Menaxhimi i disqeve ne Linux

Fjalor I shkurtimeve

LVM- Logical Volume Manager (menaxhuesi I volumeve logjike)
PV- Physical disk (disk fizik)
VG – Volume group (volume e grupeve)
LG – Logic volume (volum logjik)

Si te krijojme LVM partition ne Linux

LVM (Logical Volume Manager) rekomandohet per te menaxhuardisqet ose volumet ne sistemin Linux. Nje nga avantazhet e LVM eshte mundesia qe krijon per zgjerimin e particioneve (extend) ne menyre direkte

Me poshte do te shikojme sit e krijojme LVM partitions ne Linux hap pas hapi.

1- Identifikimi I diskut dhe krijimi i vëllimit fizik (PV)

Login ne Linux system dhe kerko per disk te ri ose per disk te lire.

Run 'sudo fdisk -l' command

```
$ sudo fdisk -l
```

Output

```
Disk /dev/sda: 20 GiB, 21474836480 bytes, 41943040 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x9ce865e4

Device     Boot   Start      End  Sectors  Size Id Type
/dev/sda1  *       2048  1050623  1048576  512M  b W95 FAT32
/dev/sda2       1052670 41940991 40888322 19.5G  5 Extended
/dev/sda5       1052672 41940991 40888320 19.5G 83 Linux


Disk /dev/sdb: 10 GiB, 10737418240 bytes, 20971520 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes


Disk /dev/loop8: 64.79 MiB, 67915776 bytes, 132648 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes


Disk /dev/loop9: 50.98 MiB, 53432320 bytes, 104360 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
```

Sic duket kemi nje disk 10GB(/dev/sdb) I cili nuk ka particione. Le te krijojme nje volum fizik, physical volume (pv), duke perdorur komanden e meposhtme

Sintaksa:

$ sudo pvcreate <disk1> <disk2> ... <diskN>

```
$ sudo pvcreate /dev/sdb

Physical volume "/dev/sdb" successfully created.
```

```
$
```

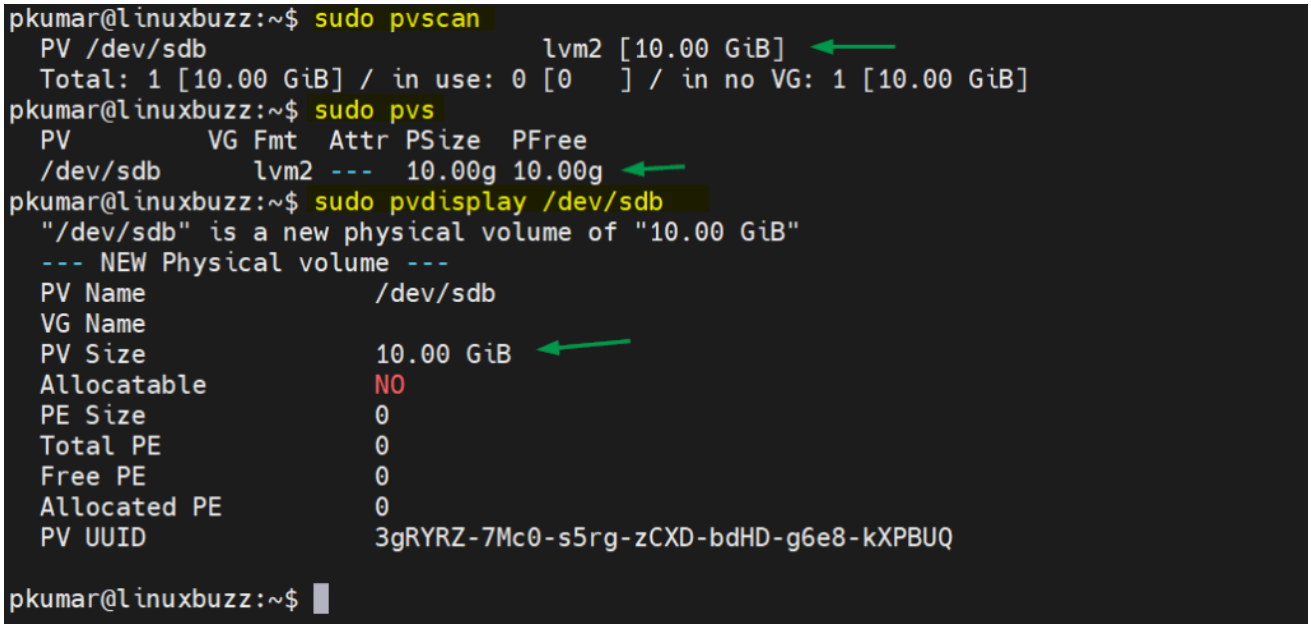
Shenim: Ne rast se pvcreate nuk eshte e disponueshme ne Ubuntu atehere instalo paketen lvm2 duke perdorur komanden

```
$ sudo apt install lvm2 -y
```

