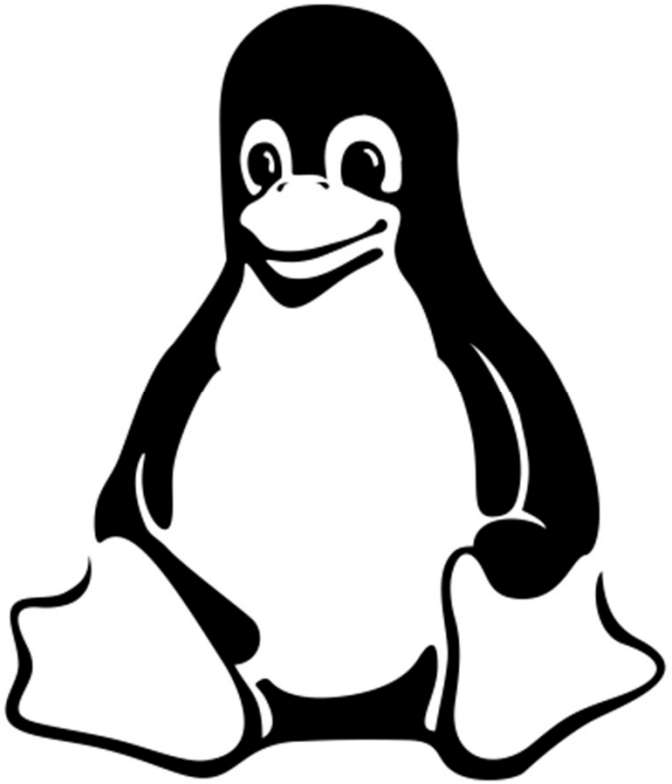
Introduction to Linux

A brief history of Linux

- Linux was introduced by Linus Torvalds, a student at university of Helsinki in Finland
- Linus was working on Unix operating system, Minix and it was a paid operating system
- Linus created his first Kernel in the year 1991
- Linux is not UNIX or Derived from Unix
- Linux was written from scratch which resembles Unix
- Linux not hardware specific
- First version 1.0 of Kernel was officially released in the name of Linux
- Rest is the history

GNU, Free Software and Open Source

- **GNU** stands for GNU's Not Unix. As per Wikipedia and most of the computer blogs GNU is an extensive collection of free software, which can be used as an operating system or can be used in parts with other operating systems
- The **GNU** project uses software that is free for users to copy, edit, and distribute. It is free in the sense that users can change the software to fit individual needs.
- **Open source** is a term that originally referred to open source software (OSS). Open source software is code that is designed to be publicly accessible—anyone can see, modify, and distribute the code as they see fit.

