1. Linux History:

The history of Linux began in 1991 with the commencement of a personal project by [Finnish](https://en.wikipedia.org/wiki/Finland) student [Linus Torvalds](https://en.wikipedia.org/wiki/Linus_Torvalds) to create a new free operating system kernel. Since then, the resulting [Linux kernel](https://en.wikipedia.org/wiki/Linux_kernel) has been marked by constant growth throughout its history

Red Hat, Inc. Founded in 1993

Products:

[Red Hat Enterprise Linux](https://en.wikipedia.org/wiki/Red_Hat_Enterprise_Linux)

[middleware](https://en.wikipedia.org/wiki/Middleware_(distributed_applications)) vendor [JBoss](https://en.wikipedia.org/wiki/JBoss_(company)" \o "JBoss (company)).

[Red Hat Virtualization](https://en.wikipedia.org/wiki/Red_Hat_Virtualization) (RHV)

Cloud Computing ( Open stack)

Boot process:

1. BIOS

2. MBR - 1st sector of the bootable disk. /dev/sda 512=446+64+2

3. GRUB - GRUB displays a splash screen, it loads the default kernel image as specified in the grub configuration file.

4. Kernel - Mounts the root file system as specified in the “root=” in grub.conf Kernel executes the /sbin/init program

5. Init - /etc/inittab file to decide the Linux run level.

Following are the available run levels

0 – halt

1 – Single user mode

2 – Multiuser, without NFS

3 – Full multiuser mode

4 – unused

5 – X11

6 – reboot

6. Runlevel programs : starts with S and K

1. Patching and Upgrade:

To upgrade server and apply all security patches, pass update option to yum command. It will update every currently installed package. If one or more packages are specified, Yum will only update the listed packages. While updating packages, yum will ensure that all dependencies are satisfied.

* 1. Red hat Satellite server
  2. Local Repo server

# Yum update  
# yum install

1. Upgrade using DVD and Yum

OS Upgrade and OS Re-install will be done through DVD image shared by Red hat kernel and security patch will be complete through yum (Remote or local) repository.

1. User management :

The user of the system is either a user or an account used by specific applications identified by a unique numerical identification number called user ID(UID). Users within a group can have read permissions, write permissions, execute permissions or any combination of read/write/execute permissions for files owned by that group.

Red Hat Enterprise Linux supports access control lists (ACLs) for files and directories which allow permissions for specific users outside of the owner to be set.

1. File system

File system structure is the most basic level of organization in an operating system. It ensures users and programs can access and write files.

Two categories:

Shareable versus (locally and remotely sharable) -NFS

Unshareable files (static)

Variable (log files)

Static files (binary)

Types:

Ext,xfs,zfs,btrfs

1. Disk management

Using disk management user can view, create, resize, delete, change, copy and move partitions on a hard drive using its own user friendly text based menu driven interface

Ex: fdisk

1. Networking in Linux :

Assign, modify delete, create IP and modify firewall rules in Linux Operating system.

/etc/sysconfig/**network**. file used by the system during the boot process.

/etc/sysconfig/**network**-scripts/ifcfg-eth0. Configure networking on devices.

# ping

# ifconfig -a | eth0

# ifup eth0

# ifdown eth0

# traceroute 4.2.2.2

# netstat -r

(Network Statistic) and routing table info

# nslookup

# route

# arp -e

# ethtool eth0

setting speed and duplex of your Network Interface Card (NIC) is is mii-tool

# iwconfig [interface]

iwconfig command in Linux is use to configure a wireless network interface.

# hostname

1. Linux Serivces:

Linux or UNIX system will have a number of background processes executing at any time. These processes - also known as *services* or *daemons* - may be native to the operating system, or run as part of an application.

Init.d/sysctl

sshd

httpd/apache2

1. Application management:
   1. External application installed in Linux machine for custom use.