Verifiko PV status duke ekzekutuar komandat

```
$ sudo pvscan

Or

$ sudo pvs

Or

$ sudo pvdisplay /dev/sdb
```

Outputi I komandave te mesiperme



2- Krijimi i Volume Group (VG)

Krijimi I volume group (vg) duke shtuar volumin fizik (pv) ne volumin e grupit (vg).

Sintaksa:

$ sudo vgcreate <vg_name> <pv> <physical volume>

Ne rastin tone komanda do te ishte

```
$ sudo vgcreate vg01 /dev/sdb

  Volume group "vg01" successfully created

$
```

Verifikimi I statusit te volume group nepermjet komandave

```
$ sudo vgscan
```

```
Or

$ sudo vgs

Or

$ sudo vgdisplay vg01
```

Output

```
pkumar@linuxbuzz:~$ sudo vgscan
  Found volume group "vg01" using metadata type lvm2
pkumar@linuxbuzz:~$ sudo vgs
  VG   #PV #LV #SN Attr   VSize   VFree
  vg01   1   0   0 wz--n- <10.00g <10.00g
pkumar@linuxbuzz:~$ sudo vgdisplay vg01
  --- Volume group ---
  VG Name               vg01
  System ID
  Format                lvm2
  Metadata Areas        1
  Metadata Sequence No  1
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                0
  Open LV               0
  Max PV                0
  Cur PV                1
  Act PV                1
  VG Size               <10.00 GiB
  PE Size               4.00 MiB
  Total PE              2559
  Alloc PE / Size       0 / 0
  Free  PE / Size       2559 / <10.00 GiB
  VG UUID               ccP1lS-e96W-Swia-QjYt-lCfJ-aLgy-6yTGzZ

pkumar@linuxbuzz:~$
```

Figura e mesiperme tregon se volume group vg01 u krijua me sukses dhe madhesia e cdo zgjatimi eshte 4 MB (kjo eshte madhesia standard, default size)

3- Krijimi I Volumeve Logjike (LV) nga Volume Group (VG)

Per te krijuar volume logjike (lv) nga volume I grupit (vg),perdor kimanden
Sintaksa:
$ sudo lvcreate -L <Size> -n <lv_name> <vg_name>
Ne rastin tone do te krijojme nje lv me madhesi 10GB me emertimin ‘lv01’.

```
$ sudo lvcreate -L 9.99G -n lv01 vg01

  Rounding up size to full physical extent 9.99 GiB

  Logical volume "lv01" created.

$
```

Verifiko statusin e volumit logjik LV duke perdorur komanden

sudo lv scan

```
pkumar@linuxbuzz:~$ sudo lvscan
  ACTIVE            '/dev/vg01/lv01' [9.99 GiB] inherit
pkumar@linuxbuzz:~$ sudo lvs
  LV   VG   Attr       LSize Pool Origin Data%  Meta%  Move Log Cpy%Sync Convert
  lv01 vg01 -wi-a----- 9.99g
pkumar@linuxbuzz:~$ sudo lvdisplay /dev/vg01/lv01
  --- Logical volume ---
  LV Path                /dev/vg01/lv01
  LV Name                lv01
  VG Name                vg01
  LV UUID                ifSSeP-M6ZH-0ziV-kKoc-5ByD-sxEE-QAkx2L
  LV Write Access        read/write
  LV Creation host, time linuxbuzz.example.lan, 2021-12-16 08:41:36 +0530
  LV Status              available
  # open                 0
  LV Size                9.99 GiB
  Current LE             2558
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     256
  Block device           253:0

pkumar@linuxbuzz:~$
```

Figura e mesiperme tregon se lv u krijua me sukses. Per ta perdorur kete particion lvm ne fillim duhet ta formatojme

4- Formatimi i Logical Volume Management LVM

Per te formatuar LVM partition mund te perdorim komanden mkfs.
Ne rastin e meposhtem kemi formatuar lvm partition me 'ext4'
file system.

