ASSIGNMENT – 13

Cloud Computing Practical Assignment No:13 Working with EBS

- Create an Amazon EBS volume
- Attach and mount your volume to an EC2 instance
- Create a snapshot of your volume
- Create a new volume from your snapshot
- Attach and mount the new volume to your EC2 instance

Step I: Launch an Instance

1. Open EC2 Console:

   - Go to the AWS Management Console and select Services> EC2.

- Click on Launch Instance.

2. Configure the Instance:

- Name: Enter Lab.

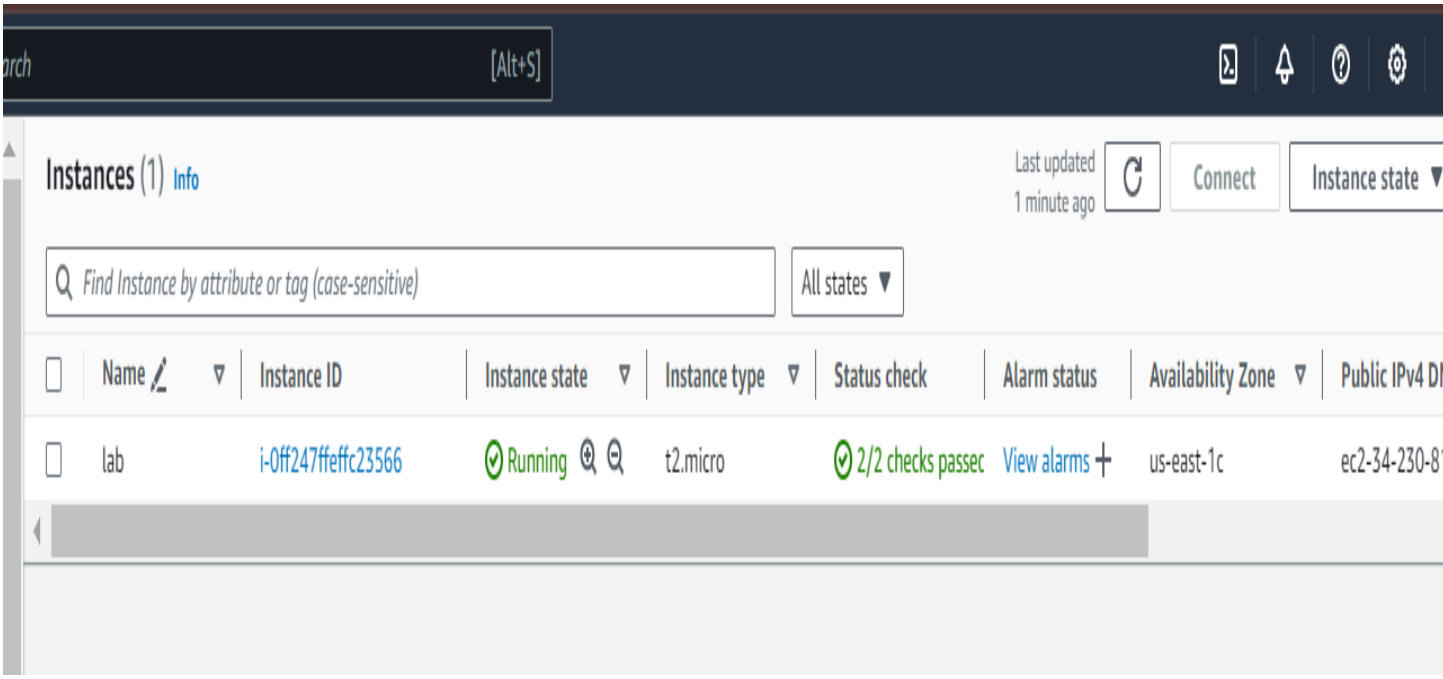
- AMI: Choose Amazon Linux 2023 AMI.

- Keep the other settings as default.

3. Launch the Instance:

- Click Launch instance.

- Wait for the instance to launch and reach the running state.



Step II: Create a Volume

1. Go to Volumes:

- In the EC2 dashboard, select Volumes from the left-hand navigation pane.

2. Create Volume:

- Click Create Volume and configure it as follows:

- Volume Type: General Purpose SSD (gp2)

