

### RAID Levels

RAID 0	<b>Stripes</b> data evenly across two or more disks.
RAID 1	<b>Mirrors</b> data on two or more disks.
RAID 2	Rarely used, Bit-level striping with Hamming code for error correction.
RAID 3	Rarely used, byte-level striping with a dedicated parity.
RAID 4	Block-level striping with <b>dedicated parity</b> .
RAID 5	Block-level striping with <b>distributed parity</b> .
RAID 6	Block-level striping with <b>double distributed parity</b> .

### Nested RAID Levels

Number	Description	Efficiency
RAID 01	Block-level striping, and mirroring without parity	1/stripes
RAID 10	Mirroring without parity, and block-level striping	stripes/n
RAID 50	Block-level striping with distributed parity, and block-level striping	(1-stripes)/n
RAID 60	Block-level striping with double distributed parity, and block-level striping	(1-2*stripes)/n

### Formatting Disks for Use with mdadm

#### DISCLAIMER: PROCEED WITH CAUTION.

MAKE SURE YOU KNOW WHAT DISK YOU ARE OPERATING ON. IT IS VERY EASY TO DO IRREVOCABLE DAMAGE TO YOUR SYSTEM IF YOU DON'T.

#### 0. Figure out disk location in the file system:

```
lsblk -o name,size,fstype,type,mountpoint
```

#### 1. Formatting with fdisk

```
sudo fdisk /dev/sdx
```

#### 2. Navigatng fdisk: just press the following keys when prompted to create new linux RAID type primary partition

n, p, 1, Enter, Enter, t, fd, w

#### 3. Repeat steps 1 and 2 for each disk that will be included in new array

```
sudo fdisk /dev/sdy
```

n, p, 1, Enter, Enter, t, fd, w

### Creating RAID arrays

#### Create a mirrored array

```
mdadm --create /dev/md0 --level=1 /dev/sdx1 /dev/sdy1
```

### Assembling RAID arrays

#### Assemble an existing array

```
mdadm --assemble /dev/md0 /dev/sdx1 /dev/sdy1
```

```
mdadm --scan --assemble --uuid=<UUID>
```

### Resetting Existing RAID Devices

#### Find the active arrays

```
cat /proc/mdstat
```

#### Unmount the array

```
sudo umount /dev/md0
```

#### Stop and remove the array

```
mdadm --stop /dev/md0
```

```
mdadm --remove /dev/md0
```

#### Find the devices used to build the array

```
lsblk -o name,fstype,mountpoint
```

#### Zero out the respective superblocks

```
sudo mdadm --zero-superblock /dev/sdx
```

```
sudo mdadm --zero-superblock /dev/sdy
```

#### Remove persistent references to the array

```
sudo nano /etc/fstab
```

Comment out or remove the reference to the array.

```
# /dev/md0 /mnt/md0 ext4 defaults,nofail,discard 0 0
```

In `/etc/mdadm/mdadm.conf` comment out or remove the array reference

```
sudo nano /etc/mdadm/mdadm.conf
```

Comment out the reference

```
# ARRAY /dev/md0 metadata=1.2 name=mdadmwrite:0
```

```
UUID=xxxx
```

### Citations

[https://en.wikipedia.org/wiki/Standard\\_RAID\\_levels](https://en.wikipedia.org/wiki/Standard_RAID_levels)

[https://en.wikipedia.org/wiki/Nested\\_RAID\\_levels](https://en.wikipedia.org/wiki/Nested_RAID_levels)

<https://www.digitalocean.com/community/tutorials/an-introduction-to-raid-terminology-and-concepts>

<https://www.digitalocean.com/community/tutorials/how-to-manage-raid-arrays-with-mdadm-on-ubuntu-16-04>