Syntax:
$ sudo mkfs.ext4 <LV_Path>

```
$ sudo mkfs.ext4 /dev/vg01/lv01
```

Output:

```
pkumar@linuxbuzz:~$ sudo mkfs.ext4 /dev/vg01/lv01
mke2fs 1.45.5 (07-Jan-2020)
Creating filesystem with 2619392 4k blocks and 655360 inodes
Filesystem UUID: 813ecc5d-8e81-43dc-b8d6-1258ac867a76
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632

Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done

pkumar@linuxbuzz:~$
```

Figura e mesiperme tregon se lvm eshte formatuar me sukses me ext4 filesystem

Per te aksesuar kete file system krijojme nje pike ngarkimi (mount point) duke perdorur komanden mkdir dhe duke e ngarkuar ate.

```
$ sudo mkdir /data
```

```
$ sudo mount /dev/vg01/lv01  /data
```

Verifikimi I ngarkimit me komanden

```
$ sudo df -Th /data

Filesystem                              Type     Size      Used
Avail    Use%    Mounted on

/dev/mapper/vg01-lv01      ext4     9.8G      37M      9.3G     1%
/data

$
```

Fig. e mesiperme tregon se particioni LVM eshte ngarkuar ne data direktori. Per ngarkim te perhershem perdor /etc/fstab file.

```
$ echo '/dev/vg01/lv01  /data  ext4  defaults 0 0' | sudo  tee
-a /etc/fstab
```

5- Fshirja e particioneve

1. Listo particionet duke perdorur fdisk

Kjo eshte e rendesishme per te identifikuar particionet dhe per te shmangur zgjedhjen e particionit te gabuar dhe fshirjen e te dhenave te rendesishme

```
$ sudo fdisk -l
```

Kjo do te tregoje nr. e particioneve ne sistem

```
Disk /dev/sda: 465.78 GiB, 500107862016 bytes, 976773168 sectors
Disk model: Samsung SSD 860
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: 3C473EA7-C207-4FD2-A49A-D899D2CB47DD

Device         Start       End   Sectors   Size Type
/dev/sda1       2048    206847    204800   100M EFI System
/dev/sda2     206848    239615     32768    16M Microsoft reserved
/dev/sda3     239616 232740863 232501248 110.9G Microsoft basic data
/dev/sda4  306163712 307197951   1034240   505M Windows recovery
environment
/dev/sda5  307200000 614399999 307200000 146.5G Microsoft basic data
/dev/sda6  614400000 897210367 282810368 134.9G Microsoft basic data
/dev/sda7  897210368 899307519   2097152     1G Linux filesystem
/dev/sda8  232740864 306163711  73422848    35G Linux filesystem
/dev/sda9  899307520 901404671   2097152     1G Linux filesystem
/dev/sda10 901404672 976773119  75368448    36G Linux LVM
```

Nga output-i i mesiperm duhet te selektojme diskun e duhur. Ne rastin konkret duam te fshijme particionin nga **/dev/sda** ,i cili eshte, **/dev/sda10**.

