

## Lesson-End Project

### Scaling of EBS Volume for a Linux VM

**Project agenda:** To implement a procedure to dynamically scale the Elastic Block Store (EBS) volume of a Linux Virtual Machine to optimize storage capacity and performance

**Description:** Your company is experiencing business growth where solution deployment is happening with limited resources. In this case, the vertical scalability feature of AWS can be used to create a cost-optimised architecture.

**Tools required:** AWS account

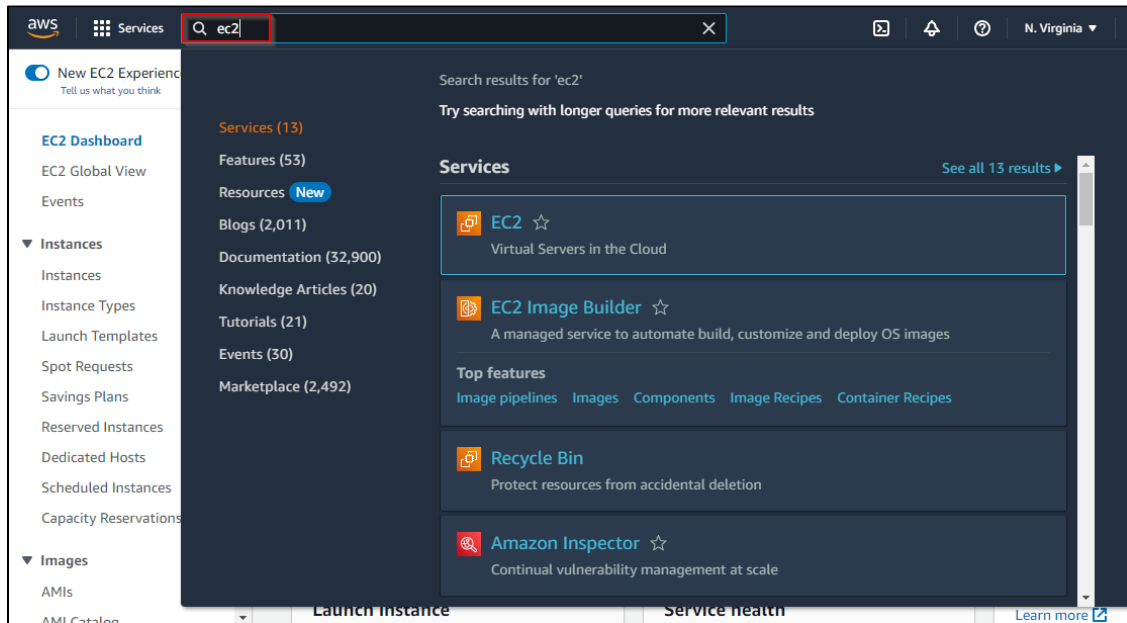
**Prerequisites:** A running EC2 Instance

Steps to be followed:

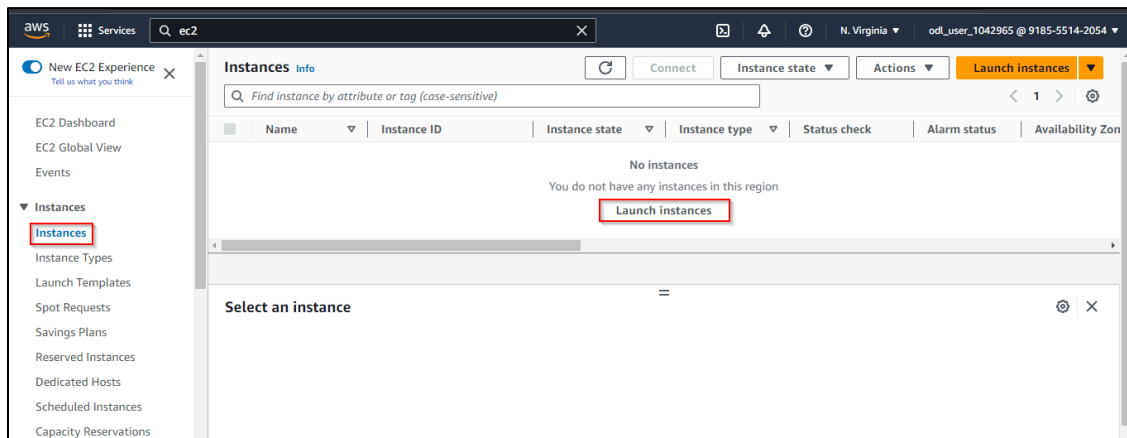
1. Create an EC2 instance
2. Identify the EBS volume
3. Create a snapshot
4. Create a new volume
5. Detach the existing volume from the EC2 Instance
6. Attach a new volume to the EC2 Instance

## Step 1: Create an EC2 instance

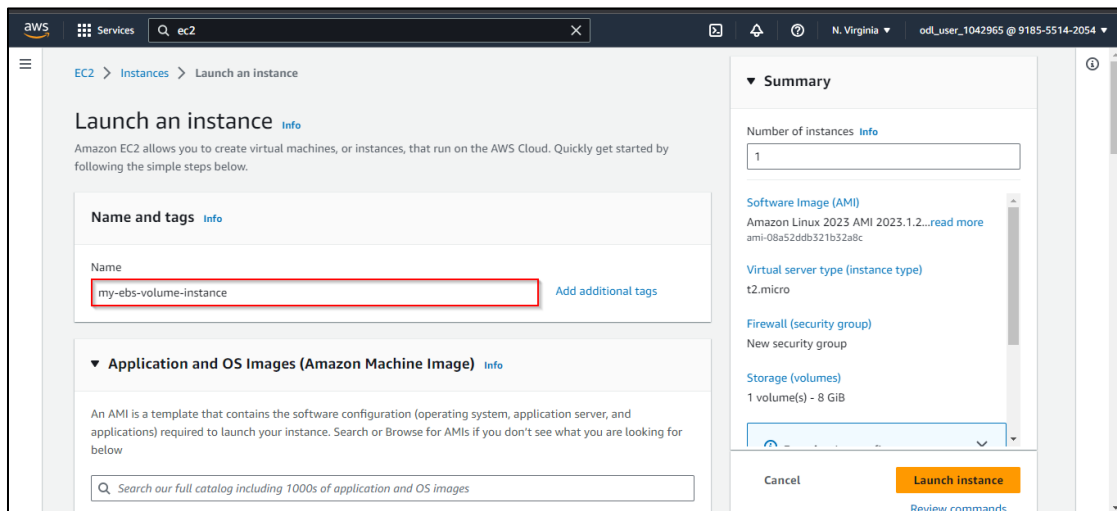
### 1.1 Navigate to the AWS Management Console and select the EC2 service