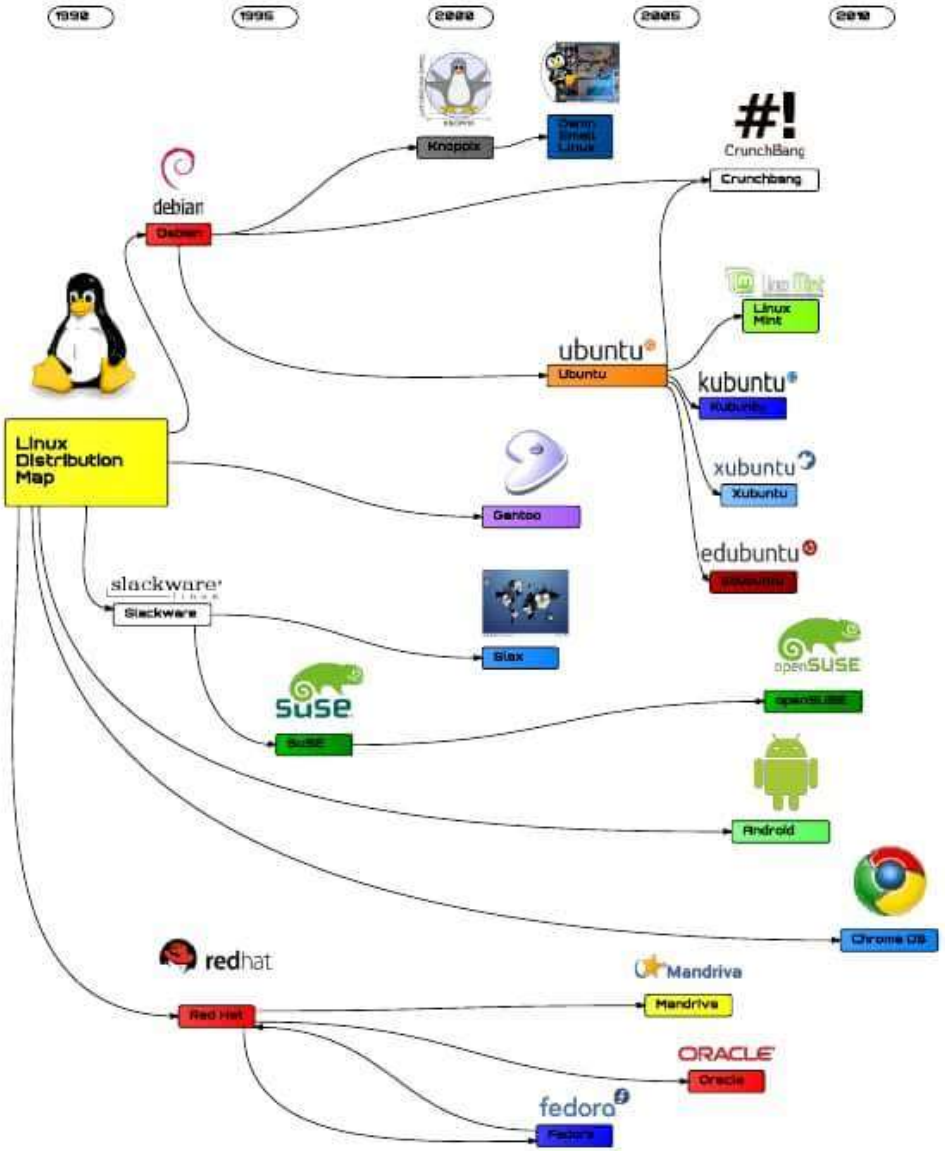


TUX
Linux Mascot

Linux Distributions (Distros)

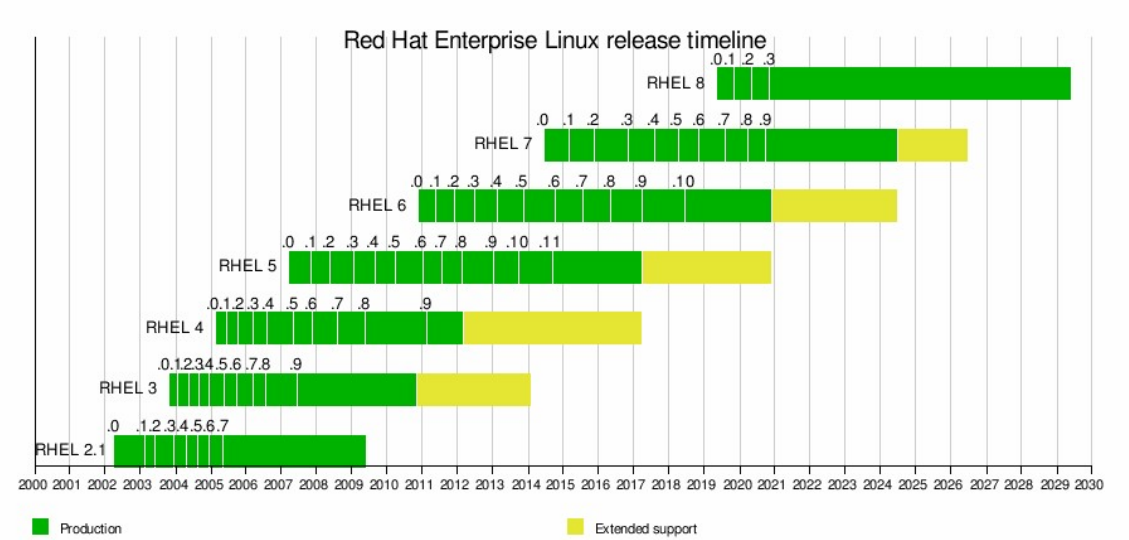
Few most famous distros

- RedHat
- Ubuntu
- SUSE
- Debian
- Fedora
- Arch Linux



RedHat Enterprise Linux (RHEL)

