

System Admin II: Lab1

- Using loop devices, create 4 PVs

```
maysara@Linux-Ubuntu: /tmp
maysara@Linux-Ubuntu:~$ cd /tmp
maysara@Linux-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, 0.284964 s, 359 MB/s
maysara@Linux-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, 0.286094 s, 358 MB/s
maysara@Linux-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, 0.415111 s, 247 MB/s
maysara@Linux-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, 0.309795 s, 331 MB/s
maysara@Linux-Ubuntu:/tmp$
```

```
102400000 bytes (102 MB, 98 MiB) copied, 0.309795 s, 331 MB/s
maysara@Linux-Ubuntu:/tmp$
maysara@Linux-Ubuntu:/tmp$ sudo losetup /dev/loop19 disk1.disk
[sudo] password for maysara:
maysara@Linux-Ubuntu:/tmp$ sudo losetup /dev/loop19 disk2.disk
losetup: disk2.disk: failed to set up loop device: Device or resource busy
maysara@Linux-Ubuntu:/tmp$ sudo losetup /dev/loop20 disk2.disk
maysara@Linux-Ubuntu:/tmp$ sudo losetup /dev/loop21 disk2.disk
maysara@Linux-Ubuntu:/tmp$ sudo losetup /dev/loop22 disk2.disk
maysara@Linux-Ubuntu:/tmp$
```

- Create VG and add PVs to it

```
maysara@Linux-Ubuntu:/tmp$ sudo vgcreate VG1 /dev/loop19
Physical volume "/dev/loop19" successfully created.
Volume group "VG1" successfully created
maysara@Linux-Ubuntu:/tmp$ sudo lvcreate 250M VG1
No command with matching syntax recognised. Run 'lvcreate --help' for more information.
maysara@Linux-Ubuntu:/tmp$ sudo lvcreate -L 250M VG1
Rounding up size to full physical extent 252.00 MiB
```

```

maysara@Linux-Ubuntu:/tmp$ sudo lvcreate 250M VG1
No command with matching syntax recognised. Run 'lvcreate --help' for more information.
maysara@Linux-Ubuntu:/tmp$ sudo lvcreate -L 250M VG1
Rounding up size to full physical extent 252.00 MiB
Volume group "VG1" has insufficient free space (24 extents): 63 required.
maysara@Linux-Ubuntu:/tmp$
maysara@Linux-Ubuntu:/tmp$
maysara@Linux-Ubuntu:/tmp$
maysara@Linux-Ubuntu:/tmp$
maysara@Linux-Ubuntu:/tmp$ sudo lvcreate -L 150M VG1
Rounding up size to full physical extent 152.00 MiB
Volume group "VG1" has insufficient free space (24 extents): 38 required.
maysara@Linux-Ubuntu:/tmp$ cd /Desktop
bash: cd: /Desktop: No such file or directory
maysara@Linux-Ubuntu:/tmp$ cd /home
maysara@Linux-Ubuntu:/home$ sudo lvcreate -L 150M VG1
Rounding up size to full physical extent 152.00 MiB
Volume group "VG1" has insufficient free space (24 extents): 38 required.
maysara@Linux-Ubuntu:/home$ cd /tmp
maysara@Linux-Ubuntu:/tmp$ vgsdisplay
WARNING: Running as a non-root user. Functionality may be unavailable.
/run/lock/lvm/P_global:aux: open failed: Permission denied
maysara@Linux-Ubuntu:/tmp$ sudo vgsdisplay
--- Volume group ---
VG Name                VG1
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                 96.00 MiB
PE Size                 4.00 MiB
Total PE                24
Alloc PE / Size         0 / 0
Free PE / Size          24 / 96.00 MiB
VG UUID                 QNWlmd-kC8X-12vt-P4nc-QPSe-afxv-WkeG2Z

maysara@Linux-Ubuntu:/tmp$ sudo lvcreate -L 95M VG1
Rounding up size to full physical extent 96.00 MiB
Logical volume "lvol0" created.
maysara@Linux-Ubuntu:/tmp$

