

BTRFS as root filesystem

System overview

1. /dev/sda1 4.08GB ext4 "/" used 1.56GB, free 2.53GB
2. /dev/sda2 10.91GB extended
 1. /dev/sda5 524MB swap
 2. /dev/sda6 10.40GB ext4 "/home" 321MB used, 10.09GB free

Boot from live-cd

Btrfs support is heavily developed in Linux Kernel. So do not use old kernel.

I was using gparted-live-0.22.0-1-amd64.iso (NOTE: to match your existing system architecture (i586, amd64, etc)) Which contains:

1. Kernel 3.16.0-4-586
2. btrfs utils version 3.17

Update to kernel 4

Edit /etc/apt/sources and add sid release

```
apt-get update
apt-get install linux-image-amd64
apt-get install btrfs-tools
update-initramfs -u
```

- ERROR: Warning: /sbin/fsck.btrfs doesn't exist, can't install to initramfs, ignoring.
- EXPLANATION: "This is going to be changed back in the next version of btrfs-tools."
- SOLUTION: In -s /bin/fsck.btrfs /sbin/fsck.btrfs

Check btrfs-tools version

```
/bin/btrfs version
```

Converting dirs into subvolumes

To make backups, snapshots, moving much easier and faster, every directory you want to backup by snapshot should be a subvolume. Also root filesystem should be created in separate subvolume not in btrfs root.

To distinguish volumes from directories we will use @ character at beginning of subvolume name. This is Ubuntu naming convention for subvolumes.

Proposed subvolumes structure (where / is BTRFS root)

- /@
- /@home
- /@var

Mount BTRFS filesystem (BTRFS root) to /mnt/btrfs.

root

- take a snapshot of root volume. Name of snapshot is '@'
 - `btrfs subvolume snapshot /mnt/btrfs @`
- delete files on BTRFS root (/mnt/btrfs)
- make @ subvolume a default root
 - update fstab:

[/etc/fstab](#)

```
UUID=739e6086-d925-4bdb-94f5-26d8c10dc171 / btrfs
defaults,subvol=@
```

- OR
 - `get @ subvolume id btrfs subvolume list /mnt/btrfs`
 - set default subvolume to use when system is mounted `btrfs subvolume set-default 256 /mnt/btrfs`

subdirectories

- On BTRFS root create a new subvolume
 - `btrfs subvolume create /mnt/btrfs/@home`
- move files into the new subvolume as if it were a directory
 - `mv /mnt/btrfs/@/home/* /mnt/btrfs/@home/`
 - `cp --reflink` is much faster on BTRFS
- remove old directory
 - `rmdir /mnt/btrfs/@/home`
- update /etc/fstab to mount @home as /home

fstab

Do not use `errors=remount-ro` option which is not valid for BTRFS. Example working fstab file:

[/etc/fstab](#)

```
UUID=ed730508-753e-4a7f-ac1e-bf8646f7bd63 / btrfs
defaults,subvol=@,compress=no 0 0
UUID=ed730508-753e-4a7f-ac1e-bf8646f7bd63 /var btrfs
```

```
defaults,subvol=@var,compress=no          0    0
UUID=ed730508-753e-4a7f-ac1e-bf8646f7bd63 /var/log      btrfs
defaults,subvol=@varlog,compress=no        0    0
UUID=ed730508-753e-4a7f-ac1e-bf8646f7bd63 /home         btrfs
defaults,subvol=@home,compress=no          0    0
UUID=ed730508-753e-4a7f-ac1e-bf8646f7bd63 /mnt/btrfs    btrfs
noauto,defaults,subvol=id=5,compress=no    0    0
```

To prevent systemd to halt system during startup if device is not found (nofail and x-systemd.device-timeout):

[/etc/fstab](#)

```
UUID=<the_device_uuid> /mount/point btrfs nofail,x-systemd.device-
timeout=10,noatime,compress=lzo,autodefrag 0 0
```

NOTE: do not use autodefrag - it consumes lots of cpu

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Last update: **2017/01/18 21:41**