- RedHat is a commercial Linux distribution
- Marc Ewing creates first RedHat Linux distribution in 1994
- First version of RHEL version 2.1 was released in 2002
- Current and Latest version available is RHEL 8.3
- In 2019 IBM acquired RedHat for $34 Billion
- Red Hat is the clear Linux market leader, with a 67% share in terms of market presence



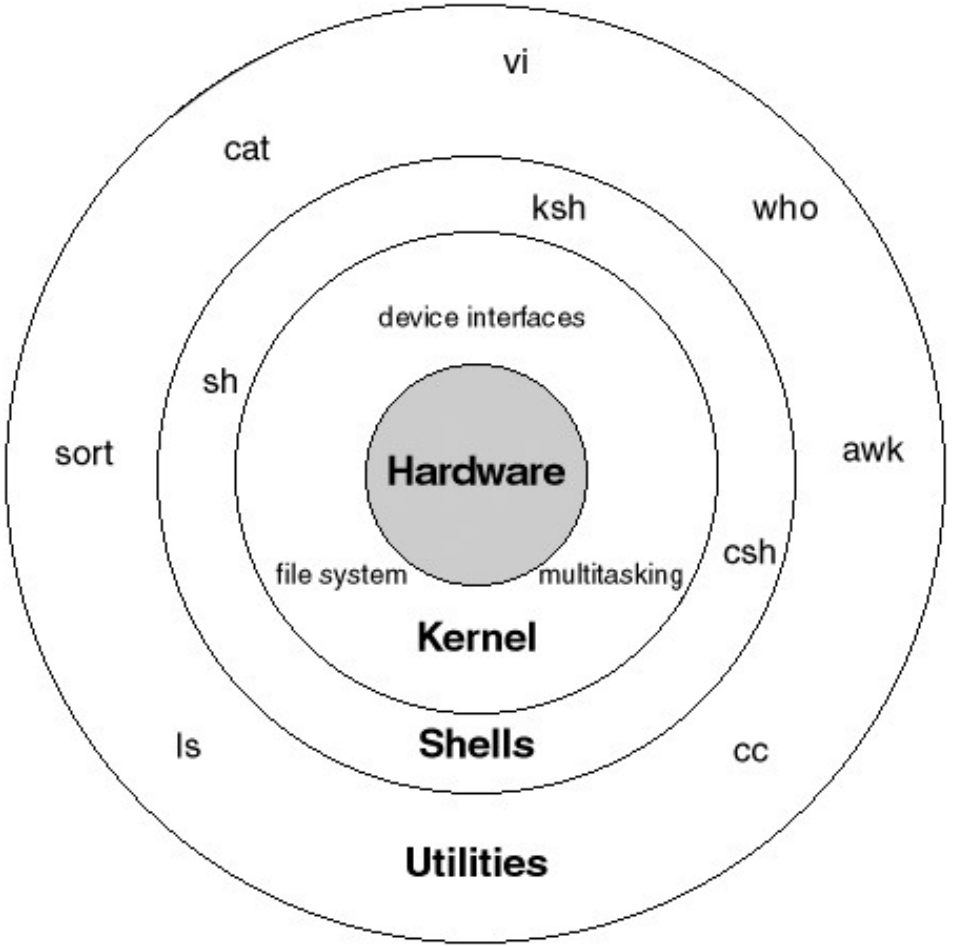
Systems Administration

Administering the system?

- Keep the system up in a consistent state
- Monitor performance
- User management
- Security
- Install, configure, upgrade, maintain
- Backup, restore, disaster recovery
- Application hosting and maintenance

Linux Architecture

- Hardware
- Kernel
- Shell
- Utilities



Kernel

The kernel is a computer program that is the core of a computer's operating system, with complete control over everything in the system. It manages following resources of the Linux system.

- File management
- Process management
- I/O management
- Memory management
- Device management etc.

