Overview of Linux

What is Linux?

- A widely used Open Source Unix-like operating system.
- Linux was first released by its inventor Linus Torvalds in 1991.
- The inner workings of Linux are open and available for anyone to examine and change as long as they make their changes available to the public.

Difference between Linux and Windows

- Linux is an open-source Operating System. People can change codes and add programs to Linux OS which will help use your computer better. You can't change any code for windows OS. Linux user's can edit its OS and design new OS.
- Linux is freely available for desktop or home use but Windows is expensive. For server use, Linux is cheap compared to Windows.
- Windows must boot from a primary partition. Linux can boot from either a primary partition or a logical partition inside an extended partition. Windows must boot from the first hard disk. Linux can boot from any hard disk in the computer.
- Windows separates directories with a back slash while Linux uses a normal forward slash.
- Windows file names are not case sensitive. Linux file names are. For example "abc" and "aBC" are different files in Linux, whereas in Windows it would refer to the same file.
- Windows and Linux have different concepts for their file hierarchy. Windows uses a volume-based file hierarchy while Linux uses a unified scheme. Windows uses letters of the alphabet to represent different devices and different hard disk partitions. eg: c: , d: , e: etc.. while in linux " / " is the main directory.
- In Linux each user will have a home directory and all his files will be save under it while in windows the user saves his files anywhere in the drive. This makes difficult to have backup for his contents. In Linux its easy to have backup's.

Linux Flavours

Red Hat Enterprise Linux (**RHEL**) is a Linux-based operating system developed by Red Hat and targeted toward the commercial market. Red Hat Enterprise Linux is released in server versions for x86, x86-64, Itanium, PowerPC and IBM System z, and desktop versions for x86 and x86-64.. Red Hat Enterprise Linux is often abbreviated to RHEL.

CentOS (*Community Enterprise Operating System*) is a Linux distribution which attempts to provide a free enterprise class computing platform which has 100% binary compatibility with its upstream source, Red Hat Enterprise Linux (RHEL).

Fedora is an RPM-based operating system based on the Linux kernel, developed by the community-supported Fedora Project and owned by Red Hat.

Installion Of Redhat Linux

Selecting an Installation Method

- CD-ROM
- Hard drive
- NFS Image
- FTP
- HTTP

Minimum Hardware requirements

CPU:

