

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.

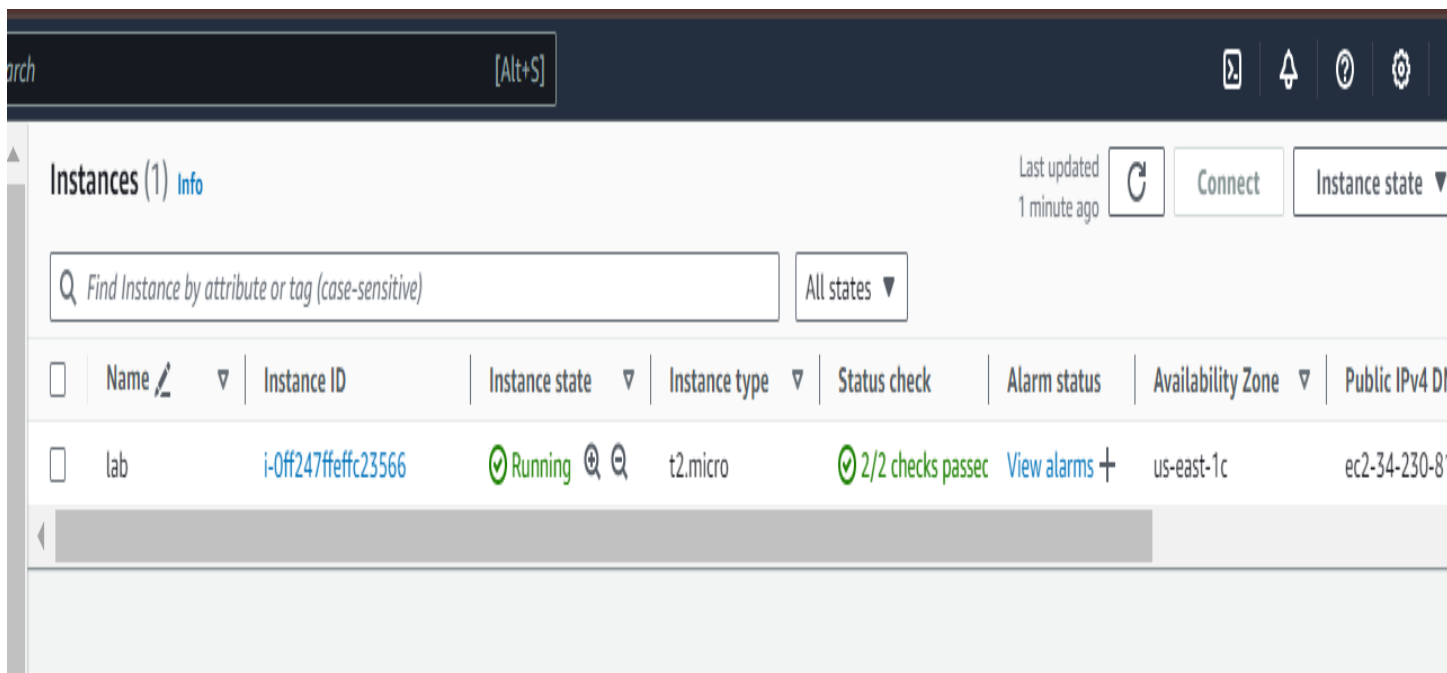
- Click on Launch Instance.

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.