- Size (GiB): 1

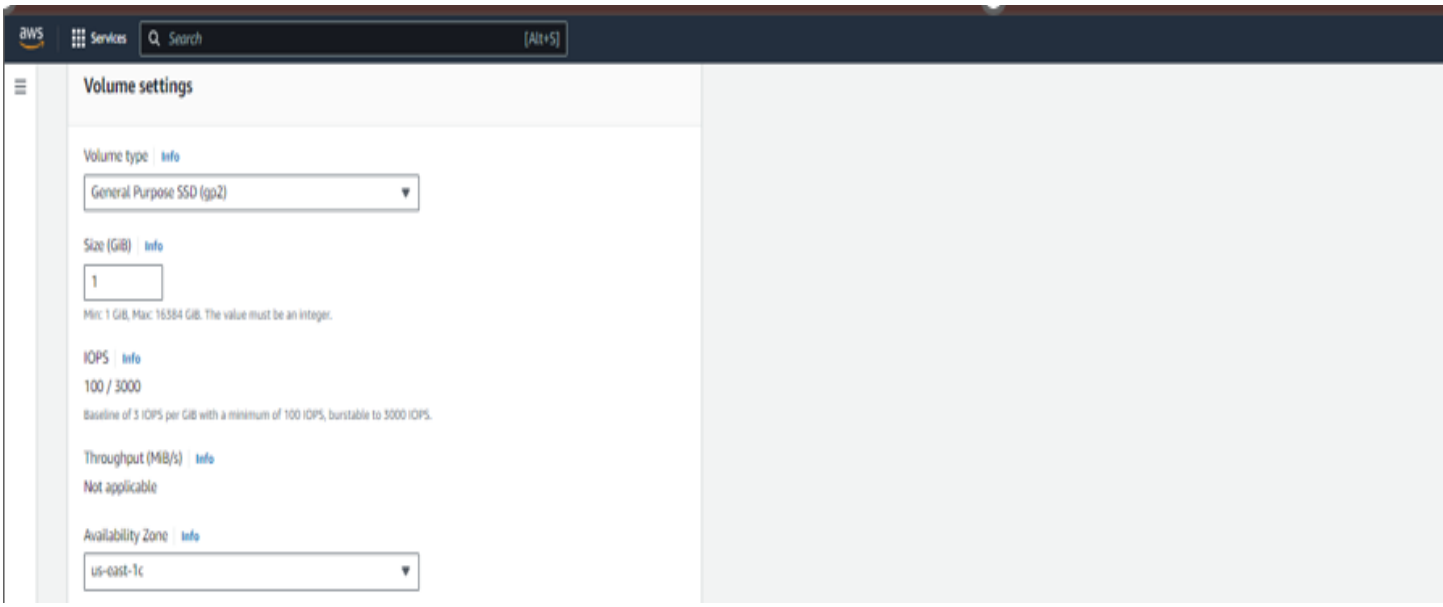
- Availability Zone: Select the same as your EC2 instance's availability zone.

3. Tag the Volume:

- Click Add tag and enter the following:

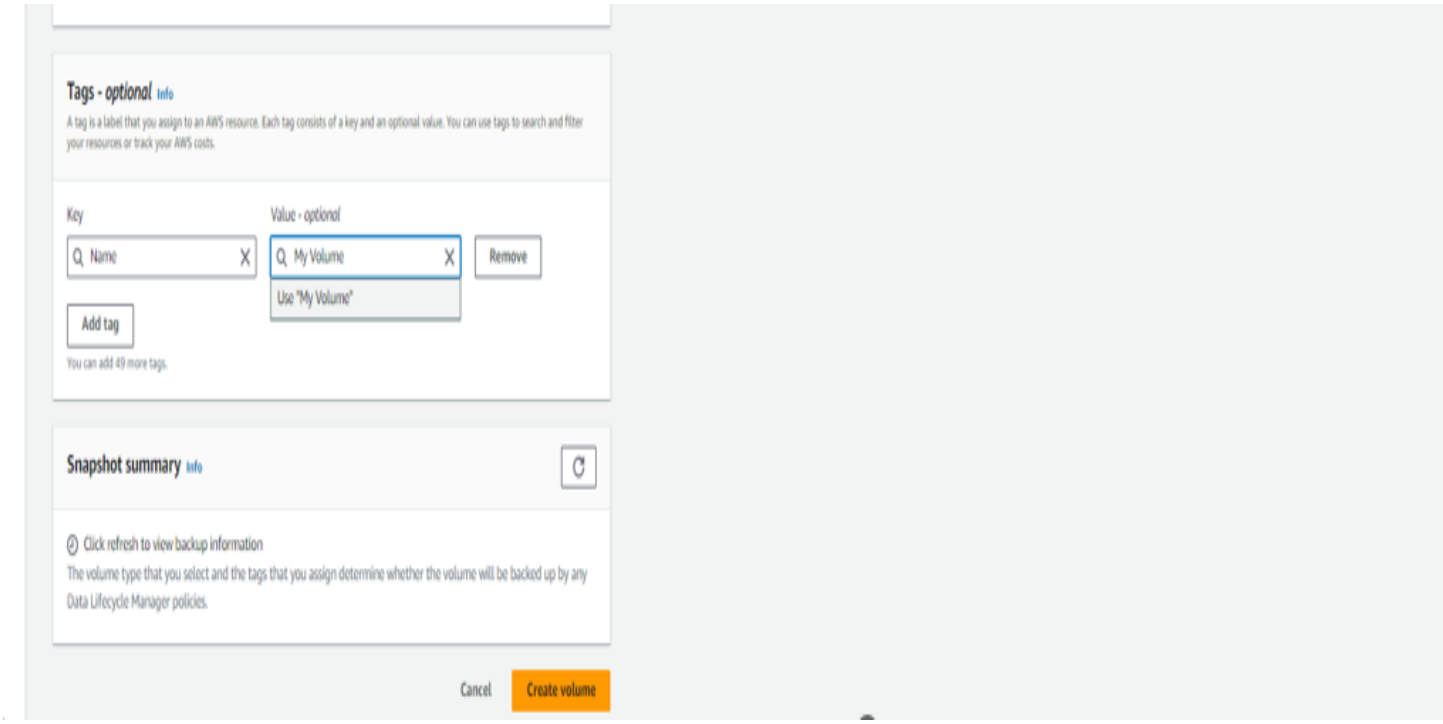
- Key: Name

- Value: My Volume



4. Create Volume:

- Click Create Volume.



