

# Demographics of Linux And Windows

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**ABSTRACT--** In this paper we have compared Linux and windows. We have briefly explained Linux and its commands. We also analysed Linux systems's advantages & disadvantages with respect to cost, security, choice, software, hardware, understanding, compatibility and use of alternative programs. In the end we compared various operating systems in terms of connectivity, scalability, stability and other important parameters.

**Keywords-** Linux, windows, operating system, comparison.

## I. INTRODUCTION

Linux is a free Unix-type operating system for computer devices [1]. The operating system is what makes the hardware work together with the software. The OS is the interface that allows you to do the things you want with your computer. Linux gives you a graphical interface that makes it easy to use your computer, yet it still allows those with know-how to change settings by adjusting 0 to 1. It is only the kernel that is named Linux, the rest of the OS are GNU tools. A package with the kernel and the needed tools make up a Linux distribution. Mandrake, Suse, Gentoo and Red hat are some of the many variants. Linux OS can be used on a large number of boxes, including i386+, Alpha, PowerPC and Sparc.

**(i) Understanding files and folders:** Linux is made with one thought in mind: Everything is a file. A blank piece of paper is called a file in the world of computers. You can use this piece of paper to write a text or make a drawing. Your text or drawing is called information. A computer file is another way of storing your information. If you make many drawings then you will eventually want to sort them in different piles or make some other system that allows you to easily locate a given drawing. Computers use folders to sort your files in a hieratic system [2]. A file is an element of data storage in a file system (file systems manual page). Files are usually stored on hard drives, CD-ROMs and other media, but may also be information stored in RAM or links to devices.

**(ii) Understanding users and permissions:-** Linux is based on the idea that everyone using a system has their own username and password. Every file belongs to a user and a group, and has a set of given attributes (read, write and executable) for users, groups and all (everybody) [3]. A file or folder can have permissions that only allow the user it belongs to read and write to it, allowing the group it belongs to read it and at the same time all other users can't even read the file.

**(iii) Who and what is root:-** Linux has one special user called **root** (this is the user name). Root is the "system administrator" and has access to all files and folders. This special user has the right to do anything. You should *never* log on as this user unless you actually need to do something that requires it. Use **su** - to temporary become root and do the things you need, again: never log into your system as root. Root is only for system maintenance, this is not a regular user.

**(iv) Opening a command shell / terminal:-** To learn Linux, you need to learn the shell command line in a terminal emulator. In KDE: **K -> System -> Console** to get a command shell). Pressing **CTRL-ALT-F1** to **CTRL-ALT-F6** gives you the console command shell windows; while **CTRL-ALT-F7** gives you XFree86 (the graphical interface).

## II. LINUX BASIC COMMANDS

- ls- List information about file(s)
- pwd- Print Working Directory
- cd- Change directory
- chmod- Make a file executable
- mkdir- makes folders
- Vi- Text Editor
- Wq- save the data (programms)
- Gcc- Gnu Cross Compiler
- ./a.out - Run
- df- view file system disk space usage
- du- view the space used by files and folders
- passwd- changes your login password
- rm- delete files and folders, short for remove.
- file- determine file type
- clear- clear terminal screen
- cmp- compare two files
- comm- compare two sorted files line by line
- cp- copy one or more files to another location
- cut- divide a file into several parts
- Free- display memory usage
- logname- print current login name
- logout- exit a login shell
- lprint- print a file
- more- display output one screen at a time
- mv- move or rename files or directories
- printf- format and print data
- screen- terminal window manager
- shutdown- shutdown or restart linux
- usermod- modify user account
- users- list users currently logged in
- who- print all usernames currently logged in.

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### III. ADVANTAGES & DISADVANTAGES OF LINUX

Here are some of the advantages of Linux that are often cited when comparing Linux with other operating systems:

- (1) Low cost
- (2) Stability
- (3) Performance
- (4) Network friendliness and security;
- (5) Flexibility
- (6) Compatibility
- (7) Choice
- (8) Fast and easy installations
- (9) Multitasking
- (10) Open source [4].

There are several advantages of Linux, and of course, some disadvantages to using the Linux operating system. This article covers 5 advantages of using Linux over Windows, and lists a few disadvantages as well.

