

Linux Partitioning and Persistence

1. Create a New Partition with ext3 Filesystem

- Identify an available disk

`fdisk -l`

```
File  Machine  View  Input  Devices  Help
devops@vishnu:~$ sudo fdisk -l
[sudo] password for devops:
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: gpt
Disk identifier: 1C90E4EF-D991-481B-B8F3-EF2791071D63

Device            Start       End   Sectors  Size Type
/dev/sda1          2048        4095     2048    1M BIOS boot
/dev/sda2          4096 31461375 31457280   15G Linux filesystem
/dev/sda3 31461376 33558527  2097152    1G Linux filesystem
devops@vishnu:~$ _
```

- Create a new partition

`fdisk /dev/sda`

```
devops@vishnu:~$ sudo fdisk /dev/sda
Welcome to fdisk (util-linux 2.39.3).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

This disk is currently in use - repartitioning is probably a bad idea.
It's recommended to umount all file systems, and swapoff all swap
partitions on this disk.

Command (m for help): m

Help:

GPT
  M  enter protective/hybrid MBR

Generic
  d  delete a partition
  F  list free unpartitioned space
  l  list known partition types
  n  add a new partition
  p  print the partition table
  t  change a partition type
  v  verify the partition table
  i  print information about a partition

Misc
  m  print this menu
  x  extra functionality (experts only)

Script
  I  load disk layout from sfdisk script file
  O  dump disk layout to sfdisk script file

Save & Exit
  w  write table to disk and exit
  q  quit without saving changes

Create a new label
  g  create a new empty GPT partition table
  G  create a new empty SGI (IRIX) partition table
  o  create a new empty MBR (DOS) partition table
  s  create a new empty Sun partition table

Command (m for help):
```

Press “n” (to add a new partition) and give partition number, first and last sector. New partition will create with partition size.

```
Command (m for help): n
Partition number (4-128, default 4):
First sector (33558528-41943006, default 33558528):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (33558528-41943006, default 41940991): +250M

Created a new partition 4 of type 'Linux filesystem' and of size 250 MiB.

Command (m for help): p
Disk /dev/sda: 20 GiB, 21474836480 bytes, 41943040 sectors
Disk model: VBOX HARDISK
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: 1C90E4EF-D991-481B-B8F3-EF2791071D63

Device      Start      End  Sectors  Size Type
/dev/sda1    2048      4095     2048    1M BIOS boot
/dev/sda2    4096 31461375 31457280   15G Linux filesystem
/dev/sda3  31461376 33558527  2097152    1G Linux filesystem
/dev/sda4  33558528 34070527   512000   250M Linux filesystem

Command (m for help): w
The partition table has been altered.
Syncing disks.
devops@vishnu:~$
```

- Format the new partition with the ext3 filesystem
mkfs.ext3 /dev/sda4

```
devops@vishnu:~$ sudo mkfs.ext3 /dev/sda4
[sudo] password for devops:
mke2fs 1.47.0 (5-Feb-2023)
Creating filesystem with 64000 4k blocks and 64000 inodes
Filesystem UUID: 0e18c105-2282-4767-97bf-19755153e52b
Superblock backups stored on blocks:
    32768

Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done

devops@vishnu:~$
```

2. Mount the Partition to /mnt/mypartition

- Create the mount point directory
mkdir -p /mnt/mypartition

```
devops@vishnu:~$ sudo mkdir -p /mnt/mypartition
devops@vishnu:~$ ls -ld /mnt/mypartition
/mnt/mypartition
devops@vishnu:~$ _
```

- Mount the partition to /mnt/mypartition
mount /dev/sda4 /mnt/mypartition

```
devops@vishnu:~$ sudo mount /dev/sda4 /mnt/mypartition
devops@vishnu:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           197M  1.1M  196M   1% /run
/dev/sda2       15G   5.3G   8.7G  38% /
tmpfs           985M    0  985M   0% /dev/shm
tmpfs           5.0M    0   5.0M   0% /run/lock
/dev/sda3       974M   64K  907M   1% /home
tmpfs           197M   12K  197M   1% /run/user/1000
/dev/sda4       219M   44K  206M   1% /mnt/mypartition
devops@vishnu:~$ _
```

3. Create a File with a Fake Address

- Within /mnt/mypartition, create a file named address
cd /mnt/mypartition
vim address

```
devops@vishnu:~$ cd /mnt/mypartition/
devops@vishnu:/mnt/mypartition$ sudo vim address
```

- Write a fake address into the address file

Change to insert mode press "i" and type the address and to write the address press "esc" key and ":wq" to save the address

cat address(ti view the address)

```
devops@vishnu:/mnt/mypartition$ cat address
2nd street,south road
Kerala,India
Pin:123456
devops@vishnu:/mnt/mypartition$ ls
address  lost+found
devops@vishnu:/mnt/mypartition$
```

4. Ensure Persistence After Reboot

- Edit the /etc/fstab file to add an entry for the new partition
vim /etc/fstab

after that add <file system> <mount point> <type> <options> <dump><pass>. Write and quit the file

```
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/sda2 during curtin installation
/dev/disk/by-uuid/cd08b871-3f6f-4296-8811-4a3eaed3a0a2 / ext4 defaults 0 1
# /home was on /dev/sda3 during curtin installation
/dev/disk/by-uuid/e2478f41-4cbe-4652-85bd-12bf8655dc43 /home ext4 defaults 0 1
/swap.img none swap sw 0 0
/dev/sda4 /mnt/mypartition ext3 defaults 0 0
```

Reboot the system and verify that:

- The partition is mounted automatically

Mount -a

- The address file still exists in /mnt/mypartition
ls /mnt/mypartition/
cat /mnt/mypartition/address

```

root@vishnu:/mnt/mypartition# mount -a
root@vishnu:/mnt/mypartition# df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           197M  1.1M  196M   1% /run
/dev/sda2       15G   5.4G   8.6G  39% /
tmpfs           985M    0  985M   0% /dev/shm
tmpfs           5.0M    0   5.0M   0% /run/lock
/dev/sda3       974M   72K  907M   1% /home
tmpfs           197M   12K  197M   1% /run/user/1000
/dev/sda4       219M   48K  206M   1% /mnt/mypartition
root@vishnu:/mnt/mypartition# cd
root@vishnu:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           197M  1.1M  196M   1% /run
/dev/sda2       15G   5.4G   8.6G  39% /
tmpfs           985M    0  985M   0% /dev/shm
tmpfs           5.0M    0   5.0M   0% /run/lock
/dev/sda3       974M   72K  907M   1% /home
tmpfs           197M   12K  197M   1% /run/user/1000
/dev/sda4       219M   48K  206M   1% /mnt/mypartition
root@vishnu:~# ls /mnt/mypartition/
address  lost+found
root@vishnu:~# cat /mnt/mypartition/address
2nd street,south road
Kerala,India
Pin:23456
root@vishnu:~# _

```

After reboot the partition is still exists

```

root@vishnu:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           197M  1.1M  196M   1% /run
/dev/sda2       15G   5.4G   8.6G  39% /
tmpfs           985M    0  985M   0% /dev/shm
tmpfs           5.0M    0   5.0M   0% /run/lock
/dev/sda4       219M   48K  206M   1% /mnt/mypartition
/dev/sda3       974M   72K  907M   1% /home
tmpfs           197M   12K  197M   1% /run/user/1000
root@vishnu:~#

```