2- Selektojme particionet duke perdorur **fdisk**

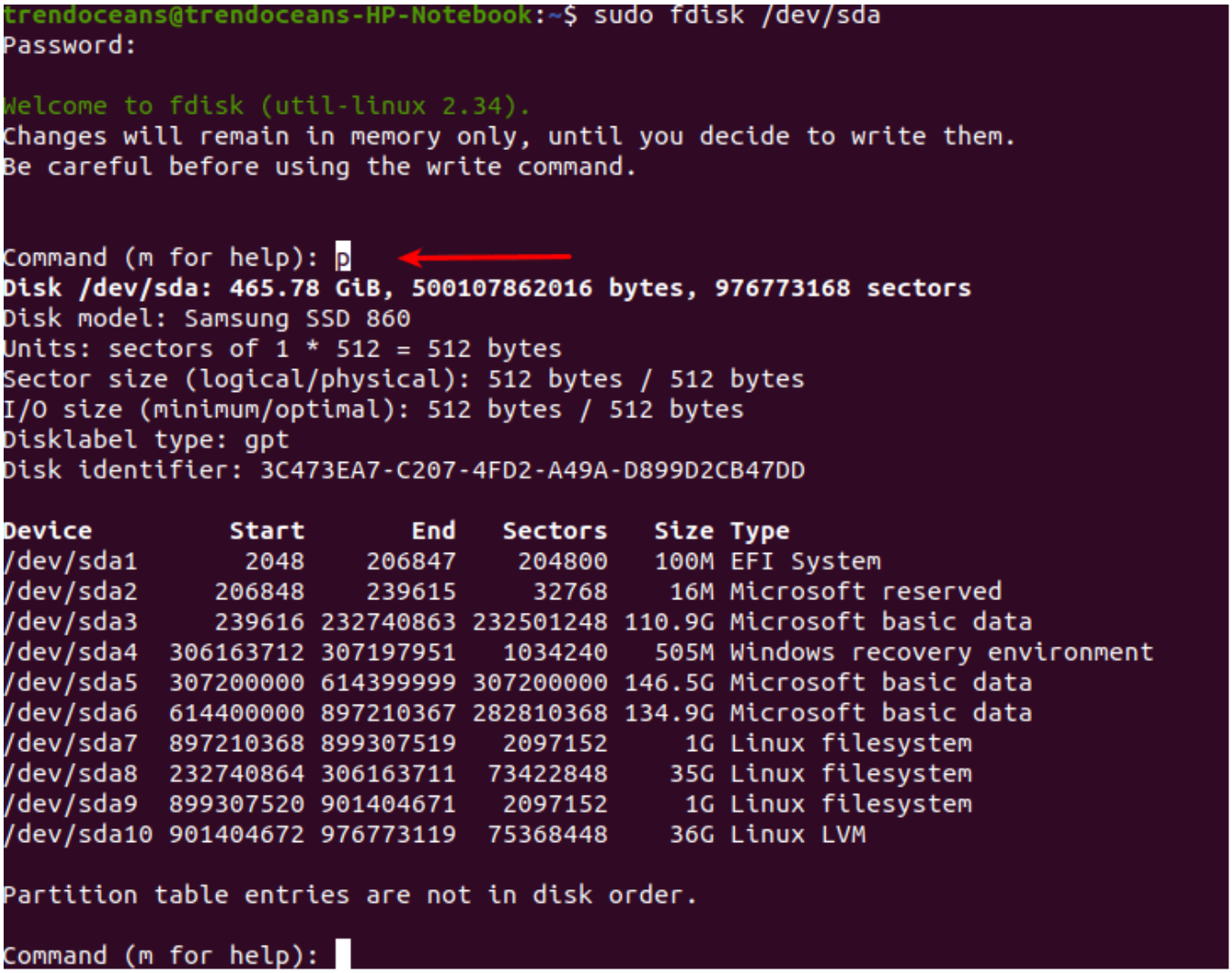
Tani e dime se cilin particion do te fshijme, keshtu qe duhet te perdorim komanden e mesiperme se bashku me emrin e particionit

```
$ sudo fdisk /dev/sda

Password:

Welcome to fdisk (util-linux 2.34).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
```

```
Command (m for help):
```

Shtyp m per ndihme dhe do te shfaqen nje seri komandash te tjera te specifikuara

```
p
```



Type command p

3- Fshirja e particioneve duke perdorur fdisk

Per te fshire particionin shtyp d ose del ne fdisk command-line te ndjekur nga numri i particionit

```
Command (m for help): d
Partition number (1-10, default 10): 10

Partition 10 has been deleted.

Command (m for help):
```

Ne rastin tone shfaqen disa particione ne **/dev/sda** , keshtu qe nevojitet te vendosim nr. e particionit manualisht.
Per te gjetur numrin e particionit kontrollojme ne outputin me komanden p

```
Command (m for help): p
Disk /dev/sda: 465.78 GiB, 500107862016 bytes, 976773168 sectors
Disk model: Samsung SSD 860
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: 3C473EA7-C207-4FD2-A49A-D899D2CB47DD

Device          Start       End   Sectors   Size Type
/dev/sda1        2048    206847    204800   100M EFI System
/dev/sda2      206848    239615     32768    16M Microsoft reserved
/dev/sda3      239616 232740863 232501248 110.9G Microsoft basic data
/dev/sda4   306163712 307197951   1034240   505M Windows recovery environment
/dev/sda5   307200000 614399999 307200000 146.5G Microsoft basic data
/dev/sda6   614400000 897210367 282810368 134.9G Microsoft basic data
/dev/sda7   897210368 899307519   2097152     1G Linux filesystem
/dev/sda8   232740864 306163711  73422848    35G Linux filesystem
/dev/sda9   899307520 901404671   2097152     1G Linux filesystem
/dev/sda10  901404672 976773119  75368448    36G Linux LVM
   Partition Number
Partition table entries are not in disk order.

Command (m for help): d                    1
Partition number (1-10, default 10): 10                2

Partition 10 has been deleted.

Command (m for help):
```

