4.1 Linux Boot Process

As you study this section, answer the following questions:

- What are the three general stages for the boot process?
- When is the initramfs image loaded into memory?
- What is the default initial program?
- Which component mounts the root partition?
- What is the process ID of the initial program?
- Where is the primary boot loader located?

Key terms for this section include the following:

Term	Definition
Basic Input/Output System (BIOS)	The program used to get a computer started. BIOS is a legacy system that has been replaced by UEFI.
Unified Extensible Firmware Interface (UEFI)	A program used to start a computer system. It replaced BIOS.
Boot	The act of starting a computer, also referred to as powering the computer on.
Firmware	Software that is embedded in hardware, usually on a read-only memory (ROM) chip.
Boot manager/ bootloader	A software program that controls the process of loading the operating system.
Complementary Metal-oxide Semiconductor (CMOS)	A technology for constructing integrated circuits that efers to the system configuration stored in a battery-powered memory chip used on computers.
Power on Self Test (POST)	A software process that verifies that computer hardware works properly.
Globally Unique Identifier (GUID)	A system software programs use to identify the location of a data object.
Master Boot Record (MBR)	A legacy system that refers the to the boot sector on a hard disk or other storage device. The boot sector contains files required for starting a computer.
Extensible	The partitioning scheme used by UEFI. ESP is the format used for the boot sector where

Firmware Interface Partition (ESP)	the operating system and utilities for starting a computer are stored.
init	init is the first process started when booting a Linux system. Init is a daemon process that continues running until the system is shut down. It is the direct or indirect ancestor of all other processes and automatically adopts all orphaned processes. init is a legacy process that has been replaced by systemd.
initramfs	initramfs is used as the first root filesystem that your machine has access to. It is used for mounting the real rootfs, which has all of your data.
root partition	The partition at the top of the directory tree. It contains all of the programs and files necessary for running Linux. It is the root file system and is represented by a forward slash (/).

This section helps you prepare for the following certification exam objectives:

Exam	Objective

CompTIA Linux+	1.1 Explain Linux boot process concepts.
	
	• Boot loaders
	    ○ GRUB
	    ○ GRUB2
	• Boot options
	    ○ UEFI/EFI
	    ○ PXE
	    ○ NFS
	    ○ Boot from ISO
	    ○ Boot from HTTP/FTP
	• File locations
	    ○ /boot
	    ○ /boot/efi
	• Boot modules and files
	    ○ Commands: mkinitrd
	    ○ Commands: dracut
	    ○ initramfs
	    ○ efi files
	    ○ vmlinuz
	    ○ vmlinux