**Linux Boot Process Explained [HINDI] | MPrashant**

* **Step1** - BIOS(Basic input output system)
* This is the first program that is executed which is stored in read-only memory(ROM) on motherboard of the computer
* It performs POST(Power on self test) which verifies the hardware components and peripherals to ensure if computer is in working condition or not
* It will check for the bootable device like pendrive, hardisk etc
* And then it will handover control to the first sector of device i.e, MBR
* Apart from BIOS, UEFI(Unified extensible firmware interface) is also used
* **Step2 –** MBR(Master boot record)
* The size of MBR is 512 Bytes
* This is the first sector of any bootable device which contains machine code instructions to boot a machine
* It has the following info –
  + Boot loader (446 bytes)
  + Partition table(64 bytes)
  + Error checking(2 bytes)
* It will load the bootloader into the memory and handover the control to bootloader
* **Step3-** GRUB(Grand unified bootloader)
* It loads the /boot/grub2/grub.cfg at boot time
* At this stage, user will see GUI asking for different OS or kernels configured to boot
* Once you have selected the kernel you want to use, GRUB then locates the corresponding kernel binary
* /boot/vmlinux-<kernel-version>
* Main job of GRUB is to load kernel and initrd/initramfs image into memory
* Once kernel is loaded into RAM, it then passes on the control to kernel
* In RHEL7 the default bootloader is GRUB2
* GRUB is for x86 architecture, it could be different for other architecture like linux loader could also be used
* **Step4 –** Kernel
* first kernel is loaded into ROM
* Initramfs/initrd gets decompressed and then it first loads temporary file system
* Initrd then detects and loads the drivers from temporary file system to load actual file system
* It also mounts other partitions like LVM, RAID etc and unmount it
* Once main filesystem is mounted, kernel initializes the first systemd process
* You can find these images under /boot folder
* **Systemd(Daemon process) –** This is the first service that is loaded with PID 1
* Its starts all the required processes from /etc/system/system/default.target
* This helps bring the system to ruuning state like gui. run-level/target(0-6)
* You can find the different runlevel files under /usr/lib/system/system
* Command – cd /usr/=lib/system/system && ls -l runlevel\*
* To get the system state – systemctl get-default