

Comparison of Windows and Linux Operating Systems in Advanced Features

P. Abhilash*, Abhinay sri vasthav.V**

*(Department of Computer Science, SNIST(An Autonomous College), Ghatkesar, Hyderabad)

** (Department of Computer Science, SNIST(An Autonomous College),Ghatkesar, Hyderabad)

Abstract

Comparison between the Microsoft Windows and Linux computer operating systems is a long-running discussion topic within the personal computer industry .This technical paper is mainly going to focus on the differences between windows and linux in all fields. Both Windows and Linux Operating systems have their own advantages and differ in functionalities and user friendliness. Linux and Microsoft Windows differ in philosophy, cost, versatility and stability, with each seeking to improve in their perceived weaker areas. This paper is mainly going to focus on the advanced features that are uniquely present in one operating system and not in other one.

Keywords—Windows, Linux, Operating systems

I. INTRODUCTION

Linux is a Unix-like operating system that was designed to provide pc users a free or low rate OS comparable to traditional and costlier Unix systems. The fame of Linux OS has mainly arise because of excellent performance and effectiveness.The kernel of Linux OS (the central part of the operating system) was built by Linus Torvalds at the University of Helsinki in Finland.We can give the differences between Linux and Windows operating systems from various viewpoints. It is tough to answer which operating system works better and which doesn't[1].

II. The Vital Distinctive Features Between Linux & Windows (Beginners Level)

1.No Registry

Windows uses a single database of configuration options with the help of its registry. But the LinuxOS does not provide this feature.2. There is no registry. We will find the system-wideconfiguration files in the /etc directory .User-specific configuration files will typically be located in hidden directories in home folder.It's better than Windows as there is no chance of failure ofsystem configuration. If one configuration file gets damaged, only that function halts and the remaining works. Linux makes iteasy to backup configuration files --it'sthe same as copying all other files — and to troubleshootproblems[2].

2. Drivers have mount points but not letters

In Linux, file systems are not assigned letters as in Windows. But there is single root file system whose path is "/".The Disk Analyzer Shows your File system Usage and Layout. Linux mounts new drives in folders inside the root file system[4].

3.Software comes from repositories,not from CD's or websites

In the Windows OS, we have to use Google if we need to find a program to perform a task and install it using its own installer.There is no guarantee that it installs correctly and virus free. Linux avoids this "search and peck" style of software installation, and introduced concept of "software repositories." When we want to install a program, we simply use add/remove programs utility, search for the program, and install it. The package manager will display all the requirements and the same goes while uninstalling a program[3].

4. Login issue

In Windows, users login as the system administrator. Because of this, Windows computers are easily infected with viruses and malware In Linux, the administratoris called "root", andwe should use root access only.Modern interfaces will warn you for the root password when it's required.In linux,we must always login as regular user.

5.More help

In Linux,if we have any problem with the running of programs, we need not bother about it. Because there are many experts available who have already worked with it and they are ready to provide any kind of help for the users and it is absolutely free[1].

III. The differences between windows and linux in advanced features are as follows:

WINDOWS OS	LINUX OS
The Windows operating system, does not provides the users access to the programming code that forms the basis for foundation of this OS.	Linux OS belongs to the GNU Public License. It provides the access of code to the users of all categories. That code is basis for foundation of Linux OS.
The user must and should belong to some special category to get access to the code,that forms the basis for foundation of this OS.	The user need not belong to some special category to get access to the coding part, which formsthe basis for foundation of the operating system.
The users must and should be bounded to the number of licenses he/she purchases, in case of the Microsoft license policy. Here,no such facility is provided to permit installation of a single application on multiple machines.	In Linux GPL-licensed OS, users are free to modify that software and use and even republish or sell it. GPL helps users to download a single copy of a Linux application and permits to install it on many machines.
The Windows operating system provides some easy methodology. In this,the users do not need to have installation disk for installing it. But the users can buy the 10-cent Ethernet to install it.	If you need to install Linux operating system on a machine, we must hand-pick each piece of hardware or else your installation won't be up to the mark of expectation.
The users can run the Windows installed machines for numerous years and it even provides various types of help to the users via command line.	We can run a machine running on the Linux OS also for many years without help of the command line[2].
In Windows, we need to know where to find software and install it,by running executable files (.exe files) related to it.	In Linux,we have a centralized location where we can search for, add or remove software co-related to packet management system.
In the case of Windows, the users are needed to connect to internet to install an application.	In linux, the users can install an application without using internet support.
In earlier days the installation of apps on Windows was simpler.	Due to the modifications in the features of OS,the linux supports easy installation of apps.
In Windows, if users want to change the desktop appearance, they have to pay and install a third party application[1].	In case of Linux, users are free to make their desktop appearance in the way they desire.
Windows provides a greater facility for its users by providing various drives like C:, D:,E: and so on. In windows, all the drives are not mounted on a single tree.	Users won't find "My Documents" on Ubuntu, nor will you find "Program Files" on Fedora. There are no C: or D: drives. But, there is only one single file tree and all our drives are mounted on the tree.
In Windows the users have an "installation package". In this,the users can install a program only after running the .exe file related to it.	In Linux OS, there exists "package manager", which acts as a center for browsing, installing, and removing program packages.
Microsoft created the Windows OS, but allows other computer manufacturers to distribute their own computers with Windows pre-installed.	Linux kernel is developed by the community. Linus Torvalds oversees things.
The Windows OS can be installed on PC's desktops, laptops, servers and recently even on some mobile phones.	Linux can be installed on various types of computer hardware, starting from mobiles, tablet computers andvideo game consoles, to mainframes and supercomputers.
The file systems that are supported by Windows are "FAT, FAT32, NTFS, exFAT."[4]	File systems supported by Linux are "Ext2, Ext3, Ext4, Jfs, ReiserFS, Xfs, Btrfs, FAT, FAT32, NTFS".
The Windows GUI (Graphical User Interface)is an integral component of OS and it cannot be replaceable[5].	The Linux mainly provides two GUI's,KDE and GNOME .But there are many alternatives like LXDE, Xfce , Unity, Mate, twm etc.
Windows uses a command shell and each Windows version has a single command interpreter with DOS, recently an optional PowerShell has been added that mostly supports Unix commands.	In the context of Text mode interface, the Linux OS has default shell called "BASH" (Bourne Again Shell). This BASH can support multiple command interpreters.
The price of the Windows OS ranges from \$50-\$450.	The price of Linux is free, but the help is provided for a certain price.

