

Lab1 System Admin II

Lab Objectivies :

1-Using Loop devices, create 4 PVs

```
omarwalid@omarwalid-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, 0.0589341 s, 174 MB/s
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup -f /dev/loop8
omarwalid@omarwalid-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, 0.0585938 s, 175 MB/s
omarwalid@omarwalid-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, 0.0625636 s, 164 MB/s
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop8 disk1.disk
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop9 disk2.disk
losetup: disk2.disk: failed to set up loop device: Device or resource busy
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup -f
```

2-create VG and add 3 on PVs to it:

```
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop8 disk1.disk
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop9 disk2.disk
losetup: disk2.disk: failed to set up loop device: Device or resource busy
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup -f
/dev/loop21
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop21 disk2.disk
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup -f
/dev/loop22
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop22 disk3.disk
omarwalid@omarwalid-VirtualBox:/tmp$ pvscan
WARNING: Running as a non-root user. Functionality may be unavailable.
/run/lock/lvm/P_global:aux: open failed: Permission denied
No matching physical volumes found
omarwalid@omarwalid-VirtualBox:/tmp$ sudo pvscan
No matching physical volumes found
omarwalid@omarwalid-VirtualBox:/tmp$ sudo pvcreate /dev/loop8
Physical volume "/dev/loop8" successfully created.
omarwalid@omarwalid-VirtualBox:/tmp$ sudo pvcreate /dev/loop21
Physical volume "/dev/loop21" successfully created.
omarwalid@omarwalid-VirtualBox:/tmp$ sudo pvcreate /dev/loop22
Physical volume "/dev/loop22" successfully created.
omarwalid@omarwalid-VirtualBox:/tmp$ sudo vgcreate VG1 /dev/loop8 /dev/loop21
```

3-create LV which has size of 250M:

```
omarwalid@omarwalid-VirtualBox:/tmp$ sudo lvcreate -L 15M VG1
Rounding up size to full physical extent 16.00 MiB
Logical volume "lvol0" created.
omarwalid@omarwalid-VirtualBox:/tmp$ sudo lvdisplay
--- Logical volume ---
LV Path                /dev/VG1/lvol0
LV Name                 lvol0
VG Name                 VG1
LV UUID                 YcUwac-gRWK-wIjA-jgON-orFL-sIv0-4s13IP
LV Write Access         read/write
LV Creation host, time  omarwalid-VirtualBox, 2023-03-28 13:17:04 +0200
LV Status                available
# open                  0
LV Size                 16.00 MiB
Current LE               4
Segments                2
Allocation               inherit
Read ahead sectors      auto
- currently set to      256
Block device            253:0
```

4-format LV using ext4:

```
omarwalid@omarwalid-VirtualBox:/tmp$ mkfs.ext4 /dev/VG1/lvol0
mke2fs 1.46.5 (30-Dec-2021)
mkfs.ext4: Permission denied while trying to determine filesystem size
omarwalid@omarwalid-VirtualBox:/tmp$ sudo mkfs.ext4 /dev/VG1/lvol0
mke2fs 1.46.5 (30-Dec-2021)
Discarding device blocks: done
Creating filesystem with 4096 4k blocks and 4096 inodes

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

5-mount LV into /mnt directory:

```
omarwalid@omarwalid-VirtualBox:/tmp$ sudo mount /dev/VG1/lvol0 /mnt
omarwalid@omarwalid-VirtualBox:/tmp$ sudo df -h /mnt
Filesystem              Size  Used Avail Use% Mounted on
/dev/mapper/VG1-lvol0   11M   24K  9.9M   1% /mnt
```

6-extend VG with the remaining PV:

```
omarwalid@omarwalid-VirtualBox:/tmp$ lvextend -l +10M /dev/VG1/lvol0
WARNING: Running as a non-root user. Functionality may be unavailable.
Invalid argument for --extents: +10M
Error during parsing of command line.
omarwalid@omarwalid-VirtualBox:/tmp$ sudo lvextend -L +10M /dev/VG1/lvol0
Rounding size to boundary between physical extents: 12.00 MiB.
Size of logical volume VG1/lvol0 changed from 16.00 MiB (4 extents) to 28.00 MiB (7 extents).
Logical volume VG1/lvol0 successfully resized.
```

7-extend LV with +50M:

