

4.1.4 Practice Questions

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Score: 100%

Passing Score: 80%



▼ Question 1: ✓ Correct

What is the core process for a systemd-based Linux system?



Explanation

systemd is the core process that spawns all other processes in a systemd-based Linux operating system.

Linux distributions that are SysVinit-based use the initd daemon as the core process that manages all other daemons.

References



4.1.2 Linux Boot Process Facts

q_bootproc_lp5_01.question.fex

▼ Question 2:

✓ Correct

Which system component verifies the hardware and passes control of the computer to the boot loader?

☐ OS kernel☐ Init☐ CMOS☒ BIOS**Explanation**

The BIOS is responsible for verifying system hardware, reading settings from the CMOS, detecting hardware changes, and passing control of the system to the boot loader.

The boot process for a Linux computer includes the following general stages:

1. BIOS (in the BIOS stage, BIOS is loaded, and the system hardware is identified).
2. Boot loader (during the boot loader stage, BIOS gives control to the boot loader program to load the kernel into RAM).
3. OS Kernel (during the OS kernel stage, the Linux kernel takes over).
4. Init (during the Init stage, the initial [init or system] process determines which other programs to run, such as a login shell).

References**4.1.2 Linux Boot Process Facts**

q_bootproc_lp5_02.question.fex

▼ Question 3:

✓ Correct

What is the correct order for the boot phases of a Linux computer?

1st

✓ BIOS

2nd

✓ Boot loader

3rd

✓ OS Kernel

4th

✓ system or init

Explanation

The boot process for a Linux computer includes the following general stages:

1. BIOS (in the BIOS stage, BIOS is loaded, and the system hardware is identified).
2. Boot loader (during the boot loader stage, BIOS gives control to the boot loader program to load the kernel into RAM).
3. OS Kernel (during the OS kernel stage, the Linux kernel takes over).
4. systemd (during the initial stage, the systemd process determines what other programs to run, such as a login shell).

References



4.1.2 Linux Boot Process Facts

q_bootproc_lp5_03.question.fex

▼ **Question 4:**

✓ Correct

In which boot process stage is the root partition mounted?

- ☐ systemd
- ☐ BIOS
- ☐ Boot loader
- ➡ ☒ **OS kernel**

Explanation

The OS kernel stage mounts the root partition. During this stage, the Linux kernel:

1. Resides in the /boot directory.
2. Initializes the hardware on the system.
3. Locates and loads the initrd script to access the linuxrc program, which configures the operating system.
4. Dismounts and erases the RAM disk image (initrd image).
5. Looks for new hardware and loads the drivers.
6. Mounts the root partition.
7. Loads and executes the initial process, such as SysV init or systemd on newer Linux distributions.

The boot process for a Linux computer includes the following general stages:

1. BIOS (in the BIOS stage, BIOS is loaded and the system hardware is identified).
2. Boot loader (during the boot loader stage, BIOS gives control to the boot loader program to load the kernel into RAM).
3. OS Kernel (during the OS kernel stage, the Linux kernel takes over).
4. systemd (during the initial stage, the systemd process determines what other programs to run, such as a login shell or configuration files).

References**15.4.2 Remove Unneeded Services and Scan Ports**

q_bootproc_lp5_04.question.fex

▼ Question 5:

✓ Correct

You have a system with more than one Linux operating system installed. During the system's bootup process, which component loads a splash screen, allowing you to choose which operating system you want to run?

- ☐ BIOS
- ☐ The initial program
- ➡ ☒ The secondary boot loader
- ☐ The primary boot loader

Explanation

The secondary boot loader provides a splash screen that allows you to choose which operating system you want to load. This occurs in the *boot loader* stage of the boot process. Specifically, during the boot loader stage, the following steps take place:

1. BIOS searches the boot sector which contains a Master Boot Record (MBR).
2. BIOS loads the primary boot loader code from the MBR.
3. The primary boot loader takes one of two actions:
 - Examines the partition table marked as bootable and then loads the boot sector from that partition. This boot sector contains a secondary boot loader, which locates an OS kernel.
 - Locates an OS kernel directly, without using a secondary boot loader.
4. When the secondary boot loader is in RAM and executing, a splash screen is commonly displayed, and an optional initial RAM disk, *initrd* image, is loaded into memory. The *initrd* image:
 - Has root permissions and can be used to access the actual */root* file system regardless of whether it exists on the local computer or an external device. Without the permissions, the computer could not access the file systems without being able to read information that only exists on those file systems.
 - Is used to mount the actual file system and load the kernel into RAM.
5. With the images ready, the secondary boot loader invokes the kernel image.

The BIOS is responsible for verifying system hardware, reading settings from the CMOS, detecting hardware changes, and passing control of the system to the boot loader. The initial (*init* or *systemd*) process is the first process on the Linux system to run. *Init* determines which other programs to run, such as a SysV *init* login shell or *systemd* configuration files.

References




4.1.2 Linux Boot Process Facts

q_bootproc_lp5_05.question.fex

▼ Question 6: **✓ Correct**

Which of the following has a process ID (PID) of 1?

- ☐ The BIOS
-  ☒ **The initial process**
- ☐ The boot loader
- ☐ The OS kernel

Explanation

The initial process have the process ID (PID) of 1 because it is the first process to run on the system. On a SysV init Linux system, the name of the initial process is *init*. On a systemd Linux system, the initial process is named *systemd*.

The BIOS, boot loader, and OS kernel do not receive PIDs.

References**15.4.2 Remove Unneeded Services and Scan Ports**

q_bootproc_lp5_06.question.fex

▼ Question 7:

✓ Correct

Which component is responsible for loading and executing the initial process?

- ☐ initrd image
- ☐ primary boot loader
- ➡ ☒ OS kernel
- ☐ BIOS

Explanation


The OS kernel stage loads and executes the initial (init) process. During this stage, the Linux kernel:

1. Resides in the /boot directory.
2. Initializes the hardware on the system.
3. Locates and loads the initrd script to access the linuxrc program which configures the operating system.
4. Dismounts and erases the RAM disk image (initrd image).
5. Looks for new hardware and loads the drivers.
6. Mounts the root partition.
7. Loads and executes the initial process (init or systemd).

The BIOS is responsible for verifying system hardware, reading settings from the CMOS, detecting hardware changes, and passing control of the system to the boot loader. The initrd image is used to mount the actual file system and loads the kernel into RAM. The primary boot loader takes one of two actions:

- Examines the partition table marked as bootable and then loads the boot sector from that partition. This boot sector contains a secondary boot loader, which locates an OS kernel.
- Locates an OS kernel directly, without using a secondary boot loader.

References

 4.1.2 Linux Boot Process Facts

q_bootproc_lp5_07.question.fex

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