Shell

A shell is special user program which provide an interface to user to use operating system services. Shell accept human readable commands from user and convert them into something which kernel can understand. It is a command language interpreter that execute commands read from input devices such as keyboards or from files. The shell gets started when the user logs in or start the terminal.

- Command line shell
  - Example: sh, bash, csh, csh
- Graphical Shell (We simply call it Graphical User Interface or GUI)
  - Example: KDE, GNOME

Utilities

Any third-party software, application or tools installed on the Linux. Utilities interfaces with shell. Few applications can bypass and directly access Kernel.

Example:

- cat command
- httpd/apache
- ftpd

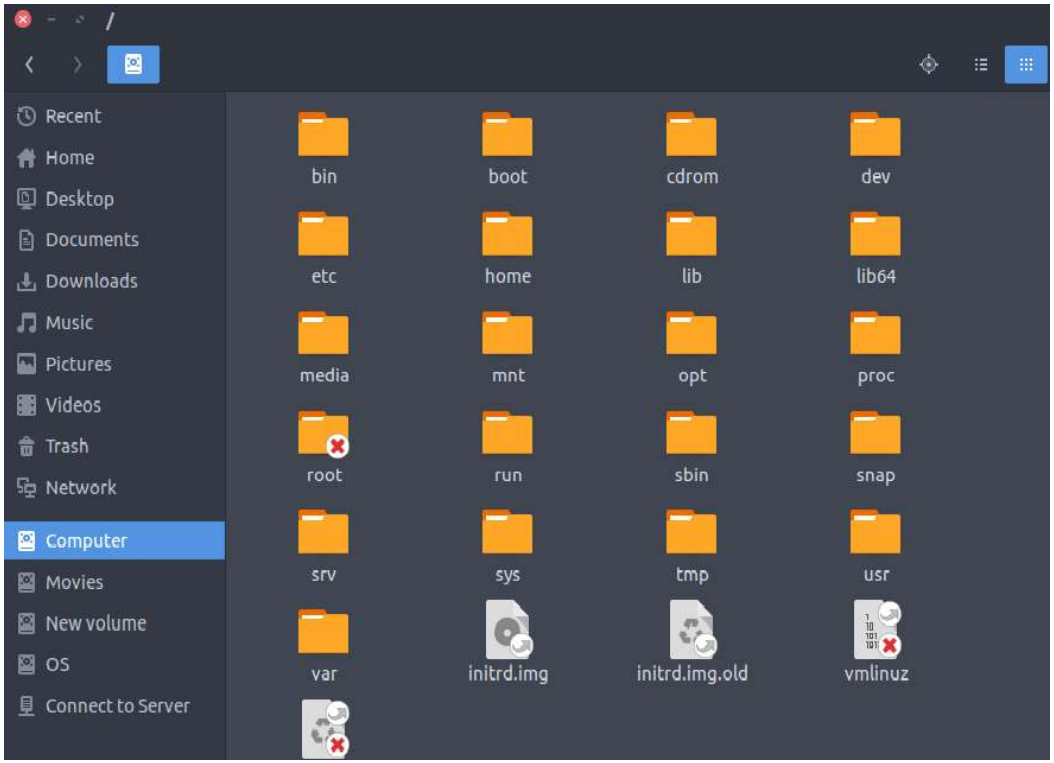
Features of bash shell

- **Command line completion**
  - Use tab to autocomplete the commands
- **Wild cards**
  - Wild card characters like * ? ^ etc
- **Command History**
  - Maintains run/executed command history
- **Aliases**
  - Allows to create alias for lengthy command
    - Example: alisas ll='ls –l'

Linux File Structure

Linux file system structure is defined under FHS (filesystem hierarchy) by Linux Foundation

/ – The Root Directory
/boot – Static Boot Files
/usr – User Binaries & Read-Only Data
/etc – Configuration Files
/dev – Device Files
/home – Home Folders
/bin – Essential User Binaries
/lib – Essential Shared Libraries
/mnt – Temporary Mount Points
/opt – Optional Packages
/proc – Kernel & Process Files
/sbin – System Administration Binaries
/var – Variable Data Files
/tmp – Temporary Files




Linux
is user friendly.
It's just very picky
about who its friends are.