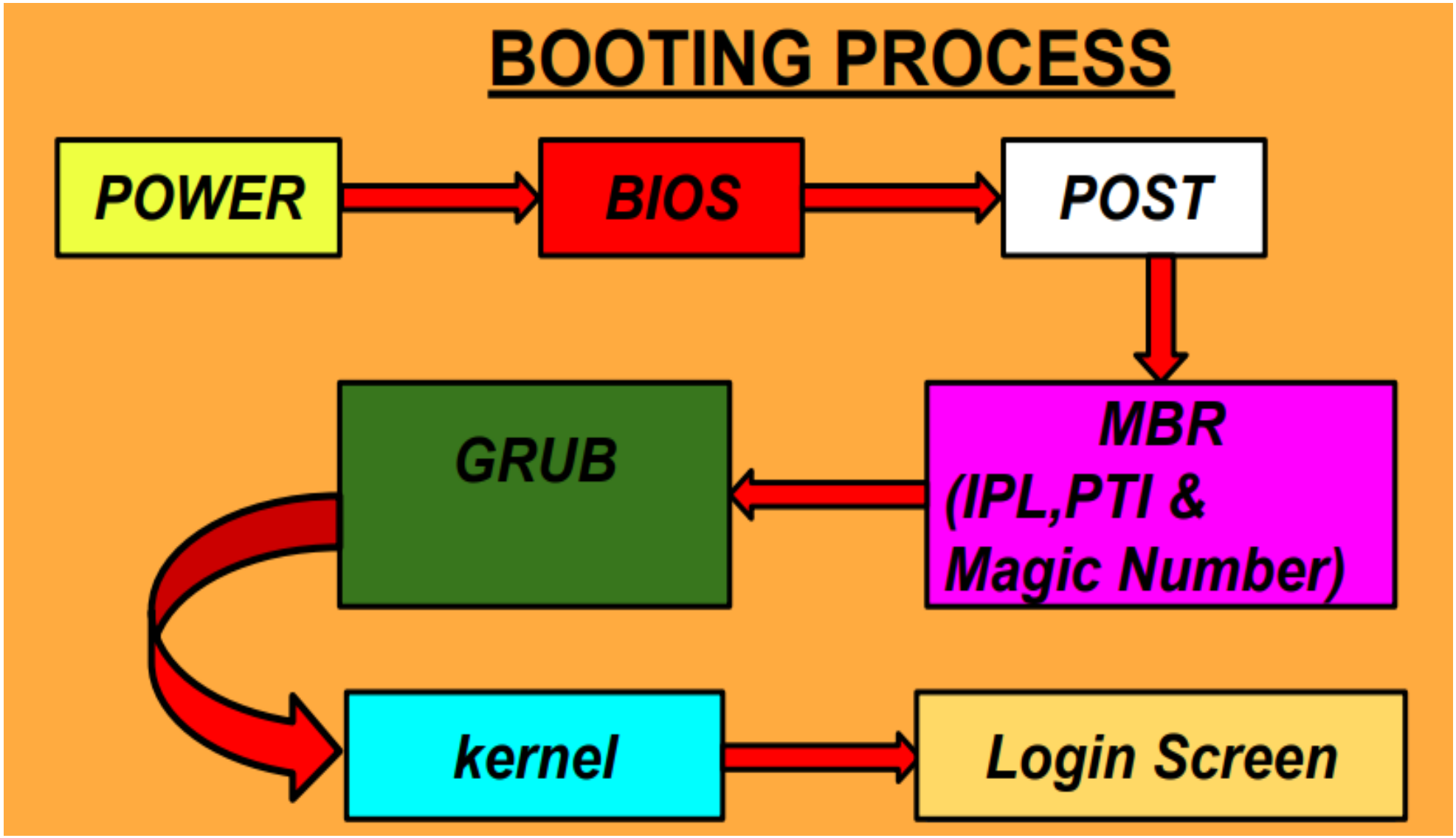
CONTROLLING THE BOOT PROCESS

BOOTING PROCESS

When we power on the machine after sometime we will get the login screen. Behind that process called as booting process

process
system
power on
bios [basic input output system]
post[power on self test]
MBR [master boot recorder]
grub [grand unified boot loader]
kernel
systemd
login screen


BOOTING PROCESS
POWER
BIOS
POST
MBR
(IPL,PTI &
Magic Number)
GRUB
kernel
Login Screen

BIOS{ Basic Input Output System}

Bios stands for basic input output system. It is a small program which is already installed in your machine.