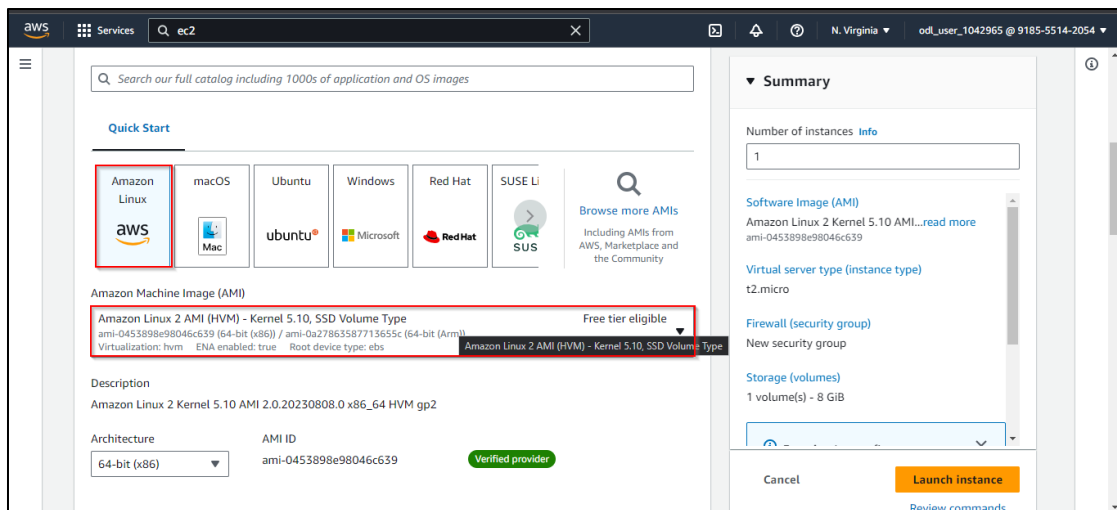
### 1.2 Click on **Instances** and select **Launch instances**



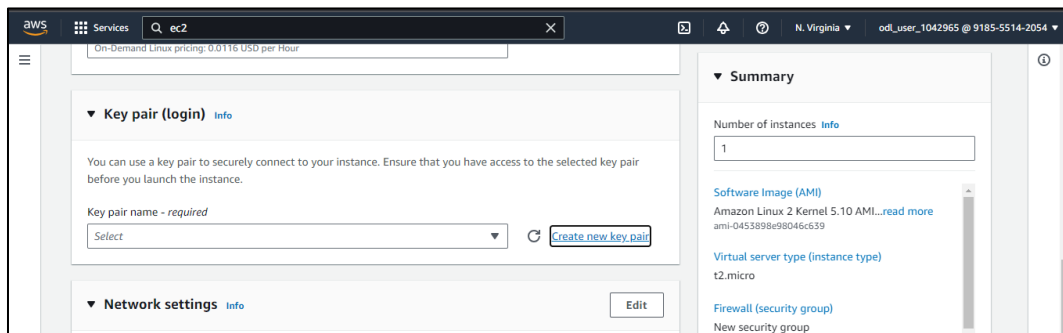
### 1.3 Enter a name for the Instance



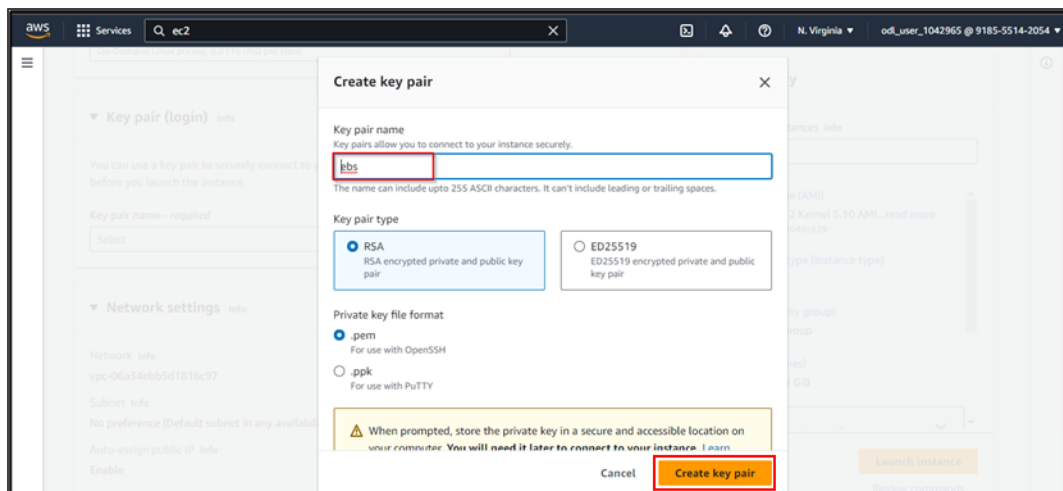
### 1.4 Select Amazon Linux VM and select AMI as Kernel 5.10, SSD



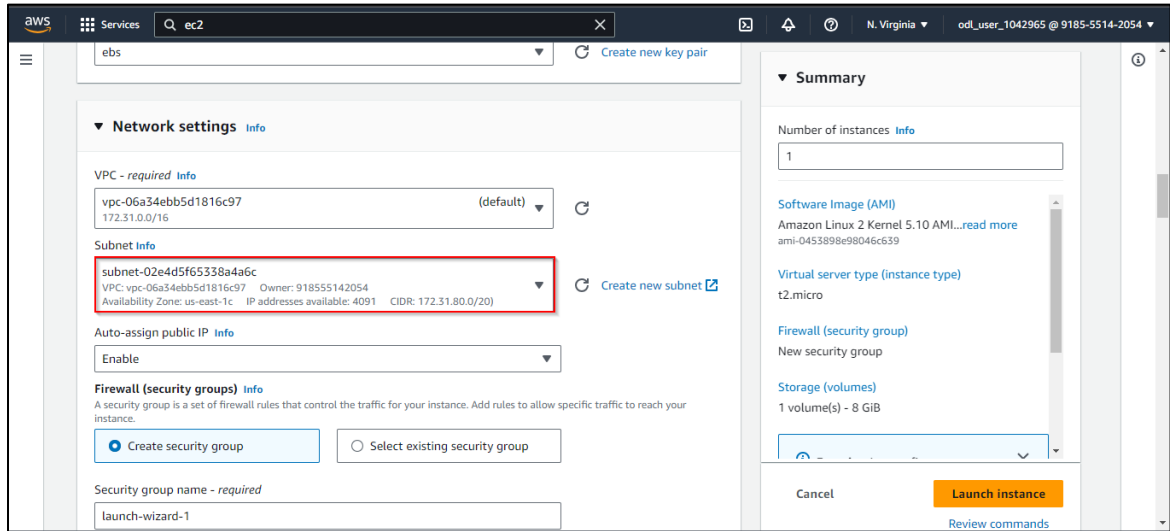
## 1.5 Click on **Create new key pair**



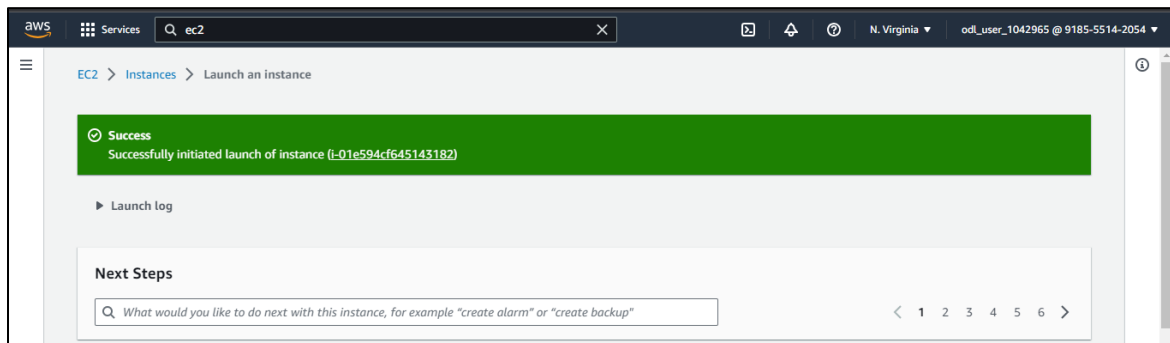
## 1.6 Enter the **Key pair name** as **ebs** and click the **Create key pair** button



