RedHat Certified System Administrator (RHEL 9)

LVM

LVM is a storage management technology that gives users the power to pool and abstract the physical layout of component storage devices for easier and flexible administration

LVM Components

- <u>Physical Volumes (PV):</u> A physical volume is a storage device or partition that is used as a component in an LVM logical volume.
- <u>Volume Groups (VG):</u> A volume group is a collection of physical volumes that are grouped together to form a single storage unit.
- <u>Logical Volumes (LV):</u> A logical volume is a virtual disk that is created from free space in a volume group.
- <u>Physical Extents (PE):</u> A physical extent is the smallest unit of storage in a volume group.
- <u>Logical Extents (LE):</u> A logical extent is the smallest unit of storage in a logical volume.

Steps to Create a Logical Volume

1. Create a partition on the disk

```
fdisk /dev/sdb
# Create a new partition
n
# Select the default values
# Write the changes
w
```

2. Create a physical volume

```
pvcreate /dev/sdb1
```

3. Create a volume group

```
vgcreate vg1 /dev/sdb1
```

4. Create a logical volume

```
lvcreate -n lv1 -L 1G vg1
```

    o -n: Name of the logical volume
    o -L: Size of the logical volume

5. Create a filesystem

```
mkfs.ext4 /dev/vg1/lv1
```

    o mkfs.ext4: Create a filesystem of type ext4

6. Mount the filesystem

```
mkdir /mnt/lv1
mount /dev/vg1/lv1 /mnt/lv1
```

7. Or you can mount it permanently by adding the following line to /etc/fstab

```
/dev/vg1/lv1 /mnt/lv1 ext4 defaults 0 0
```

Steps to Resize a logical Volume

1. Resize the logical volume

```
lvresize -r -L +1G /dev/vg1/lv1
```

    o -L: Size of the logical volume
    o +1G: Add 1GB to the logical volume
    o -r: Resize the filesystem

Steps to Remove a Logical Volume

1. Unmount the filesystem

   `umount /mnt/lv1 # Just an example path`

Or you can unmount it permanently by removing entry from /etc/fstab

`/dev/vg1/lv1 /mnt/lv1 ext4 defaults 0 0`

2. Remove the logical volume

   `lvremove /dev/vg1/lv1`

3. Remove the volume group

   `vgremove vg1`

4. Remove the physical volume(s)

   `pvremove /dev/sdb1`

Stratis

- Stratis is a local storage management solution for Linux that is designed to be easy to use. It provides a simple command-line interface.
- To install stratis:

  `yum install stratisd stratis-cli`

- `Enable and start the service stratisd`

  `Systemctl enable --now stratisd`

- `Stratis Components`
    - `Pool:` `A pool is a collection of block devices that are grouped together to form a single storage unit.`
    - `Filesystem:` `A filesystem is a virtual disk that is created from free space in a pool.`

Stratis Examples

- Create a snapshot
  `stratis filesystem snapshot pool1 fs1 fs1-snapshot`
  - pool1: Name of the pool
  - fs1: Name of the filesystem
  - fs1-snapshot: Name of the snapshot
- Restore a snapshot
  `stratis filesystem restore pool1 fs1-snapshot`
  - pool1: Name of the pool
  - fs1-snapshot: Name of the snapshot

PS: You can find more examples at the end of the man page (`man stratis`).