

# A Review on Linux Distribution as Future Operating System

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**Abstract**— Open-source software (OSS) is computer software with its source code made available with a license under End User License Agreement (EULA) in which the copyright holder provides the rights to study, changes, and distributes the software to anyone and for any purpose. Open-source software may be developed in a collaborative public manner. Open-source software is the most prominent example of open-source development. The open-source model, or collaborative competition development from multiple independent sources, generates an increasingly more diverse scope of design perspective than any one company is capable of developing and sustaining long term. The Linux kernel is an operating system kernel used by the Linux family of Unix-like operating systems. It is one of the most prominent examples of free and open source software. Linux is, in simplest terms, an operating system. It is the software on a computer that enables applications and the computer operator to access the devices on the computer to perform desired functions. The operating system (OS) relays instructions from an application to, for instance, the computer's processor.

Overall this research paper focuses on the very core aspect of the Linux Operating system based on online statistic and also tells the most valued and the best distribution (Distro) of Linux.

**Index Terms**— Open Source, Linux Operating System, Android, commands, kernel.

## INTRODUCTION

Linux is free and open source Operating System, Which is mainly used in servers and supercomputers. Linux is bundled with features of Windows and Mac OS X, Since its Open source, We have various Linux distributions, Which cater to different needs of different users.

### A. OPEN SOURCE

Open source[1] software is software whose source code is available for modification or enhancement by anyone. "Source code" is the part of software that most computer users don't ever see; it's the code computer programmers can manipulate to change how a piece of software a "program" or "application" works.

### B. LICENSE

The GPL[2] is a copy left license, which means that derived works can only be distributed under the same license terms. This is in distinction to permissive free software licenses, of which the BSD licenses and the MIT License are the standard examples.

### C. KERNEL

The kernel[3] is a computer program that constitutes the central core of a computer's operating system. It has complete control over everything that occurs in the system. As such, it is the first program loaded on startup, and then manages the remainder of the startup, as well as input/output requests from software, translating them into data processing instructions for the central processing unit. It is also responsible for managing memory, and for managing and communicating with computing peripherals, like printers, speakers, etc. The kernel is a fundamental part of a modern computer's operating system.

The Linux kernel is a Unix-like computer operating system kernel. It is used world-wide: the Linux operating system is based on it and deployed on both traditional computer systems such as personal computers and servers, usually in the form of Linux distributions and on various embedded devices

such as routers and NAS appliances. The Android operating system for tablet computers, smartphones and smart-watches is also based atop the Linux kernel.

### D. DISTRIBUTION

A linux distribution[4] (often called a distro for short) is an operating system made from a software collection, which is based upon the linux kernel and, often, a package management system. Linux users usually obtain their operating system by downloading one of the linux distributions, which are available for a wide variety of systems ranging from embedded devices (for example, openwrt) and personal computers to powerful supercomputers (for, example, rocks cluster distribution).

## 2 LITERATURE OVERVIEW

Many people are not aware about Linux Operating system, and are still stuck with the old windows Operating System, still not aware about the vast expansion of Linux "the future of operating system".

But why do companies find Linux so interesting?

- No per-unit licensing costs.
- Wide array of support options.
- Do it yourself.
- Free e-mail support from the community.
- Paid support options (up to 24x7 enterprise-style with guaranteed response time).
- Competition between support options leads to lower costs.
- Huge numbers of college students are graduating with deep Linux skills.
- In addition to all the above it is also well known that
- Smart Phones using Linux
- Android has a bed of Linux
- Nokia N900
- Limo
- Netbooks and Mobile Internet Devices (MID's)
- Intel and Linux Foundation's Moblin.
- Google's Chrome OS.

### 3 ADVANTAGES OF LINUX OVER WINDOWS

#### 3.1 Easy to install applications

Installing new programs in Linux is easier than in Windows [5]. You don't need to accept agreements because it's all open sources so there is no need to click Next 20 times before the program is installed.