1.7 In the **Network settings**, add the subnet availability zone and click the **Launch instance** button



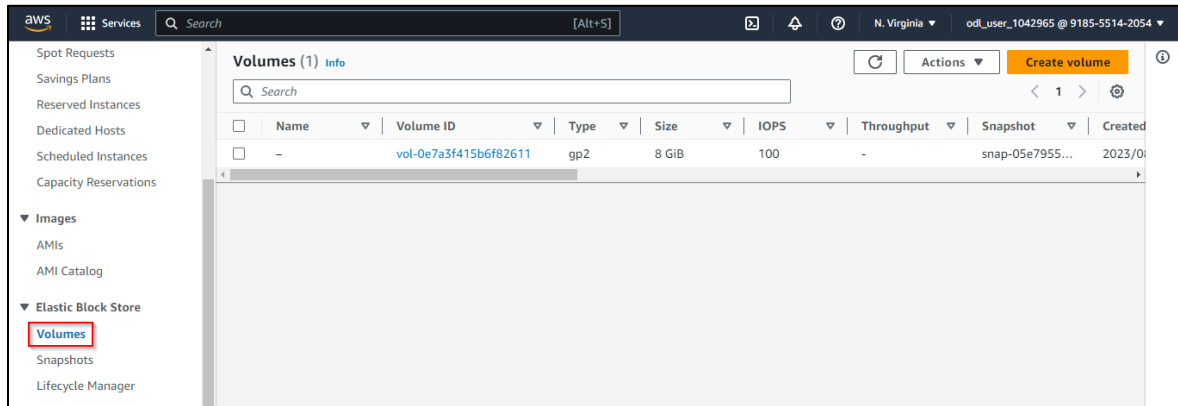
**Note:** You may also use the Subnet Availability Zone as **us-east-1a**.



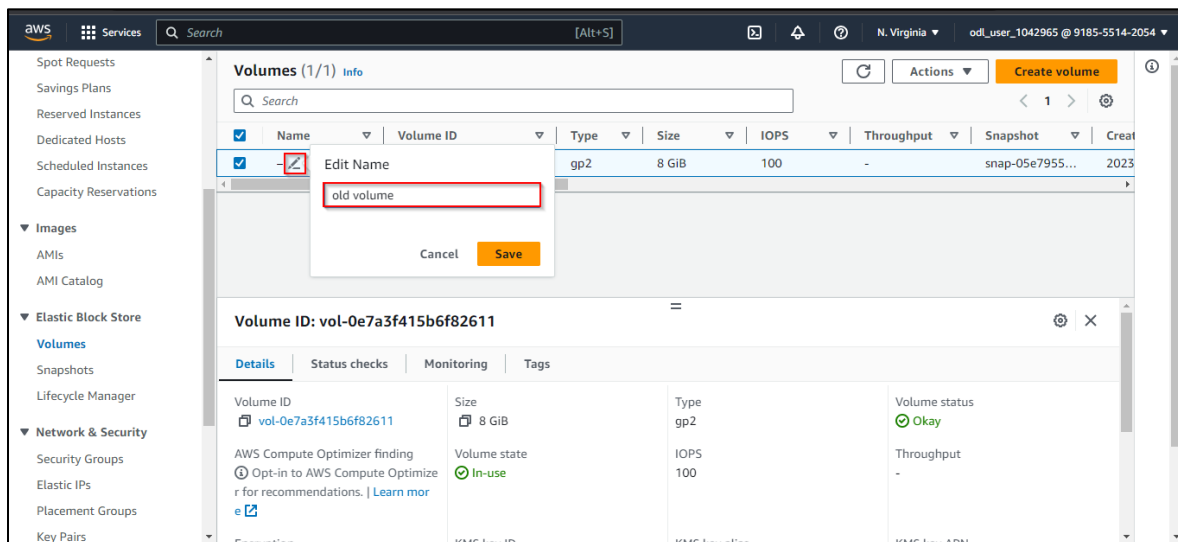
The EC2 Instance has been successfully initiated.

