

Introduction to Linux OS

What is Linux?

Linux is an operating system that was created by Linus Torvalds when he was a student at the University of Helsinki. Torvalds started Linux by writing a Kernel – the heart of the OS –, originally working with Minix, (a small UNIX system) decided to create an operating system which would exceed Minix standards. His development began in 1991 when he released version 0.02. Since then Linux has undergone drastic changes. There are now many different distributions of Linux (sometimes referred to as flavors) which all use the same Kernel. This Kernel is still being developed by Torvalds and a group of programmers and releases are more and more frequent.

Linux is:

- **Free :**

- First ,It's available free of cost (You don't have to pay to use this OS, other OSes like MS-Windows or Commercial version of Unix may cost you money)
- Second free means freedom to use Linux, i.e. when you get Linux you will also get source code of Linux, so you can modify OS according to your taste.
- It also offers many Free Software applications, programming languages, and development tools etc. Most of the Program/Software/OS are under GNU

- **Open Source**

Open source means that anyone is free to use and modify any of the actual source code. There are only a few restrictions on the use of the code. If you make changes to the programs, you have to make those changes available to everyone.

Why Linux

1. **Cost** -- Linux is free, and that includes all the apps
2. **Resources** --Linux demand no more resources than Windows XP.
3. **Performance** -- Linux worked faster than XP
4. **Security** -- Last year, 48,000 new virus signatures were documented for Windows, compared to 40 for Linux.
5. **Network friendliness**--Linux was developed by a group of programmers over the Internet and has therefore strong support for network functionality; client and server systems can be easily set up on any computer running

Linux. It can perform tasks such as network backups faster and more reliably than alternative systems.

6. **Dual booting** -- The best Linux distros make dual booting a simple affair, along with the required disk partitioning (so you don't need to buy partitioning software).
7. **Installation** -- installing Windows from scratch takes hours by the time you get all your apps up and running. With Linux, it can take as little as half an hour to install the operating system, utilities, and a full set of applications.
8. **Keeping track of software** -- With Linux, there are no serial numbers of software or passwords to lose or worry about.
9. **More security** -- These days, operating systems are less vulnerable than the applications that run on them. Therefore a vital aspect of PC security is keeping your apps up-to-date with the latest security patches. That's hard manual labor in Windows, but with Linux it's automatic.

Free Software pre-Linux

This philosophy of asking for users' comments and suggestions and using them to improve computer programs was not new. Richard Stallman had been advocating just such an approach to computer programming and use since the early 1970's. He was a pioneer in the concept of 'free software', always pointing out that 'free' means 'freedom', not zero cost. He founded GNU. The goal of GNU was to produce software that was free to use, distribute and modify. Linus Torvalds' goal 6 years later was basically the same: to produce an operating system that took into account user feedback.

Common Linux features

- **Multiuser:**
 - Multiple users can log in and working on the system at the same time
 - Users can have their own environments arranged the way they want.
- **Multitasking:**
 - it is possible to have many programs running at the same time
- **Graphical User Interface (X Window System)**
- **Hardware support**
 - you can configure support for almost every type of hardware that can be connected to a computer
- **Networking connectivity:**
 - Linux offers support for a variety of local area network boards, modems, and serial devices.
- **Network servers**

- providing networking services to the client computers on the LAN or to the entire Internet is what Linux does best.
- **Application support**
 - a wide range of freeware and shareware software is available for Linux.

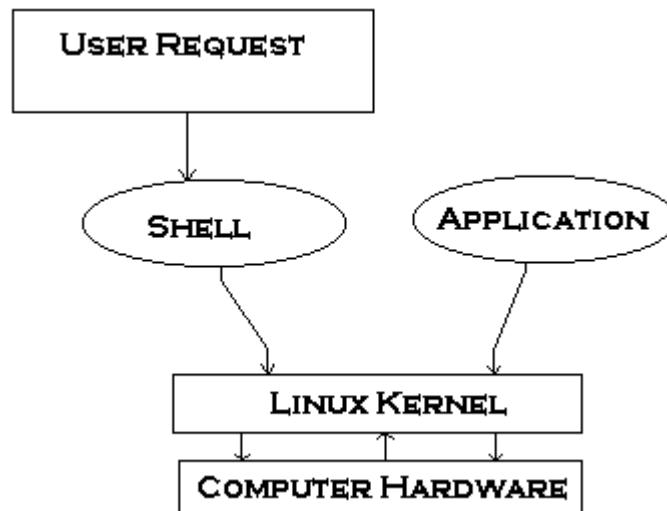
What Kernel Is?

Kernel is hart of Linux Os.

It manages resource of Linux Os. Resources means facilities available in Linux. For e.g. Facility to store data, print data on printer, memory, file management etc .

Kernel decides who will use this resource, for how long and when. It runs your programs (or set up to execute binary files).

The kernel acts as an intermediary between the computer hardware and various programs/application/shell.



Kernel performance following task :-

- I/O management
- Process management
- Device management
- File management
- Memory management

What is Linux Shell ?

Computer understand the language of 0's and 1's called binary language.

In early days of computing, instruction are provided using binary language, which is difficult for all of us, to read and write. So in OS there is special program called Shell. Shell accepts your instruction or commands in English (mostly) and if its a valid command, it is pass to kernel.

Shell is not part of system kernel, but uses the system kernel to execute programs, create files etc.