- The volume will appear in the list and move from Creating to Available state. Refresh the page if necessary.

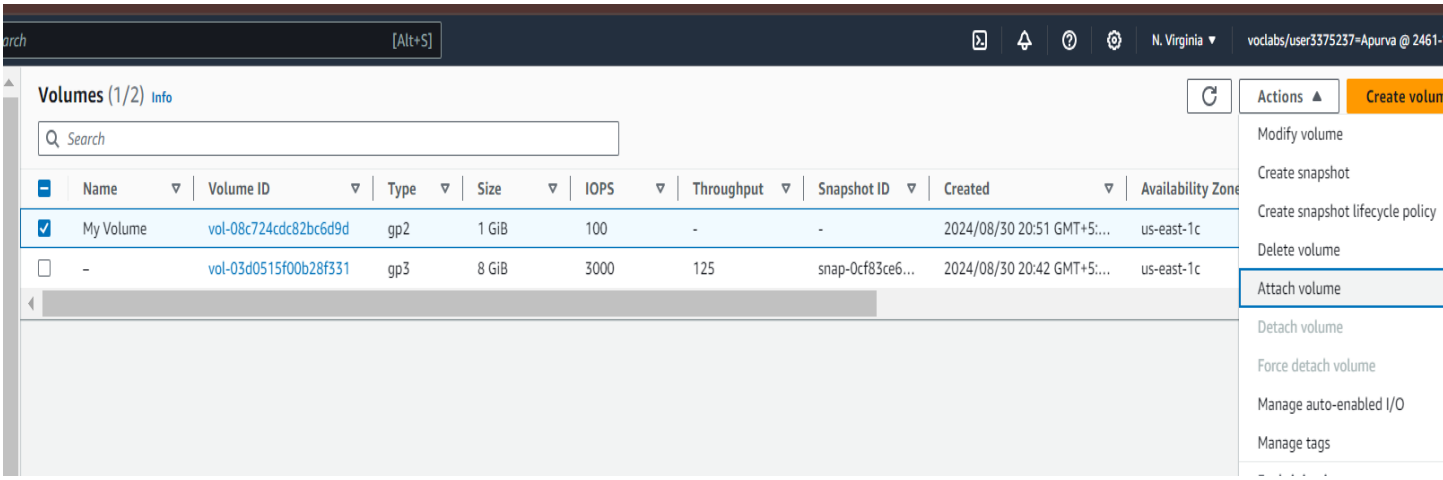
Task 2: Attach the Volume to an Instance

1. Select the Volume:

   - In the Volumes section, select My Volume.

2. Attach Volume:

   - Click on Actions > Attach Volume.



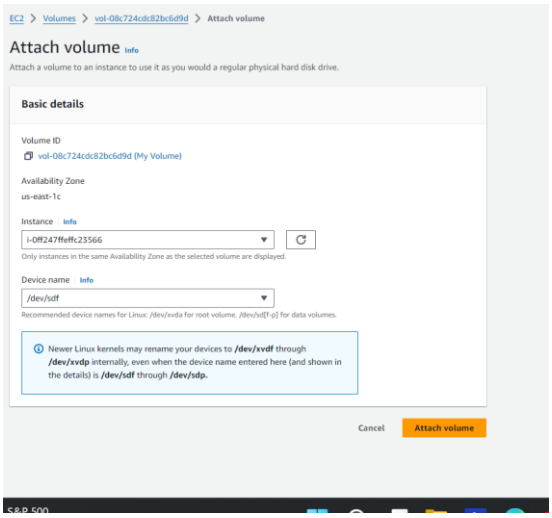
3. Select the Instance:

   - In the Instance field, select the Lab instance.

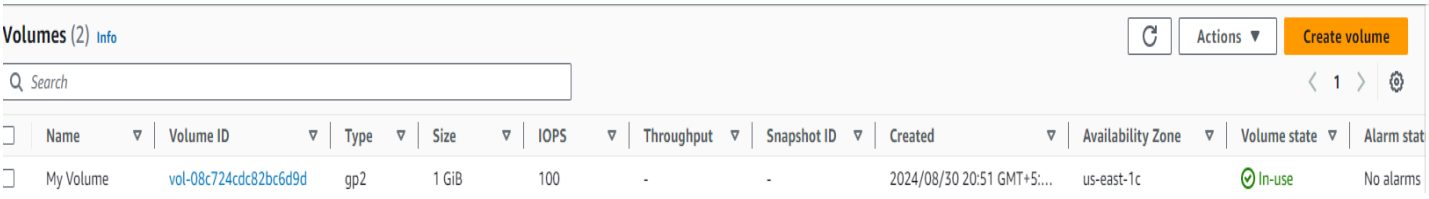
- The Device name should be set to ‘/dev/sdf’.