## Step 2: Identify the EBS volume

### 2.1 Navigate to the Elastic Block Store and click on Volumes

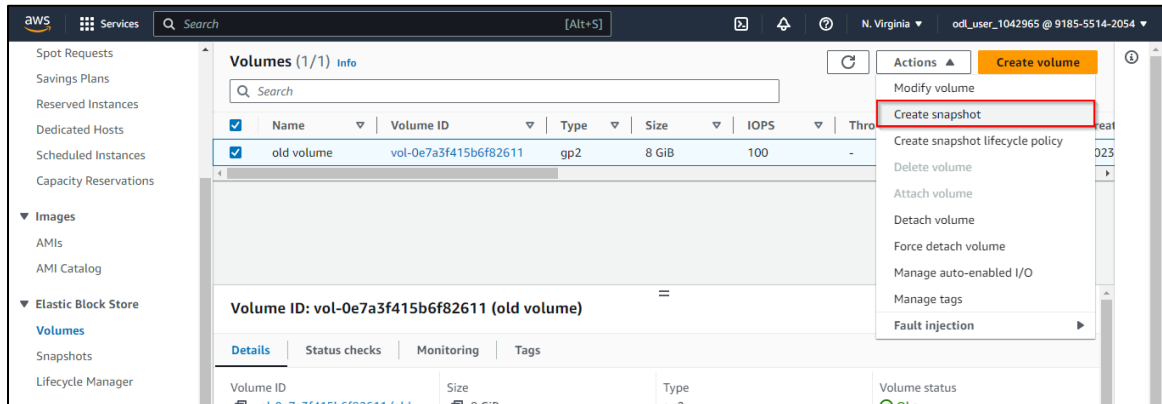


### 2.2 Click on the Edit icon, change the name to old volume, and click on Save

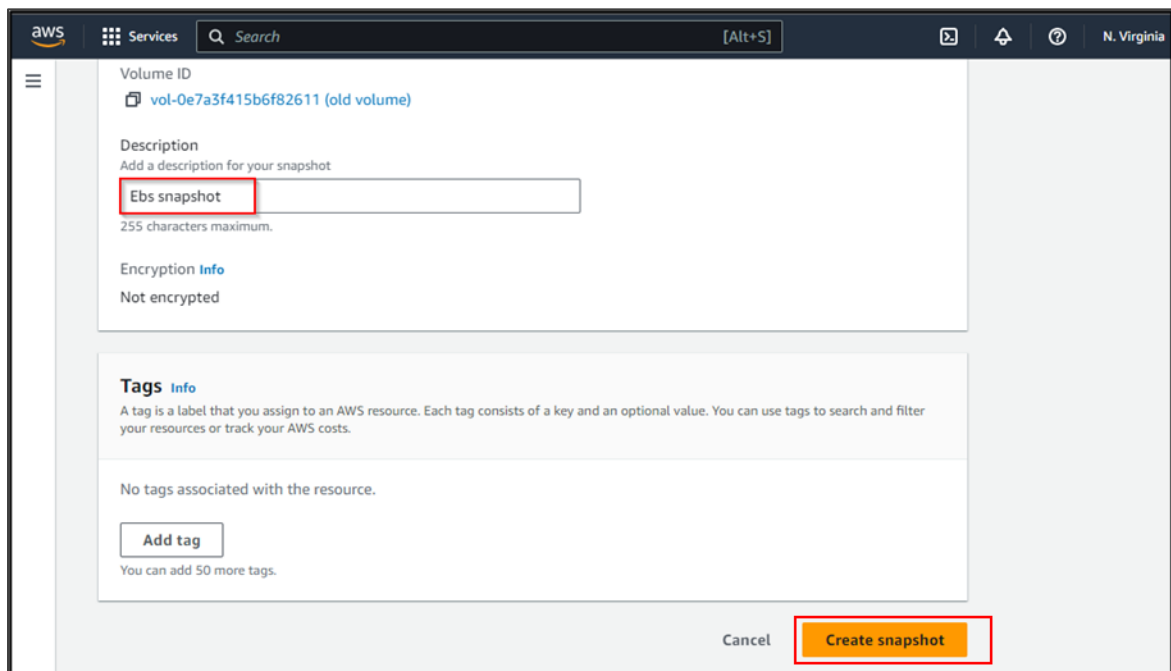


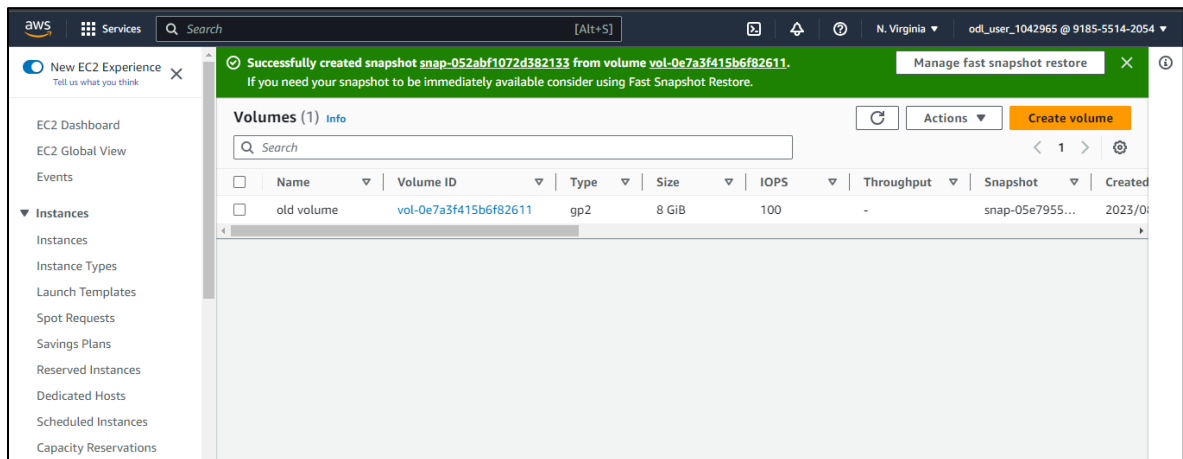
## Step 3: Create a snapshot

### 3.1 Select the **old volume**, click on the **Actions** tab, and select **Create snapshot**



### 3.2 Enter a description and click on **Create snapshot**

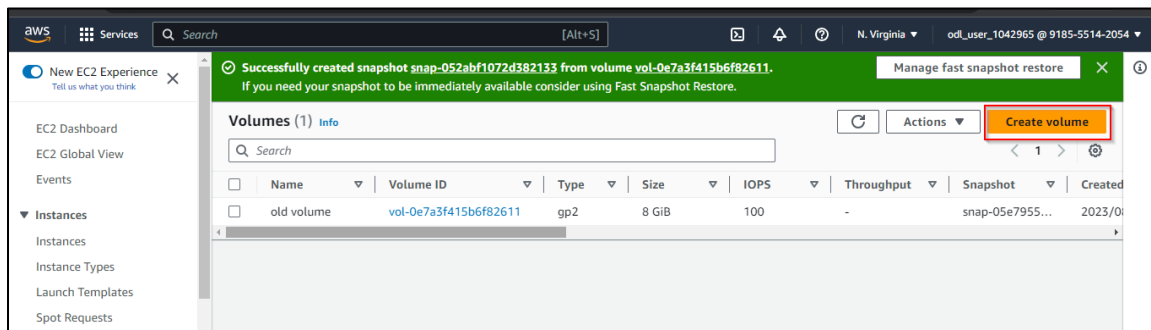




The snapshot has been successfully created.

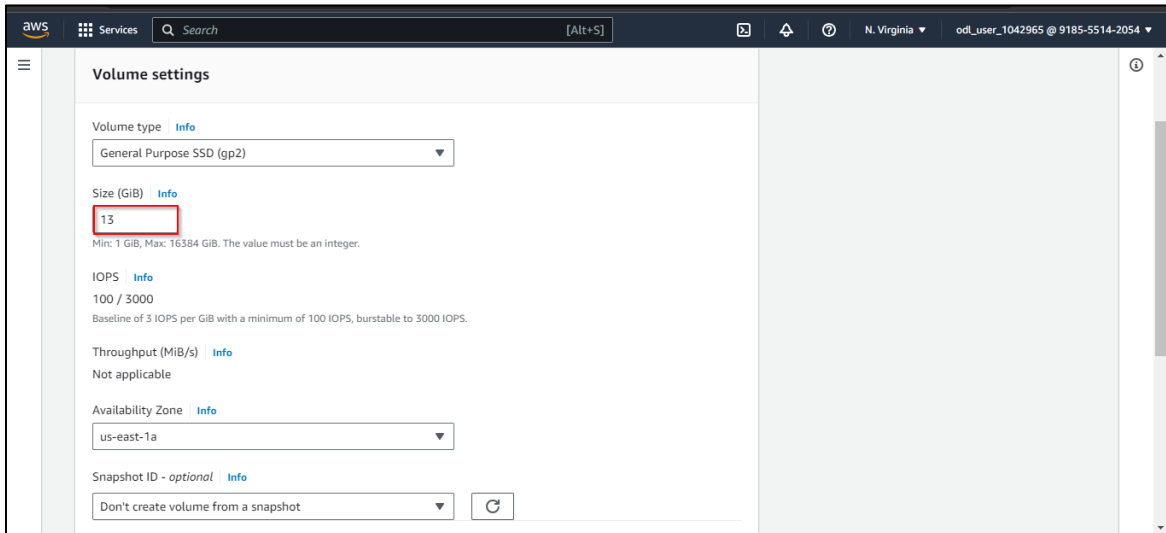
## Step 4: Create a new volume

### 4.1 Click on **Create volume**





#### 4.1 Enter the **Size (GiB)** as **13**



**Volume settings**

Volume type [Info](#)  
General Purpose SSD (gp2)

Size (GiB) [Info](#)  
**13**  
Min: 1 GiB, Max: 16384 GiB. The value must be an integer.

IOPS [Info](#)  
100 / 3000  
Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS.

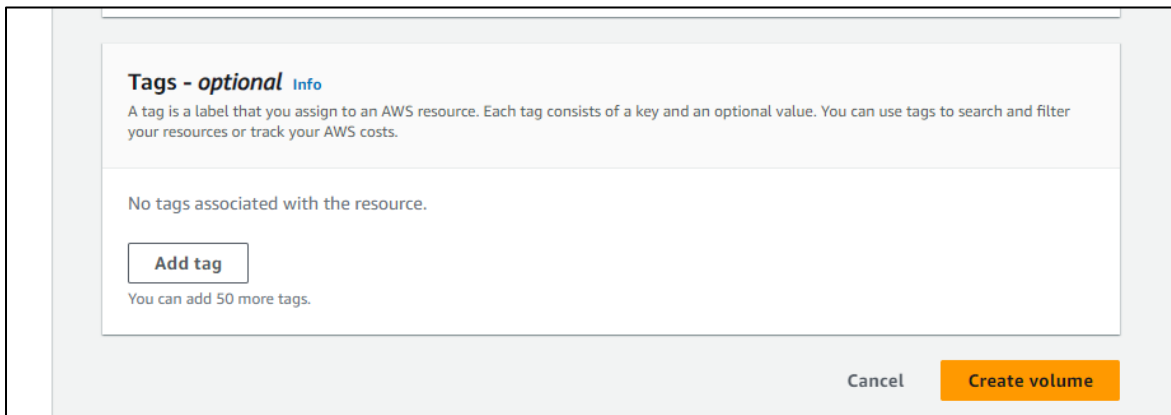
Throughput (MiB/s) [Info](#)  
Not applicable

Availability Zone [Info](#)  
us-east-1a

Snapshot ID - optional [Info](#)  
Don't create volume from a snapshot

**Note:** The **Availability Zone** should be provided as the same as the EC2 instance created.

#### 4.2 Click on **Create volume**



**Tags - optional** [Info](#)

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.