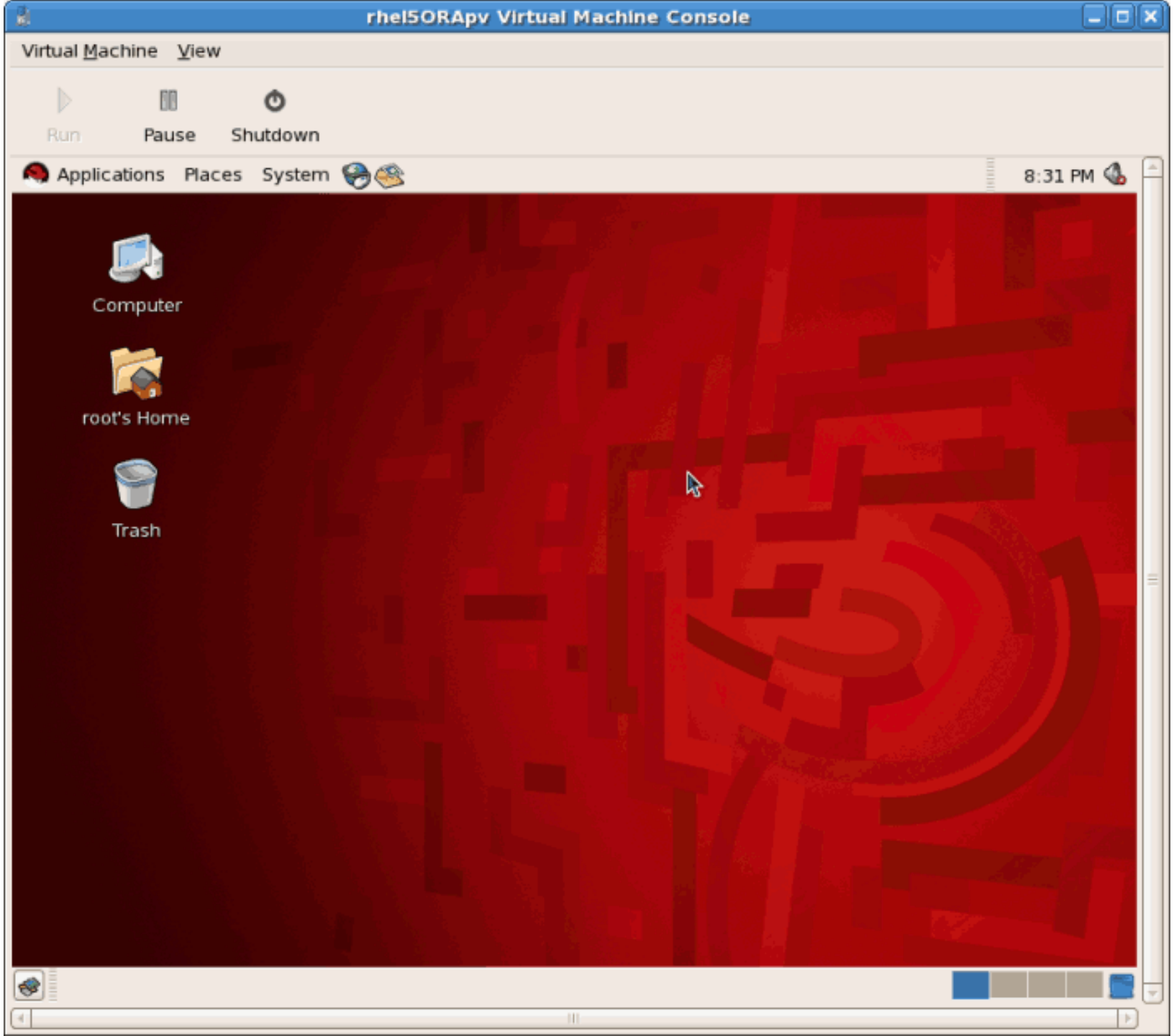
- Minimum: Pentium-class
- Recommended for text-mode: 200 MHz Pentium-class or better
- Recommended for graphical: 400 MHz Pentium II or better

Hard Disk Space (NOTE: Additional space will be required for user data):

- Custom Installation (minimum): 475MB
- Server (minimum): 850MB
- Personal Desktop: 1.7GB
- Workstation: 2.1GB
- Custom Installation (everything): 5.0GB

Memory:

- Minimum for text-mode: 64MB
- Minimum for graphical: 128MB
- Recommended for graphical: 192MB


rhel5ORApv Virtual Machine Console
Virtual Machine View
Run
Pause
Shutdown
Applications Places System
8:31 PM
Computer
root's Home
Trash

Run Levels

- A run level is a state of init and the whole system that defines what system services are operating. Run levels are identified by numbers.

Init Numbers	Definitions
0	Halt the system
1	Single-user mode (for special administration).
2	Local Multiuser with Networking but without network service (like NFS)
3	Full Multiuser with Networking
4	Not Used
5	Full Multiuser with Networking and X Windows(GUI)
6	Reboot

Package Management

Two types of utilities to install packages:

RPM and YUM.

RPM - RPM Package Manager.

- It is an open packaging system available for anyone to use
- It also maintains a database of all packages and their files that can be used for verifying packages and querying for information about files and/or packages
- RPM packages typically have file names like foo-1.0-1.i386.rpm. The file name includes the package name (foo), version (1.0), release (1), and architecture (i386).
- It can be used to build, install, query, verify, update, and remove/erase individual software packages.