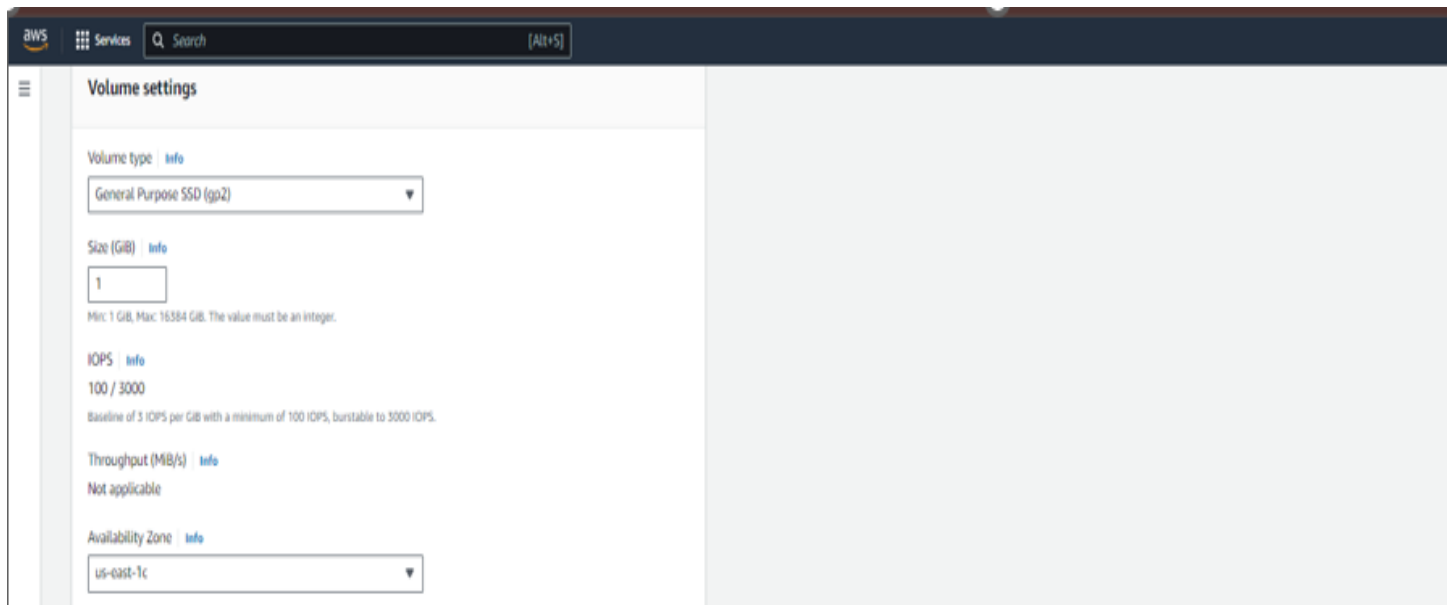
2. Create Volume:

- 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.

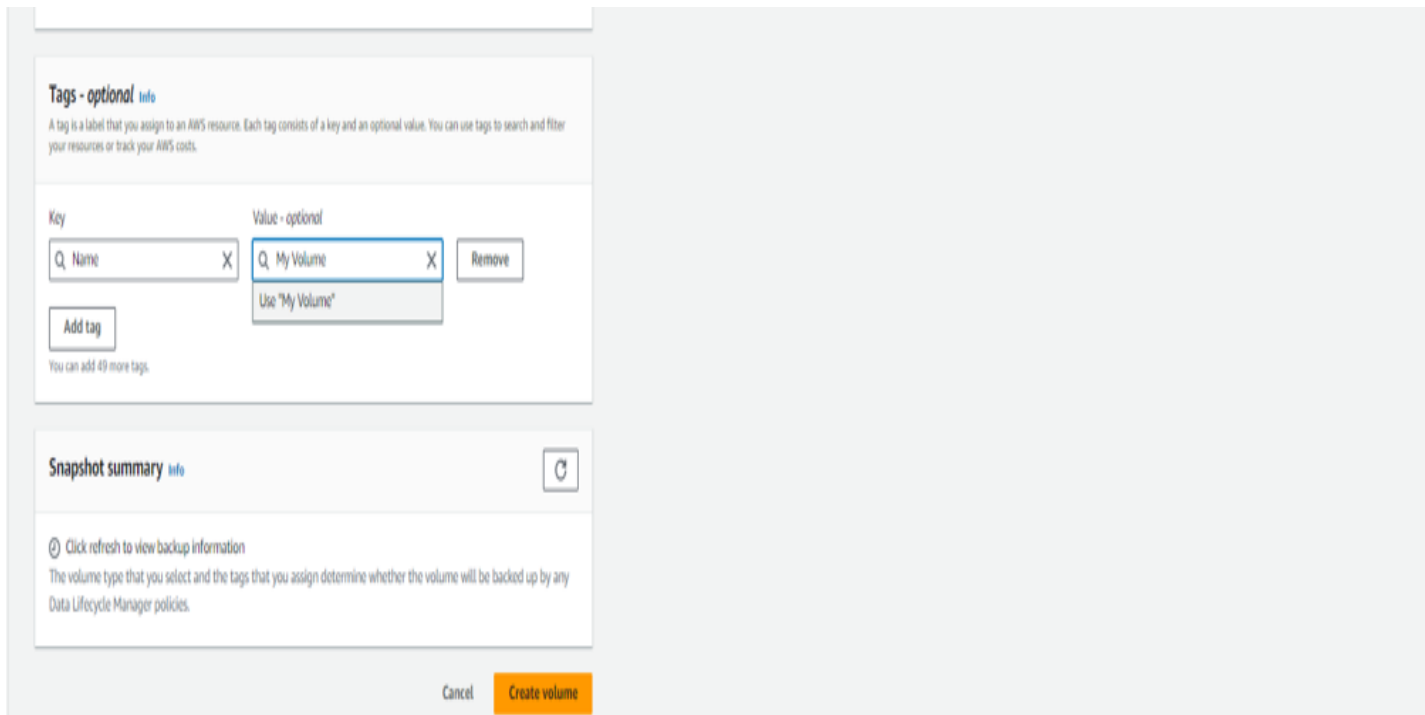
3. Tag the Volume:

- 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.

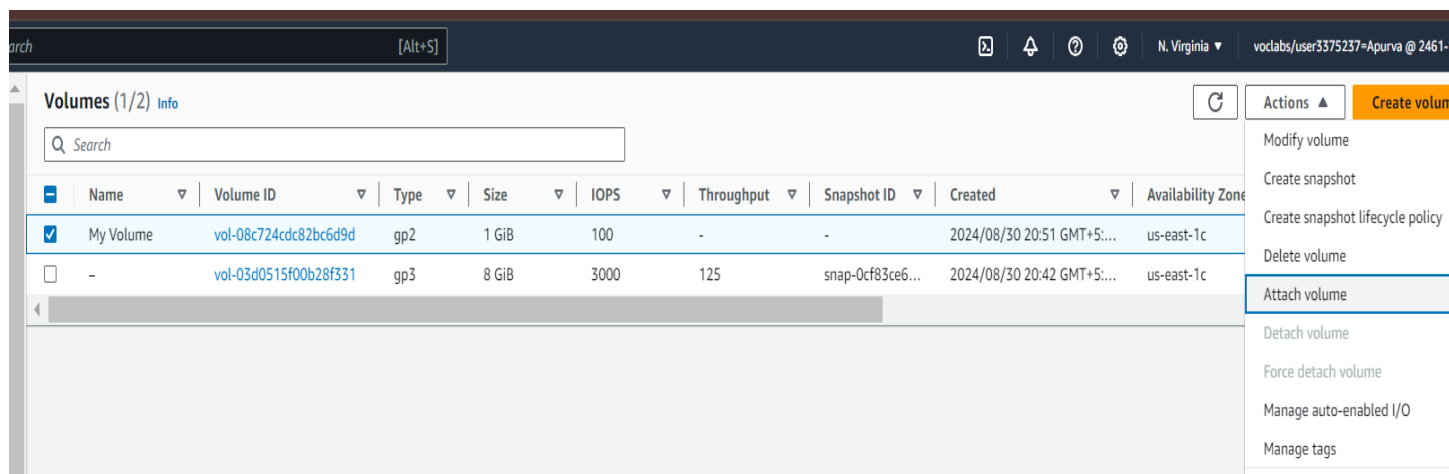
Task 2: Attach the Volume to an Instance

1. Select the Volume:

- In the Volumes section, select My Volume.

2. Attach Volume:

- Click on Actions > Attach Volume.



The screenshot shows the AWS Management Console interface for the 'Volumes' section. At the top, there's a search bar and a table of volumes. The table has columns: Name, Volume ID, Type, Size, IOPS, Throughput, Snapshot ID, Created, and Availability Zone. Two volumes are listed: 'My Volume' (gp2, 1 GiB, 100 IOPS) and another volume (gp3, 8 GiB, 3000 IOPS). The 'My Volume' row is selected. To the right of the table, there's an 'Actions' dropdown menu with options: Modify volume, Create snapshot, Create snapshot lifecycle policy, Delete volume, Attach volume (highlighted), Detach volume, Force detach volume, Manage auto-enabled I/O, and Manage tags.