#### 3.2 Secure

Security is not just an enhancement like in Windows. It is a pillar of the Linux Core, which makes hard the task to virus creators or to hackers. You can use your Linux without antivirus program and without being ever annoyed by a virus.

#### 3.3 Easy to change options

Linux comes with a control panel but also comes with a menu next to the Applications menu where you simply select the thing you want to change, be it the Desktop background or the network settings. Everything on the windows that appear is simple and there are just the options you need so it is easy to change the options.

#### 3.4 Community

The community behind Linux, especially Linux is what attracts many people to the operating system.

#### 3.5 Free

Everything about Linux is free, the operating system (you can even have them send you a copy of the operating system for a small fee that covers postage), the software installed is free (including all the software you can download) any help and support is free. The whole experience is 100% free, because it is open source. Open source means that you can distribute and even edit the code behind the program.

### 4 How Linux Works

Linux is a multi-task [6] and multi user operating system. A multitask operating system is capable of doing several tasks at the same time (well, not quite so, but it seems like that from the human point of view).

A multiuser operating system has a concept of "user" a way to identify the person that is using the system, and can allow different users to perform different tasks in the computer, and protect one user's tasks from interfering with another user's programs.

There are a few other terms that will help understand the rest of the pages in this paper

#### 4.1 Shell

This is a program in the system that allows you to give the commands you want to execute. It is the basic program that connects you to the operating system. This is a program in the system that allows you to give the commands you want to execute. It is the basic program that connects you to the operating system.

#### 4.2 Process

Any task that you run in the system is called a process (again, a process is something a little more complex than just a task, but that definition is good enough to start).

#### 4.3 File

It is a part of the hard disk that contains data owned by a user

of the system.

#### 4.4 X-windows (or simply windows)

This is a mode of Linux where your screen (monitor) can be split in small "parts" called windows, that allow you to do several things at the same time (or rather change from one task to another easily) and view graphics in a nice way.

#### 4.5 Text terminal

It means monitor that has only the capability to display text stuff, no graphics (or perhaps a very basic graphics display).

#### 4.6 Session

The time spend between logging on in the system and logging out of the system.

### 5 BASIC COMMANDS IN LINUX

Commands [7] can be one of 4 different kinds

- A. An executable program like all those files in /usr/bin:  
Within this category, programs can be compiled binaries such as programs written in C and C++, or programs written in scripting languages such as the shell, Perl, Python, Ruby, etc.
- B. A command built into the shell itself  
Bash provides a number of commands internally called shell built in's. The cd command, for example, is a shell built in.
- C. A shell function  
These are miniature shell scripts incorporated into the environment. We will cover configuring the environment and writing shell functions in later lessons, but for now, just be aware that they exist.
- D. An Alias  
Commands that you can define yourselves, built from other commands. This will be covered in a later lesson.

### 6 POPULAR LINUX DISTRIBUTERS

#### 6.1 Debian

GNU/Linux is a distribution [9] that emphasizes free software. It supports many hardware platforms. Debian and distributions based on it use the .deb package format and the DPKG package manager and its frontends.

#### 6.2 Knoppix

It is based on Debian. It is a live distribution, with automated hardware configuration and a wide choice of software, which is decompressed as it loads from the drive.

#### 6.3 Ubuntu

It is a distribution based on Debian, designed to have regular releases, a consistent user experience and commercial support on both desktop and server.

#### 6.4 Unofficial variants

This distribution and derivatives are not controlled or guided by Canonical Ltd. and generally have different goals in mind.

#### 6.5 Gentoo

This is a distribution designed to have highly optimized and frequently updated software. Distributions based on Gentoo use the Portage package management system with emerges or one of the alternative package managers.

## 6.6 Red Hat Linux and SUSE Linux

These are the original major distributions that used the RPM file format, which is today used in several package management systems. Both of these later divided into commercial and community-supported distributions. Red Hat Linux divided into a community-supported distribution sponsored by Red Hat called Fedora, and a commercially supported distribution called Red Hat Enterprise Linux, whereas SUSE divided into openSUSE and SUSE Linux Enterprise.

