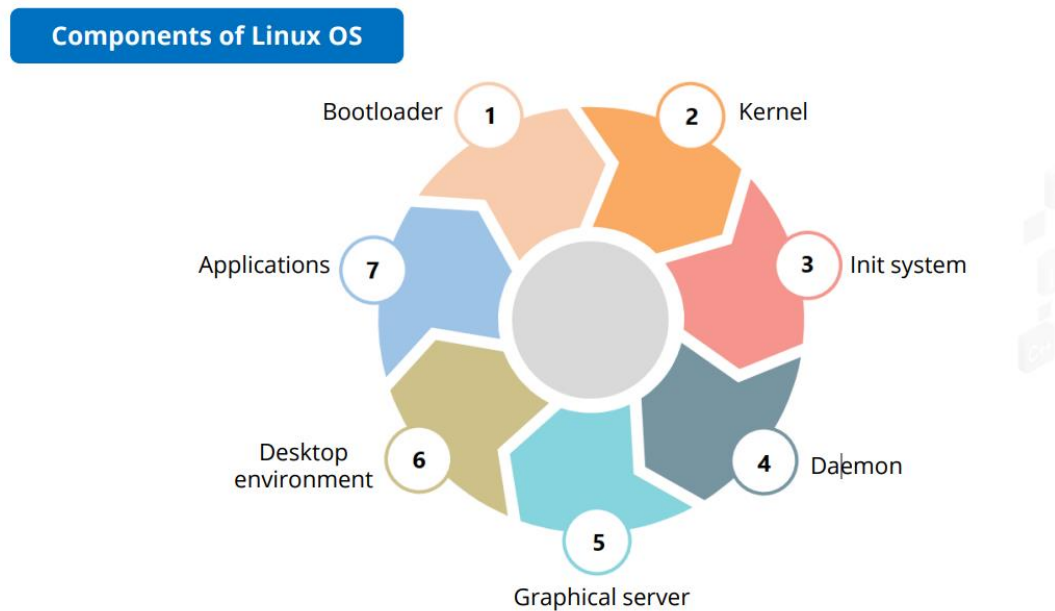


Linux Operating System

Linux is an operating system that manages the communication between software and hardware of a system. It is an open-source Unix-like OS, based on Linux kernel.



1. **Bootloader:** A software to manage the booting process of a computer that mostly comes as a splash screen to boot into an OS.
2. **Kernel:** The core of a system that manages CPU, memory, and the peripheral devices and is the basic level of an OS.
3. **Init system:** A sub-system that bootstraps the user space and is charged with controlling daemons.
4. **Daemons:** Background services such as printing, sound, and scheduling that either startup during a boot or after logging into a system/computer.
5. **Graphical server:** A subsystem to display graphics on the monitor, commonly referred to as X server or just X 5.
6. **Desktop environment:** The component with which the users interact the most and includes built-in applications such as file managers, configuration tools, and web browsers
7. **Applications:** High-quality software applications can be easily found using App Store-like tools that centralize and simplify application installation

Linux Distribution

Linux distributions or distros are different versions of Linux OS offered to suit any type of users. These distros can be downloaded for free, burned onto disk, and installed on a system.



Open source

Linux is also distributed under an open source license. Open source follows these key tenets:

- ✓ The freedom to run the program, for any purpose.
- ✓ The freedom to study how the program works, and change it to make it do what you wish.
- ✓ The freedom to redistribute copies so you can help your neighbor.
- ✓ The freedom to distribute copies of your modified versions to others.

The shell

The shell is the Linux command line interpreter. It provides an interface between the user and the kernel and executes programs called commands. For example, if a user enters `ls` then the

shell executes the `/s` command. The shell can also execute other programs such as applications, scripts, and user programs (e.g., written in c or the shell programming language).

Linux file system

The Linux file system is a ***hierarchical file system***. The file system consists of a very small number of different file types. These include text files, directories, character special files (e.g., terminals) and block special files (e.g., disks and tapes).

A directory is just a special type of file. A directory (akin to a Macintosh folder) contains the names and locations of all files and directories below it. A directory always contains two special files `'.'` (dot) and `'..'` (Dot dot). Every file has a filename of up to 1024 characters typically from `'A-Z a-z 0-9 `.'` and an inode which uniquely identifies the file in the file system.

Directory names are separated by a slash `'/'`, forming pathnames.

`/usr/bin/file`

`/etc/passwd`

Files are accessed by referring to their relative or absolute pathnames.

Importance of Linux in DevOps

- ✓ The main goal of DevOps is to deliver software at a faster pace, that means building on existing infrastructure. Linux is a huge part of that.
- ✓ Efficiency demands of DevOps can be easily met if a Linux environment is configured and the associated networking connectivity will minimize obstacles of development process
- ✓ Linux is highly flexible as it can be installed on any device and configured to fit any workflow
- ✓ Linux is highly scalable as it can process large amounts of data and can easily be configured to add processing power and storage capacity

Linux Administration

Linux administration is about managing system operations such as:

- ✓ File backups and restores
- ✓ Disaster recovery
- ✓ New system builds
- ✓ Hardware, software, and user maintenance
- ✓ Filesystem housekeeping
- ✓ Application installation and configuration
- ✓ System security management and storage management