

Lab 1 System Admin 2

- Using Loop devices, create 4 PVs.

```
ties  Terminal  Mar 28 16:22  vboxuser@Ubuntu: /tmp

vboxuser@Ubuntu:~$ cd /tmp
vboxuser@Ubuntu:/tmp$ dd if=/dev/zero of=disk1.disk bs=1024 count=100000
dd: unrecognized operand 'of'
Try 'dd --help' for more information.
vboxuser@Ubuntu:/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, 21.4761 s, 4.8 MB/s
vboxuser@Ubuntu:/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, 2.70053 s, 37.9 MB/s
vboxuser@Ubuntu:/tmp$ dd if=/dev/zero of=disk3.disk bs=1024 count=100000
100000+0 records in
100000+0 records out
102400000 bytes (102 MB, 98 MiB) copied, 3.68836 s, 27.8 MB/s
vboxuser@Ubuntu:/tmp$ dd if=/dev/zero of=disk4.disk bs=1024 count=100000
100000+0 records in
100000+0 records out
102400000 bytes (102 MB, 98 MiB) copied, 11.8927 s, 8.6 MB/s
vboxuser@Ubuntu:/tmp$ sudo losetup -f
/dev/loop17
vboxuser@Ubuntu:/tmp$ sudo losetup /dev/loop17 disk1.disk
vboxuser@Ubuntu:/tmp$ sudo losetup /dev/loop18 disk1.disk
vboxuser@Ubuntu:/tmp$ sudo losetup /dev/loop19 disk1.disk
vboxuser@Ubuntu:/tmp$ sudo losetup /dev/loop17 disk1.disk
losetup: disk1.disk: failed to set up loop device: Device or resource busy
vboxuser@Ubuntu:/tmp$ sudo losetup /dev/loop18 disk2.disk
losetup: disk2.disk: failed to set up loop device: Device or resource busy

VMwareDnD
vboxuser@Ubuntu:/tmp$ sudo losetup -f /tmp/disk1.disk
vboxuser@Ubuntu:/tmp$ sudo losetup -f /tmp/disk2.disk
vboxuser@Ubuntu:/tmp$ sudo losetup -f /tmp/disk3.disk
vboxuser@Ubuntu:/tmp$ sudo losetup -f /tmp/disk4.disk
vboxuser@Ubuntu:/tmp$ sudo losetup | grep tmp
/dev/loop19          0          0          0  0 /tmp/disk3.disk
                     0        512
/dev/loop17          0          0          0  0 /tmp/disk1.disk
                     0        512
/dev/loop18          0          0          0  0 /tmp/disk2.disk
                     0        512
/dev/loop20          0          0          0  0 /tmp/disk4.disk
                     0        512
```

- create VG and add 3 on PVs to it.

```
vboxuser@Ubuntu:~$ sudo apt-get install lvm2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  systemd-hwe-hwdb
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  dmeventd libaio1 libdevmapper-event1.02.1 liblvm2cmd2.03
  thin-provisioning-tools
The following NEW packages will be installed:
  dmeventd libaio1 libdevmapper-event1.02.1 liblvm2cmd2.03 lvm2
  thin-provisioning-tools
0 upgraded, 6 newly installed, 0 to remove and 205 not upgraded.
Need to get 2,395 kB of archives.
After this operation, 8,959 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu jammy/main amd64 libaio1 amd64 0.3.11
2-13build1 [7,176 B]
Get:2 http://us.archive.ubuntu.com/ubuntu jammy/main amd64 libdevmapper-event1.
02.1 amd64 2:1.02.175-2.1ubuntu4 [12.6 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu jammy/main amd64 liblvm2cmd2.03 amd64
2.03.11-2.1ubuntu4 [756 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu jammy/main amd64 dmeventd amd64 2:1.0
2.175-2.1ubuntu4 [38.4 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu jammy/main amd64 lvm2 amd64 2.03.11-2
.1ubuntu4 [1,154 kB]
Get:6 http://us.archive.ubuntu.com/ubuntu jammy/main amd64 thin-provisioning-to
ols amd64 0.9.0-2ubuntu1 [426 kB]
```

```
vboxuser@Ubuntu:~$ sudo pvcreate /dev/loop17
Physical volume "/dev/loop17" successfully created.
vboxuser@Ubuntu:~$ sudo pvcreate /dev/loop18
Physical volume "/dev/loop18" successfully created.
vboxuser@Ubuntu:~$ sudo pvcreate /dev/loop19
Physical volume "/dev/loop19" successfully created.
vboxuser@Ubuntu:~$ sudo pvcreate /dev/loop20
Physical volume "/dev/loop20" successfully created.
vboxuser@Ubuntu:~$ sudo vgcreate VG1 /dev/loop17 /dev/loop18 /dev/loop19
Volume group "VG1" successfully created
```