## 6.7 Pacman

It is a package manager that is capable of resolving dependencies and automatically downloading and installing all necessary packages. In theory, a user need only run a single command to completely update the system.

## 6.8 Slackware

It is known as a highly customizable distribution that stresses ease of maintenance and reliability over cutting-edge software and automated tools. Generally considered a distribution for advanced users, it is often suggested to those who want to learn the inner workings of a Linux operating system.

## 6.9 Independent

This are the operating system made by the independent users.

# 7 POPULAR LINUX DISTRIBUTION BASED ON FAMILY

## 7.1 Some Debian operating system

Kali Linux made to be a completely customizable OS[9], used for penetration testing. It is based on Debian GNU/Linux

- **NepaLinux** A Debian and Morphix Linux based distribution focused for desktop usage in Nepali language computing
- **SteamOS** Debian-based and gaming-focused distribution developed by Valve Corporation and designed around the Steam digital distribution platform.

## 7.2 Some UBUNTU operating system

- Ubuntu is a project that is an official derivative of the Ubuntu operating system that is "lighter, less resource hungry and more energy-efficient", using the LXDE desktop environment.
- An official derivative of Ubuntu using MATE, a desktop environment forked from the now-defunct GNOME 2 code base, with an emphasis on the desktop metaphor.
- A complete Linux based operating system targeted for primary and secondary education. It is freely available with community-based support. The Edubuntu community is built on the ideas enshrined in the Edubuntu Manifesto: that software, especially for education, should be available free of charge and that software tools should be usable by people in their local language and despite any disabilities.

## 7.3 Unofficial Distribution

- Specifically for the Eee PC range of netbooks, based on Debian. Previously named Eeebuntu and based on Ubuntu.
- Linux Mint synchronizes its release-cycle with Ubuntu's long-term support, and is tailored to user-friendliness for desktop users. Also features a Debian-based edition.
- For academic and scientific use. Based on Ubuntu, but enhanced by e.g. GIS/maps, numerical modeling, 2D/3D/4D visualization, statistics, tools for creating simple and complex graphics, programming languages.

## 7.4 Some Gentoo based operating system

- Chrome OS is used on various Chrome Books, Chrome boxes and tablet computers. It is primarily Internet-based, launching each app within the Chrome browser. The OS features a user interface that is very similar-looking to Chrome instead of GNOME, KDE, etc.
- Sabayon Linux is a European Linux distribution based on Gentoo. However, it follows the "out of the box" philosophy, aiming to give the user a wide number of applications ready to use and a self-configured operating system. Like Gentoo, Sabayon uses the rolling release model; it uses a customized version of Red Hat's Anaconda Installer and includes a Media Center application.

## 7.5 Some Packman Based Operating System

- An i686- and x86-64-optimized distribution targeted at experienced users. Arch runs on a rolling release system and uses the pacman utility for package management.
- Originally derived from Arch Linux, with the latest KDE desktop. For now uses the pacman utility for package management. Strives to be Qt-only.
- Frugalware Linux is a general purpose Linux distribution designed for intermediate users. Has some influences from Slackware, and uses a heavily modified version of the Pacman package manager, Pacman-G2, a fork of a cvs version of the complete rewrite of Pacman-G1 by Aurelien Foret (the old monolithic Pacman-G1 is written by Judd Vinet). The packages are tar archives that are compressed using xz.

## 7.6 Some RPM Based Operating System

- Community-supported Linux distribution sponsored by Red Hat. It usually features cutting-edge Linux technologies.
- OpenSUSE previously branded Novell Linux Desktop. A desktop-oriented Linux distribution supplied by SUSE and targeted at the enterprise market.
- Hanthana is designed to cater the needs of Sri Lankan computer users who are unable to access Internet frequently, with many most-wanted applications built in.