4. Attach Volume:

- Click Attach volume.



- The volume's state will change to In-use.

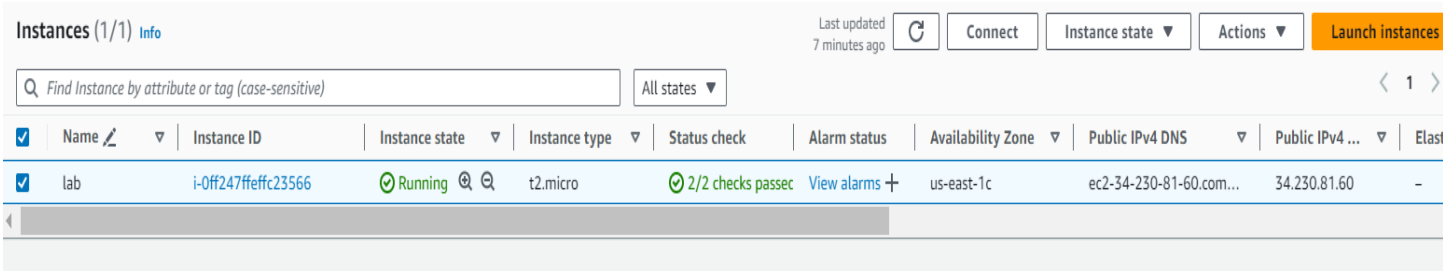


Task 3: Connect to Your Amazon EC2 Instance

1. Navigate to Instances:

- In the AWS Management Console, search for and select EC2.

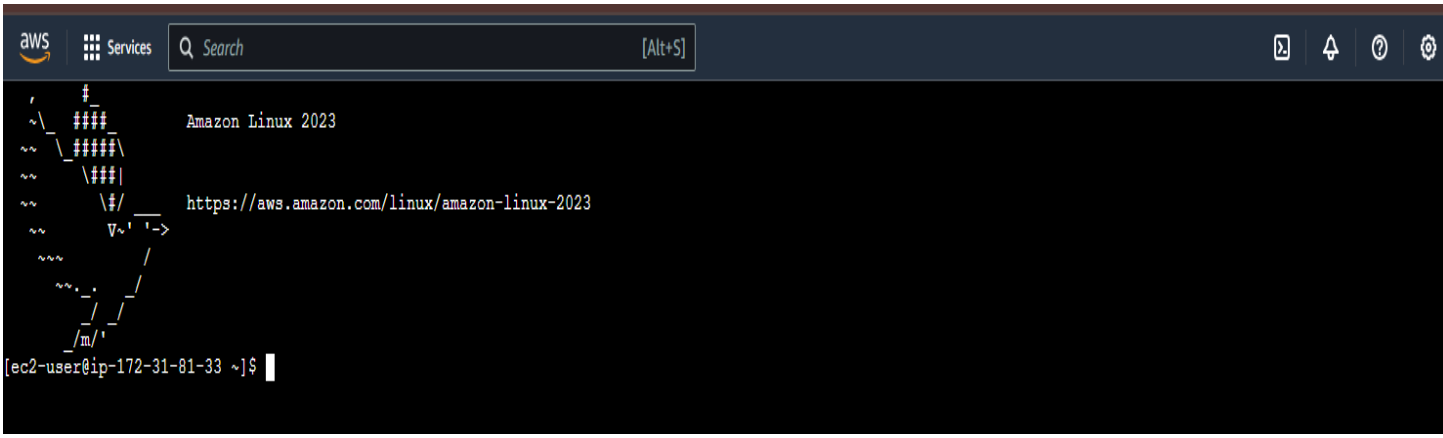
- Click on Instances.



2. Connect to the Instance:

- Select the Lab instance and click Connect.

- On the EC2 Instance Connect tab, click Connect.



- A terminal session will open.

Task 4: Create and Configure Your File System

1. View Storage:

- Run the command:

df -h

```
[ec2-user@ip-172-31-81-33 ~]$ sudo su
[root@ip-172-31-81-33 ec2-user]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        4.0M     0  4.0M   0% /dev
tmpfs           475M     0  475M   0% /dev/shm
tmpfs           190M  452K  190M   1% /run
/dev/xvda1      8.0G  1.6G  6.5G  20% /
tmpfs           475M     0  475M   0% /tmp
/dev/xvda128     10M  1.3M  8.7M  13% /boot/efi
tmpfs            95M     0   95M   0% /run/user/1000
[root@ip-172-31-81-33 ec2-user]#
```

- Confirm that the 1GB volume you attached is not yet listed.