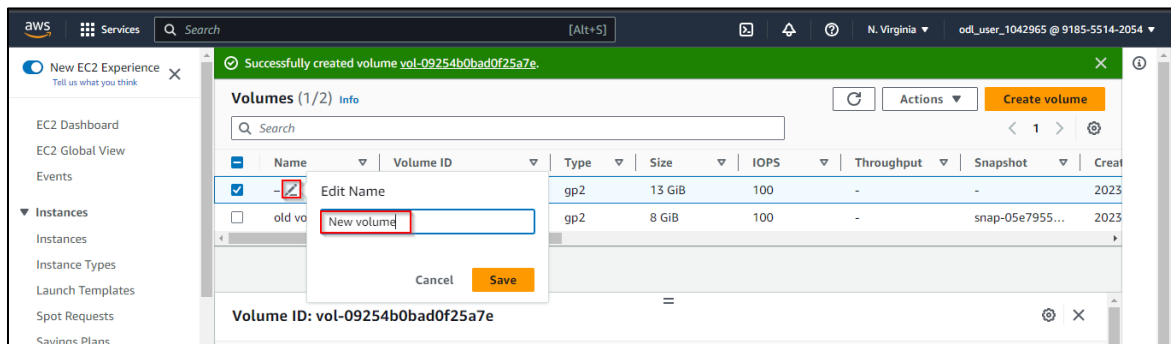
No tags associated with the resource.

**Add tag**

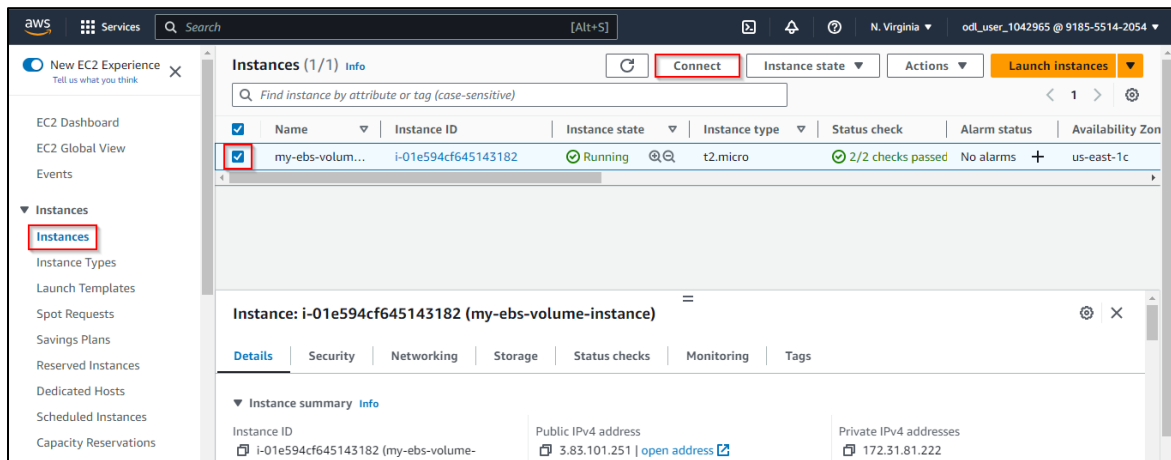
You can add 50 more tags.

Cancel **Create volume**

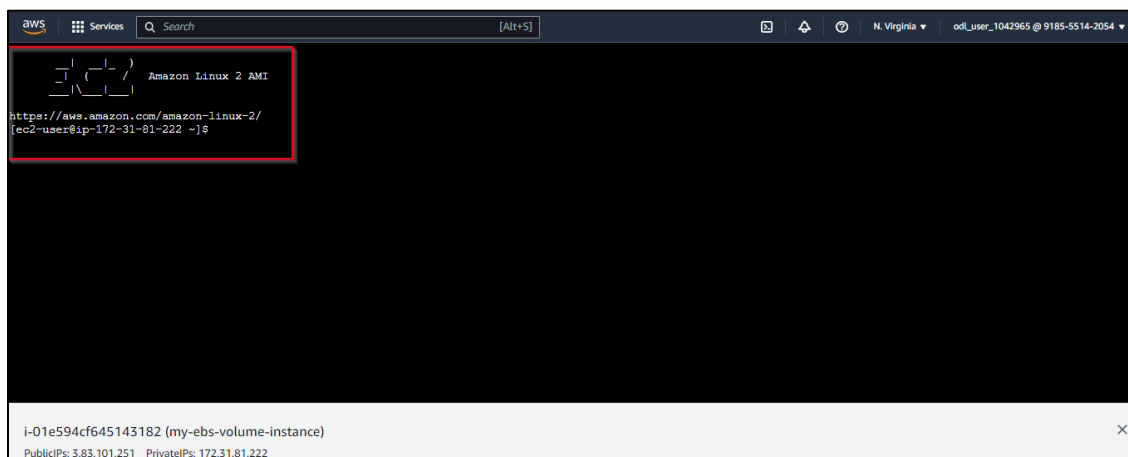
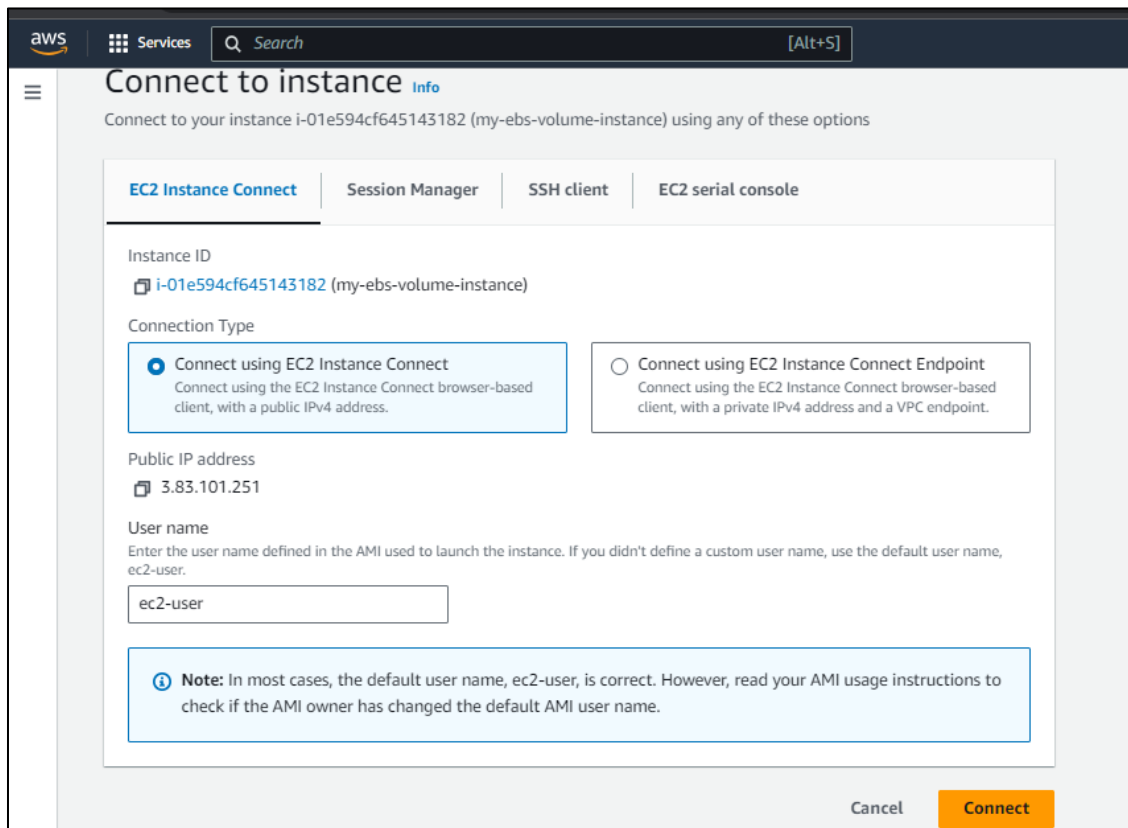
#### 4.3 Click on the edit icon and change the name to **New volume**



