# Linux Components, Distributions, Features

Components of Linux System

➢ The Linux operating system is mostly made up of three parts.

➢ Kernel is the most important part of Linux. It is in charge of everything important that this operating system does. It is made up of different modules and talks directly to the hardware underneath. Kernel gives system and application programs the separation they need from low-level hardware details.

➢ **System Library:** System libraries are special functions or programs that allow application programs or system utilities to use Kernel's features. Most of the operating system's functions are taken care of by these libraries, which do not need access to the kernel module's code.

➢ **System Utility**: Programs in this category are in charge of doing specialized, individual tasks.
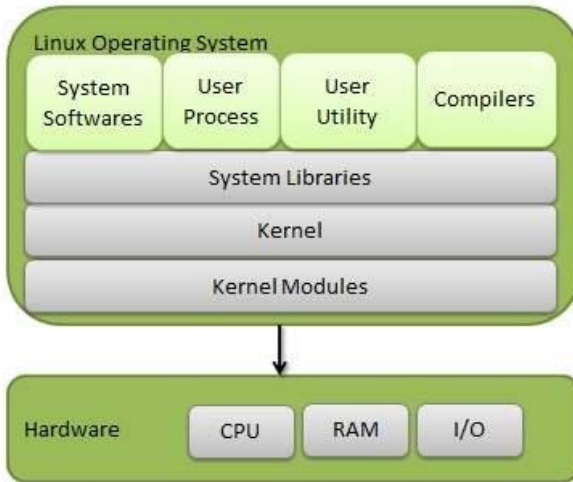
Linux Distributions List

There are about 600 Linux distributors, and each one has different features. Here, we'll talk about some of the most popular Linux distributions out there right now.

1) Ubuntu

It was made by Canonical in 2004, and it became very popular very quickly. Canonical wants Ubuntu to be a simple, graphical Linux desktop that doesn't need the command line. It is the Linux distribution that most people know about. Ubuntu is the next version of Debian, and it is easy for beginners to use. It comes with a large number of apps and libraries that are easy to use. Ubuntu used to use the GNOME2 desktop environment, but now it has made its own, called unity. It comes out every six months, and the developers are working on making it work on tablets and phones.

2) Linux Mint

It is based on Ubuntu and uses its repository software. This means that some packages are the same in both Ubuntu and Linux Mint.

It used to be an alternative to Ubuntu because it had media codecs and proprietary software that Ubuntu didn't have. But now it has its own popularity, and instead of Ubuntu's unity desktop environment, it uses the cinnamon and mate desktops.

3) Debian

Debian has been around since 1993, but it puts out new versions of its software much more slowly than Ubuntu and mint. Because of this, it is one of the most stable ways to get Linux.

Ubuntu is based on Debian, and it was started to make Debian's core parts better and easier to use. Every name for a Debian release comes from the name of a character in the movie Toy Story.

4) Red Hat Enterprise and CentOS

Red Hat is a company that sells Linux. Red Hat Enterprise Linux (RHEL) and Fedora, both of which are free, are their products. RHEL is well-tested before it comes out, and it is supported for seven years after it comes out. Fedora, on the other hand, has faster updates but no support.

Red Hat uses trademark law to stop people from giving away their software. CentOS is a community project that uses the code from red hat enterprise Linux. However, it takes out all of

red hat's trademarks and makes the code available for free. In other words, it is a free version of RHEL that has been around for a long time and works well.

5) Fedora

It is a project that is mostly about free software and gives people the latest versions of software. It doesn't make its own desktop environment; instead, it uses software from "upstream." By default, it has GNOME3 desktop environment. It is less stable but has the most up-to-date information.

Features of the Linux Operating System

LINUX is a popular open-source operating system that is used all over the world. It is free, and anyone can get access to its source code under the GNU license (General Public Licence). Linux is an operating system that has a lot of features that can be used by many different kinds of systems, like computers and servers. Android OS is also based on the Linux kernel, which means that it can be used to make embedded systems and systems for automation. The Linux operating system has the characteristics listed below:

1. Free and open-source software

Costs are never a barrier to utilizing Linux as an operating system since it is entirely free.

