What is Linux and Why Should You Learn It?

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Topics

- What is Linux?
  - What is a Linux Distribution?
  - Debian-based, Red Hat-based, and other distributions.
  - Software Package Management differences between distributions.
  - Linux user interfaces.
- Why should you learn Linux?
- Which distribution should you pick?
- Installation options.

What is Linux?

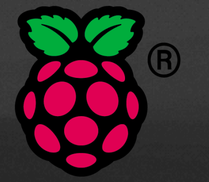
- A family of freely-available UNIX-like computer operating systems.
- The Linux kernel and most user-space supporting programs are published under open-source licenses.
- It was originally created for use on desktops running Intel x86 CPUs, but now runs on many architectures ranging from ARM to IBM mainframes.
- The creator was Linus Torvalds, a computer science student at the University of Helsinki.
- Comes in many flavors known as “distributions” AKA “distros.”

What is a Linux Distribution?

- There is no one “Linux” OS.
- A distribution (distro) is the Linux OS kernel plus supporting system software and libraries.
- Most of these supporting packages come from the GNU Project, hence the term “GNU/Linux.”
- Anyone is free to create their own distro and make it available to the world.
- Most distros are based on one of two primary versions: Debian Linux or Red Hat Linux.
- There are hundreds (at least) of Linux distros. The #1 place to explore them is DistroWatch.com.

Debian-Based Distributions

- Ubuntu/Kubuntu/Lubuntu/ Xubuntu
- Knoppix
- Kali
- Raspbian, as used on Raspberry Pi single board computers
- Etc.



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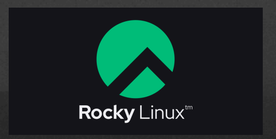
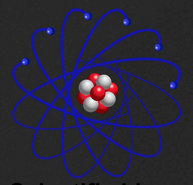
Red Hat-Based Distributions

- AlmaLinux
- Amazon's AMI
- Fedora
- CentOS
- Oracle
- Rocky
- Scientific Linux from Fermilab
- Etc.





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Other Distributions

- SUSE Enterprise Linux and openSUSE
- Slackware is the oldest distribution that is still maintained, dating to 1993!

Software Package Management

- A key difference between distribution families is how you manage software installation, patching, and removal.
- Debian and Red Hat derivatives use different tools.
- Sometimes software you want to run is distributed as raw source code and you need to compile it before you can install and run it.

Debian-Based Distribution Package Management

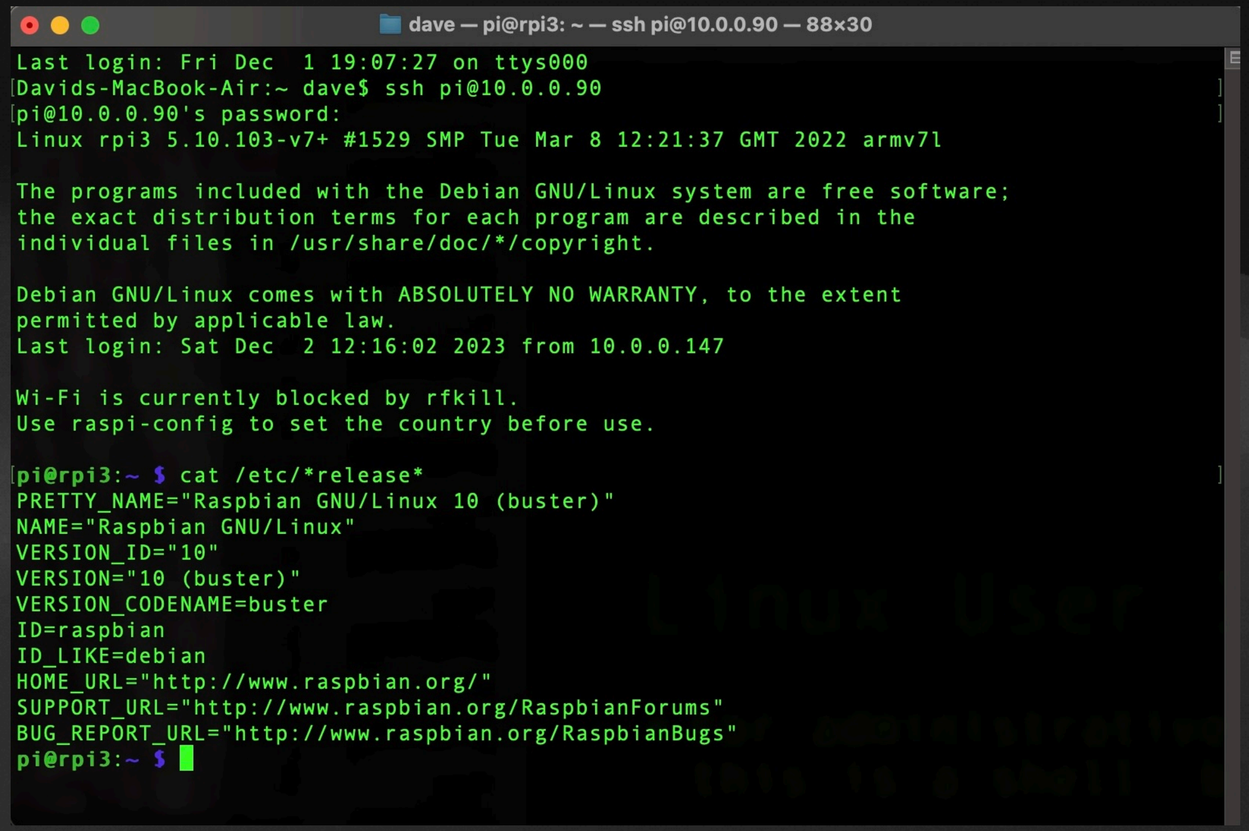
- Software packages use the .deb extension.
- Installation and removal are done with dpkg and apt.
- For example:
  - $ sudo apt-get install nmap
  - $ sudo apt remove nmap