| Name | Volume ID | Type | Size | IOPS | Throughput | Snapshot ID | Created | Availability Zone |
|-----------|-----------------------|------|-------|------|------------|------------------|----------------------------|-------------------|
| My Volume | vol-08c724cdc82bc6d9d | gp2 | 1 GiB | 100 | - | - | 2024/08/30 20:51 GMT+5:... | us-east-1c |
| - | vol-03d0515f00b28f331 | gp3 | 8 GiB | 3000 | 125 | snap-0cf83ce6... | 2024/08/30 20:42 GMT+5:... | us-east-1c |

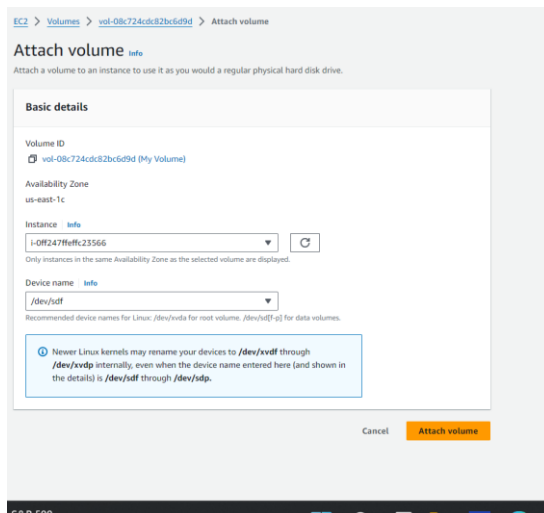
3. Select the Instance:

- 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.

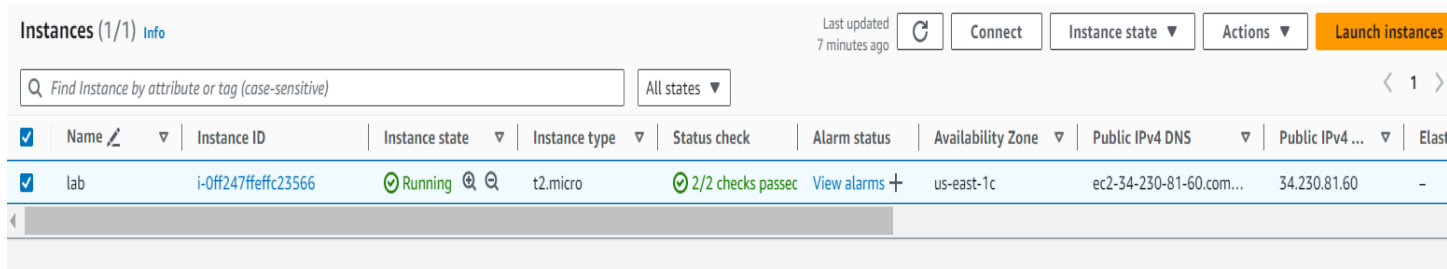
| Volumes (2) Info | | | | | | | | | | | | Refresh | Actions | Create volume |
|-------------------------------------|-----------|-----------------------|------|-------|------|------------|-------------|----------------------------|-------------------|-----------------------|--------------|-------------------------|-------------------------|-------------------------------|
| <input type="text" value="Search"/> | | | | | | | | | | | | 1 | | |
| <input type="checkbox"/> | Name | Volume ID | Type | Size | IOPS | Throughput | Snapshot ID | Created | Availability Zone | Volume state | Alarm status | | | |
| <input type="checkbox"/> | My Volume | vol-08c724cdc82bc6d9d | gp2 | 1 GiB | 100 | - | - | 2024/08/30 20:51 GMT+5:... | us-east-1c | ✓ In-use | No alarms | | | |