2. Create a File System:

- Run the following command to create an ext3 file system on the new volume:

sudo mkfs -t ext3 /dev/sdf

```
[root@ip-172-31-81-33 ec2-user]# sudo mkfs -t ext3 /dev/sdf
mke2fs 1.46.5 (30-Dec-2021)
/dev/sdf contains a ext3 file system
        created on Fri Aug 30 15:27:45 2024
Proceed anyway? (y,N) y
Creating filesystem with 262144 4k blocks and 65536 inodes
Filesystem UUID: 7425d917-a13c-49f0-ae84-737b6f0a1fbc
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376

Allocating group tables: done
Writing inode tables: done
Creating journal (8192 blocks): done
Writing superblocks and filesystem accounting information: done
```

3. Create a Mount Directory:

- Create a directory for the new volume:

sudo mkdir /mnt/data-store

```
[root@ip-172-31-81-33 ec2-user]# sudo mkdir /mnt/data-store
```

4. Mount the Volume:

- Mount the volume to the directory:

sudo mount /dev/sdf /mnt/data-store

5. Configure Automatic Mounting:

- Run the following command to add the volume to '/etc/fstab':

```
[root@ip-172-31-81-33 ec2-user]# sudo mount /dev/sdf /mnt/data-store
[root@ip-172-31-81-33 ec2-user]# echo "/dev/sdf   /mnt/data-store ext3 defaults,noatime 1 2" | sudo tee -a /etc/fstab

/dev/sdf   /mnt/data-store ext3 defaults,noatime 1 2
[root@ip-172-31-81-33 ec2-user]# cat /etc/fstab
#
UUID=aac19826-060d-43e9-a76d-4d9cae6ea783     /           xfs    defaults,noatime  1   1
UUID=78B3-5976        /boot/efi       vfat    defaults,noatime,uid=0,gid=0,umask=0077,shortname=winnt,x-systemd.automoun
/dev/sdf   /mnt/data-store ext3 defaults,noatime 1 2
```

echo "/dev/sdf   /mnt/data-store ext3 defaults,noatime 1 2" | sudo tee -a /etc/fstab

6. View Configuration:

- Run the command:

  cat /etc/fstab

7. Check Storage Again:

- View the storage:

  df -h

```
[root@ip-172-31-81-33 ec2-user]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        4.0M     0  4.0M   0% /dev
tmpfs           475M     0  475M   0% /dev/shm
tmpfs           190M  456K  190M   1% /run
/dev/xvda1      8.0G  1.6G  6.5G  20% /
tmpfs           475M     0  475M   0% /tmp
/dev/xvda128     10M  1.3M  8.7M  13% /boot/efi
tmpfs            95M     0   95M   0% /run/user/1000
/dev/xvdf       975M   60K  924M   1% /mnt/data-store
```

- Confirm that the new volume is now listed.

8. Create a File:

- Create a file on the mounted volume and add text:

  sudo sh -c "echo some text has been written > /mnt/data-store/file.txt"

```
[root@ip-172-31-81-33 ec2-user]# sudo sh -c "echo some text has been written > /mnt/data-store/file.txt"
[root@ip-172-31-81-33 ec2-user]# cat /mnt/data-store/file.txt
some text has been written
[root@ip-172-31-81-33 ec2-user]#
```

9. Verify File Creation:

- Check that the text has been written to the file:

cat /mnt/data-store/file.txt

```
[root@ip-172-31-81-33 ec2-user]# cat /mnt/data-store/f
some text has been written
[root@ip-172-31-81-33 ec2-user]#
```

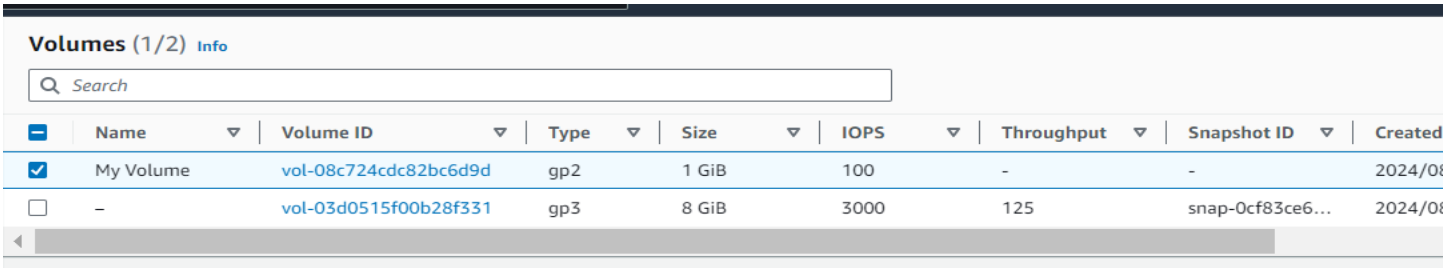
Task 5: Create an Amazon EBS Snapshot

1. Select Volume:

- In the EC2 Console, choose Volumes and select My Volume.

