Linux RAID with mdadm Cheat Sheet

by James Draper (drapja) via cheatography.com/33530/cs/17725/

RAID Levels

RAID 0	**Stripes** data evenly across two or more disks.
RAID 1	**Mirrors** 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 **dedicated parity**.
RAID 5	Block-level striping with **distributed parity**.
RAID 6	Block-level striping with **double distributed parity**.

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-str-ipes)/n
RAID 60	Block-level striping with double distributed parity, and block-level striping	(1-2*stri-pes)/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,s ize ,fs typ e,t ype ,mo unt point
```

1. Formatting with fdisk

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

2. Navigatng fdisk: just press the following keys when promted 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>
```

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Published 31st October, 2018.
Last updated 1st November, 2018.

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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,f sty pe, mou ntpoint
```

Zero out the respective superblocks

```
sudo mdadm --zero -su per block /dev/sdx
```

```
sudo mdadm --zero -su per block /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/m dad m/m dad m.conf` comment out or remove the array reference

```
sudo nano /etc/m dad m/m dad m.conf
```

Comment out the reference

```
# ARRAY /dev/md0 metada ta=1.2 name=m dad mwr ite:0 UUID=
xxxx
```

Citations

https://en.wikipedia.org/wiki/Standard_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

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