Task 3: Connect to Your Amazon EC2 Instance

1. Navigate to Instances:

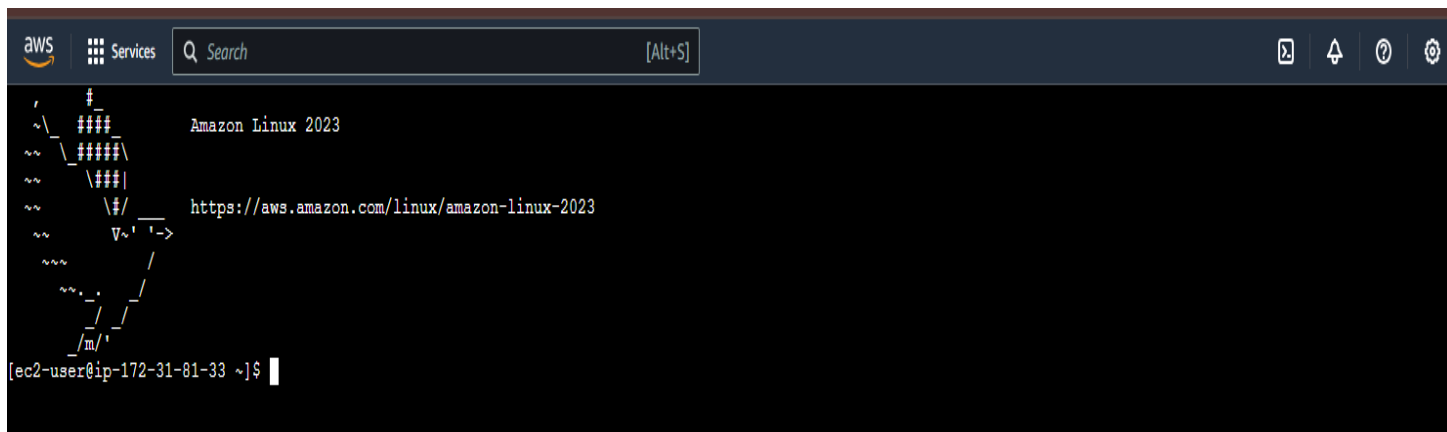
- In the AWS Management Console, search for and select EC2.

- 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/file.txt
some text has been written
[root@ip-172-31-81-33 ec2-user]#
```

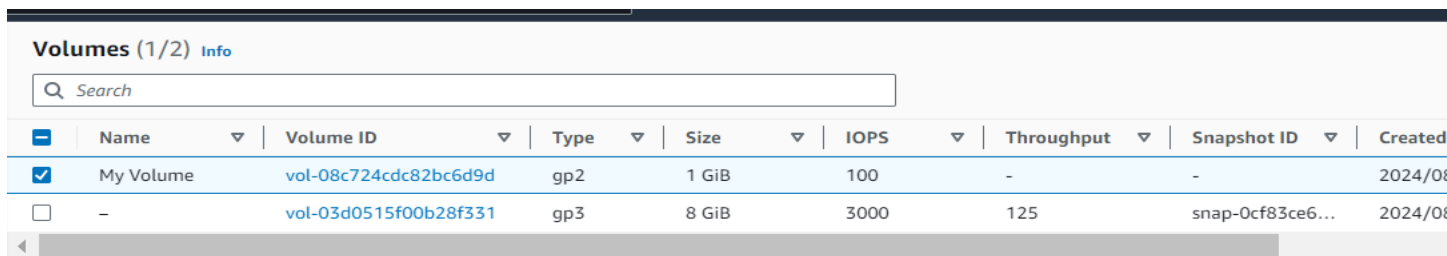
Task 5: Create an Amazon EBS Snapshot

1. Select Volume:

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

2. Create Snapshot:

- Click on Actions > Create snapshot.



The screenshot shows the Amazon EC2 console 'Volumes' page. At the top, there's a header 'Volumes (1/2)' with an 'Info' link. Below it is a search bar with the placeholder text 'Search'. A table lists the volumes with columns: Name, Volume ID, Type, Size, IOPS, Throughput, Snapshot ID, and Created. The first row, 'My Volume', is selected with a blue checkbox and has a light blue background. The second row is unselected with a white checkbox. A horizontal scrollbar is visible at the bottom of the table.

| | Name | Volume ID | Type | Size | IOPS | Throughput | Snapshot ID | Created |
|-------------------------------------|-----------|-----------------------|------|-------|------|------------|------------------|------------------|
| <input checked="" type="checkbox"/> | My Volume | vol-08c724cdc82bc6d9d | gp2 | 1 GiB | 100 | - | - | 2024/08/27 12:00 |
| <input type="checkbox"/> | - | vol-03d0515f00b28f331 | gp3 | 8 GiB | 3000 | 125 | snap-0cf83ce6... | 2024/08/27 12:00 |

3. Tag the Snapshot:

- Click Add tag and enter:

- Key:Name
- Value: My Snapshot
- Click Create snapshot.

The screenshot shows the 'Create snapshot' page in the AWS Management Console. The page title is 'Create snapshot' with an 'Info' link. Below the title is a subtitle: 'Create a point-in-time snapshot to back up the data on an Amazon EBS volume to Amazon S3.' The form is divided into three main sections: 'Source volume', 'Snapshot details', and 'Tags'. The 'Source volume' section shows 'Volume ID' as 'vol-08c724cdc82bc6d9d (My Volume)' and 'Availability Zone' as 'us-east-1c'. The 'Snapshot details' section has a 'Description' field with a placeholder 'Add a description for your snapshot' and a note '255 characters maximum.' Below this is an 'Encryption' section with an 'Info' link and the text 'Not encrypted'. The 'Tags' section has an 'Info' link and a description: 'A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.' There are two tag input fields: one with 'Name' as the key and 'My Snapshot' as the value, and another with 'My Snapshot' as the value. There are 'Add tag' and 'Remove' buttons. At the bottom right, there are 'Cancel' and 'Create snapshot' buttons. The footer shows 'CloudShell' and 'Feedback' links.

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-store/
```

