GNU GRUB  version 2.02~beta2-36ubuntu3.7

*Run Ubuntu - persistent live
Try Ubuntu without installing
Install Ubuntu
OEM install (for manufacturers)
Check disc for defects

Use the ↑ and ↓ keys to select which entry is highlighted. Press enter to boot the selected OS, 'e' to edit the commands before booting or 'c' for a command-line.
root@ubuntu:/etc/mdadm# echo "Create a new raid array"

Create a new raid array

root@ubuntu:/etc/mdadm# mdadm --create --verbose /dev/md2 --level=1 /dev/sda /dev/sdc
mdadm: no raid-devices specified.

root@ubuntu:/etc/mdadm# mdadm --create --verbose /dev/md2 --level=1 -n2 /dev/sda /dev/sdc

/dev/sda appears to contain an ext2fs file system
size=20971520K mtime=Tue Jan 31 17:22:23 2017
mdadm: Note: this array has metadata at the start and may not be suitable as a boot device. If you plan to store '/boot' on this device please ensure that your boot-loader understands md/v1.x metadata, or use --metadata=0.90

/dev/sdc appears to contain an ext2fs file system
size=488383620K mtime=Tue Jan 31 18:22:48 2017
mdadm: size set to 488255488K
mdadm: automatically enabling write-intent bitmap on large array

Continue creating array? y

mdadm: Defaulting to version 1.2 metadata
mdadm: array /dev/md2 started.

root@ubuntu:/etc/mdadm#
root@ubuntu:/etc/mdadm# echo "Note that created a RAID level ONE array"
Note that created a RAID level ONE array
root@ubuntu:/etc/mdadm#
```
root@ubuntu:/etc/mdadm# cat /proc/mdstat
Personalities : [raid0] [raid6] [raid5] [raid4] [raid1]
md2 : active raid1 sdc[1] sda[0]
    488255488 blocks super 1.2 [2/2] [UU]
    [>....................] resync = 0.8% (4208832/488255488) finish=57.5min
    speed=140294K/sec
    bitmap: 4/4 pages [16KB], 65536KB chunk

unused devices: <none>
[<user input>]
```

ls /dev/md
md0  md1  md2

Create a filesystem on the array

mkfs.ext4 /dev/md2
mke2fs 1.42.13 (17-May-2015)
/dev/md2 contains a ext4 file system
last mounted on Tue Jan 31 22:19:21 2017

Proceed anyway? (y,n) y
Creating filesystem with 122063872 4k blocks and 30523392 inodes
Filesystem UUID: fd68a415-2d1c-45e8-87b8-ba2ec4f1a83d
Superblock backups stored on blocks:
  32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
  4096000, 7962624, 11239424, 20480000, 23887872, 71663616, 78675968,
  102400000

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done

ls /dev/md
root@ubuntu:~# pwd
/home/joe
root@ubuntu:~# ls
dmraid.isw mirror raid5 stripe
root@ubuntu:~# mount /dev/md
md0  md1  md2
root@ubuntu:~# mount /dev/md2 mirror/
root@ubuntu:~#
<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>udev</td>
<td>5.9G</td>
<td>0</td>
<td>5.9G</td>
<td>0%</td>
<td>/dev</td>
</tr>
<tr>
<td>tmpfs</td>
<td>1.2G</td>
<td>9.3M</td>
<td>1.2G</td>
<td>1%</td>
<td>/run</td>
</tr>
<tr>
<td>/dev/sde4</td>
<td>1.5G</td>
<td>1.5G</td>
<td>0</td>
<td>100%</td>
<td>/cdrom</td>
</tr>
<tr>
<td>/dev/loop0</td>
<td>1.4G</td>
<td>1.4G</td>
<td>0</td>
<td>100%</td>
<td>/rofs</td>
</tr>
<tr>
<td>/cow</td>
<td>3.6G</td>
<td>167M</td>
<td>3.2G</td>
<td>5%</td>
<td>/</td>
</tr>
<tr>
<td>tmpfs</td>
<td>5.9G</td>
<td>112K</td>
<td>5.9G</td>
<td>1%</td>
<td>/dev/shm</td>
</tr>
<tr>
<td>tmpfs</td>
<td>5.0M</td>
<td>4.0K</td>
<td>5.0M</td>
<td>1%</td>
<td>/run/lock</td>
</tr>
<tr>
<td>tmpfs</td>
<td>5.9G</td>
<td>0</td>
<td>5.9G</td>
<td>0%</td>
<td>/sys/fs/cgroup</td>
</tr>
<tr>
<td>tmpfs</td>
<td>5.9G</td>
<td>4.0K</td>
<td>5.9G</td>
<td>1%</td>
<td>/tmp</td>
</tr>
<tr>
<td>tmpfs</td>
<td>1.2G</td>
<td>48K</td>
<td>1.2G</td>
<td>1%</td>
<td>/run/user/999</td>
</tr>
<tr>
<td>/dev/sde5</td>
<td>3.6G</td>
<td>167M</td>
<td>3.2G</td>
<td>5%</td>
<td>/media/ubuntu/casper-rw</td>
</tr>
<tr>
<td>/dev/sde3</td>
<td>121M</td>
<td>54M</td>
<td>67M</td>
<td>45%</td>
<td>/media/ubuntu/ubu1604164</td>
</tr>
<tr>
<td>/dev/sde1</td>
<td>2.4G</td>
<td>13M</td>
<td>2.4G</td>
<td>1%</td>
<td>/media/ubuntu/usbdata</td>
</tr>
<tr>
<td>tmpfs</td>
<td>1.2G</td>
<td>0</td>
<td>1.2G</td>
<td>0%</td>
<td>/run/user/1000</td>
</tr>
<tr>
<td>/dev/md2</td>
<td>459G</td>
<td>70M</td>
<td>435G</td>
<td>1%</td>
<td>/home/joe/mirror</td>
</tr>
</tbody>
</table>
Note that since we are mirroring 2x500 G disks, my capacity is about 500 G
echo "run some benchmark tests using the gnome-disks tool"
run some benchmark tests using the gnome-disks tool
joe@yavin:~$ echo "Your screens will look a little different"
Your screens will look a little different
joe@yavin:~$
500 GB RAID-1 Array
/dev/md2