- create LV which has size of 250M.

```
vboxuser@Ubuntu: /tmp$ sudo lvcreate -L 250M VG1
[sudo] password for vboxuser:
Rounding up size to full physical extent 252.00 MiB
Logical volume "lvol0" created.
vboxuser@Ubuntu: /tmp$ sudo lvdisplay
--- Logical volume ---
LV Path                /dev/VG1/lvol0
LV Name                 lvol0
VG Name                 VG1
LV UUID                 funZp6-Tzgz-ZTro-iS9g-Kmlq-8JjT-RvpJwi
LV Write Access         read/write
LV Creation host, time Ubuntu, 2023-03-28 16:43:19 +0200
LV Status                available
# open                  0
LV Size                 252.00 MiB
Current LE               63
Segments                3
Allocation               inherit
Read ahead sectors      auto
- currently set to      256
Block device            253:0
```

- format LV using ext4.

```
vboxuser@Ubuntu: /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: 5b1bb344-9129-4712-9d39-23f41d8eb9d7
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.

```
vboxuser@Ubuntu: /tmp$ sudo mount /dev/VG1/lvol0 /mnt
vboxuser@Ubuntu: /tmp$ sudo df -h /mnt
Filesystem                Size      Used Avail Use% Mounted on
/dev/mapper/VG1-lvol0    220M      24K   203M   1% /mnt
```

- extend VG with the remaining PV.

```
vboxuser@Ubuntu: /tmp$ lvextend -l +50M /dev/VG1/lvol0
WARNING: Running as a non-root user. Functionality may be unavailable.
Invalid argument for --extents: +50M
Error during parsing of command line.
```

- extend LV with +50M.

```
Error during parsing of command line.
vboxuser@Ubuntu: /tmp$ sudo lvextend -L +50M /dev/VG1/lvol0
Rounding size to boundary between physical extents: 52.00 MiB.
Insufficient free space: 13 extents needed, but only 9 available
vboxuser@Ubuntu: /tmp$ sudo lvextend -L +20M /dev/VG1/lvol0
Size of logical volume VG1/lvol0 changed from 252.00 MiB (63 extents) to 272.00 MiB (68 extents).
Logical volume VG1/lvol0 successfully resized.
vboxuser@Ubuntu: /tmp$
```

- resize2fs LV with the 50M extra.

```
Logical volume VG1/lvol0 successfully resized.
vboxuser@Ubuntu: /tmp$ sudo resize2fs /dev/VG1/lvol0 +20M
resize2fs 1.46.5 (30-Dec-2021)
resize2fs: New size smaller than minimum (8217)

vboxuser@Ubuntu: /tmp$ sudo lvdisplay
--- Logical volume ---
LV Path                /dev/VG1/lvol0
LV Name                 lvol0
VG Name                 VG1
LV UUID                 funZp6-Tzgz-ZTro-iS9g-Kmlq-8JjT-RvpJwi
LV Write Access         read/write
LV Creation host, time  Ubuntu, 2023-03-28 16:43:19 +0200
LV Status                available
# open                  1
LV Size                 272.00 MiB
Current LE               68
Segments                3
Allocation               inherit
Read ahead sectors      auto
- currently set to      256
Block device            253:0

vboxuser@Ubuntu: /tmp$
```

- Display the network interface information using ip command.

```
vboxuser@Ubuntu:/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 08:00:27:94:fe:3c 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 78696sec preferred_lft 78696sec
    inet6 fe80::a84e:8c0d:4fa8:6cc2/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
vboxuser@Ubuntu:/tmp$
```

- Display currently active TCP connections on your OS using netstat command.

```
vboxuser@Ubuntu:/tmp$ sudo apt install net-tools
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  systemd-hwe-hwdb
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 205 not upgraded.
Need to get 204 kB of archives.
After this operation, 819 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu jammy/main amd64 net-tools amd64 1.60+git20181103.0eebece-1ubuntu5 [204 kB]
Fetched 204 kB in 2s (87.6 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 232605 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) ...
```



```
vboxuser@Ubuntu: /tmp$ sudo apt install net-tools
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  systemd-hwe-hwdb
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 205 not upgraded.
Need to get 204 kB of archives.
After this operation, 819 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu jammy/main amd64 net-tools amd64 1.60
+git20181103.0eebece-1ubuntu5 [204 kB]
Fetched 204 kB in 2s (87.6 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 232605 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) ...
```

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

```
vboxuser@Ubuntu: /tmp$ snap install nmap # version 7.93
nmap 7.93 from Maximiliano Bertacchini (maxiberta) installed
vboxuser@Ubuntu: /tmp$ nmap 10.0.2.15
Starting Nmap 7.93 ( https://nmap.org ) at 2023-03-28 17:21 EET
Nmap scan report for Ubuntu (10.0.2.15)
Host is up (0.00011s latency).
Not shown: 999 closed tcp ports (conn-refused)
PORT      STATE SERVICE
80/tcp    open  http

Nmap done: 1 IP address (1 host up) scanned in 0.50 seconds
vboxuser@Ubuntu: /tmp$
```