According to Dr. Nic Peeling and Dr. Julian Satchell's "Analysis of the Impact of Open Source Software" there had to be more than 60K viruses in Windows. Antivirus costs about \$20 to \$400.	The Linux OS has had about 60 to 100 viruses listed till date .But now-a-days unfortunately none of these are actively working[3].
In Windows, after detecting a threat, Microsoft releases a patch that will fix the problem and it will take more than 2 to 3 months.	In Linux, threat detection and solution is better, as it is community driven and when any user posts any type of problem, many developers of Linux will start working on it.
The Windows operating system provides the facility of running the gaming environment very effectively.	In Linux, only few games are available natively. Some of them can be played through Wine, but all features are not provided.
The list of the Windows supported platforms :- PowerPC: versions 1.0 - NT 4.0; DEC Alpha: versions 1.0 - NT 4.0; MIPS R4000: versions 1.0 - NT 4.0; IA-32: versions 1.0 - 8; IA-64: version XP; x86-64: versions XP - 8; ARM: version RT.	The linux operating system can support various platforms, as it is an open source software.
The Windows OS is the family of the famous OS in the world that is nothing but "Microsoft".	The Linux operating system is the best example of Open Source software development and Free Operating System (OS).
If the users have a website built in asp, asp.net or MS-SQL or are willing to use any Microsoft application like ColdFusion or any other, they will have to opt for a Windows VPS hosting.	If the users have a website built in PHP or HTML, then the users can opt for the Linux VPS hosting.[4]
The GUI is the most important factor in windows based VPS hosting. Windows VPS provides Plesk, which is a powerful control panel with user friendly interface. It helps to create and manage user and email accounts .Standard feature of windows VPS is Remote Desktop Access [5].	The Linux is an open source OS. You do not need licenses to run Linux software.

IV. Conclusion

There are many differences between the windows and linux operating systems in various fields. But the users cannot say exactly which OS is the better one between the two. There are some users who donot know that there are some advanced features that exists uniquely in each of the operating systems.

References:

- [1] Jonathan DePrizio, "5 Things New Linux Converts Should Know".
- [2] <http://www.techrepublic.com/blog/10things/10-fundamental-differencesbetween-Linux-and-windows/406>
- [3] "Linux vs Windows (a comparison)". 20 June 2005. <http://www.michaelhorowitz.com/Linux.vs.Windows.html#agui>. Retrieved 16 March 2008.
- [4] "Ext2 File System Driver for Windows". Sourceforge.net.<http://sourceforge.net/projects/ext2fsd>
- [5] "An Approach to Analyzing the Windows and Linux Security Models"

About the authors:



P. Abhilash is currently pursuing his Bachelor of Technology (BTech) degree in Computer Science and Engineering from Sreenidhi Institute of Science and Technology (SNIST). His areas of interest are Operating Systems and Information Security.



Abhinay sri vasthav.V is currently pursuing his Bachelor of Technology degree in Computer Science and Engineering from Sreenidhi Institute of Science and Technology (SNIST), an autonomous institution in Hyderabad (India) and his areas of interest are Operating Systems and computer networks.