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# Mount encrypted logical volume with `cryptsetup`

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This howto was tested with Debian 7, 8 and 9.

## 1. Usage scenario

### System repair

1. The system does not boot any more.
2. Boot from live CD
3. Follow this howto to mount the encrypted system

### Switch to UEFI

1. Switch a Debian system from legacy boot mode to UEFI boot mode.  
The procedure is the same as *System repair* with some additional steps described in [how to switch a debian 7-9 legacy boot system to UEFI](#)<sup>1</sup>

### Fast file copy from HD to HD

1. Dismount the harddrive from host `disk-system`
2. Connect the harddrive to another host `host-system` with a SATA-USB3 adapter or any other interface.
3. Mount `disk-system` into `host-system` following this howto.

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<sup>1</sup> [./public/downloads/doc/legacy2UEFIboot/Switch Debian from legacy to UEFI boot mode.html](#)



The recovery mode of the Debian 9 Stretch installer disk automates the following steps. Try this first!

## 2. Find the device and partition of the to be mounted logical volume

1. Connect the disk with `host-system` and observe the kernel messages in `/var/log/syslog`

```
root@host-system:~# tail -f /var/log/syslog
sd 3:0:0:0: [sdb] 976773168 512-byte logical blocks: (500 GB/465 GiB)
sd 3:0:0:0: [sdb] Write Protect is off
sd 3:0:0:0: [sdb] Mode Sense: 43 00 00 00
sd 3:0:0:0: [sdb] Write cache: enabled, read cache: enabled, doesn't
support DPO or FUA
   sdb: sdb1 sdb2 sdb3 sdb5
sd 3:0:0:0: [sdb] Attached SCSI disk
```

The to be mounted device is `/dev/sdb`.

2. Find the partition

```
root@host-system:~# gdisk -l /dev/sdb
GPT fdisk (gdisk) version 0.8.5
...
Number  Start (sector)    End (sector)  Size        Code  Name
   1            2048             411647       200.0 MiB   8300  Linux
        filesystem
   2           411648             494821        43.0 MiB   0700
   3           494822             501759       1024.0 KiB  8300  Linux
        filesystem
   5           501760           976771071     465.5 GiB  8300  Linux
        filesystem
```

The to be mounted logical volume of `disk-system` resides on `/dev/sdb5`.

## 3. Mount encrypted logical volume

1. Open decryption layer.

## Mount encrypted logical volume with `cryptsetup`

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```
root@host-system:~# lvscan
ACTIVE          '/dev/host-system/root' [231.03 GiB] inherit
ACTIVE          '/dev/host-system/swap_1' [7.20 GiB] inherit
```

Logical volume is not registered yet. Do so.

```
root@host-system:~# cryptsetup luksOpen /dev/sdb5 sdb5_crypt
Enter passphrase for /dev/sdb5:
```

Enter disk password.

```
root@host-system:~# lvscan
inactive        '/dev/disk-system/root' [457.74 GiB] inherit
inactive        '/dev/disk-system/swap_1' [7.78 GiB] inherit
ACTIVE          '/dev/host-system/root' [231.03 GiB] inherit
ACTIVE          '/dev/host-system/swap_1' [7.20 GiB] inherit
```

Logical volume of `disk-system`` is registered now. It contains one ``root` partition (line 1) and and one `swap` partition (line 2).

### 2. Activate logical volumes

```
root@host-system:~# lvchange -a y disk-system
```

Check success.

```
root@host-system:~# lvscan
ACTIVE          '/dev/disk-system/root' [457.74 GiB] inherit
ACTIVE          '/dev/disk-system/swap_1' [7.78 GiB] inherit
ACTIVE          '/dev/host-system/root' [231.03 GiB] inherit
ACTIVE          '/dev/host-system/swap_1' [7.20 GiB] inherit
```

```
root@host-system:~# ls /dev/mapper
control disksystem-root disksystem-swap_1 hostsystem-root
hostsystem-swap_1 mymapper sdb5_crypt
```

### 3. Mount logical volume

```
root@host-system:~# mount -t ext4 /dev/mapper/disk-system-root /mnt
```

Check success.

```
.....
root@host-system:~# ls /mnt
bin  etc          initrd.img.old  lib64          mnt  proc  sbin  sys
var
boot home        lib             lost+found     mnt2  root  selinux tmp
vmlinuz
dev  initrd.img  lib32          media          opt  run  srv  usr
vmlinuz.old
.....
```

## 4. Unmount encrypted logical volume

---

```
root@host-system:~# umount /mnt
```

```
root@host-system:~# lvscan
```

```
ACTIVE          '/dev/disk-system/root' [457.74 GiB] inherit
ACTIVE          '/dev/disk-system/swap_1' [7.78 GiB] inherit
ACTIVE          '/dev/host-system/root' [231.03 GiB] inherit
ACTIVE          '/dev/host-system/swap_1' [7.20 GiB] inherit
```

```
root@host-system:~# lvchange -a n disk-system
```

```
root@host-system:~# lvscan
```

```
inactive      '/dev/disk-system/root' [457.74 GiB] inherit
inactive      '/dev/disk-system/swap_1' [7.78 GiB] inherit
ACTIVE        '/dev/host-system/root' [231.03 GiB] inherit
ACTIVE        '/dev/host-system/swap_1' [7.20 GiB] inherit
```

```
root@host-system:~# cryptsetup luksClose sdb5_crypt
```

```
root@host-system:~# lvscan
```

```
ACTIVE        '/dev/host-system/root' [231.03 GiB] inherit
ACTIVE        '/dev/host-system/swap_1' [7.20 GiB] inherit
.....
```