```

- Formate LV using ext4

```

maysara@Linux-Ubuntu:/tmp$ sudo mkfs.ext4 /dev/VG1/lvol0
mke2fs 1.46.5 (30-Dec-2021)
Discarding device blocks: done
Creating filesystem with 24576 4k blocks and 24576 inodes

Allocating group tables: done
Writing inode tables: done
Creating journal (1024 blocks): done
Writing superblocks and filesystem accounting information: done

```

- Mount LV to /mnt directory
- Extend VG the remaining PV

```
maysara@Linux-Ubuntu:/tmp$ sudo mount /dev/VG1/lvol0/mnt
mount: /dev/VG1/lvol0/mnt: can't find in /etc/fstab.
maysara@Linux-Ubuntu:/tmp$ sudo mount /dev/VG1/lvol0 /mnt
maysara@Linux-Ubuntu:/tmp$ sudo vgextend VG1 /dev/loop19
Physical volume '/dev/loop19' is already in volume group 'VG1'
Unable to add physical volume '/dev/loop19' to volume group 'VG1'
/dev/loop19: physical volume not initialized.
maysara@Linux-Ubuntu:/tmp$ sudo vgextend VG1 /dev/loop20
Physical volume "/dev/loop20" successfully created.
Volume group "VG1" successfully extended
```

- Resize 2fs LV with 50M extra

```
open: Permission denied while opening /dev/VG1/lvol0
maysara@Linux-Ubuntu:/tmp$ sudo resize2fs -f /dev/VG1/lvol0
resize2fs 1.46.5 (30-Dec-2021)
```

Network

- Display Network interface info with ip command

```
maysara@Linux-Ubuntu:/tmp$ ip a
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 08:00:27:6b:45:3a 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 83189sec preferred_lft 83189sec
    inet6 fe80::f352:15e0:6493:bdd9/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

- Display currently active TCP connections on your Os using netstat command

```
valid_lft forever preferred_lft forever
maysara@Linux-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 258 not upgraded.
Need to get 204 kB of archives.
After this operation, 819 kB of additional disk space will be used.
Get:1 http://eg.archive.ubuntu.com/ubuntu jammy/main amd64 net-tools amd64 1.60+git20181103.0eebece-1ubuntu5 [204 kB]
Fetched 204 kB in 2s (106 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 231643 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) ...
maysara@Linux-Ubuntu:/tmp$
```

```
maysara@Linux-Ubuntu:/tmp$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp        0      0 localhost:domain        0.0.0.0:*               LISTEN
tcp6       0      0 [::]:http               [::]:*                  LISTEN
tcp6       0      0 ip6-localhost:ipp      [::]:*                  LISTEN
udp        0      0 0.0.0.0:37752           0.0.0.0:*               LISTEN
udp        0      0 localhost:domain        0.0.0.0:*               LISTEN
udp        0      0 Linux-Ubuntu:bootpc     _gateway:bootps        ESTABLISHED
udp        0      0 0.0.0.0:mdns            0.0.0.0:*               LISTEN
udp        0      0 0.0.0.0:631             0.0.0.0:*               LISTEN
udp6       0      0 [::]:mdns               [::]:*                  LISTEN
udp6       0      0 [::]:58909              [::]:*                  LISTEN
```

- Display currently open ports on your system using nmap

```
Processing triggers for man-db (2.10.2-1) ...
maysara@Linux-Ubuntu:/tmp$ sudo apt install nmap
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:
  libblas3 liblinear4 lua-lpeg nmap-common
Suggested packages:
  liblinear-tools liblinear-dev ncat ndiff zenmap
The following NEW packages will be installed:
  libblas3 liblinear4 lua-lpeg nmap nmap-common
0 upgraded, 5 newly installed, 0 to remove and 258 not upgraded.
Need to get 5,973 kB of archives.
After this operation, 26.3 MB of additional disk space will be used.
```

```
maysara@Linux-Ubuntu:/tmp$
maysara@Linux-Ubuntu:/tmp$ nmap 192.168.1
Starting Nmap 7.80 ( https://nmap.org ) at 2023-04-10 01:46 EET
Nmap scan report for 192.168.1 (192.168.0.1)
Host is up (0.082s latency).
Not shown: 997 filtered ports
PORT      STATE SERVICE
25/tcp    open  smtp
80/tcp    open  http
443/tcp   open  https
```