

# Encrypt non-root devices (LUKS)

If you have more than one hard disk that you need to encrypt (e.g. SSD as main disk, HDD as data disk) there are a few things to keep in mind to ensure continued smooth operation without any loss of convenience.

The layout is as follows:

Type	File System	Description
Home File System	LUKS2	Stores user home directories and personal files

## Preparing the disk

Determine the disks that are installed on your system. This can easily be done with `fdisk`:

```
fdisk -l
```

Start partitioning the disk with `cgdisk`:

**WARNING:** Make sure you are modifying the correct device, else you *will* lose data!

```
cgdisk /dev/sda
```

If the disk has no partition table yet, `cgdisk` will ask you to specify one. The default partition table format for UEFI systems is `gpt`. Create a layout with at least 3 partitions:

Size	FS Type
(disk size)	Linux home

**NOTE:** Specifying the correct file system type allows some software to automatically detect and assign appropriate mount points to partitions. See [Discoverable Partitions Specification](#) for more details.

## Formatting partitions

Before writing a file system to the disk a LUKS container needs to be created with the `cryptsetup` utility:

**WARNING:** Do **NOT** forget your passphrase! In case of loss you won't be able to access the data inside the container anymore!

**NOTE:** Using `/dev/sda` as an example of a SATA HDD that is intended to be mounted at `/home`.

```
cryptsetup luksFormat /dev/sda1
```

Open the newly created LUKS container and supply the passphrase you just set:

**NOTE:** `crypthome` is used as an example here. It is the "mapper name" under which the opened LUKS container will be available at, in this example: `/dev/mapper/crypthome`. You may use whatever name you like.

```
cryptsetup open /dev/sda1 crypthome
```

## Formatting and mounting partitions

Create a file system for the home file system:

```
mkfs.ext4 /dev/mapper/crypthome
```

Mount the file systems:

```
mount --mkdir /dev/mapper/crypthome -o noatime /mnt/home
```

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