Linux Installation

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Agenda

- Installation of Linux OS
  - Boot process
  - Device detection
  - Partitioning
  - Configuration
- Summary

Installation

- **Installation consists of the following steps**
  - Boot from installation media
  - Launching installation program
  - Device detection
  - Partitioning
  - Package selection
  - Package installation
  - Boot loader installation
  - Configuration
  - Reboot

Boot from installation media

- After initialization BIOS loads special program called “Boot loader” (GRUB, Lilo), which is stored in the first sectors of media storage. The Boot loader is responsible for further actions. It calls the installation program or loads the operating system.
- GRUB is the reference implementation of the Multiboot Specification, which provides a user the choice to boot one of multiple operating systems installed on a computer or select a specific kernel configuration available on a particular operating system's partitions.

Device Detection

- Device detection is a special operation performed by installation program in order to find out and configure various hardware components in the system. Without detection procedure the hardware components will not be configured properly and can not be used.

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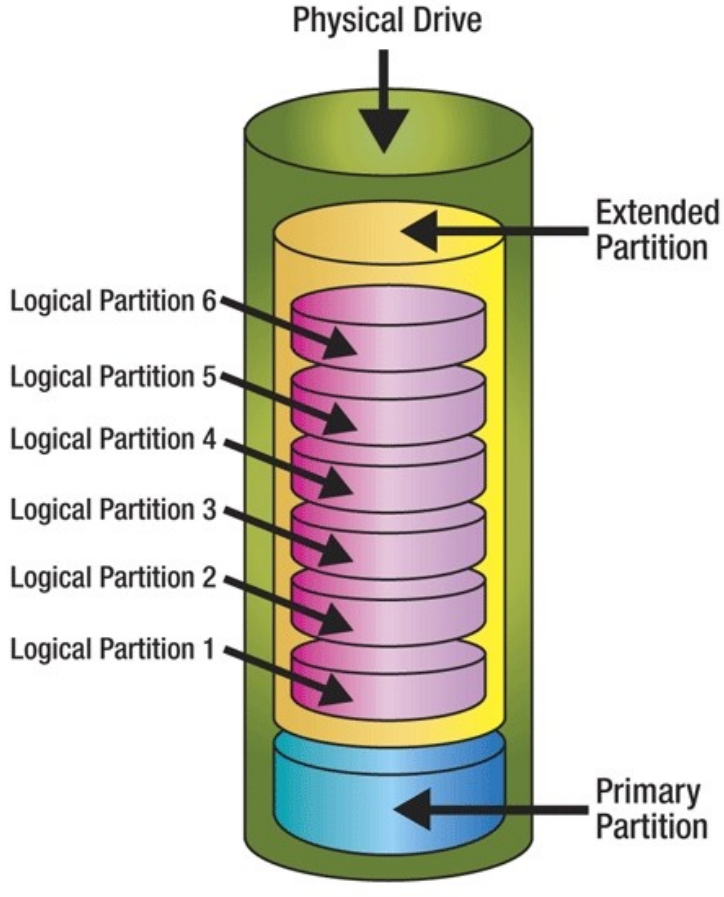
Partitioning

- Hard drive of the computer can be divided into several logical drives (partitions), each of which is treated as an separate hard drive by the operating system. Primary partitions are used for storing operating system files, and boot loader. Extended partitions can be repartitioned into several partitions, so theses are kind of containers for logical drives.



Partitioning (continuation)

- At lease two partitions should exists for Linux OS:
  - root partition, on which system files are stored.
  - swap partition, which is used for virtual memory.

Installation and Configuration

- Installation program allows user to select system configuration (packages to install, graphical environment, etc.).
- After installing selected components, installation program writes the boot loader and configures hardware components. For some components user can select configuration options.
- Booting is also possible from LiveCD without installation an Operating System

Boot from LiveCD

- A live CD, live DVD, or live disc is a CD or DVD containing a bootable computer operating system. Live CDs are unique in that they have the ability to run a complete, modern operating system on a computer lacking mutable secondary storage, such as a hard disk drive. Live USB flash drives are similar to live CDs, but often have the added functionality of automatically and transparently writing changes back to their bootable medium.
- It allows the user to return the computer to its previous state when the live CD is ejected and the computer is rebooted. It is able to run without permanent installation by placing the files that typically would be stored on a hard drive into RAM, typically in a RAM disk, though this does cut down on the RAM available to applications.

Network Configuration

- Network configuration consists of following steps:
  - IP address configuration (static or via DHCP server)
  - DNS server(s) configuration
  - Routing configuration (gateway selection)

Summary

- BIOS loads Boot loader from installation media.

Boot loader allow to invoke installation program.

Installation program allows to:

  - partition hard drive
  - select desired system configuration
  - configure hardware components
  - install boot loader