Mounting RAID10 using `parted`.

GUID Partition Table (GPT) is a standard for the layout of the partition table on a physical hard disk, using globally unique identifiers (GUID). Although it forms a part of the Unified Extensible Firmware Interface (UEFI) standard (Unified EFI Forum proposed replacement for the PC BIOS), it is also used on some BIOS systems because of the limitations of master boot record (MBR) partition tables, which use 32 bits for storing logical block addresses (LBA) and size information.

Below is the image of how partition is divided. (courtesy from wikipedia)

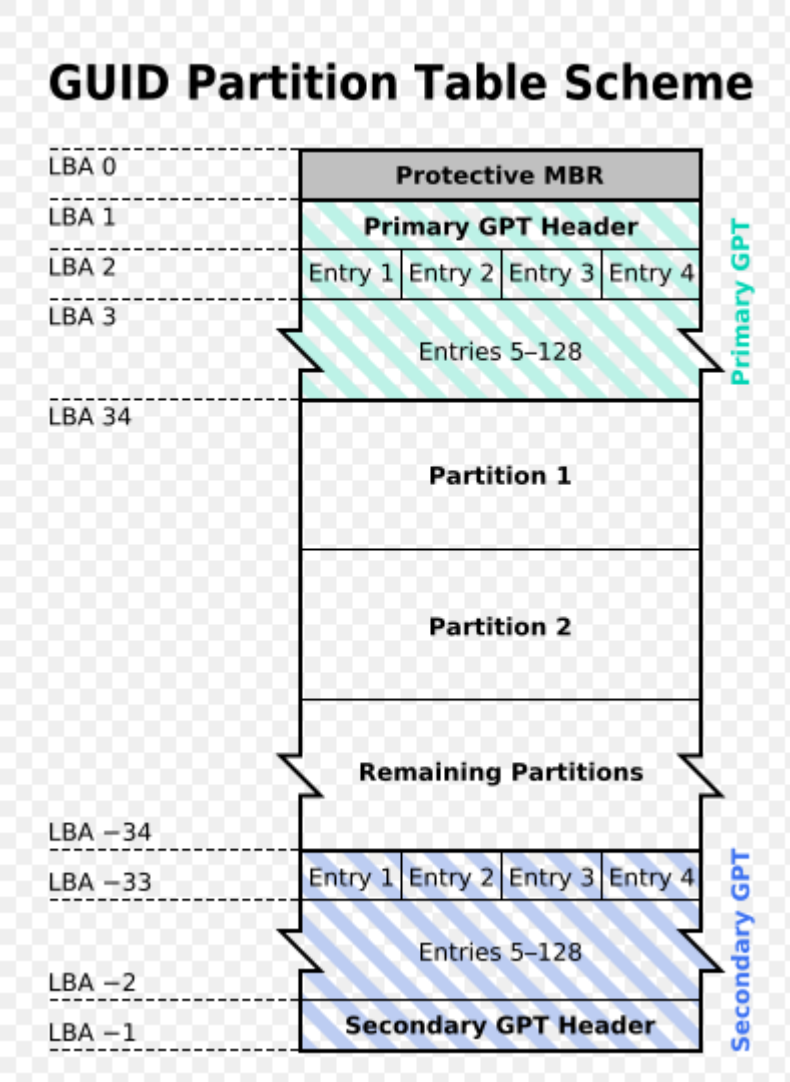

Figure 1: image

Logging into the server

First lets check the `fdisk` partition to see how much space we have on the server.

```
Using username "root".
root@192.168.100.44's password:
Last login: Wed Sep 30 13:22:13 2015 from 192.168.100.2
[root@my-server ~]# fdisk -l /dev/sdb

WARNING: GPT (GUID Partition Table) detected on '/dev/sdb'!
                                    The util fdisk doesn't support GPT. Use GNU Parted.


Disk /dev/sdb: 13196.0 GB, 13196018581504 bytes
255 heads, 63 sectors/track, 1604324 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1               1      267350  2147483647+  ee  GPT
```

Checking disk.

```
[root@my-server ~]# df -h
Filesystem            Size  Used Avail Use% Mounted on
/dev/mapper/VG-LV_ROOT
                       96G  1.9G   90G   2% /
tmpfs                 127G     0  127G   0% /dev/shm
/dev/sda2             976M   32M  894M   4% /boot
/dev/sda1            1022M  276K 1022M   1% /boot/efi
/dev/mapper/VG-LV_HOME
                      976M  1.3M  924M   1% /home
/dev/mapper/VG-LV_VAR
                      998G  1.5G  946G   1% /var
```

Let us start partitioning the RAID on the server.

```
[root@my-server ~]# parted /dev/sdb
GNU Parted 2.1
Using /dev/sdb
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) print
Model: DELL PERC H730 Mini (scsi)
Disk /dev/sdb: 13196GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt

Number  Start  End  Size  File system  Name  Flags

(parted) mklabel gpt
Warning: The existing disk label on /dev/sdb will be destroyed and
                              all data on this disk will be lost. Do you want to continue?
```

```
Yes/No? Yes
(parted) unit GB
(parted) mkpart primary 1MB 13196GB
(parted) print
Model: DELL PERC H730 Mini (scsi)
Disk /dev/sdb: 13196GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt

Number  Start   End      Size     File system  Name     Flags
 1      0.00GB  13196GB  13196GB  ext4         primary

(parted) quit
```

partition is created. Now we are going to format it using `ext4`.

```
[root@my-server ~]# mkfs.ext4 /dev/sdb1
mke2fs 1.41.12 (17-May-2010)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
732422144 inodes, 2929687296 blocks
146484364 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=4294967296
89407 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
        4096000, 7962624, 11239424, 20480000, 23887872, 71663616, 78675968,
        102400000, 214990848, 512000000, 550731776, 644972544, 1934917632,
        2560000000

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

This filesystem will be automatically checked every 22 mounts or
180 days, whichever comes first.  Use tune2fs -c or -i to override.
[root@my-server ~]#
[root@my-server ~]#
```

