

System Admin2 Lab1

Lab objectives:

- Using Loop devices, create 4 PVs

- dd if=/dev/zero of=disk1.disk bs=1024 count=10000
- dd if=/dev/zero of=disk2.disk bs=1024 count=10000
- dd if=/dev/zero of=disk3.disk bs=1024 count=10000
- dd if=/dev/zero of=disk4.disk bs=1024 count=10000

```
donia@donia-VirtualBox:/tmp$ dd if=/dev/zero of=disk1.disk bs=1024 count=10000
10000+0 records in
10000+0 records out
10240000 bytes (10 MB, 9.8 MiB) copied, 0.0327621 s, 313 MB/s
donia@donia-VirtualBox:/tmp$ dd if=/dev/zero of=disk2.disk bs=1024 count=10000
10000+0 records in
10000+0 records out
10240000 bytes (10 MB, 9.8 MiB) copied, 0.0444316 s, 230 MB/s
donia@donia-VirtualBox:/tmp$ dd if=/dev/zero of=disk3.disk bs=1024 count=10000
10000+0 records in
10000+0 records out
10240000 bytes (10 MB, 9.8 MiB) copied, 0.0577112 s, 177 MB/s
donia@donia-VirtualBox:/tmp$ dd if=/dev/zero of=disk4.disk bs=1024 count=10000
10000+0 records in
10000+0 records out
10240000 bytes (10 MB, 9.8 MiB) copied, 0.0545428 s, 188 MB/s
donia@donia-VirtualBox:/tmp$ losetup -f
/dev/loop0
donia@donia-VirtualBox:/tmp$ losetup /dev/loop0 disk1.disk
losetup: /dev/loop0: failed to set up loop device: Permission denied
donia@donia-VirtualBox:/tmp$ sudo losetup /dev/loop0 disk1.disk
donia@donia-VirtualBox:/tmp$ sudo losetup /dev/loop1 disk2.disk
donia@donia-VirtualBox:/tmp$ sudo losetup /dev/loop2 disk3.disk
donia@donia-VirtualBox:/tmp$ sudo losetup /dev/loop3 disk4.disk
donia@donia-VirtualBox:/tmp$ sudo pvcreate /dev/loop0
Physical volume "/dev/loop0" successfully created.
donia@donia-VirtualBox:/tmp$ sudo pvcreate /dev/loop1
Physical volume "/dev/loop1" successfully created.
```

- create VG and add 3 on PVs to it

```
- sudo vgcreate VG1 /dev/loop0 /dev/loop1 /dev/loop2
```

```
donia@donia-VirtualBox:/tmp$ sudo vgcreate VG1 /dev/loop0 /dev/loop1 /dev/loop2 /dev/loop3
Volume group "VG1" successfully created
donia@donia-VirtualBox:/tmp$ sudo vgsdisplay
--- Volume group ---
VG Name                VG1
System ID
Format                 lvm2
Metadata Areas         4
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                 4
Act PV                 4
VG Size                 32.00 MiB
PE Size                 4.00 MiB
Total PE                8
Alloc PE / Size         0 / 0
Free PE / Size          8 / 32.00 MiB
VG UUID                oHqH87-rXN2-t2tK-ySDM-s1vZ-W1RK-0vJeQr
```

- create LV which has size of 250M

```
donia@donia-VirtualBox:/tmp$ sudo lvcreate -L 6M -n lv1 VG1
Rounding up size to full physical extent 8.00 MiB
Logical volume "lv1" created.
```

- format LV using ext4

```
-sudo mkfs.ext4 /dev/VG1/lv1
```

```
donia@donia-VirtualBox:/tmp$ sudo mkfs.ext4 /dev/VG1/lv1
mke2fs 1.46.5 (30-Dec-2021)
Discarding device blocks: done
Creating filesystem with 2048 4k blocks and 2048 inodes

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

- mount LV into /mnt directory

```
- sudo mkdir /mnt/lv1
- sudo mount /dev/VG1/lv1/mnt/lv1
donia@donia-VirtualBox:/tmp$ sudo mkdir /mnt/lv1
donia@donia-VirtualBox:/tmp$ sudo mount /dev/VG1/lv1 /mnt/lv1
donia@donia-VirtualBox:/tmp$
```

- extend LV with +50M

```
- sudo lvextend /dev/VG1/lv1 -L +3M
donia@donia-VirtualBox:/tmp$ sudo lvextend /dev/VG1/lv1 -L +3M
Rounding size to boundary between physical extents: 4.00 MiB.
Size of logical volume VG1/lv1 changed from 8.00 MiB (2 extents) to 12.00 MiB (3 ext
Logical volume VG1/lv1 successfully resized.
donia@donia-VirtualBox:/tmp$
```

- resize2fs LV with the 50M extra

```
- sudo resize2fs /dev/VG1/lv1 +10M
donia@donia-VirtualBox:/tmp$ sudo resize2fs /dev/VG1/lv1 +10M
resize2fs 1.46.5 (30-Dec-2021)
Filesystem at /dev/VG1/lv1 is mounted on /mnt/lv1; on-line resizing required
old_desc blocks = 1, new_desc blocks = 1
The filesystem on /dev/VG1/lv1 is now 2560 (4k) blocks long.
```

Lab Network:

- Display the network interface information using ip command

```
donia@donia-VirtualBox:/tmp$ ip add show
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 08:00:27:8a:2f:49 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 45887sec preferred_lft 45887sec
    inet6 fe80::ee84:e0f:76f7:e037/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
donia@donia-VirtualBox:/tmp$
```

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

```
donia@donia-VirtualBox:/tmp$ netstat -t
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 donia-VirtualBox:52990  ec2-54-244-27-196:https ESTABLISHED
donia@donia-VirtualBox:/tmp$
```

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

```
donia@donia-VirtualBox:/tmp$ netstat -l
Active Internet connections (only servers)
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 ip6-localhost:ipp      [::]:*                  LISTEN
udp        0      0 0.0.0.0:46196          0.0.0.0:*               *
udp        0      0 0.0.0.0:mdns            0.0.0.0:*               *
udp        0      0 localhost:domain       0.0.0.0:*               *
udp        0      0 0.0.0.0:631            0.0.0.0:*               *
udp6       0      0 [::]:mdns               [::]:*                  *
udp6       0      0 [::]:54770              [::]:*                  *
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7

Active UNIX domain sockets (only servers)
Proto RefCnt Flags               Type               State              I-Node   Path
unix   2      [ ACC ]                STREAM             LISTENING          19927    /run/dbus/system_bus_socket
unix   2      [ ACC ]                STREAM             LISTENING          19939    /run/uuid/request
unix   2      [ ACC ]                STREAM             LISTENING          21158    @/tmp/.X11-unix/X0
unix   2      [ ACC ]                STREAM             LISTENING          21380    /run/user/1000/systemd/private
unix   2      [ ACC ]                STREAM             LISTENING          21387    /run/user/1000/bus
unix   2      [ ACC ]                STREAM             LISTENING          21389    /run/user/1000/gnupg/S.dirmngr
```