



Chapter 10

Managing Devices, Storage and Software

Understanding Filesystems

- Linux virtual directory structure contains a single base directory, called the *root directory*. The root directory lists files and folders beneath it based on the folder path used to get to them
- there's a standard format defined for the Linux virtual directory, called the Linux filesystem hierarchy standard (FHS).
- TABLE 11.3 Common Linux FHS folders

Listing Disks and Partitions

- `df -h`
- `ls /dev/sd*`
- `lsblk`

Partitioning Tools

- fdisk

- `sudo fdisk -l`

- `sudo fdisk /dev/sdb ; partprobe`

- gdisk

- parted

- GParted

Formatting and Mounting Filesystems

```
sudo mkfs -t ext4 -L MyDisk01 /dev/sdb1
```

```
blkid
```

```
sudo mkdir /mnt/MyD01
```

```
sudo mount [-t ext4] /dev/sdb1 /mnt/MyD01
```

```
sudo fallocate -l 100m testfile
```

```
sudo umount /mnt/MyD01
```

Encrypting Partitions

- A popular tool for encrypting the entire partition is the Linux Unified Key Setup (LUKS). The core utility in LUKS is the cryptsetup utility.

```
sudo apt install cryptsetup
```

```
sudo cryptsetup -y -v luksFormat /dev/sdc1
```

```
sudo cryptsetup -v luksOpen /dev/sdc1 safedata
```

```
ls /dev/mapper -l
```

```
sudo mkfs -t ext4 /dev/mapper/safedata
```

```
sudo mount /dev/mapper/safedata /mnt/dd
```

```
sudo cryptsetup -v status /dev/mapper/safedata
```

```
sudo umount /mnt/dd
```

```
sudo cryptsetup -v luksClose /dev/mapper/safedata
```

Packaging Applications

- Linux distributions have created a system for bundling already compiled applications for distribution. This bundle is called a package, and it consists of all the files required to run a single application. Tracking software packages on a Linux system is called package management.

```
sudo dpkg -i XXXX.deb      ; dpkg vs. rpm  
dpkg -l [openssh*]
```

- Each Linux distribution has its own central clearinghouse of packages, called a repository. The repository contains software packages that have been tested and known to install and work correctly in the distribution environment.

```
sudo apt-cache pkgnames  
sudo apt install zsh      ; TABLE 13.4: The apt program action commands  
sudo apt remove zsh      ; apt vs. dnf
```

- Graphical Package Tools
gnome-software

Working with Devices

- The CUPS main web page: <http://localhost:631>
- EXERCISE 23.1: Adding a USB Storage Device to the Linux System