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
```

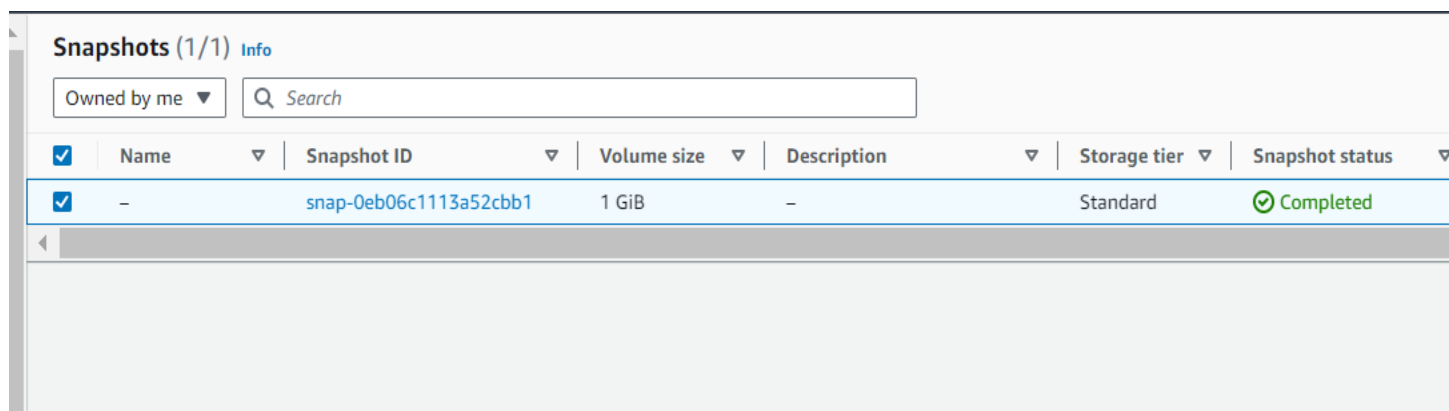
Task 6: Restore the Amazon EBS Snapshot

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.



The screenshot shows the AWS Management Console 'Snapshots' page. It features a table with columns for Name, Snapshot ID, Volume size, Description, Storage tier, and Snapshot status. A single snapshot is listed with ID 'snap-0eb06c1113a52cbb1', size '1 GiB', and status 'Completed'.

| | Name | Snapshot ID | Volume size | Description | Storage tier | Snapshot status |
|-------------------------------------|------|------------------------|-------------|-------------|--------------|-----------------|
| <input checked="" type="checkbox"/> | - | snap-0eb06c1113a52cbb1 | 1 GiB | - | Standard | Completed |

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.

| [Alt+S] | | | | | | | | | | |
|-------------------------------------|-----------------|-----------------------|--------|--------|--------|--------------|------------------|----------------------------|---------------------|-----------------|
| N. Virginia ▼ voclabs/user3375237-A | | | | | | | | | | |
| Volumes (3) Info | | | | | | | | | | |
| Q Search | | | | | | | | | | |
| <input type="checkbox"/> | Name ▼ | Volume ID ▼ | Type ▼ | Size ▼ | IOPS ▼ | Throughput ▼ | Snapshot ID ▼ | Created ▼ | Availability Zone ▼ | Volume status ▼ |
| <input type="checkbox"/> | My Volume | vol-08c724cdc82bc6d9d | gp2 | 1 GiB | 100 | - | - | 2024/08/30 20:51 GMT+5:... | us-east-1c | In-use |
| <input type="checkbox"/> | Restored Volume | vol-016db7345dc00cbc5 | gp3 | 1 GiB | 3000 | 125 | snap-0eb06c1... | 2024/08/30 21:13 GMT+5:... | us-east-1c | Available |
| <input type="checkbox"/> | - | vol-03d0515f00b28f331 | gp3 | 8 GiB | 3000 | 125 | snap-0cf83ce6... | 2024/08/30 20:42 GMT+5:... | us-east-1c | In-use |

- Click on Actions > Attach Volume.

[Alt+S]

N. Virginia

voclabs/user337

Volumes (1/3) Info

Q Search

| | Name | Volume ID | Type | Size | IOPS | Throughput | Snapshot ID | Created | Availability Zone |
|-------------------------------------|------------------|-----------------------|------|-------|------|------------|------------------|----------------------------|-------------------|
| <input type="checkbox"/> | My Volume | vol-08c724cdc82bc6d9d | gp2 | 1 GiB | 100 | - | - | 2024/08/30 20:51 GMT+5:... | us-east-1c |