Checking for the partition is ready. Now we need to mount it.

```
[root@my-server ~]# lsblk
NAME                  MAJ:MIN RM    SIZE RO TYPE MOUNTPOINT
sda                     8:0    0    1.1T  0 disk
 sda1                   8:1    0      1G  0 part /boot/efi
 sda2                   8:2    0      1G  0 part /boot
 sda3                   8:3    0    1.1T  0 part
   VG-LV_ROOT (dm-0) 253:0    0   97.7G  0 lvm  /
```

```
   VG-LV_SWAP (dm-1) 253:1    0      3G  0 lvm  [SWAP]
   VG-LV_VAR (dm-2)  253:2    0 1013.6G  0 lvm  /var
   VG-LV_HOME (dm-3) 253:3    0      1G  0 lvm  /home
sdb                    8:16   0     12T  0 disk
 sdb1                  8:17   0     12T  0 part /data
```

Creating a mount point.

```
[root@my-server ~]# mkdir /data
```

Updating `/etc/fstab`. Add the below line to `/etc/fstab`.

```
#-------------------------------------------------------------
# drive   |  dir  | fs-type  |  options     | dump  |  pass
#-------------------------------------------------------------
/dev/sdb1   /data   ext4        defaults        0       0
```

Here are more details about what each columns mean.

1. **file system** : The partition or storage device to be mounted.
2. **dir** : The mountpoint where is mounted to.
3. **fs-type** : The file system type of the partition or storage device to be mounted. Many different file systems are supported: `ext2`, `ext3`, `ext4`, `btrfs`, `reiserfs`, `xfs`, `jfs`, `smbfs`, `iso9660`, `vfat`, `ntfs`, `swap` and `auto`. The auto type lets the mount command guess what type of file system is used. This is useful for optical media (CD/DVD).
4. **options** : Mount options of the filesystem to be used. See the mount man page. Please note that some options are specific to filesystems; to discover them see below in the aforementioned mount man page.
5. **dump** : Used by the dump utility to decide when to make a backup. Dump checks the entry and uses the number to decide if a file system should be backed up. Possible entries are 0 and 1. If 0, dump will ignore the file system; if 1, dump will make a backup. Most users will not have dump installed, so they should put 0 for the dump entry.
6. **pass** : Used by `fsck` to decide which order filesystems are to be checked. Possible entries are 0, 1 and 2. The root file system should have the highest priority 1 (unless its type is `btrfs`, in which case this field should be 0) - all other file systems you want to have checked should have a 2. File systems with a value 0 will not be checked by the `fsck` utility.

Here is how the contents look like.

```
[root@my-server ~]# cat /etc/fstab
#
# /etc/fstab
# Created by anaconda on Tue May 19 15:57:32 2015
#
# Accessible filesystems, by reference, are maintained under '/dev/disk'
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info
#
/dev/mapper/VG-LV_ROOT  /                       ext4    defaults        1 1
UUID=4185b123-5123-45ca-b123-de6d1da123e2 /boot                   ext4    defaults        1 2
UUID=EB97-DBDC          /boot/efi               vfat    umask=0077,shortname=winnt 0 0
/dev/mapper/VG-LV_HOME  /home                   ext4    defaults        1 2
/dev/mapper/VG-LV_VAR   /var                    ext4    defaults        1 2
/dev/mapper/VG-LV_SWAP  swap                    swap    defaults        0 0
tmpfs                   /dev/shm                tmpfs   defaults        0 0
```

```
devpts                  /dev/pts                devpts  gid=5,mode=620  0 0
sysfs                   /sys                    sysfs   defaults        0 0
proc                    /proc                   proc    defaults        0 0
/dev/sdb1               /data                   ext4    defaults        0 0
[root@my-server ~]#
```

Executing `mount -a` to load the `fstab` entries.

```
[root@my-server ~]# mount -a
```

Display mount entries.

```
[root@my-server ~]# mount
/dev/mapper/VG-LV_ROOT on / type ext4 (rw)
proc on /proc type proc (rw)
sysfs on /sys type sysfs (rw)
devpts on /dev/pts type devpts (rw,gid=5,mode=620)
tmpfs on /dev/shm type tmpfs (rw)
/dev/sda2 on /boot type ext4 (rw)
/dev/sda1 on /boot/efi type vfat (rw,umask=0077,shortname=winnt)
/dev/mapper/VG-LV_HOME on /home type ext4 (rw)
/dev/mapper/VG-LV_VAR on /var type ext4 (rw)
none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)
/dev/sdb1 on /data type ext4 (rw)
```

Checking for directory mounting.

```
[root@my-server ~]# df -h
Filesystem            Size  Used Avail Use% Mounted on
/dev/mapper/VG-LV_ROOT
                       96G  1.9G   90G   2% /
tmpfs                 127G     0  127G   0% /dev/shm
/dev/sda2             976M   32M  894M   4% /boot
/dev/sda1            1022M  276K 1022M   1% /boot/efi
/dev/mapper/VG-LV_HOME
                      976M  1.3M  924M   1% /home
/dev/mapper/VG-LV_VAR
                      998G  1.5G  946G   1% /var
/dev/sdb1              13T   31M   13T   1% /data
[root@my-server ~]#
```

Now we are all good.

Important Links :

Redhat

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