#### ADVANTAGES OF LINUX

- **Cost** - The most obvious advantage of using Linux is the fact that it is free to obtain, while Microsoft products are available for a hefty and sometimes recurring fee. Microsoft licenses typically are only allowed to be installed on a single computer, whereas a Linux distribution can be installed on any number of computers, without paying a single dime.

- **Security** - In line with the costs, the security aspect of Linux is much stronger than that of Windows. Why should you have to spend extra money for virus protection software? The Linux operating system has been around since the early nineties and has managed to stay secure in the realm of widespread viruses, spyware and adware for all these years. Sure, the argument of the Linux desktop not being as widely used is a factor as to why there are no viruses [5].

- **Choice (Freedom)**- The power of choice is a great Linux advantage. With Linux, you have the power to control just about every aspect of the operating system. Two major features you have control of are your desktops look and feel by way of numerous Window Managers, and the kernel. In Windows, our either stuck using the boring default desktop theme, or risking corruption or failure by installing a third-party shell.

- **Software** - There are so many software choices when it comes to doing any specific task. In addition, software on Linux tends to be packed with more features and greater usability than software on Windows. Best of all, the vast majority of Linux software is free and open source. Not only are you getting the software for no charge, but you have the option to modify the source code and add more features if you understand the programming language.

- **Hardware** - Install Linux and use it as a firewall, a file server, or a backup server. There are endless possibilities. Old 386 or 486 computers with barely any RAM run Linux without any issue. Good luck running Windows on these machines and actually finding a use for them.

#### DISADVANTAGES OF LINUX

- **Understanding** - Becoming familiar with the Linux operating system requires patience as well as a strong learning curve. You must have the desire to read and figure things out on your own, rather than having everything done for you. Check out the 20 must read how to's and guides for Linux.

- **Compatibility** - Because of its free nature, Linux is sometimes behind the curve when it comes to brand new hardware compatibility. Though the kernel contributors and maintainers work hard at keeping the kernel up to date, Linux does not have as much of a corporate backing as alternative operating systems. Sometimes you can find third party applications, sometimes you can't.

- **Alternative Programs** - Though Linux developers have done a great job at creating alternatives to popular Windows applications, there are still some applications that exist on Windows that have no equivalent Linux application. Read Alternatives to Windows Applications to find out some of the popular alternatives.

#### IV. COMPARISON OF LINUX AND WINDOWS

- The network performance of Linux is 20-30% but windows are unable to handle heavy network loads.
- Linux does include a very robust packet filtering firewall system but windows Microsoft claims that their products are secure. But they offer no guarantee.
- It has good on-line support but support is also available for Windows with no guarantee that your problem will be resolved.
- Linux can only run binaries that are specifically compiled for Linux but there are thousands of applications available for Windows, far more than for any other OS.
- Applications and Documentation is available for little or no cost but
- Windows documentation is expensive, and very little on-line documentation.
- It cost less to install and Fast operate.
- It is designed to look and operate very much like MS Windows.

#### V. DIFFICULTIES IN COMPARING WINDOWS AND LINUX

Several factors can make it difficult to compare Windows and Linux. The term "Linux" can have different meanings. In some cases, it refers only to the system kernel; whereas in many other cases, "Linux" refers to a complete graphical desktop Linux distribution. Both come in different editions, each with different functionalities (e.g. Desktop, Server, Embedded, and Multimedia Editions). Linux, in particular, has a vast number of distributions, including many that are highly specialized for specific job tasks. There are also vastly differing versions of "Windows". You can say "Windows runs on old computers" (Windows 95), "Windows has modern multimedia capabilities" (Windows XP) and "Windows is a server operating system" (Windows Server

2003), but whether questionable or not, these assertions don't necessarily apply to the same version of Windows, thus making it much more difficult to make a "Windows vs. Linux" comparison. Price and support for both systems differ based on editions, distributors, and OEM products. Major OEM vendors of new computers may also choose to bundle additional useful software in addition to the installed operating system. Additionally, some OEMs receive payment from the vendors of this software, which they may use to reduce the overall price to the buyer. There are conflicting claims about each operating system from the marketing and research done on the topic. Microsoft sells copies of Windows under many different licenses (usually in a closed source fashion, but occasionally in different levels of shared source). Likewise, most Linux distributions contain propriety software. Therefore it is difficult to compare Linux uptimes vs. Windows uptimes from publicly available Netcraft data. The bottom line is that quality, not quantity, is the determining factor when evaluating any operating system and the same holds true for Linux and Windows as well.