Size  500 GB (499,973,619,712 bytes)

Volumes

Filesystem
500 GB Ext4

Size  500 GB — 492 GB free (1.6% full)

Device  /dev/md2

Contents  Ext4 (version 1.0) — Mounted at /home/joe/mirror
500 GB RAID-1 Array
/dev/md2

Size 500 GB (499,973,619,712 bytes)

Volumes

Filesystem
500 GB Ext4

Size 500 GB — 492 GB free (1.6% full)
Device /dev/md2
Contents Ext4 (version 1.0) — Mounted at /home/joe/mirror
500 GB RAID-1 Array
/dev/md2

Size 500 GB (499,973,619,712 bytes)

Benchmark

Disk or Device 2 — 500 GB RAID-1 Array (/dev/md2)
Last Benchmarked No benchmark data available
Sample Size -
Average Read Rate -
Average Write Rate -
Average Access Time -

Start Benchmark...
Benchmarking involves measuring the transfer rate on various areas of the device as well as measuring how long it takes to seek from one random area to another. Please back up important data before using the write benchmark.

**Transfer Rate**

- Number of Samples: **100**
- Sample Size (MiB): **10**
- Perform write-benchmark

**Access Time**

- Number of Samples: **1000**

[Button] Start Benchmarking...
Disk or Device: 2 — 500 GB RAID-1 Array (/dev/md2)
Last Benchmarked: Measuring transfer rate (24.0% complete)...
Sample Size: 10.0 MiB (10,485,760 bytes)
Average Read Rate: 128.5 MB/s (24 samples)
Average Write Rate: 56.2 MB/s (23 samples)
Average Access Time: -

Abort Benchmark  Close
joe@ubuntu:~$ echo "How to clean up ARRAY when you are done, DESTROYS THINGS"
How to clean up ARRAY when you are done, DESTROYS THINGS
joe@ubuntu:~$
joe@ubuntu:~$ sudo mdadm -QD /dev/md2
Used Dev Size: 488255488 (465.64 GiB 499.97 GB)
Raid Devices: 2
Total Devices: 2
  Persistence: Superblock is persistent

Intent Bitmap: Internal

Update Time: Tue Jan 31 22:38:13 2017
  State: active, resyncing
Active Devices: 2
Working Devices: 2
Failed Devices: 0
Spare Devices: 0

Resync Status: 11% complete
  Name: ubuntu:2 (local to host ubuntu)
  UUID: 57cdb6b9:4ea0e1f9:7a1bef08:51aa6249
  Events: 111

  Number  Major  Minor  RaidDevice  State
  0       8      0      0          active sync /dev/sda
  1       8      32     1          active sync /dev/sdc

joe@ubuntu:~$
joe@ubuntu:~$ echo "Mine isn't even done resyncing yet... oh well!"
Mine isn't even done resyncing yet... oh well!
joe@ubuntu:~$ sudo mdadm --stop /dev/md2
mdadm: stopped /dev/md2
joe@ubuntu:~$ sudo mdadm --remove /dev/md2
joe@ubuntu:~$ sudo mdadm --zero-superblock /dev/sd[abcd]
mdadm: Unrecognised md component device - /dev/sdb
mdadm: Unrecognised md component device - /dev/sdd
joe@ubuntu:~$
joe@ubuntu:~$ sudo mdadm -QD /dev/md2
/dev/md2:
    Version:
    Raid Level: raid0
    Total Devices: 0

    State: inactive

    Number  Major  Minor  RaidDevice
joe@ubuntu:~$
```
joe@ubuntu:~$ sudo mdadm -QD /dev/md2
/dev/md2:
    Version:
    Raid Level: raid0
    Total Devices: 0

    State: inactive

Number Major Minor RaidDevice
```

```
joe@ubuntu:~$ cat /proc/mdstat
Personalities: [raid0] [raid6] [raid5] [raid4] [raid1]
unused devices: <none>
joe@ubuntu:~$
```