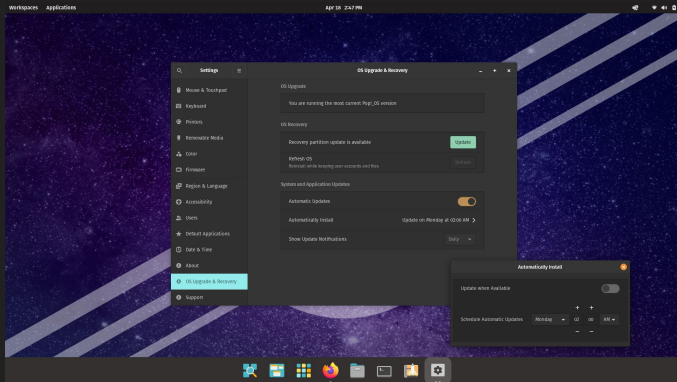


Part 2

Choosing a Distro

Debian-based

- Ubuntu (or Kubuntu/Xubuntu)
- PopOS! (handles drivers automatically)
- Linux Mint
- Debian (focuses on stability)



Arch-based

- Arch (barebones by default, however has `archinstall` command)
- Manjaro (graphical installer, sane defaults)



```
Arch Linux 6.1.1-arch1-1 (tty1)

archiso login: root (automatic login)

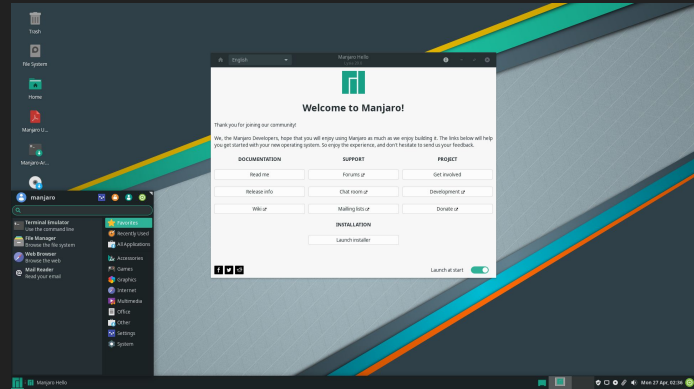
To install Arch Linux follow the installation guide:
https://wiki.archlinux.org/title/Installation_guide

For Wi-Fi, authenticate to the wireless network using the iwctl utility.
For mobile broadband (WWAN) modems, connect with the mmcli utility.
Ethernet, WLAN and WWAN interfaces using DHCP should work automatically.

After connecting to the internet, the installation guide can be accessed
via the convenience script Installation_guide.
```