## 7.7 Some Slackware Based Operating System

- SimpleLinux uses LZMA compression to compress its system files. The project started on year 2007 by a group of Malaysian developer. simpleLinux is a Slackware-based distribution that comes in both Live CD and Persistence version that can be installed to a medium. simpleLinux comes to be a multi-tasking operating system that runs the X Window System.
- Frugalware Linux is a general-purpose Linux distribution designed for intermediate users who are familiar with command-line operations. Early versions were based on Slackware, but it is now an independently developed distribution.
- Originally a minimal version of Slackware, Zenwalk has evolved into a very different operating system; however, compatibility with Slackware is still maintained.

## 7.8 Some Independent Operating System

- Void is a general-purpose operating system, based on the monolithic Linux kernel. Its package system allows you to quickly install, update and remove software; software is provided in binary packages or can be built directly from sources with the help of the XBPS source packages collection.
- GoboLinux An alternative Linux distribution which redefines the file system hierarchy by installing everything belonging to one application in one folder under /Programs,

and using symlinks from /System and its subfolders to point to the proper files.

## 8 COMPARATIVES

Here are the highlights of comparison made between the distros of Linux Operating System based on their requirements (hardware), and also on the basic of their interface and their capability to handle the workload.

Operating System	Processor Required	RAM	Storage Required
Debian	1 GHz	512 MB	5 GB
Ubuntu	1 GHz	800 MB	5 GB
Kubuntu	1 GHz	1 GB	10 GB
Xubuntu	1 GHz	512 MB	5 GB
Linux Mint	1 GHz	1 GB	10 GB
Slackware	i486	256 MB	5 GB
Fedora	1 GHz	1 GB	10 GB
Redhat Enterprise Linux	1 GHz	1 GB	10 GB
Puppy Linux	333 MHz	64 MB	1 GB
Centos	1 GHz	256 MB	256 MB
openSUSE	AMD 64 or Intel 2.4 GHz	2 GB	5 GB

## 9 CONCLUSION

The above studies has been done in through reference to the manuals and distro documents. It has come to a depth understanding of how every Linux based disro functions and also their different flavor. With this document anybody can able to identify the need based selection of the appropriate distro and use it.

## 10 REFERENCES

- [1] [https://opensource.org/\(2/4/2016\)](https://opensource.org/(2/4/2016))
- [2] [https://www.novell.com/coolsolutions/feature/1532.html\(2/4/2016\)](https://www.novell.com/coolsolutions/feature/1532.html(2/4/2016))
- [3] [https://en.wikipedia.org/wiki/Linux\\_kernel\(29/03/2016\)](https://en.wikipedia.org/wiki/Linux_kernel(29/03/2016))
- [4] [Distrowatch.com/\(29/03/2016\)](Distrowatch.com/(29/03/2016))
- [5] Linux vs. Windows: A Comparison of Application and Platform Innovation Incentives for Open Source and Proprietary Software Platforms Author: Nicholas Economides and Evangelos Katsamakas 2006 Published by Elsevier B.V. (29/03/2
- [6] *How Linux Works* (2004) BBrianI Ward
- [7] [www.comptechdoc.org/os/linux/usersguide/linux\\_ugbasics.html\(29/03/2016\)](http://www.comptechdoc.org/os/linux/usersguide/linux_ugbasics.html(29/03/2016))
- [8] [www.howtogeek.com/.../10-of-the-most-popular-linux-distributions\(29/03/2016\)](http://www.howtogeek.com/.../10-of-the-most-popular-linux-distributions(29/03/2016))
- [9] [https://en.wikipedia.org/wiki/List\\_of\\_Linux\\_distributions\(29/03/2016\)](https://en.wikipedia.org/wiki/List_of_Linux_distributions(29/03/2016))
- [10] [www.av-comparatives.org/linux-reviews/\(29/03/2016\)](http://www.av-comparatives.org/linux-reviews/(29/03/2016))

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