

--network--

Display the network interface information using `ip` command

```
nehad@nehad-VirtualBox:/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: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:c7:2c:65 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
        valid_lft 76335sec preferred_lft 76335sec
    inet6 fe80::a3ea:2a18:7ff5:6485/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

Display currently active TCP connections on your OS using `netstat` command

```
nehad@nehad-VirtualBox:/tmp$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
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 [::]:http                [::]:*                  LISTEN
udp        0      0 0.0.0.0:631             0.0.0.0:*               *
udp        0      0 0.0.0.0:44992           0.0.0.0:*               *
udp        0      0 localhost:domain        0.0.0.0:*               *
udp        0      0 nehad-VirtualBox:bootpc _gateway:bootps        ESTABLISHED
udp        0      0 0.0.0.0:mdns            0.0.0.0:*               *
udp6       0      0 [::]:mdns                [::]:*                  *
udp6       0      0 [::]:45357               [::]:*                  *
raw6       0      0 [::]:ipv6-icmp           [::]:*                  7
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type        State         I-Node  Path
unix    2      [ ACC ] STREAM     LISTENING    19377   /run/cups/cups.sock
unix    2      [ ACC ] STREAM     LISTENING    21223   @/tmp/.ICE-unix/1071
unix    2      [ ACC ] STREAM     LISTENING    21597   @/tmp/.X11-unix/X0
```

Display currently open ports on your system using `nmap` command (install it using `apt`)

```

nehad@nehad-VirtualBox:/tmp$ sudo apt install nmap
[sudo] password for nehad:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi i965-va-driver
  intel-media-va-driver libaacs0 libaom3 libass9 libavcodec58 libavformat58
  libavutil56 libbdplus0 libbluray2 libbs2b0 libchromaprint1 libcodec2-1.0
  libdav1d5 libflite1 libgme0 libgsm1 libgstreamer-plugins-bad1.0-0
  libigdgmm12 liblilv-0-0 libllvm15 libmfx1 libmysofa1 libnorm1 libopenmpt0
  libpgm-5.3-0 libpostproc55 librabbitmq4 librubberband2 libserd-0-0
  libshine3 libsnappy1v5 libsord-0-0 libsratom-0-0 libsrt1.4-gnutls
  libssh-gcrypt-4 libswresample3 libswscale5 libudfread0 libva-drm2
  libva-wayland2 libva-x11-2 libva2 libvdpau1 libvidstab1.1 libx265-199
  libxvidcore4 libzing2 libzmq5 libzvbi-common libzvbi0 mesa-va-drivers
  mesa-vdpau-drivers pocketsphinx-en-us va-driver-all vdpau-driver-all
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  liblinear4 lua-lpeg nmap-common
Suggested packages:
  liblinear-tools liblinear-dev ncat ndiff zenmap
The following NEW packages will be installed:
  liblinear4 lua-lpeg nmap nmap-common

```

Display currently open ports on your system using `nmap` command (install it using apt)

`**nmap 192.168.1.7`

-- Using Loop devices, create 4 PVs

```

nehad@nehad-VirtualBox:/tmp$ dd if=/dev/zero of=/tmp/disk1.disk bs=1024 count=10000
10000+0 records in
10000+0 records out
10240000 bytes (10 MB, 9.8 MiB) copied, 0.0305485 s, 335 MB/s
nehad@nehad-VirtualBox:/tmp$ dd if=/dev/zero of=/tmp/disk2.disk bs=1024 count=10000
10000+0 records in
10000+0 records out
10240000 bytes (10 MB, 9.8 MiB) copied, 0.0746151 s, 137 MB/s
nehad@nehad-VirtualBox:/tmp$ dd if=/dev/zero of=/tmp/disk3.disk bs=1024 count=10000
10000+0 records in
10000+0 records out
10240000 bytes (10 MB, 9.8 MiB) copied, 0.0534774 s, 191 MB/s
nehad@nehad-VirtualBox:/tmp$ dd if=/dev/zero of=/tmp/disk4.disk bs=1024 count=10000
10000+0 records in
10000+0 records out
10240000 bytes (10 MB, 9.8 MiB) copied, 0.0550648 s, 186 MB/s

```

```
nehad@nehad-VirtualBox:/tmp$ sudo losetup -f /tmp/disk1.disk
nehad@nehad-VirtualBox:/tmp$ sudo losetup -f /tmp/disk2.disk
nehad@nehad-VirtualBox:/tmp$ sudo losetup -f /tmp/disk3.disk
nehad@nehad-VirtualBox:/tmp$ sudo losetup -f /tmp/disk4.disk
```

sudo losetup

```
nehad@nehad-VirtualBox:/tmp$ sudo pvcreate /dev/loop17
Physical volume "/dev/loop17" successfully created.
nehad@nehad-VirtualBox:/tmp$ sudo pvcreate /dev/loop18
Physical volume "/dev/loop18" successfully created.
nehad@nehad-VirtualBox:/tmp$ sudo pvcreate /dev/loop19
Physical volume "/dev/loop19" successfully created.
nehad@nehad-VirtualBox:/tmp$ sudo pvcreate /dev/loop20
Physical volume "/dev/loop20" successfully created.
```

-- create VG and add 3 on PVs to it

```
nehad@nehad-VirtualBox:/tmp$ sudo vgcreate VG0 /dev/loop17 /dev/loop18 /dev/loop19
Volume group "VG0" successfully created
```

--create LV which has size of 250M

Sudo Lvcreate -L 250M VG0

```
Rounding up size to full physical extent 252.00 MiB
Logical volume "lvol0" created.
```

--format LV using ext4

```
nehad@nehad-VirtualBox:/tmp$ sudo mkfs.ext4 /dev/VG1/lvol0
mke2fs 1.46.5 (30-Dec-2021)
Discarding device blocks: done
Creating filesystem with 64512 4k blocks and 64512 inodes
Filesystem UUID: 49ebdabd-895f-4623-aa52-24be2fe5a988
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
```

-- mount LV into /mnt directory

```
nehad@nehad-VirtualBox:/tmp$ mount /dev/VG1/lvol0 /mnt
mount: /mnt: must be superuser to use mount.
```

-- extend VG with the remaining PV

```
nehad@nehad-VirtualBox:/tmp$ sudo vgextend VG1 /dev/loop32
WARNING: Not in a consistent state: /dev/loop32: Vol 1: 135M 0x70
Volume group "VG1" successfully extended
```

-- extend LV with +50M

```
nehad@nehad-VirtualBox:/tmp$ sudo lvextend /dev/VG0/lvol0 -L +50M
WARNING: Not in a consistent state: /dev/loop32: Vol 1: 135M 0x70
Logical volume VG1/lvol0 successfully resized.
```

-- resize2fs LV with the 50M extra

```
nehad@nehad-VirtualBox:/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.
```