

Boot Modes & Recovery

New Boot Process (CentOS/RHEL 7 and above):

- systemd manages boot sequence
- backward compatible with SysV init scripts from previous versions

BIOS - Basic Input/Output System (firmware interface)

POST - Power-On-Self-Test started

- MBR - Master Boot Record
 - information saved in first sector of hard disk that indicates where the GRUB2 is located so it can load
 - GRUB2 - Grant Unified Boot Loader v2 - loads linux kernel
/boot/grub2/grub.cfg
- Kernel - Core of the operating system - loads required drivers from initrd.img starts first OS process
systemd
- Systemd = System Daemon (PID #1) then starts all required processes
read /etc/systemd/system/default.target to bring system to run level (7 run levels 0-6)

How to Reboot / Shutdown

systemctl poweroff	stops all services, unmounts filesystems
poweroff	
systemctl reboot	all of the above plus reboot
reboot	

Select systemd target

- 0-6 run levels now referred to as targets
- important targets:
 - graphical.target - system supports multiple users, graphical and text based logins
 - multi-user.target - system supports multiple users, text based logins only
 - rescue.target - sulogin prompt, basic system initialisation completed
 - emergency.target - sulogin prompt, initramfs pivot complete and system root mounted on / read only
- a target can be part of another target (graphical.target includes multi-user.target)

systemctl get-default	check current target
who -r	run level
systemctl list-dependencies graphical.target grep target	list target dependencies
ls -l /lib/systemd/system/runlevel*	list run levels
systemctl set-default graphical.target	set default target

Recover Root Password (RHEL 9)

Reboot	
Press esc to get to grub	
Find line beginning with Linux, add " rd.break" to the end	RHEL 9 boot into emergency re
Find line beginning with Linux, add "init=/bin/bash" to the end	RHEL 10 boot into emergency
Press Ctrl X	start boot using the modified s
mount -o remount,rw /sysroot	RHEL 9 remount the root filesy
mount -o remount,rw /	RHEL 10 remount the root files
chroot /sysroot	change root to /sysroot (RHEL
passwd	
Enter your new password	
touch /.autorelabel	Force SELinux to relabel files o
exit	RHEL 9 exit back to emergency
mount -o remount,ro /	RHEL 10 reboot cleanly
exit	exit to boot

Repair Filesystem Corruption
Common errors

Corrupt file system	systemd attempts to repair file if it cannot be repaired, go to e
nonexistent device/UUID in /etc/fstab	if device remains unavailable,
nonexistent mount point in /etc/fstab	go to emergency shell
incorrect mount option in /etc/fstab	go to emergency shell

Emergency target can diagnose and fix the issue, because no file systems are mounted before emergency shell is displayed

systemctl daemon-reload	when using emergency shell, r /etc/fstab
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