



### Exercise 22.1 Disk Encryption

In this exercise, you will encrypt a partition on the disk in order to provide a measure of security in the event that the hard drive or laptop is stolen. Reviewing the **cryptsetup** documentation first would be a good idea (`man cryptsetup` and `cryptsetup --help`).

1. Create a new partition for the encrypted block device with **fdisk**. Make sure the kernel is aware of the new partition table. A reboot will do this but there are other methods.
2. Format the partition with **cryptsetup** using **LUKS** for the crypto layer.
3. Create the un-encrypted pass through device by opening the encrypted block device, i.e., `secret-disk`.
4. Add an entry to `/etc/crypttab` so that the system prompts for the passphrase on reboot.
5. Format the filesystem as an **ext4** filesystem.
6. Create a mount point for the new filesystem, i.e. `/secret`.
7. Add an entry to `/etc/fstab` so that the filesystem is mounted on boot.
8. Try and mount the encrypted filesystem.
9. Validate the entire configuration by rebooting.

### Solution 22.1

1. `$ sudo fdisk /dev/sda`

Create a new partition (in the below `/dev/sda4` to be concrete) and then either issue:

```
$ sudo partprobe -s
```

to have the system re-read the modified partition table, or reboot (which is far safer).

**Note:** If you can't use a real partition, use the technique in the previous chapter to use a loop device or image file for the same purpose.

2. `$ sudo cryptsetup luksFormat /dev/sda4`
3. `$ sudo cryptsetup luksOpen /dev/sda4 secret-disk`

4. Add the following to `/etc/crypttab`:

```
secret-disk    /dev/sda4
```

5. `$ sudo mkfs -t ext4 /dev/mapper/secret-disk`

6. `$ sudo mkdir -p /secret`

7. Add the following to `/etc/fstab`:

```
/dev/mapper/secret-disk    /secret    ext4    defaults    1 2
```

8. Mount just the one filesystem:

```
$ sudo mount /secret
```

or mount all filesystems mentioned in `/etc/fstab`:

```
$ sudo mount -a
```

9. Reboot.