#### 4.4 Connect to the AWS Linux VM by clicking on **Instances**, selecting the instance, and clicking on the **Connect** button



#### 4.5 Click on the **Connect** button



The EC2 instance was successfully connected to the Amazon Linux VM.

4.6 Enter the following command to view the **EBS** volumes created:

**lsblk**

```

aws
Services
Search [Alt+S]

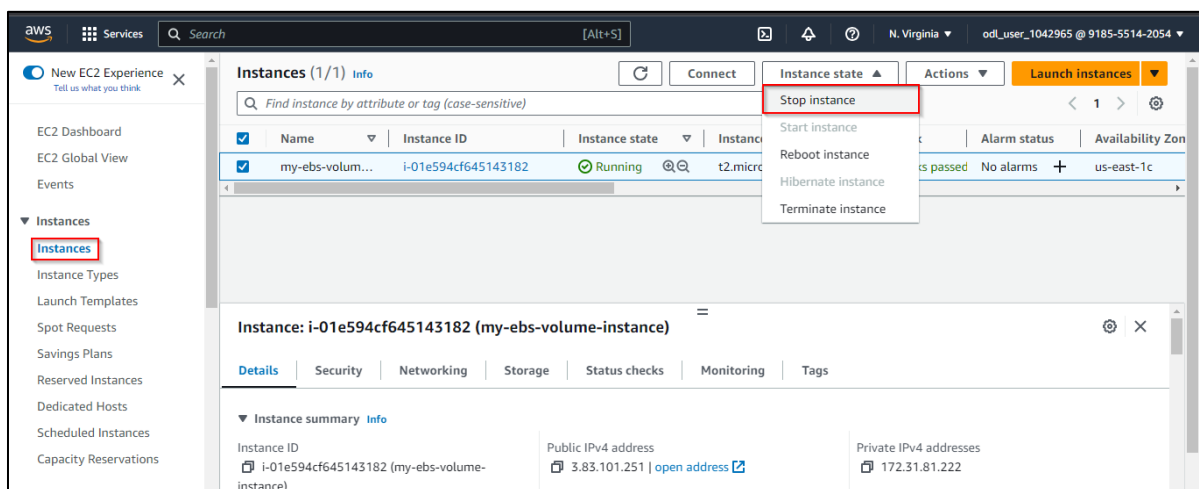
_ _ | _ _ | _ )
_ | ( _ _ | /  Amazon Linux 2 AMI
_ | \ _ _ | _ |

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-81-222 ~]$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
xvda         202:0    0   8G  0 disk
└─xvda1      202:1    0   8G  0 part /
[ec2-user@ip-172-31-81-222 ~]$

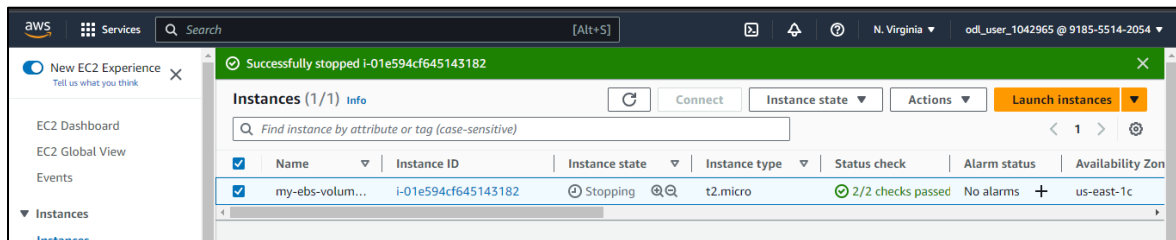
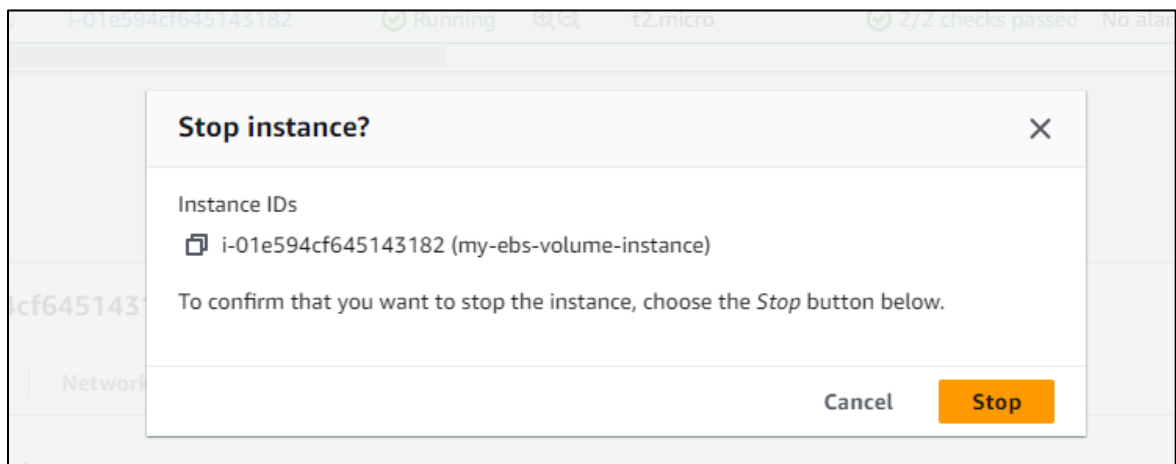
```

