

## Adding & Replacing Drives

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This is a guide on how to add/replace a disk on a Software RAID. In the event of a missing drive or a single drive failure. You can follow this guide as reference to replace/add a new disk and put your RAID configuration back in a healthy state.

Status of current RAID can be obtained using:

```
root@Software-Raid-Recovery-Test:~# cat /proc/mdstat
```

A sample output would be similar to:

```
Personalities : [raid1] [linear] [multipath] [raid0] [raid6] [raid5] [raid4] [raid10]
md126 : active raid1 sdb31 sda3[0]
      466720576 blocks super 1.2 [2/1] [U_]
      bitmap: 3/4 pages [12KB], 65536KB chunk
md127 : active (auto-read-only) raid1 sda2[0] sdb2[1]
      1995776 blocks super 1.2 [2/2] [UU]

unused devices: <none>
```

You can also review messages in syslog:

```
root@Software-Raid-Recovery-Test:~# tail /var/log/syslog
```

```
Mar  9 05:17:09 Software-Raid-Recovery-Test mdadm[1557]: Fail event detected on md
device /dev/md126, component device /dev/sdb3Mar  9 05:17:09 Software-Raid-
Recovery-Test kernel: [75455.286573] md/raid1:md126: Disk failure on sdb3, disabling
device.
```

```
Mar 9 05:17:09 Software-Raid-Recovery-Test kernel: [75455.286573] md/raid1:md126:
Operation continuing on 1 devices.
Mar 9 05:17:09 Software-Raid-Recovery-Test kernel: [75455.300175] RAID1 conf
printout:
Mar 9 05:17:09 Software-Raid-Recovery-Test kernel: [75455.300181] --- wd:1 rd:2
Mar 9 05:17:09 Software-Raid-Recovery-Test kernel: [75455.300185] disk 0, wo:0,
o:1, dev:sda3
Mar 9 05:17:09 Software-Raid-Recovery-Test kernel: [75455.300188] disk 1, wo:1,o:0,
dev:sdb3
Mar 9 05:17:09 Software-Raid-Recovery-Test kernel: [75455.323552] RAID1 conf
printout:
Mar 9 05:17:09 Software-Raid-Recovery-Test kernel: [75455.323557] --- wd:1 rd:2
Mar 9 05:17:09 Software-Raid-Recovery-Test kernel: [75455.323561] disk 0, wo:0,
o:1, dev:sda3
```

## Remove the device from RAID

```
root@Software-Raid-Recovery-Test:~# mdadm --remove /dev/md126 /dev/sdb3
```

```
mdadm: hot removed /dev/sdb3 from /dev/md126
```

```
unused devices: <none>
```

You can see `/dev/sdb2` is not seen in `/proc/mdstat`

Also if we check `mdadm --detail` command we can see that `/dev/sdb3` has been removed.

```
root@Software-Raid-Recovery-Test:~# mdadm --detail /dev/md126
```

```
/dev/md126:
```

```
Version : 1.2
```

```
Creation Time : Wed Mar 8 08:15:07 2017
```

```
Raid Level : raid1
```

```
Array Size : 466720576 (445.10 GiB 477.92 GB)
```

```
Used Dev Size : 466720576 (445.10 GiB 477.92 GB)
```

```
Raid Devices : 2
```

```
Total Devices : 1
```

```
Persistence : Superblock is persistent
```

```
Intent Bitmap : Internal
```

```
Update Time : Thu Mar 9 05:43:10 2017
```

```
State : clean, degraded
```

```
Active Devices : 1
Working Devices : 1
Failed Devices : 0
Spare Devices : 0
    Name : 232491c29715:ROOT
    UUID : 61f43f57:7fe803b5:61156f1d:c2e7ea0d
    Events : 588
Number  Major  Minor  RaidDevice State
   0     8     3     0   active sync  /dev/sda3
   2     0     0     2   removed
```

Add a new device:

```
root@Software-Raid-Recovery-Test:~# mdadm --add /dev/md126 /dev/sdb3
```

```
mdadm: re-added /dev/sdb3
```

The partition should now be added and you can view the status of the Raid Config on the commands below.

```
root@Software-Raid-Recovery-Test:~# cat /proc/mdstat
```

```
Personalities : [raid1] [linear] [multipath] [raid0] [raid6] [raid5] [raid4] [raid10]
md126 : active raid1 sdb3[1] sda3[0]
    466720576 blocks super 1.2 [2/2] [UU]
    bitmap: 3/4 pages [12KB], 65536KB chunk
md127 : active (auto-read-only) raid1 sda2[0] sdb2[1]
    1995776 blocks super 1.2 [2/2] [UU]

unused devices: <none>
```

```
root@Software-Raid-Recovery-Test:~# mdadm --detail /dev/md126
```

```
/dev/md126:
    Version : 1.2
    Creation Time : Wed Mar  8 08:15:07 2017
    Raid Level : raid1
    Array Size : 466720576 (445.10 GiB 477.92 GB)
    Used Dev Size : 466720576 (445.10 GiB 477.92 GB)
    Raid Devices : 2
```

Total Devices : 2  
Persistence : Superblock is persistent  
Intent Bitmap : Internal  
Update Time : Thu Mar 9 05:46:42 2017  
State : clean  
Active Devices : 2  
Working Devices : 2  
Failed Devices : 0  
Spare Devices : 0  
Name : 232491c29715:ROOT  
UUID : 61f43f57:7fe803b5:61156f1d:c2e7ea0d  
Events : 606

Number	Major	Minor	RaidDevice	State
0	8	3	0	active sync /dev/sda3
1	8	19	1	active sync /dev/sdb3

Once the new disk is added the RAID Configuration will automatically get re-build using mdadm utility.