2. Create Snapshot:

- Click on Actions > Create snapshot.



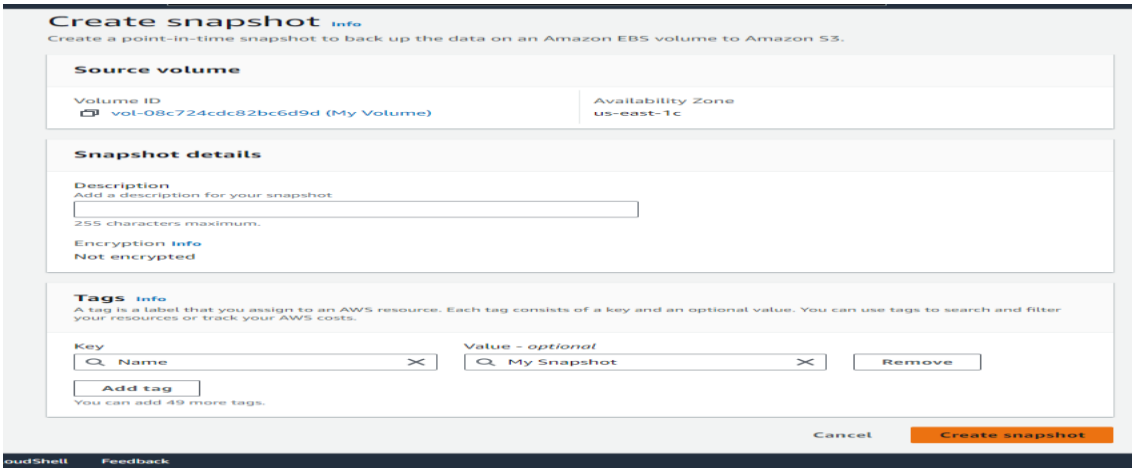
3. Tag the Snapshot:

- Click Add tag and enter:

- Key:Name

- Value: My Snapshot

- Click Create snapshot.



4. View Snapshot:

- In the left navigation pane, choose Snapshots.

- The snapshot will initially show as Pending and then change to Completed.

5. Delete the File on the Volume:

- In your EC2 Instance Connect session, run:

sudo rm /mnt/data-store/file.txt

```
[root@ip-172-31-81-33 ec2-user]# sudo rm /mnt/data-sto
```

6. Verify File Deletion:

- Check that the file has been deleted:

ls /mnt/data-store/

```
[root@ip-172-31-81-33 ec2-user]# sudo rm /mnt/data-store/file.txt
[root@ip-172-31-81-33 ec2-user]# ls /mnt/data-store/
lost+found
```

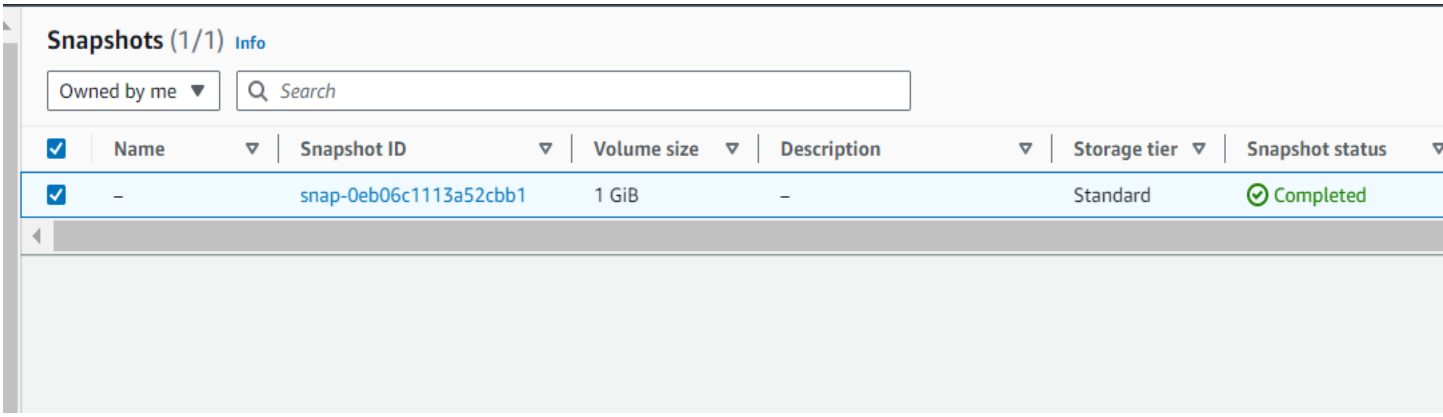
Task 6: Restore the Amazon EBS Snapshot

1. Select the Snapshot:

- In the EC2 Console, go to Snapshots and select My Snapshot.

2. Create Volume from Snapshot:

- Click Actions > Create volume from snapshot.



3. Configure Volume:

- Availability Zone: Choose the same as your previous configuration.

