Linux Distros

Back to history

1969 Ken Thompson and Dennis Ritchie of Bell Laboratories developed the UNIX operating system

Refer to Video lecture 01

1985 Richard Stallman started FSF (Free Software Foundation). Later FSF started developing the "Hurd" kernel

universal freedom to study, distribute, create, and modify computer software

GNU project (GNU is Not UNIX)

See also: https://www.youtube.com/watch?v=cGVdCGxh1IY

GNU General Public License (GPL)

1991 Linus Torvalds released the first Linux kernel

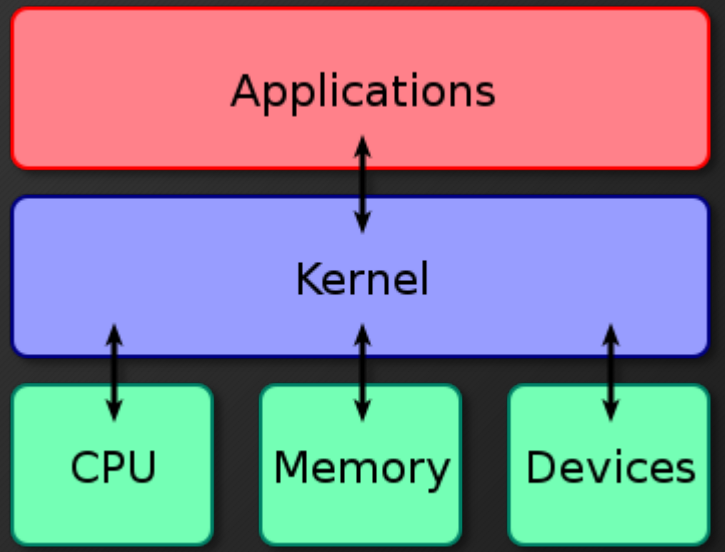
The GNU project adapted Linux kernel instead of "Hurd"

GNU/Linux

- GNU was developing a kernel called “Hurd”, but the project was stalled
- GNU started using Linux kernel instead
- Technically there is no “Linux OS”, only the Linux kernel
- The correct term for the full operating system is GNU/Linux OS

Kernel

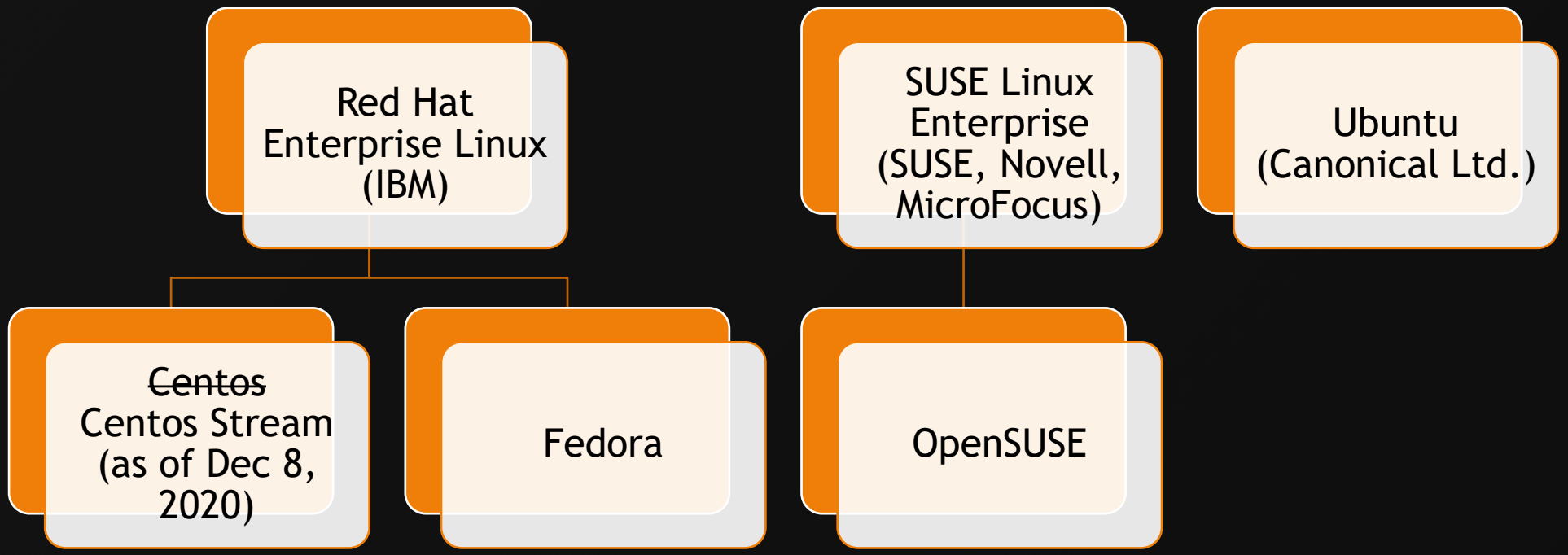
- Kernel is the code that manages the hardware
- Abstracts the hardware layer from the applications
  - Provides an interface for applications to interact with hardware
  - So Application does not have to be written for specific hardware
- Kernel manages time-sharing, multi-tasking, I/O, memory, power management and hardware devices



