

**LVM**

```
muhammad@muhammad-Virtual-Machine: /tmp
/dev/loop12
muhammad@muhammad-Virtual-Machine:/tmp$
muhammad@muhammad-Virtual-Machine:/tmp$ dd if=/dev/zero of=disk1.disk bs=1024 count=100000
100000+0 records in
100000+0 records out
102400000 bytes (102 MB, 98 MiB) copied, 1.69797 s, 60.3 MB/s
muhammad@muhammad-Virtual-Machine:/tmp$ dd if=/dev/zero of=disk2.disk bs=1024 count=100000
100000+0 records in
100000+0 records out
102400000 bytes (102 MB, 98 MiB) copied, 1.88997 s, 54.2 MB/s
muhammad@muhammad-Virtual-Machine:/tmp$ dd if=/dev/zero of=disk3.disk bs=1024 count=50000
50000+0 records in
50000+0 records out
51200000 bytes (51 MB, 49 MiB) copied, 0.790905 s, 64.7 MB/s
muhammad@muhammad-Virtual-Machine:/tmp$ dd if=/dev/zero of=disk4.disk bs=1024 count=50000
50000+0 records in
50000+0 records out
51200000 bytes (51 MB, 49 MiB) copied, 0.819383 s, 62.5 MB/s
muhammad@muhammad-Virtual-Machine:/tmp$ sudo losetup -f
/dev/loop13
muhammad@muhammad-Virtual-Machine:/tmp$ sudo losetup /dev/loop13 disk1.disk
muhammad@muhammad-Virtual-Machine:/tmp$ sudo losetup /dev/loop14 disk2.disk
muhammad@muhammad-Virtual-Machine:/tmp$ sudo losetup /dev/loop15 disk3.disk
muhammad@muhammad-Virtual-Machine:/tmp$ sudo losetup /dev/loop16 disk4.disk
muhammad@muhammad-Virtual-Machine:/tmp$ sudo losetup -a
/dev/loop1: [2049]:803296 (/var/lib/snapd/snaps/core20_1434.snap)
/dev/loop8: [2049]:792262 (/var/lib/snapd/snaps/snapd_18596.snap)
/dev/loop15: [2049]:3221 (/tmp/disk3.disk)
/dev/loop6: [2049]:803297 (/var/lib/snapd/snaps/snapd_15534.snap)
/dev/loop13: [2049]:2392 (/tmp/disk1.disk)
/dev/loop4: [2049]:803299 (/var/lib/snapd/snaps/gtk-common-themes_1519.snap)
```

```
muhammad@muhammad-Virtual-Machine: /tmp
rdate thin-provisioning-tools
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 52 not upgraded.
Need to get 204 kB of archives.
After this operation, 819 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy/main amd64 net-tools amd64 1.60+git20181103.0eebece-1ubuntu5 [204 kB]
Fetched 204 kB in 11s (19.2 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 210496 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20181103.0eebece-1ubuntu5_amd64.deb ...
Unpacking net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Setting up net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Processing triggers for man-db (2.10.2-1) ...
muhammad@muhammad-Virtual-Machine:/tmp$ pv create /dev/loop13
Command 'pv' not found, but can be installed with:
sudo apt install pv
muhammad@muhammad-Virtual-Machine:/tmp$ pvcreate /dev/loop13
WARNING: Running as a non-root user. Functionality may be unavailable.
/run/lock/lvm/P_global:aux: open failed: Permission denied
muhammad@muhammad-Virtual-Machine:/tmp$ sudo pvcreate /dev/loop13
Physical volume "/dev/loop13" successfully created.
muhammad@muhammad-Virtual-Machine:/tmp$ sudo pvcreate /dev/loop14
Physical volume "/dev/loop14" successfully created.
muhammad@muhammad-Virtual-Machine:/tmp$ sudo pvcreate /dev/loop15
Physical volume "/dev/loop15" successfully created.
muhammad@muhammad-Virtual-Machine:/tmp$ sudo pvcreate /dev/loop16
Physical volume "/dev/loop16" successfully created.
muhammad@muhammad-Virtual-Machine:/tmp$
```

```
muhammad@muhammad-Virtual-Machine: /tmp
muhammad@muhammad-Virtual-Machine:/tmp$ sudo vgcreate VG1 /dev/loop13 /dev/loop14 /dev/loop15
Volume group "VG1" successfully created
muhammad@muhammad-Virtual-Machine:/tmp$ sudo lvcreate -L 236M VG1
Logical volume "lvol0" created.