RPM COMMAND SHEET

Command	Description	Example
rpm -ivh {rpm-file}	Install the package	rpm -ivh --test mozilla-mail-1.7.5-17.i586.rpm
rpm -Uvh {rpm-file}	Upgrade package	rpm -Uvh mozilla-mail-1.7.6-12.i586.rpm
rpm –Fvh {rpm-file}	Freshen the Package	rpm -Fvh mozilla-mail-1.7.6-12.i586.rpm
rpm –e {package}	Erase/remove/ an installed package	rpm –e mozilla-mail-1.7.6-12.i586.rpm
rpm -qa	Display list all installed packages	rpm –qa ,rpm -qa | less

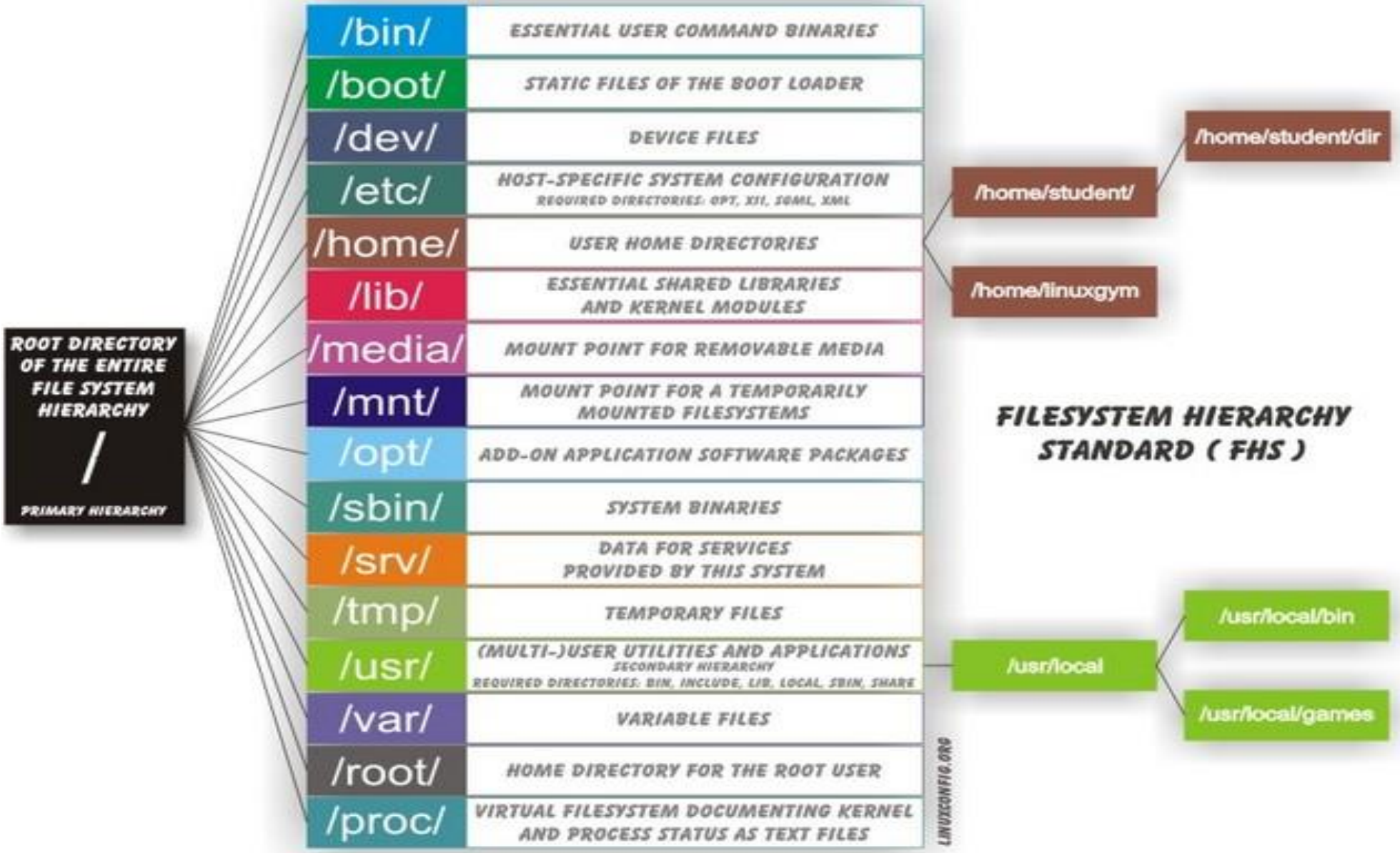
YUM

- *Yellowdog Update, Modified* (YUM) is a package manager that was developed by Duke University to improve the installation of RPMs.
- No mount is required.
- It will show information about installed and non-installed packages
- YUM installs the required dependencies automatically
- For using YUM you need to create repositories.