Linux Distro

- Operating system made from Linux kernel, and a collection of other software
  - Linux Kernel
  - GNU Tools and Libraries
  - Package management
  - A Windows system and Desktop environment
  - Documentation
  - Additional Software
- Commercially backed, or entirely community-driven
- Look at: https://en.wikipedia.org/wiki/Linux_distribution#/media/File:Linux_Distribution_Timeline.svg

Examples of Commercially backed Linux



Examples of community supported Linux

- Debian (the Debian Project)
- Arch Linux
- Gentoo Linux (Gentoo Foundation)

Debian

Entirely free and open-source software

Branches: Stable, Testing, Unstable

Package Managers: Debian Package Management System (dpkg)

User learning curve: Intermediate to advanced (server/cloud admin)

Ubuntu

Based on Debian

Free Software + some proprietary device drivers

Deployment types: Desktop, Server, Cloud, IoT, Ubuntu for Windows Subsystem for Linux (WSL)

Flavours: Kubuntu, Lubuntu, Ubuntu Budgie, Ubuntu MATE, Ubuntu Kylin, Ubuntu Studio, Xubuntu

Package Managers: GNOME Software, dpkg (APT as front), Snappy, Flatpak

User learning curve: beginner to advanced (server/cloud admin)

Linux Mint

Based on Ubuntu

- Uses the same package management system
- Same software packages as Ubuntu

Package Management: dpkg

More “light weight” than Ubuntu

Aimed at Desktop and Laptop

User learning curve: beginner to intermediate

Red Hat Enterprise Linux (RHEL)

Has strict rules to restrict free re-distribution since 2003(still provides source code for free)

Now owned by IBM

Package management: Redhat Package manager (RPM)

Aimed at Enterprise and Servers

User learning curve: intermediate to advanced

Fedora

Released by Redhat in 2003 after RHEL became commercial only (was no longer free)

Community driven support by the Fedora Project

Aimed at Desktop/Workstation

Various free software licenses, plus proprietary firmware files

Cutting Edge, but Less stable than RHEL and Ubuntu LTS

Updates and development from Fedora is ported into RHEL after development and testing is completed

Package manager: DNF (standard tool); dnfdragora and GNOME Software (front-ends); RPM (package system); Flatpak

Learning curve: beginner to advanced

~~CentOS~~
CentOS Stream

Free version of RHEL (mostly GNU GPL)
As of 2021 no longer provides stable version

Binary Compatible with RHEL

~~Red Hat without Commercial support option~~
Testing branch for RHEL, Unstable version only

Package manager: Yum, and RPM

User learning curve: Intermediate to advanced

AlmaLinux

(Sponsored by CloudLinux Inc)

Fork of RHEL (as of 2021) by (mostly) former CentOS developers

Binary Compatible with RHEL

Community Driven Development

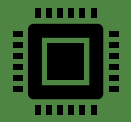
Package manager: Yum, and RPM

User learning curve: Intermediate to advanced

Gentoo

Free Software

Package manager: Portage



Compile the entire OS from source code locally for the specific computer system to ensure maximum performance

User learning curve: Advanced

Arch Linux

Free software, NOT endorsed by GNU

Default kernel contains non-free proprietary blobs

Customizable, lightweight

Can run on desktop, laptops and many other devices (RaspberryPi)

Package manager: Pacman

User learning curse: Advanced (use this if you want to be a hardcore Linux user)

SUSE Linux Enterprise/OpenSUSE

Originally free, created by German based company SUSE

- Popular on desktop and server
- GUI control panel called YaST

Purchased by Novell

- SUSE Linux Enterprise (Commercial)
- OpenSUSE (Community supported)

Is now owned by Micro Focus

Package Management: RPM, Zypp

User learning curve: beginner to advanced