## Step 5: Detach the existing volume from the EC2 Instance

5.1 Navigate to the instance **my-eks-volume** and click on **Stop instance** from the **Instance state** tab

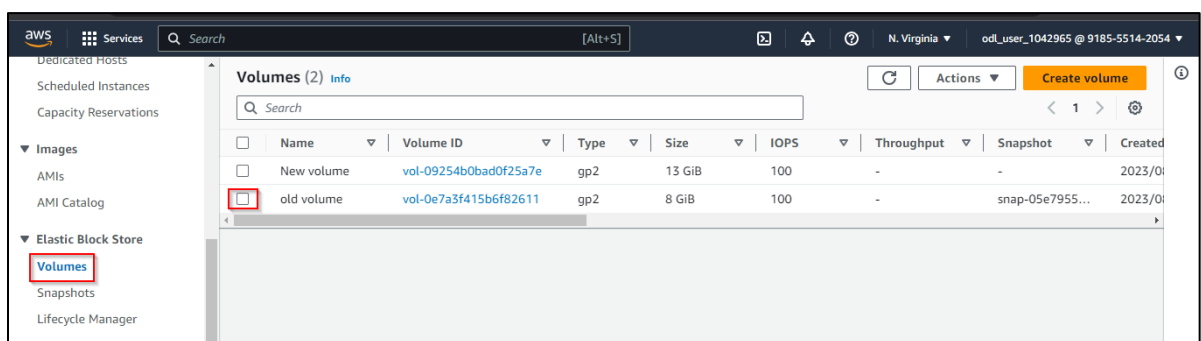


## 5.2 Click on the **Stop** button

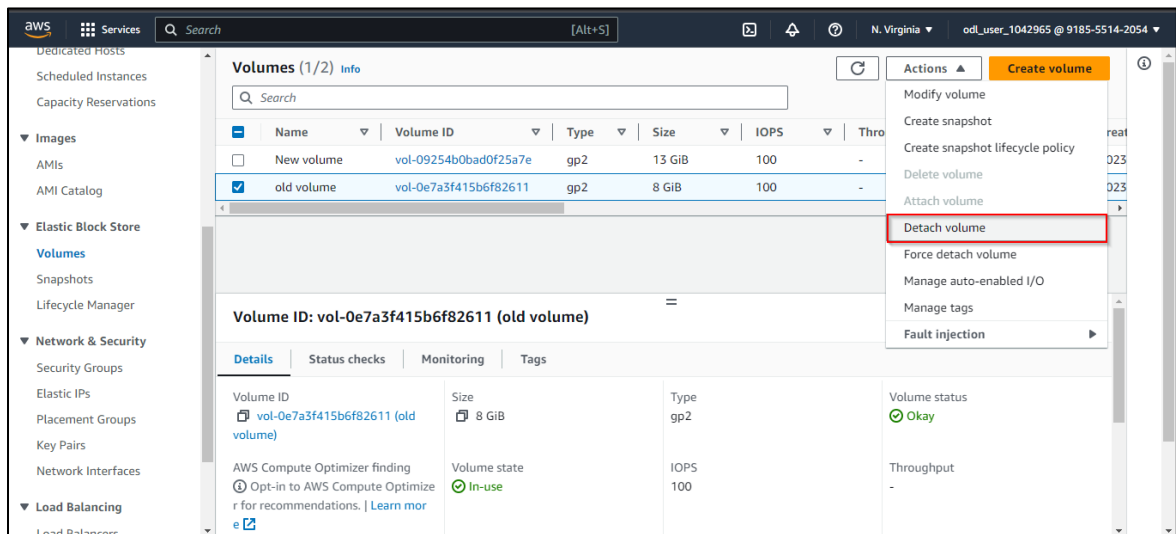


The instance has been successfully stopped.

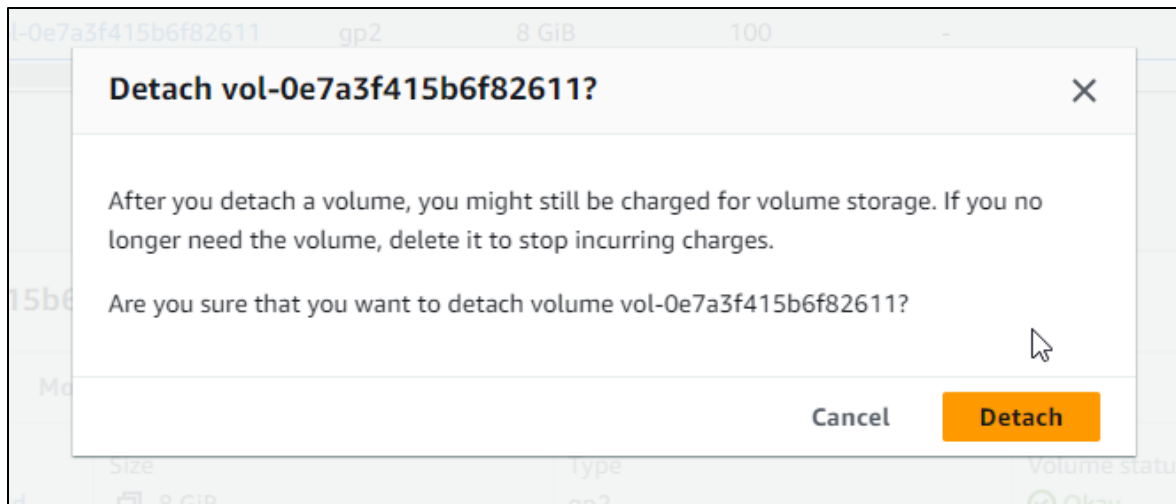
## 5.3 Navigate to the **Elastic Block Store** and **Volumes**. Now, select the **old volume** checkbox.



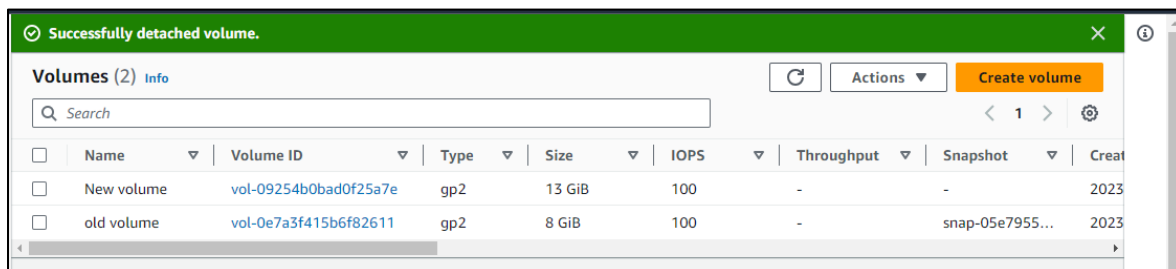
#### 5.4 Under the **Actions** tab, click on **Detach volume**



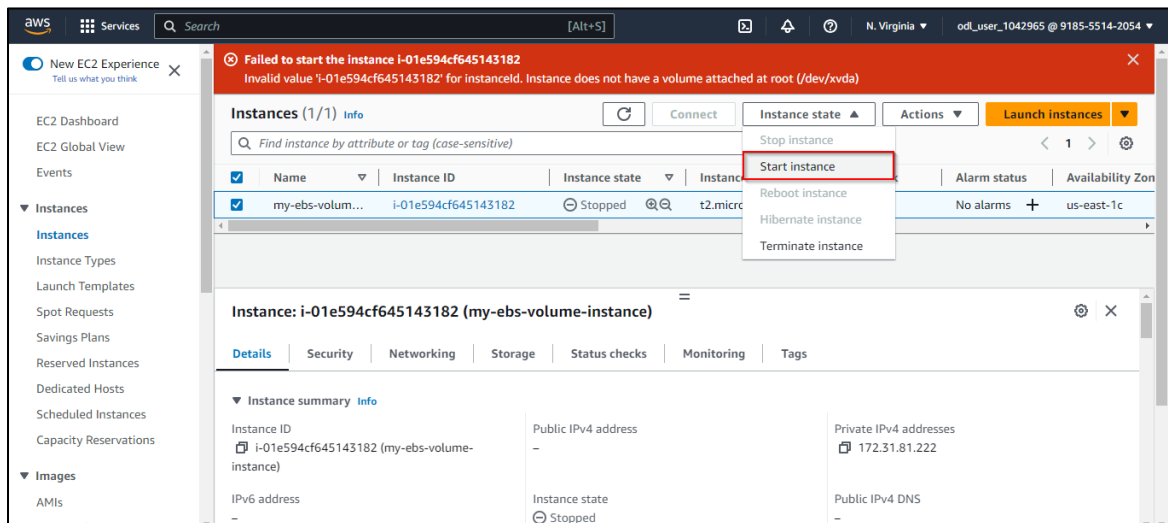
#### 5.5 Click on **Detach**



The **old volume** has been successfully detached.