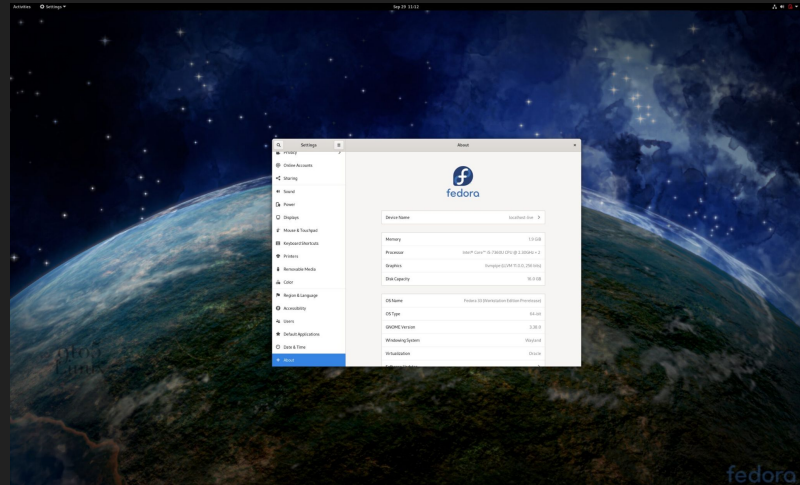


```
root@archiso ~ # _
```



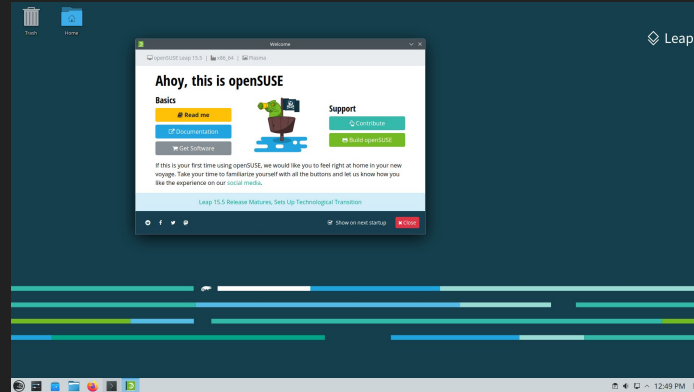
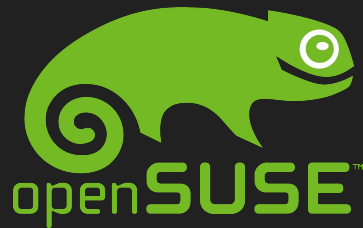
RHEL-based

- RHEL (Server OS, paid support, for companies but it exists)
- Fedora



SUSE-based

- SUSE Linux Enterprise (Like RHEL, paid support, for companies)
- OpenSUSE Leap (Versioned release)
- OpenSUSE Tumbleweed (Rolling release)



Part 3

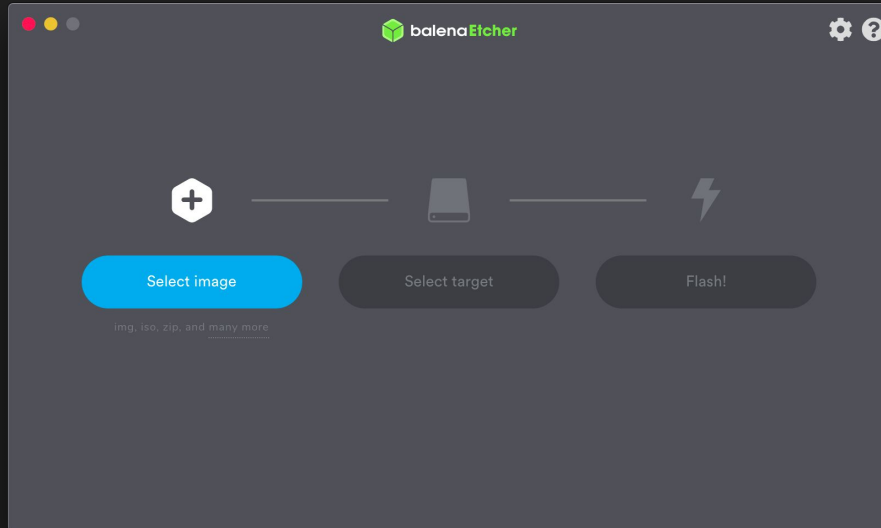
Installing and Running Linux :3

So you want to install Linux

- Virtualization
 - Run the Operating System inside your current operating system
 - Completely contained inside the virtualization program
- Dual Booting - Installing more than one operating system on your computer
 - Allows you to switch between them if you need Windows for some things but still want to use Linux
 - When you boot the computer, you can decide which one to use
 - Requires more experience than running Linux in a virtual environment
- Linux Only
 - Completely replace your OS with a Linux Distribution

Step 1: Make a Linux Install USB

- Like installing Linux in a VM, you'll need the ISO file for your distro of choice and a USB stick
- Software such as Rufus and BalenaEtcher will flash the ISO image to the USB



