

BTRFS

Creating array of disks

```
# ls /dev/sd*
```

```
/dev/sda
```

```
/dev/sda1
```

```
/dev/sda2
```

```
/dev/sda5
```

```
/dev/sdb    # NEW DISK
```

```
/dev/sdc    # NEW DISK
```

```
# mkfs.btrfs -f /dev/sdb /dev/sdc
```

```
# mkfs.btrfs -f -m raid1 -d raid0 /dev/sdb /dev/sdc
```

- This create automatically raid 0 on data, raid 1 on metadata, raid1 on system
- UUID is the same for /dev/sdb and /dev/sdc
- UUID can be use to mount the FS
- Second command define the metadata as raid 1 and data as raid0

```
root@debian-vm:/home/ilan# mkfs.btrfs /dev/sdb /dev/sdc
btrfs-progs v4.20.1
See http://btrfs.wiki.kernel.org for more information.

Label:                (null)
UUID:                 da443907-442e-42d8-a6fe-01bcfd20ce7c
Node size:            16384
Sector size:          4096
Filesystem size:      4.00GiB
Block group profiles:
  Data:                RAID0              409.50MiB
  Metadata:            RAID1              204.75MiB
  System:              RAID1              8.00MiB
SSD detected:         no
Incompat features:    extref, skinny-metadata
Number of devices:    2
Devices:
  ID     SIZE  PATH
  1      2.00GiB /dev/sdb
  2      2.00GiB /dev/sdc
```

btrfs filesystem show /dev/sdb

show basic information about the FS /dev/sdb and /dev/sdc. They have the same UUID but each one has it's own UUID_SUB

```
root@debian-vm:/home/ilan# btrfs filesystem show /dev/sdb
Label: none  uuid: da443907-442e-42d8-a6fe-01bcfd20ce7c
    Total devices 2 FS bytes used 128.00KiB
    devid    1 size 2.00GiB used 417.50MiB path /dev/sdb
    devid    2 size 2.00GiB used 417.50MiB path /dev/sdc

root@debian-vm:/home/ilan# btrfs filesystem show /dev/sdc
Label: none  uuid: da443907-442e-42d8-a6fe-01bcfd20ce7c
    Total devices 2 FS bytes used 128.00KiB
    devid    1 size 2.00GiB used 417.50MiB path /dev/sdb
    devid    2 size 2.00GiB used 417.50MiB path /dev/sdc

root@debian-vm:/home/ilan# /sbin/blkid /dev/sdb
/dev/sdb: UUID="da443907-442e-42d8-a6fe-01bcfd20ce7c" UUID_SUB="09b762ff-27d9-467f-9930-2562ff17071e" TYPE="btrfs"
root@debian-vm:/home/ilan#
root@debian-vm:/home/ilan# /sbin/blkid /dev/sdc
/dev/sdc: UUID="da443907-442e-42d8-a6fe-01bcfd20ce7c" UUID_SUB="8292ab72-3a99-4334-9384-45ffa2180b0b" TYPE="btrfs"
root@debian-vm:/home/ilan#
```

MOUNTING THE NEW FS:

mkdir /NAS

mount /dev/sdb /NAS

df -h - doesn't show the true\real value of the free space. Use this command:

btrfs filesystem df /NAS

is the correct way to show the actual free space

btrfs filesystem usage /NAS

Show more detail information about usage and free space

- Device size: 4GB
- Alocated: 835MB
- Unallocated: 3.18GB
- DATA is in RAID0, size 409MB, use 128KB
- METADATA is in RAID1, size 204MB, use 112KB
- SYSTEM is in RAID1, size 8MB, use 16KB
- UNALLOCATED: /dev/sdb and /dev/sdc 1.59GB each
- The DATA space will be increase (and compress) automatically when copying data on it

SNAPPER: managing snapshots tool

- Create\Delete snaps based on time
- Making snaps automatically before updating the system (apt upgrade)
- Restore particular files – not restore to whole snapshot

snapper -c nas create-config /NAS

- -c: config name
- cancel hourly snapping: "TIMELINE_CREATE = "no" in /etc/snapper/configs/nas

snapper -c nas create

- create new snapshot

snapper -c nas list

- list of snaps for 'nas' config

snapper -c nas create

- create new snap after deleting some files

snapper -c nas status 3..4

- compare backup 3 and 4

snapper -c nas undochange 3..4

- cancel changing between snap 3 and 4

snapper -c nas undochange 3..4 /NAS/file1

- cancel changing of file1 between snap 3 and 4

snapper -c nas diff 3..4 /NAS/file1

- show diff of file1 between snap3 and snap 4

snapper -c nas delete-config

- delete 'nas' config with the whole snapshots

Add device to RAID

btrfs device add -f /dev/sdx /NAS

- *-f force*
- *This does not enter the device to the raid*

btrfs fi balance start -dconvert=raid0 -mconvert=raid0 /NAS

- *balance add the device to the raid array*
- *-dconvert: -d for data (you can choose raid0, raid1, raid5, raid10)*
- *-mconvert: -m for metadata*

btrfs fi balance start /NAS

- *it will balance the raid if you suspect of something wrong*

SCRUB

btrfs scrub start /NAS

- *btrfs is a self healing FS. If btrfs see a problem it will automatically fix it*

btrfs scrub status /NAS

- *To see the status of scrub command (that run as a process in the background)*