| <input checked="" type="checkbox"/> | Restored Volu... | vol-016db7345dc00cbc5 | gp3 | 1 GiB | 3000 | 125 | snap-0eb06c1... | 2024/08/30 21:13 GMT+5:... | us-east-1c |
| <input type="checkbox"/> | - | vol-03d0515f00b28f331 | gp3 | 8 GiB | 3000 | 125 | snap-0cf83ce6... | 2024/08/30 20:42 GMT+5:... | us-east-1c |

Actions

Modify volum

Create snaps

Create snaps

Delete volum

Attach volum

Detach volum

Force detach

Manage aut

Manage tags

5. Select the Instance:

- Choose the Lab instance.
- The Device field should be set to ‘/dev/sdg’.

6. Attach Volume:

- Click Attach volume.

Services Search [Alt+S]

EC2 > Volumes > vol-016db7345dc00cbc5 > Attach volume

Attach volume [Info](#)

Attach a volume to an instance to use it as you would a regular physical hard disk drive.

Basic details

Volume ID
☐ vol-016db7345dc00cbc5 (Restored Volume)

Availability Zone
us-east-1c

Instance [Info](#)

Only instances in the same Availability Zone as the selected volume are displayed.

Device name [Info](#)

Recommended device names for Linux: /dev/xvda for root volume, /dev/sd[f-p] for data volumes.

ⓘ Newer Linux kernels may rename your devices to /dev/xvdf through /dev/xvdp internally, even when the device name entered here (and shown in the details) is /dev/sdf through /dev/sdp.

Cancel

- The volume will now be in use.

[Alt+S] N. Virginia vodlabs/user3375237=Apurva @ 2461-1026-8600

Volumes (3) [Info](#) Actions

Search

| <input type="checkbox"/> | Name | Volume ID | Type | Size | IOPS | Throughput | Snapshot ID | Created | Availability Zone | Volume state | Alarm stat |
|--------------------------|------------------|-----------------------|------|-------|------|------------|------------------|---------------------------|-------------------|--------------|------------|
| <input type="checkbox"/> | My Volume | vol-08c724cdc82bc6d9d | gp2 | 1 GiB | 100 | - | - | 2024/08/30 20:51 GMT+5... | us-east-1c | ✓ In-use | No alarms |
| <input type="checkbox"/> | Restored Volu... | vol-016db7345dc00cbc5 | gp3 | 1 GiB | 3000 | 125 | snap-0eb06c1... | 2024/08/30 21:13 GMT+5... | us-east-1c | ✓ In-use | No alarms |
| <input type="checkbox"/> | - | vol-03d0515f00b28f331 | gp3 | 8 GiB | 3000 | 125 | snap-0cf83ce6... | 2024/08/30 20:42 GMT+5... | us-east-1c | ✓ In-use | No alarms |

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
```