- Tag the volume:

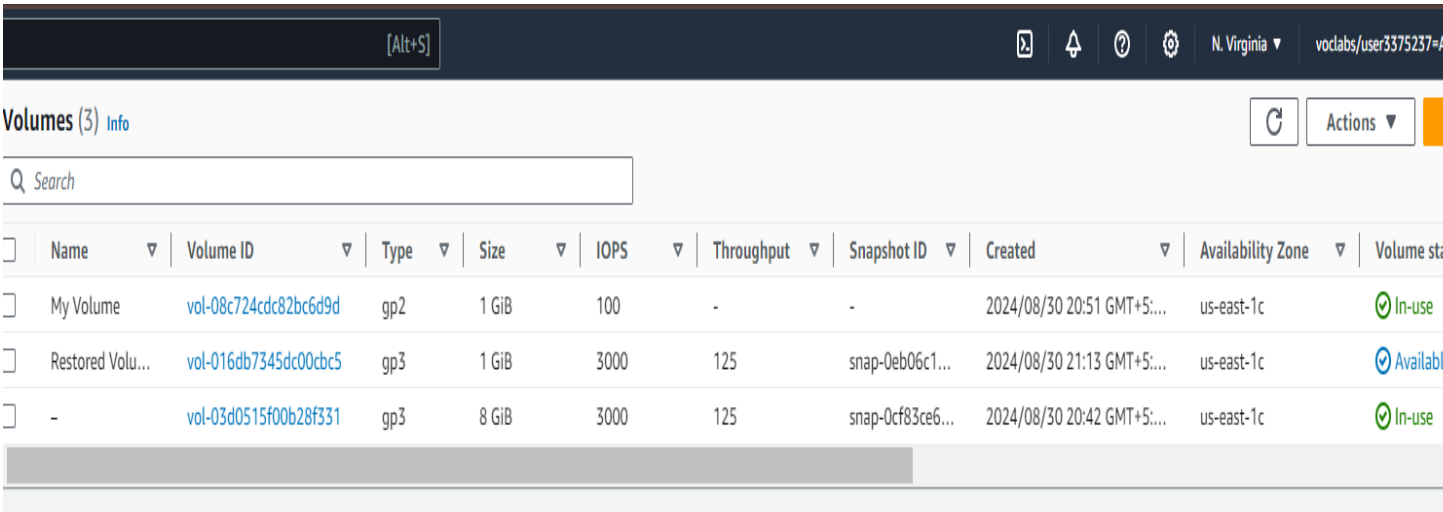
- Key: Name

- Value: Restored Volume

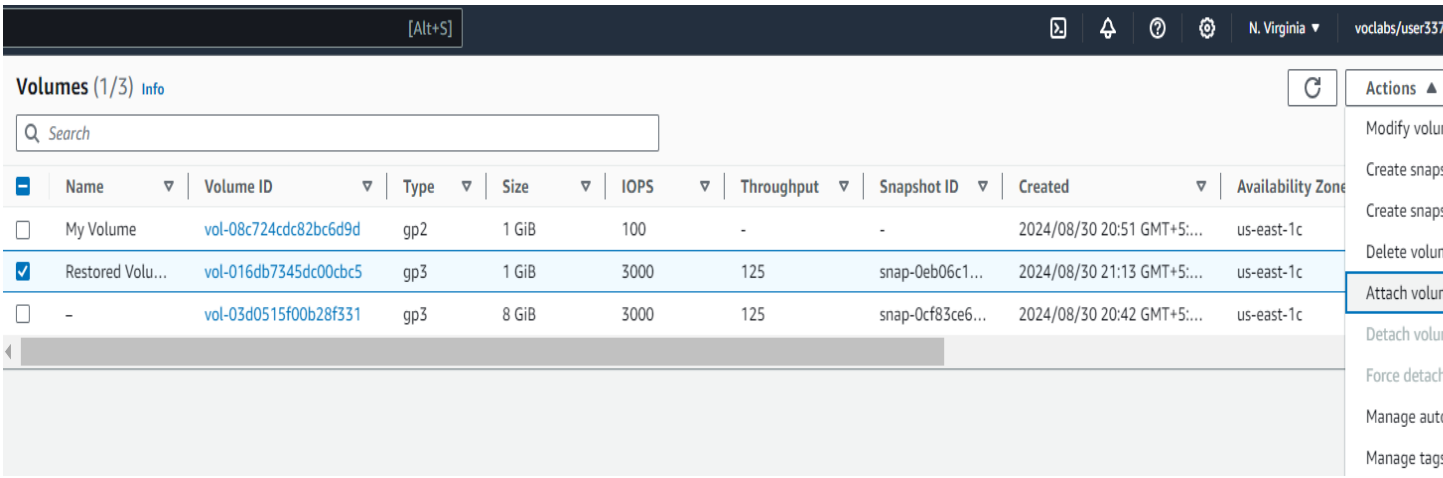
- Click Create Volume.

4. Attach the Restored Volume:

- In the Volumes section, select Restored Volume.



- Click on Actions > Attach Volume.