Linux is free software. This implies that anybody in the world is free to modify, analyze, redistribute, or sell copies of upgraded software as long as they do so in accordance with the same license, which is also freely available.

The Linux operating system is one of the most popular open-source projects in the world today and is distributed under the GNU (General Public License).

2. Exceptional Flexibility

Linux has been implemented into embedded goods including supercomputer servers, digital equipment, and watches.

Installing a full Linux outfit has no requirements. It enables a user to just install the components that are necessary for them.

3. Minimalist Architecture

Linux takes between 4GB and 8GB of disk space for installation, although it uses less storage space overall. The memory footprint of the program or the amount of memory (RAM) consumed while it is operating, is likewise minimal, and it is compatible with all types of file formats, including text, audio, video, and graphic formats.
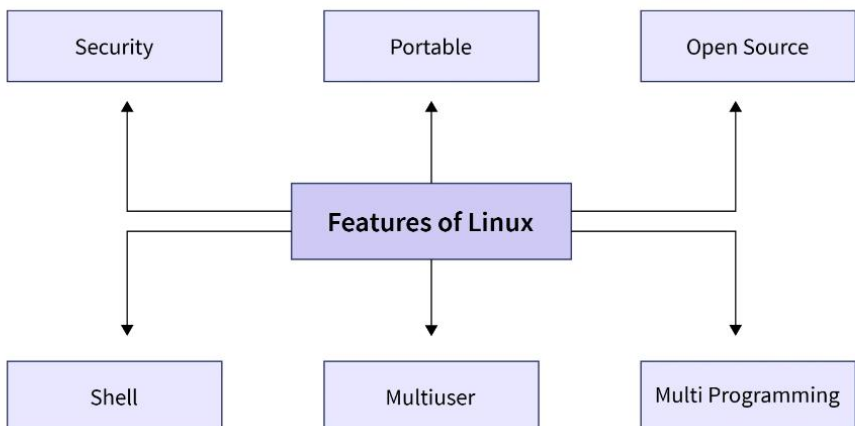
4.   Graphical User Interface (GUI)

Linux has a command-line interface by default, but it may be modified to utilize a graphical user interface like Windows. Installing packages is the main method for doing this. Logging into an Ubuntu server and installing its desktop environment is the most popular method for getting a GUI in a Linux system.

5.   End to End Encryption

Linux supports data access with end-to-end encryption, saving public keys on the server. All information is password-protected and allows users to authenticate. Additionally, it offers a secure shell, file permissions, and many other security features.

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+----------+        +----------+        +-------------+
| Security |        | Portable |        | Open Source |
+----------+        +----------+        +-------------+
      ^                  ^                    ^
      |                  |                    |
      |        +-------------------+          |
      +--------| Features of Linux |----------+
      |        +-------------------+          |
      |                  |                    |
      v                  v                    v
+----------+        +----------+        +-------------------+
|  Shell   |        | Multiuser|        | Multi Programming |
+----------+        +----------+        +-------------------+
```

6.   Portable Environment

Linux works in any environment and doesn't care if the device is high-end or low-end. A lot of people can use it at the same time, anywhere, and on different devices. It works on many different kinds of hardware. Linux also works with a number of different distributions or businesses.

Linux has its own software library, called a repository, that can be used to install packages.

7.   Shell or Command-line Interface

Shell is the Linux command line interpreter. It acts as a bridge between the user and the kernel, which runs commands, which are programs. So, Linux uses the command-line interface to run tasks, which is more efficient and takes less time. It also takes up less memory space,

8.   Keyboard made to order

Because Linux is available in all languages, it is used all over the world. Because of this, you can change the language of the keyboard based on your needs and preferences. The user can also make their own layout for the keyboard.

9.   New updates often

The Linux operating system gives users access to a wide range of software updates that can be installed and used as needed. They get updates more often, which gives users the chance to choose which updates to install and when.

10.   File System with a Hierarchy

Linux has a clear file structure, and user files are organized in a clear directory structure. Based on the types of files they contain, directories are called Binary directories, configuration directories, Data directories, memory directories, User (Unix System Resources), var (variable directory), and non-standard directories.

11. Multi-user and multi-programming: Linux lets more than one user use the system resources at the same time. It also lets more than one program run at the same time.