```
omarwalid@omarwalid-VirtualBox:/tmp$ lvextend -l +10M /dev/VG1/lvol0
WARNING: Running as a non-root user. Functionality may be unavailable.
Invalid argument for --extents: +10M
Error during parsing of command line.
omarwalid@omarwalid-VirtualBox:/tmp$ sudo lvextend -L +10M /dev/VG1/lvol0
Rounding size to boundary between physical extents: 12.00 MiB.
Size of logical volume VG1/lvol0 changed from 16.00 MiB (4 extents) to 28.00 MiB (7 extents).
Logical volume VG1/lvol0 successfully resized.
```

8-resize2fs LV with the 50M extra:

```

omarwalid@omarwalid-VirtualBox:/tmp$ sudo resize2fs /dev/VG1/lvol0 +5M
resize2fs 1.46.5 (30-Dec-2021)
resize2fs: New size smaller than minimum (1296)

omarwalid@omarwalid-VirtualBox:/tmp$ sudo lvdisplay
--- Logical volume ---
LV Path                /dev/VG1/lvol0
LV Name                 lvol0
VG Name                 VG1
LV UUID                 YcUwac-gRWK-wIjA-jgON-orFL-sIv0-4s13IP
LV Write Access         read/write
LV Creation host, time  omarwalid-VirtualBox, 2023-03-28 13:17:04 +0200
LV Status                available
# open                  1
LV Size                 28.00 MiB
Current LE               7
Segments                4
Allocation               inherit
Read ahead sectors      auto
- currently set to      256
Block device            253:0

```

9-Display the network interface information using `ip` command:

```

omarwalid@omarwalid-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 08:00:27:44:b1:99 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 84901sec preferred_lft 84901sec
    inet6 fe80::f2d1:fd11:fc8a:9d45/64 scope link noprefixroute
        valid_lft forever preferred_lft forever

```

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

```

omarwalid@omarwalid-VirtualBox:/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
tcp        0      0 10.0.2.15:52788          actiontoad.canonic:http TIME_WAIT
tcp6       0      0 ip6-localhost:ipp       [::]:*                 LISTEN
udp        0      0 0.0.0.0:631              0.0.0.0:*
udp        0      0 0.0.0.0:mdns              0.0.0.0:*
udp        0      0 0.0.0.0:49203             0.0.0.0:*
udp        0      0 localhost:domain         0.0.0.0:*
udp        0      0 10.0.2.15:bootpc         10.0.2.2:bootps        ESTABLISHED
udp6       0      0 [::]:mdns                 [::]:*
udp6       0      0 [::]:46991                 [::]:*
raw6       0      0 [::]:ipv6-icmp            [::]:*                  7

```

11-Display currently open ports on your system using `nmap` command:

```

omarwalid@omarwalid-VirtualBox:/tmp$ nmap 10.0.2.15
Starting Nmap 7.80 ( https://nmap.org ) at 2023-03-28 13:33 EET
Nmap scan report for 10.0.2.15 (10.0.2.15)
Host is up (0.00015s latency).
All 1000 scanned ports on 10.0.2.15 (10.0.2.15) are closed

```

```
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omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop9 disk2.disk
losetup: disk2.disk: failed to set up loop device: Device or resource busy
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup -f
/dev/loop21
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop21 disk2.disk
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup -f
/dev/loop22
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop22 disk3.disk
omarwalid@omarwalid-VirtualBox:/tmp$ pvscan
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Physical volume "/dev/loop8" successfully created.
omarwalid@omarwalid-VirtualBox:/tmp$ sudo pvcreate /dev/loop21
Physical volume "/dev/loop21" successfully created.
omarwalid@omarwalid-VirtualBox:/tmp$ sudo pvcreate /dev/loop22
Physical volume "/dev/loop22" successfully created.
omarwalid@omarwalid-VirtualBox:/tmp$ sudo vgcreate VG1 /dev/loop8 /dev/loop21
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop8 disk1.disk
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop9 disk2.disk
losetup: disk2.disk: failed to set up loop device: Device or resource busy
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup -f
/dev/loop21
omarwalid@omarwalid-VirtualBox:/tmp$ sudo losetup /dev/loop21 disk2.disk
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/dev/loop22
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Physical volume "/dev/loop21" successfully created.
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Physical volume "/dev/loop22" successfully created.
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```