Delete partitions

4-Verifikojme ndryshimet e kryera

Per tu siguruar nese kemi fhire particionin e duhur perdorim perseri komanden p nga **fdisk** command-line utility.

```
Command (m for help): p
Disk /dev/sda: 465.78 GiB, 500107862016 bytes, 976773168 sectors
Disk model: Samsung SSD 860
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: 3C473EA7-C207-4FD2-A49A-D899D2CB47DD

Device          Start       End   Sectors   Size Type
/dev/sda1        2048    206847    204800   100M EFI System
/dev/sda2      206848    239615     32768    16M Microsoft reserved
/dev/sda3      239616 232740863 232501248 110.9G Microsoft basic data
/dev/sda4   306163712 307197951   1034240   505M Windows recovery environment
/dev/sda5   307200000 614399999 307200000 146.5G Microsoft basic data
/dev/sda6   614400000 897210367 282810368 134.9G Microsoft basic data
/dev/sda7   897210368 899307519   2097152     1G Linux filesystem
/dev/sda8   232740864 306163711  73422848    35G Linux filesystem
/dev/sda9   899307520 901404671   2097152     1G Linux filesystem

Partition table entries are not in disk order.

Command (m for help):
```

Verify partition is deleted

Shohim se particioni /dev/sda10 nuk ekziston, pra eshte fshire

5-Ruajme ndryshimet dhe dalim

Ky eshte hapi I fundit dhe nga ky moment nuk eshte I mundur kthimi prapa.
Shtypim w per te ruajtur ndryshimet

```
Command (m for help): w
The partition table has been altered.
Syncing disks.

trendoceans@trendoceans-HP-Notebook:~$
```

Ne outputin e meposhtem duket qarte procedura e fshirjes se particionit duke perdorur **fdisk**.

```
trendoceans@trendoceans-HP-Notebook:~$ sudo fdisk /dev/sda
Password:

Welcome to fdisk (util-linux 2.34).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): p
Disk /dev/sda: 465.78 GiB, 500107862016 bytes, 976773168 sectors
Disk model: Samsung SSD 860
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: 3C473EA7-C207-4FD2-A49A-D899D2CB47DD

Device          Start       End   Sectors   Size Type
/dev/sda1        2048    206847    204800   100M EFI System
/dev/sda2      206848    239615     32768    16M Microsoft reserved
/dev/sda3      239616 232740863 232501248 110.9G Microsoft basic data
/dev/sda4   306163712 307197951   1034240   505M Windows recovery environment
/dev/sda5   307200000 614399999 307200000 146.5G Microsoft basic data
/dev/sda6   614400000 897210367 282810368 134.9G Microsoft basic data
/dev/sda7   897210368 899307519   2097152     1G Linux filesystem
/dev/sda8   232740864 306163711  73422848    35G Linux filesystem
/dev/sda9   899307520 901404671   2097152     1G Linux filesystem
/dev/sda10 901404672 976773119  75368448    36G Linux LVM

Partition table entries are not in disk order.

Command (m for help): d
Partition number (1-10, default 10): 10

Partition 10 has been deleted.

Command (m for help): p
Disk /dev/sda: 465.78 GiB, 500107862016 bytes, 976773168 sectors
Disk model: Samsung SSD 860
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: 3C473EA7-C207-4FD2-A49A-D899D2CB47DD

Device          Start       End   Sectors   Size Type
/dev/sda1        2048    206847    204800   100M EFI System
/dev/sda2      206848    239615     32768    16M Microsoft reserved
/dev/sda3      239616 232740863 232501248 110.9G Microsoft basic data
/dev/sda4   306163712 307197951   1034240   505M Windows recovery environment
/dev/sda5   307200000 614399999 307200000 146.5G Microsoft basic data
/dev/sda6   614400000 897210367 282810368 134.9G Microsoft basic data
/dev/sda7   897210368 899307519   2097152     1G Linux filesystem
/dev/sda8   232740864 306163711  73422848    35G Linux filesystem
/dev/sda9   899307520 901404671   2097152     1G Linux filesystem

Partition table entries are not in disk order.

Command (m for help): w
The partition table has been altered.
Syncing disks.

trendoceans@trendoceans-HP-Notebook:~$
```