## VI. COMPARISON OF OPERATING SYSTEM

Platform Comparison Chart								
System	Connectivity	Stability	Scalability	Multi-user	Multi-platform	POSIX	Non-proprietary	Avg. Price
Legacy System	Poor	Good	Medium-Huge	Yes	No	No	No	\$\$\$\$
MS-DOS	None	Poor	Small	No	No	No	No	\$100
Windows 3.x	Poor	Poor	Small	No	No	No	No	\$100
Windows95	SMB Only	Fair	Small	Insecure	No	No	No	\$100
Windows NT	SMB+	Fair	Small-Medium	Yes	Yes, 2	Some	No	\$500
UNIX	Excellent	Excellent	Small-Huge	Yes	Yes, Many	Yes	No	\$5000
*BSD	Good	Excellent	Small-Large	Yes	No	Yes	Yes	\$50
Linux	Excellent	Excellent	Small-Huge	Yes	Yes, Many	Yes	Yes	\$50

Table1. Comparison of various operating system.

## VII. MARKET SURVEY & FLAVORS

Both Windows and Linux come in many flavors. All the flavors of Windows come from Microsoft, the various distributions of Linux come from different companies. Windows has two main lines. The older flavors are referred to as "Win9x" and consist of Windows 95, 98, 98SE and Me. The newer flavors are referred to as "NT class" and consist of Windows NT3, NT4, 2000, XP, Vista & Windows

7. Going back in time, Windows 3.x preceded Windows 95 by a few years. And before that, there were earlier versions of Windows, but they were not popular. Microsoft no longer supports Windows NT3, NT4, all the 9x versions and of course anything older. Support for Windows 2000 is partial. All the Linux distributions released around the same time frame will use the same kernel. They differ in the add-on software provided, GUI, install process, price, documentation and technical support. Both Linux and Windows come in desktop and server editions. There may be too many distributions of Linux, it's possible that this is hurting Linux in the marketplace. It could be that the lack of a Linux distro from a major computer company is also hurting it in the marketplace. IBM is a big Linux backer but does not have their own branded distribution. Currently there seem to be many nice things said about the Ubuntu distribution. Linux is customizable in a way that Windows is not. For one, the user interface, while similar in concept, varies in detail from distribution to distribution. For example, the task bar may default to being on the top or the bottom. Also, there are many special purpose versions of Linux above and beyond the full blown distributions described above. For example, NASLite is a version of Linux that runs off a single floppy disk (since revised to also boot from a CD) and converts an old computer into a file server. This ultra small edition of Linux is capable of networking, file sharing and being a web server.

## VIII. CONCLUSION

Analysis, comparison and study of Linux and Windows was done to reveal the idea of a better, more useful operating system w.r.t cost, security, choice, software, hardware, understanding, compatibility and use of alternative programs.

## VIII. REFERENCES

- [1] Casadesus, R. M. and P. Ghemawat, 2003. Dynamic mixed duopoly: a model motivated by Linux vs. Windows. Harvard Business School Working Paper.
- [2] Mustonen, M. (2005), "When does a firm support substitute open source programming" *Journal of Economics and Management Strategy* 14(1): 121-139.
- [3] Lerner, J. and J. Tirole, 2004. The economics of technology sharing: open source and beyond. NBER Working Paper 10956.
- [4] Johnson, J. P., 2002. Open source software: Private provision of a public good. *Journal of Economics & Management Strategy* 11(4): 637-662.
- [5] Bitzer, J. and P. Schroder, 2003. Competition and innovation in a technology setting software duopoly. Discussion Paper 363, DIW Berlin.
- [6] Comino S. and F. Manenti, 2005. Government policies supporting open source software for the mass market. *Review of Industrial Organization*, 26(2), 217.