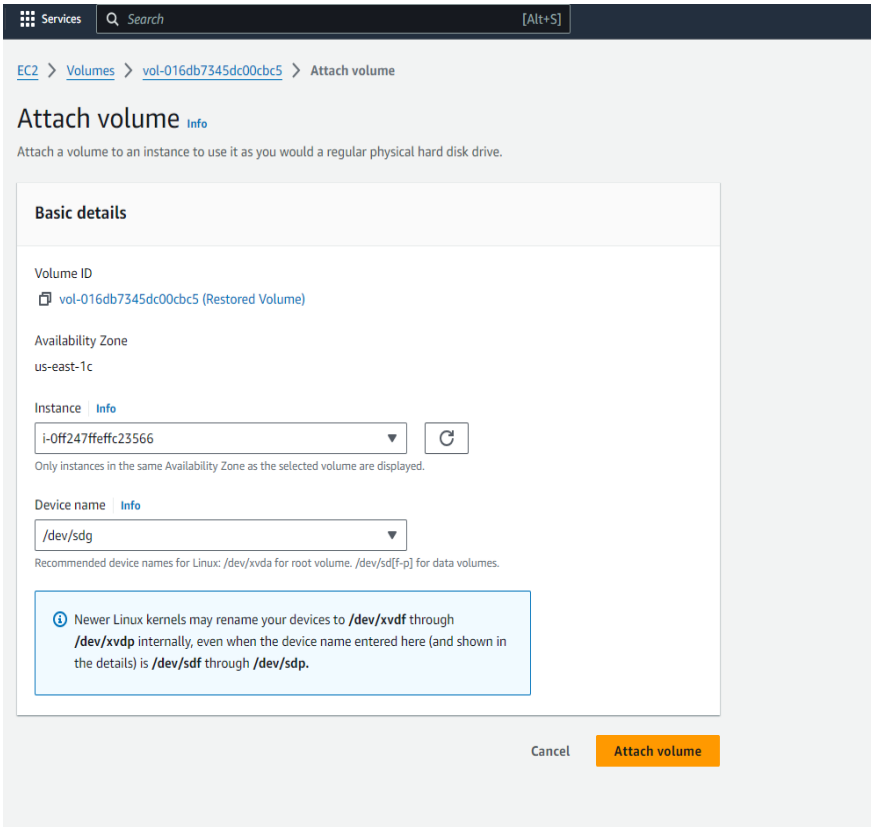
5. Select the Instance:

- Choose the Lab instance.

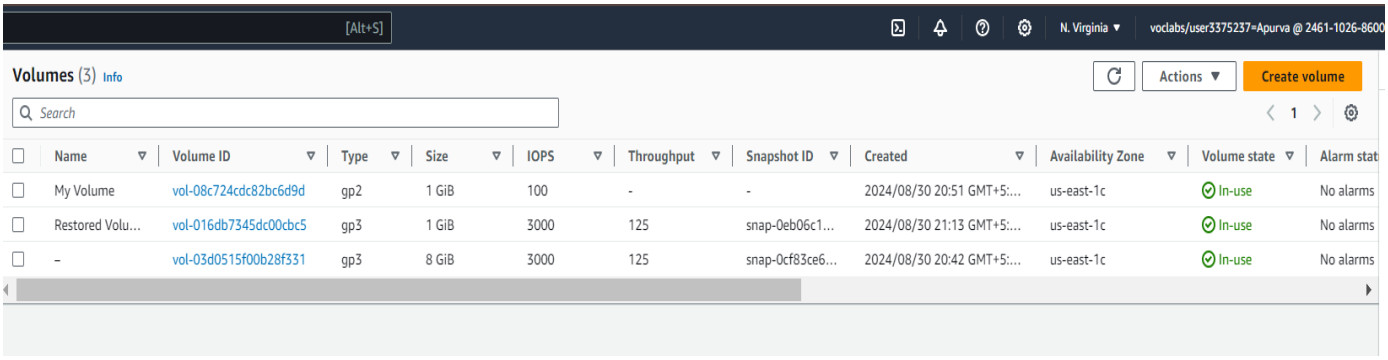
- The Device field should be set to '/dev/sdg'.

6. Attach Volume:

- Click Attach volume.



- The volume will now be in use.



7. Mount the Restored Volume:

- Create a new directory for mounting:

sudo mkdir /mnt/data-store2

```
some text has been written
[root@ip-172-31-81-33 ec2-user]# sudo rm /mnt/data-store/file.txt
[root@ip-172-31-81-33 ec2-user]# ls /mnt/data-store/
lost+found
[root@ip-172-31-81-33 ec2-user]# sudo mkdir /mnt/data-store2
```

- Mount the volume:

  sudo mount /dev/sdg /mnt/data-store2

```
[root@ip-172-31-81-33 ec2-user]# sudo mount /dev/sdg /mnt/data-store2
```

8. Verify the File:

- List the contents of the mounted volume:

  ls /mnt/data-store2/

- You should see ‘file.txt’.

```
[root@ip-172-31-81-33 ec2-user]# ls /mnt/data-store2
file.txt  lost+found
```