YUM COMMAND SHEET

Command	Desciption	Example
yum install {package-name-1}	Installs the Package	yum install httpd
yum update {package-name-1}	Updates the Package	yum update httpd
yum list installed	List all installed packages	
yum list {package-name}	List a particular package	yum list httpd
yum list all	Lists all the packages	
yum remove {package-name-1}	Removes package	yum remove httpd

FILESYETEM HIERACHY



Moving around in the file system	
Command	**Action**
pwd	"Print working directory" - show what dir you're in.
ls	List the contents of a dir.
ls -l	List the contents of a dir and show additional info of the files.
ls -a	List all files, including hidden files
cd	Change directory.
cd ..	Go to the parent directory.
Examining files	
file	Determine the type of a file.
cat	Displays the contents of the file.
less and more	View text files and paginate them if needed.
head	Displays first 10 records of file
tail	Displays last 10 records of file
Manipulating files and directories	
cp	Copy a file.
mv	Move or rename a file.
rm	Remove a file
mkdir	Make a directory.
rmdir	Remove an empty directory.

Moving around in the file system	
Command	Action
File Compression	
gzip	Compress the file
gunzip	Uncompress the file
tar	Archive mutiple files without compression
Disks and Filesystems	
df	Show free disk space
du	Reports the sizes of directories
mount	Make a disk accessible
umount	Makes a disk inaaccessible

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User Management	
Command	Action
id	Print real and effective user id and group ids.
w	Display users logged in and what they are doing.
who	Display the users logged in.
whoami	Print effective user id.
useradd	Create a new user or update default new user information.
userdel	Delete a user account and related files.
usermod	Modify a user account.
groupadd	Create a new group.
groupdel	Delete a group
Groupmod	Modify a group
groups	Print the groups a user is in
passwd	Set a user's pass word.
su - username su -	Switching to user and root.
finger	See what users are running on a system.
chown	Change the owner of file(s) to another user.
chgrp	Changes the group ownership of files.

Command	Action
Process Commands	
ps	Lists all processes
uptime	View the system load
top	Monitor Processes
netstat	Netstat command displays various network related information such as network connections, routing tables, interface statistics etc.,
free	Display free memory
kill	Terminate Process
Scheduling Jobs	
at	Schedule a job only once
crontab	Scheduling repeated jobs
Hosts	
uname	Prints System Information
hostname	Prints System hostname
ifconfig	Set/display nework information
ping	Check if host is reachable
traceroute	View network path to a host

Command	Action
Access Files:	
/etc/hosts	Contains a list of known hosts (in the local network)..
File systems	
/etc/mtab	This changes continuously as the file /proc/mount changes. In other words, when filesystems are mounted and unmounted, the change is immediately reflected in this file.
/etc/fstab	Lists the filesystems currently "mountable" by the computer. This is important because when the computer boots, it runs the command `mount -a`, which takes care of mounting every file system marked with a "1" in the next-to-last column of fstab.
System Administration	
/etc/group	Contains the valid group names and the users included in the specified groups. A single user can be present in more than one group if he performs multiple tasks. For example, is a "user" is the administrator as well as a member of the project group "project 1", then his entry in the group file will look like: `user: * : group-id : project1`
etc/passwd	See "man passwd". Holds some user account info including passwords (when not "shadowed").
/etc/securetty	Contains the device names of tty lines (one per line, without leading /dev/) on which root is allowed to login.
/etc/shadow	Contains the encrypted password information for users' accounts and optionally the password aging information.
/etc/shells	Holds the list of possible "shells" available to the system.

References

- http://www.linux.org/tutorial
- https://access.redhat.com/knowledge/docs/Red_Hat_Enterprise_Linux/
- http://www.linux.com/learn

Q & A