Boot, Reboot, & Shutdown a System safely

Typically, the systemctl command is used to shut down a system safely:

~$: (sudo) systemctl reboot

~$: (sudo) systemctl poweroff

Rarely, there are situations where you need to force shutdown or reboot because of a process or program that is getting in the way of shutting down or rebooting. Here is how to do it:

~$: (sudo) systemctl reboot - - force

~$: (sudo) systemctl poweroff - - force

Or if those didn’t work, here are last resort commands to shut down or reboot

~$: (sudo) systemctl reboot - - force - - force

~$ (sudo) systemctl poweroff - - force - - force

Rebooting at a certain time.

The shutdown command is good for scheduled reboots or shutdowns.

~$: sudo shutdown 02:00 (Shutdown the computer at 2 AM)

Time is in 24-hour format

~$: sudo shutdown +15 (Shutdown in 15 minutes) use the “+” to configure for minutes

To reboot add the –r flag

~$: sudo shutdown –r 02:00 (Reboots the machine at 2 AM)

Setting a “wall message” (Will show a message to logged in users that there is an impending shutdown or reboot)

~$: sudo shutdown –r +1 ‘Scheduled restart to upgrade our Linux kernel’

Boot or Change System into different operating modes

A lot of programs need to be loaded when a Linux system boots up, some in a specific order, so we can get to the login screen. How does Linux know how to do this?

With the help of something called “systemd.target(s)”

When a system boots up, it checks what the systemd default target is. We can use a specific command to check what that default is:

~$: systemctl get-default

My result $: graphical.target = This means that my system is configured to boot into a graphical environment.

The file graphical.target, contains instructions for how to arrive at this target.

By reading this, the OS knows what programs it needs to launch, and in what order to boot this target.

We can change the default boot target:  
~$: sudo systemctl set-default multi-user.target

This target will have the OS boot normally, with all its daemons, server utilities etc.., but the GUI will be skipped, so everything will be text based.

It's called multi-user because multiple users can login and use the system at the same time.

Muli-user.target also turns on network services so the machine will have access to the internet and the local network.

You can also switch into another boot target without rebooting the system (this change will not stick when the system is rebooted.)

~$: sudo systemctl isolate graphical.target

The GUI will then load when this command is run. This does not change the default boot target.

Other targets are:  
emergency.target = Will load as few programs as possible (useful for debugging in case programs that are loaded in other targets are making the system unstable. When you boot into this target, root is mounted as read-only.  
Rescue.target = a few essential services are loaded, and you are dropped into a root shell. A few more programs are loaded than in the emergency.target but fewer than what are loaded in multi-user.target.

\*\* IN ORDER TO USE THESE TARGETS, A PASSWORD MUST BE SET FOR ROOT USER \*\*