muhammad@muhammad-Virtual-Machine:/tmp$ sudo vgdisplay
--- Volume group ---
VG Name                VG1
System ID
Format                 lvm2
Metadata Areas         3
Metadata Sequence No   2
VG Access               read/write
VG Status               resizable
MAX LV                 0
Cur LV                 1
Open LV                 0
Max PV                  0
Cur PV                 3
Act PV                  3
VG Size                 236.00 MiB
PE Size                 4.00 MiB
Total PE                59
Alloc PE / Size        59 / 236.00 MiB
Free PE / Size          0 / 0
VG UUID                Yfbcwn-zvFh-jwiT-Xibs-CJW4-PWbb-Kpc3l3

muhammad@muhammad-Virtual-Machine:/tmp$ sudo lvdisplay
--- Logical volume ---
LV Path                 /dev/VG1/lvol0
LV Name                 lvol0
VG Name                 VG1
```

```
muhammad@muhammad-Virtual-Machine: /tmp

--- Logical volume ---
LV Path                /dev/VG1/lvol0
LV Name                lvol0
VG Name                VG1
LV UUID                TS8A0s-duhW-DGpt-mF95-Wmjw-2HrM-iXEA4P
LV Write Access        read/write
LV Creation host, time muhammad-Virtual-Machine, 2023-03-28 10:07:07 -0400
LV Status              available
# open                 0
LV Size                236.00 MiB
Current LE             59
Segments              3
Allocation              inherit
Read ahead sectors     auto
- currently set to    256
Block device           253:0

muhammad@muhammad-Virtual-Machine:/tmp$ sudo mkfs.ext4 /dev/VG1/lvol0
mkfs2fs 1.46.5 (30-Dec-2021)
Discarding device blocks: done
Creating filesystem with 60416 4k blocks and 60416 inodes
Filesystem UUID: a1d3bd30-99d4-4093-b7b9-f621156af3be
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

muhammad@muhammad-Virtual-Machine:/tmp$
```

```
muhammad@muhammad-Virtual-Machine: /tmp
muhammad@muhammad-Virtual-Machine:/tmp$ sudo mount /dev/VG1/lvol0 /mnt
muhammad@muhammad-Virtual-Machine:/tmp$ sudo vgextend VG1 /dev/loop16
  Volume group "VG1" successfully extended
muhammad@muhammad-Virtual-Machine:/tmp$ sudo lvextend /dev/VG1/lvol0 -L +44M
  Size of logical volume VG1/lvol0 changed from 236.00 MiB (59 extents) to 280.00 MiB (70 extents).
  Logical volume VG1/lvol0 successfully resized.
muhammad@muhammad-Virtual-Machine:/tmp$
```

```
muhammad@muhammad-Virtual-Machine: /tmp
muhammad@muhammad-Virtual-Machine:/tmp$ sudo umount /dev/VG1/lvol0
[sudo] password for muhammad:
muhammad@muhammad-Virtual-Machine:/tmp$ sudo e2fsck -f /dev/VG1/lvol0
e2fsck 1.46.5 (30-Dec-2021)
Pass 1: Checking inodes, blocks, and sizes
Pass 2: Checking directory structure
Pass 3: Checking directory connectivity
Pass 4: Checking reference counts
Pass 5: Checking group summary information
/dev/VG1/lvol0: 11/60416 files (0.0% non-contiguous), 7944/60416 blocks
muhammad@muhammad-Virtual-Machine:/tmp$ sudo resize2fs /dev/VG1/lvol0 +50M
resize2fs 1.46.5 (30-Dec-2021)
Resizing the filesystem on /dev/VG1/lvol0 to 12800 (4k) blocks.
The filesystem on /dev/VG1/lvol0 is now 12800 (4k) blocks long.

muhammad@muhammad-Virtual-Machine:/tmp$
```

# Network



```
muhammad@muhammad-Virtual-Machine: /tmp
muhammad@muhammad-Virtual-Machine:/tmp$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:15:5d:38:01:04 brd ff:ff:ff:ff:ff:ff
    inet 192.168.38.134/28 brd 192.168.38.143 scope global dynamic noprefixroute eth0
        valid_lft 86391sec preferred_lft 86391sec
    inet6 fe80::7caf:b5d:d399:7118/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
muhammad@muhammad-Virtual-Machine:/tmp$ netstat -atp
(Not all processes could be identified, non-owned process info
will not be shown, you would have to be root to see it all.)
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 localhost:domain        0.0.0.0:*               LISTEN      -
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN      -
tcp6       0      0 ip6-localhost:ipp      [::]:*                 LISTEN      -
tcp6       0      0 ip6-localhost:3350     [::]:*                 LISTEN      -
muhammad@muhammad-Virtual-Machine:/tmp$
```

```
muhammad@muhammad-Virtual-Machine: /tmp
muhammad@muhammad-Virtual-Machine:/tmp$ nmap 192.168.1.1
Starting Nmap 7.80 ( https://nmap.org ) at 2023-03-28 10:47 EDT
Nmap scan report for 192.168.1.1
Host is up (0.0035s latency).
Not shown: 995 closed ports
PORT      STATE SERVICE
22/tcp    open  ssh
23/tcp    open  telnet
53/tcp    open  domain
80/tcp    open  http
1900/tcp  open  upnp

Nmap done: 1 IP address (1 host up) scanned in 6.37 seconds
muhammad@muhammad-Virtual-Machine:/tmp$
```