- when my machine is power on bios is the first software runs inside the system for booting process
- The primary function of bios is, it will first check the system function process including driver loading.
- bios check & load all the drivers related to every piece of software & hardware install in the machine

POST[power on self test]

Once all drivers are loaded by the bios the next step that it will check all the physical connection (that every hardware is getting the proper power or not)
After the initialize post done then it will start to load the MBR

MBR[master boot recorder]

MBR is a small program which stores in the first sector of hard disk. It is a size of 512byte

It is divided in to 3 types

IPL (initialize program loader)

IPL will store the drives information (mouse, keyboard, pen drive)

It is the size of 446byte

PTI(partition table information)

It stores all the information of partition in the hard disk

It has the size of 64 byte

magic number

It will check either the mbr or partition is properly created or not

It is a size of 2byte

GRUB

Once mbr process is completely done it will start to load the grub
The work of grub is that it will load the kernel
There are 2 version are running
1. Grub2 (rhel 7 &8)
2. Grub1 (rhel 5&6),
All the bootable files are store in /boot directory

KERNEL

Kernel is core part of os .it will manage which application is required for os.
Kernel will keep starting the process
And then it load INITRAMFS
Initramfs is the framework (it's a file helps to load ram and filesysytem)

SYSTEMD

It is the first process in rhel 7&8
In rhel 5&6 we have used initd
In systemd there are 4 targets

1. **Graphical.target** System supports multiple users, graphical- and text-based logins
2. **Multiuser.target .**System supports multiple users, text-based logins only
3. **Rescue.target**
4. **Emergency.target (for troubleshooting)**

And in initd there are 7 run levels

- **init 0 – halt/shutdown**
- **init 1 – Single user mode**
- **init 2 – Multiuser without network service (like NFS)(CLI Mode)**
- **init 3 – Full multiuser with Networking(CLI mode)**
- **init 4 – Unused/(Reserved)**
- **init 5 – Graphically Full multiuser mode**
- **init 6 – reboot**

[user@host ~]$ systemctl list-dependencies graphical.target | grep target
[user@host ~]$ systemctl list-units --type=target –all
[root@host ~]# systemctl isolate multi-user.target
[user@host ~]$ systemctl cat graphical.target
#systemctl get-defaults (*to check the default target***)**
#systemctl set-defaults <target name> (*to change the target)*
Or
1. Boot or reboot the system.
2. Interrupt the boot loader menu countdown by pressing any key (except Enter which would initiate a normal boot).
3. Move the cursor to the kernel entry that you want to start.
4. Press e to edit the current entry.
5. Move the cursor to the line that starts with linux. This is the kernel command line.
6. Append systemd.unit=target.target. For example, systemd.unit=emergency.target.
7. Press Ctrl+x to boot with these changes.

#systemctl isolate graphical.target (*to switch one to another target temporarily)*
]$ systemctl list-dependencies graphical.target | grep target

systemctl list-units --type=target –all

#systemctl cat graphical.target

RESETTING THE ROOT PASSWORD

- reboot
- press any key to interrupt Initramfs to load
- press ‘e’ to edit
- Go to line start with ‘linux’
- Append “rd.break console=tty1”
- Press “ctrl+x”
- To change permission to rw
  - #mount –o remount,rw /sysroot

- #chroot /sysroot
- #echo password | passwd –stdin root
- #touch /.autorelabel
- Ctrl+d
- Ctrl+d