Shell is a program that interprets & manages commands

It used for:

- Run programs
- Compile computer code
- Work with file system
- Manage the computer

Examples : bash ash csh tcsh

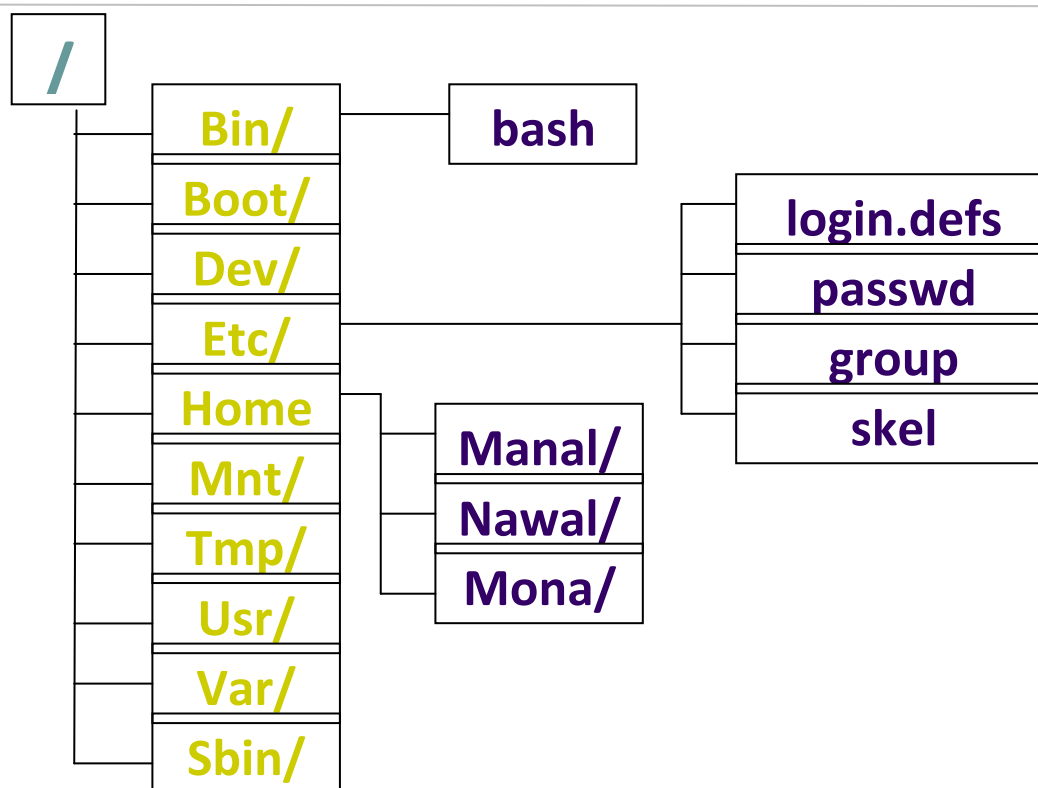
The Shell Interface:

Here are ways of reaching a shell:

- No desktop (text-based user interface)
shell command interpreters (such as bash) run programs by typing commands and options.
- With desktop (graphical user interface)
GNOME and KDE

Linux file system

The Linux file system is the structure in which all the information on your computer is stored. Files are organized within a hierarchy of directories. Each directory can contain files, as well as other directories.



Directory	Directory Content
/	The root directory
/bin	Contains common Linux user commands such as ls, sort
/boot	Has the bootable Linux kernel and boot loader configuration files
/dev	Contains references to all the CPU peripheral hardware, which are represented as files
/etc	Contains administrative configuration files
/home	Contains directories assigned to each user with a login account
/mnt	Contains Standard mount point for external file systems, e.g. a CD-ROM or a digital camera.
/tmp	Temporary space for use by the system
/usr	Contains programs, libraries, documentation etc. for all user-related programs.
/var	Contains storage for all variable files and temporary files created by users, such as log files, the mail queue, the print spooler area, space for temporary storage of files downloaded from the Internet, or to keep an image of a CD before burning it.
/sbin	Programs for use by the system and the system administrator.

Linux file systems versus Windows-based file systems

- In MS-DOS and Windows file systems, drive letters represent different storage devices (for example, A: is a floppy drive and C: is a hard disk). In Linux, all storage devices are fit into the file system hierarchy.
- Slashes, rather than backslashes, are used to separate directory names in Linux. So, **C:\home\manal** in an MS system is **/home/manal** in a Linux system.
- Every file and directory in a Linux system has permissions and ownership associated with it.
- Filenames almost always have suffixes in DOS (such as **.txt** for text files or **.doc** for word-processing files).
- A Linux file suffix can be one or more characters. Such as **.o** (one character), **.so** (two characters) and **.cfg** (three characters) and a file suffix can even have another . (dot) followed by more characters, such as: **.2.gz**.
 - Some Linux file names show the "type" of file, such as **.txt** for text files and **.conf** for Linux server and system configuration files.
 - Also, many Linux file names do not have file name suffixes.

Okay, I want Linux on my PC! What should I do now?

1. Try Linux without touching windows: You can try Linux for real without even needing to touch your hard disk, without needing to do anything to your existing Windows !This is possible with "Linux live CDs".
2. Install Linux and still keep Windows: If you want to keep Windows on your computer (which I recommend, in case you change your mind, or in case you find stuff you can only do with Windows), Windows is gonna need to share the disk with Linux. Then, each time your computer starts, it will let you choose between Windows and Linux.

<http://www.desktoplinux.com/articles/AT5836989728.html>

<http://www.whylinuxisbetter.net/>