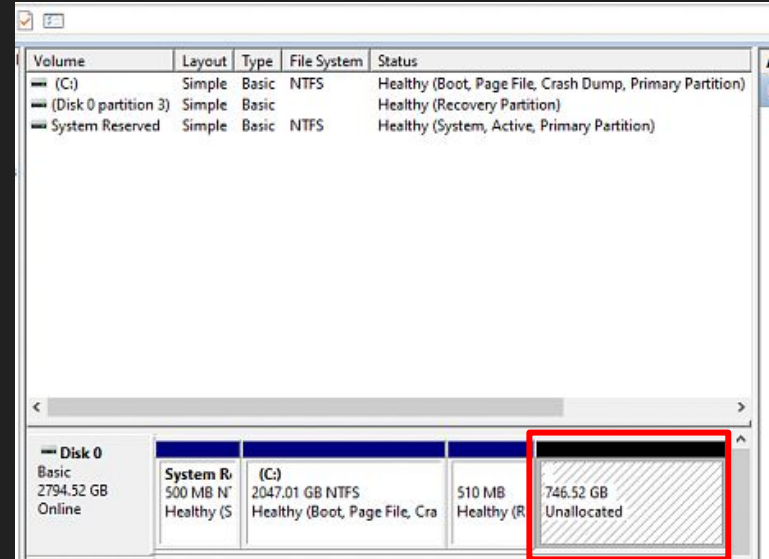
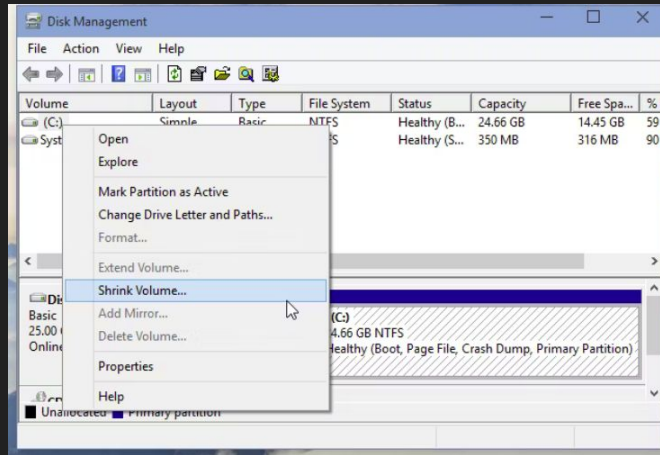
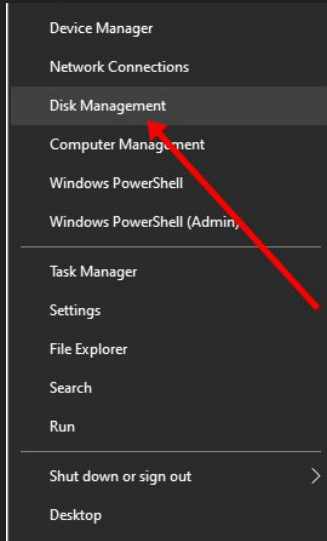
Step 1.5: Use Ventoy Instead

- Formats your flash drive to allow it to hold multiple ISOs as well as other files



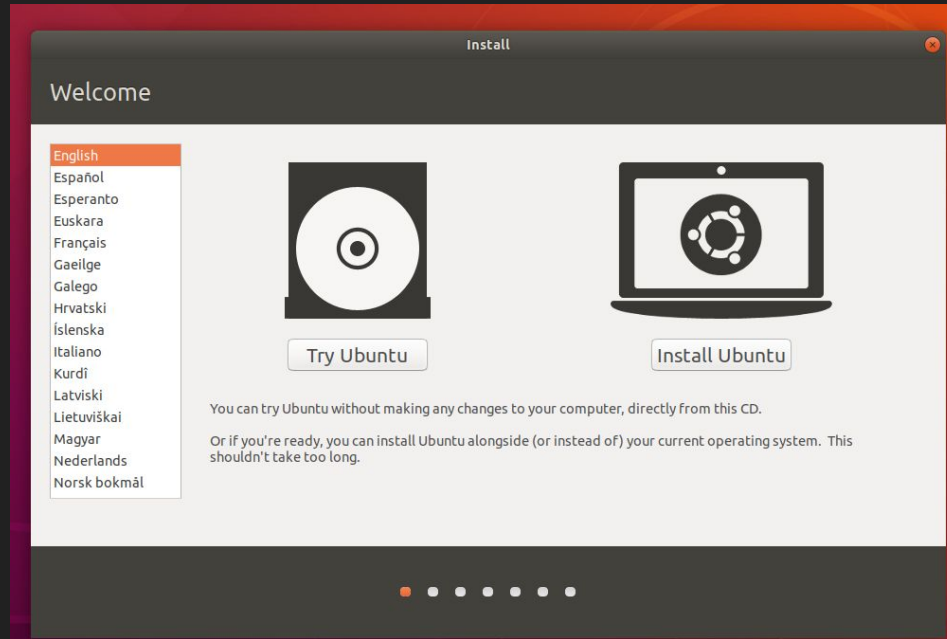
Step 2: Partitioning the Hard Drive (Windows)

- By default, Windows will use your entire hard drive. You need to make space on the disk to install another OS



Step 3: Install!

- Reboot your computer and boot from USB
 - This is different for each computer
- For an OS with a graphical install, follow the directions for installation



Live Demo Time