Red Hat Distribution Package Management

- Software packages have the .rpm extension.
- Package management is done using rpm, yum, or dnf.
- For example:
  - $ sudo yum install nmap
  - $ sudo yum remove nmap

Linux User Interfaces

- For administrative use, learn the commandline. Most often this is the bash shell.
- Many different graphical desktops including GNOME, KDE, LXDE, and XFCE, etc.



Why should you learn Linux?

- UBIQUITY! Linux is very widely used in modern information systems of all kinds in homes, small businesses, and large enterprises.
- It opens doors for well-paying jobs.
- It gives you the chance to build proficiency on the commandline, which is needed for server and network device administration.
- Linux can be used to protect your privacy because your computer’s or phone’s OS isn’t spying on you.

Where is Linux Used?

- UBIQUITY! Linux is very widely used in modern information systems. It’s used in homes, small businesses, and large enterprises.
- Desktops and laptops.
- Physical, virtual, and cloud-based servers.
- Embedded devices like cable modems, smart TVs, surveillance cameras, and even Tesla automobiles.
- Mobile devices running Android and GrapheneOS.
- Network devices such as routers, switches, load balancers, firewalls, and intrusions detection/prevention systems.

Some Critical Services That Run on Linux

- Web servers, e.g., Apache and NGINX.
- Domain Name System (DNS) servers.
- Dynamic Host Configuration Protocol (DHCP) servers.
- Network Time Protocol (NTP) servers.
- File servers running Network File System (NFS) and SMB/CIFS (Server Message Block/Common Internet File System).
- Network Attached Storage (NAS).
- Databases like MySQL, Postgres, and even MS SQL Server.

How Can I Get Linux?

- Because Linux is open-source, it is available free of charge.
- Downloadable from the distribution websites.
- If you don’t have a reliable high speed Internet connection you can also buy physical copies on disc or USB drive from various sources like amazon.com and linuxdisconline.com at relatively low cost.

Which Distribution Should You Pick?

- Linux distributions have more similarities than differences, so it doesn't really matter.
- Red Hat Enterprise Linux is extremely widely used in large corporations, so a derivative like Rocky Linux with good community support will help you learn it.
- Ubuntu Linux has also become increasingly popular in enterprises.
- If you're plan is to become a Linux administrator, learn to use commandline tools instead of graphical tools, which are often distro-specific and not present on most servers.

Installation Options

- You can install Linux as a dual-boot system with Windows or macOS (Bootcamp).
- Virtual Machines running on your computer are ideal:
  - Windows hosts: VMware Workstation, Oracle VirtualBox.
  - Intel Macs: VMWare Fusion, Oracle VirtualBox.
  - M1/M2 Macs: UTM (Requires a distro built for ARM CPUs).
  - Intel PC: Free, home-use version of VMware ESXi.
- Raspberry Pi: Inexpensive, small single-board computers.
- Older computers: Linux can run well on older PCs and Macs.

Conclusion

- Linux is a freely-available, UNIX-like OS that runs on a huge variety of hardware supporting many critical services, from cell phones and tablets, to network devices, to servers.
- It’s available in a large number of flavors AKA distributions, with Debian and Red Hat derivatives being the two major branches.
- Linux proficiency is in high demand in the workplace and will open up great earning opportunities for you.

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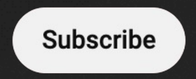
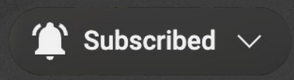
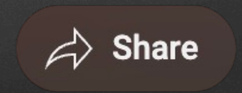
If you liked this video please hit the like button and subscribe. 

Don’t forget to click the notification button. 

Please share with anyone who would find this helpful. 

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