

Lecture 2 Introduction to Linux Notes

Important concepts:

- **Operating System:**

- An operating system provides all fundamental software features of a computer.

- **Kernel:**

- An OS kernel is a software component that's responsible for managing low-level features of the computer, including the following managing system hardware, memory allocation, CPU time, and program to program interaction.

- **Components of an operating system:**

- Applications
- Graphical Desktop Interface or Environment
- Daemons (services) and shells
- Kernel
- Libraries

- **Linux :**

- Unix-like operating system developed by an open source community, which maintains it and develops software for it.

- **Linux Characteristics:**

- Free
- Open Source
- Highly Flexible
- All Code is available to be reviewed by anyone and can be modified by anyone.
- Portable, can run on almost any hardware
- Light
- Compartmentalized, you can install just what you need and keep out what you don't need. ie You cannot uninstall Internet Explorer from Windows.

- **GNU Toolchain:**

- A set of programming tools produced by the GNU Project to be used in the development of software and that are meant to be used serially.

- **Linux Distribution:**

- A distribution is a complete Linux package made of:
 - The kernel
 - Core Tools
 - Supplemental Software
 - Startup Scripts to setup the system or environment

- An installer or packager to manage the installation of new packages/software updates, etc.
- **What is Ubuntu:**
 - Ubuntu is a Linux distribution based of the Debian Project. It was meant to be a more user friendly version of Linux. It has free and paid professional support available. It includes many open source applications that a regular user may need to start getting familiar with Linux.
- **Ubuntu Release cycles:**
 - **Regular or Non-LTS**
 - *Ships every 6 months and supported for 9 months*
 - **LTS**
 - *Ships every two even years and is supported for 5 years*
- **What is Debian:**
 - Is an all-volunteer organization dedicated to developing free software and promoting the ideals of the Free Software community.
- **Different software licensing models (open source vs closed source):**
 - Open Source: the software may be distributed for a fee or free. The source code is distributed with the software.
 - Closed Source: the software is not distributed with the source code. The user is restricted from modifying the code.
- **The 4 Freedoms of Free Software:**
 - *The freedom to run the program as you wish, for any purpose.*
 - *The freedom to study how the program works, and change it so it does your computing as you wish. Access to the source code is a precondition for this.*
 - *The freedom to redistribute copies so you can help your neighbor.*
 - *The freedom to distribute copies of your modified versions to others. By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.*
- **Virtualization:**
 - Defined as creating a non physical version of something. Takes advantage of system resources to partition them and distribute to many OSes on the same hardware.
- **Hypervisor and types:**
 - Type 1 (bare-metal hypervisor): this type runs directly on the hardware. Basically the OS for the physical machine
 - Type 2: an application that runs on top of an OS. The most commonly used in client-side.
- **VirtualBox:**
 - Multi-platform product for virtualization. It is feature rich, high performance.

List of the main Linux distributions

- Debian Based
- Pacman Based
- RPM Based (RedHat)
- Slackware

List of some of the Debian Based Linux distributions

- Ubuntu
- SuSe
- Arch

List of some of the Red Hat-based Linux distributions

- CentOS
- Fedora
- ClearOS

List of some of the Ubuntu Based Linux Distributions

- ElementaryOS
- POP!OS
- ZorinOS