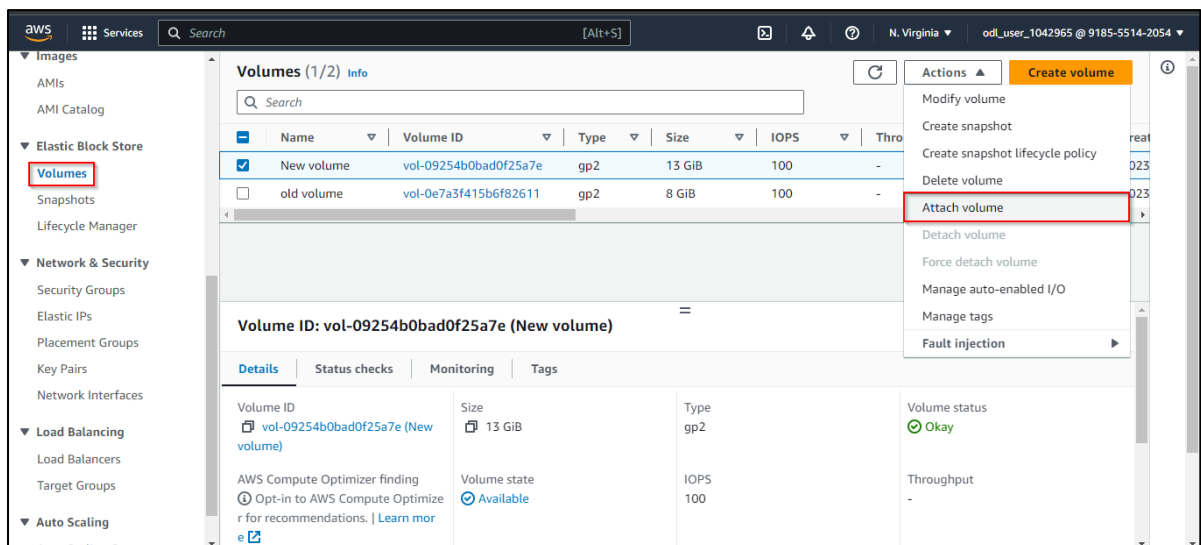
## 5.6 Start the instance by clicking on the **Instance** tab and then on **Start instance**



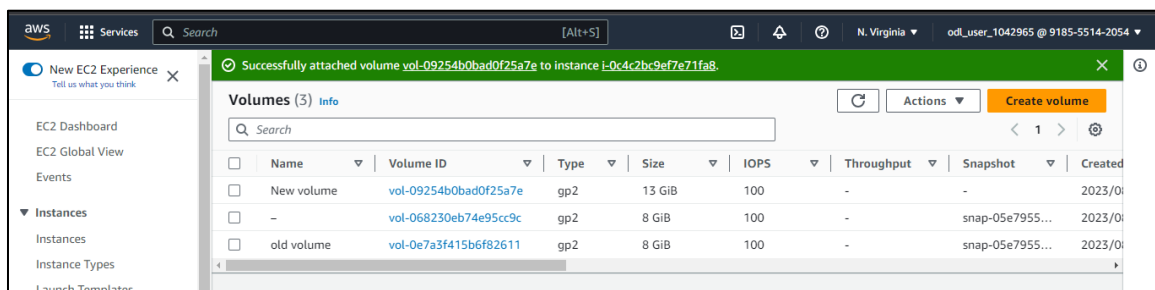
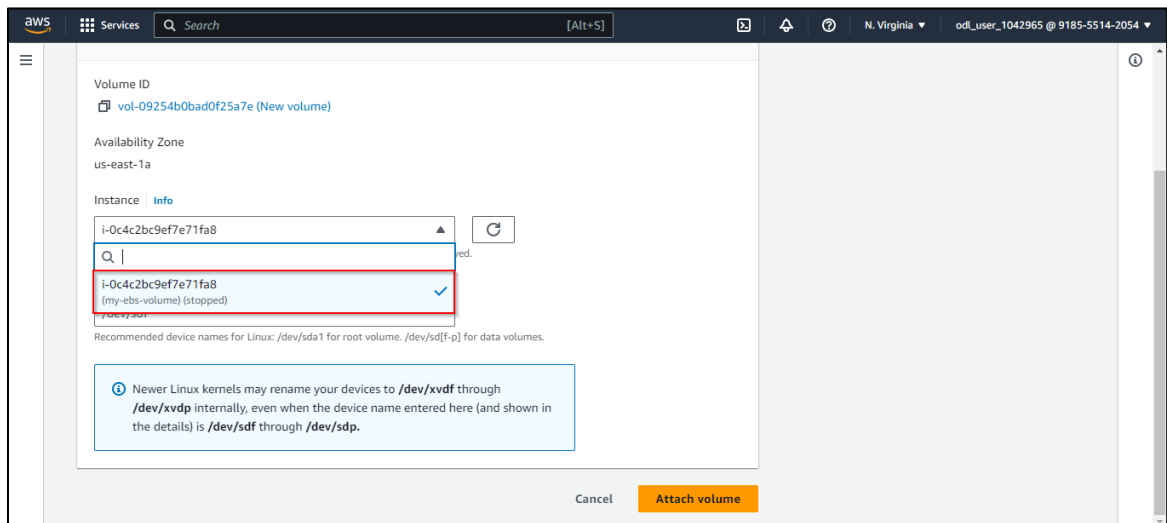
**Note:** It fails to start the instance as there is no volume attached.

## Step 6: Attach a new volume to the EC2 Instance

### 6.1 Navigate to the **Volumes** section, select the **New volume**, and click on **Attach volume** under the **Actions** tab



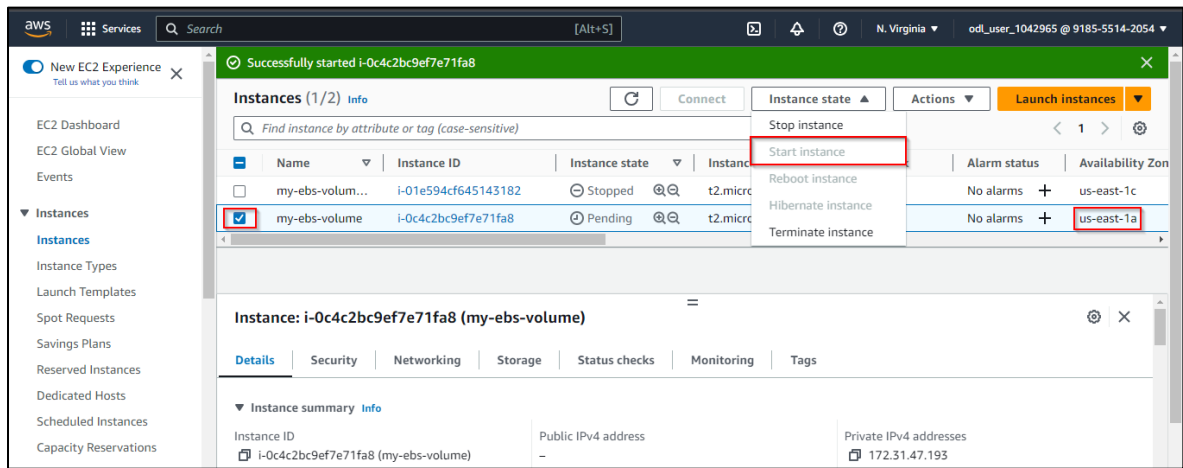
## 6.2 Select the **my-eks-volume** instance and click on **Attach volume**



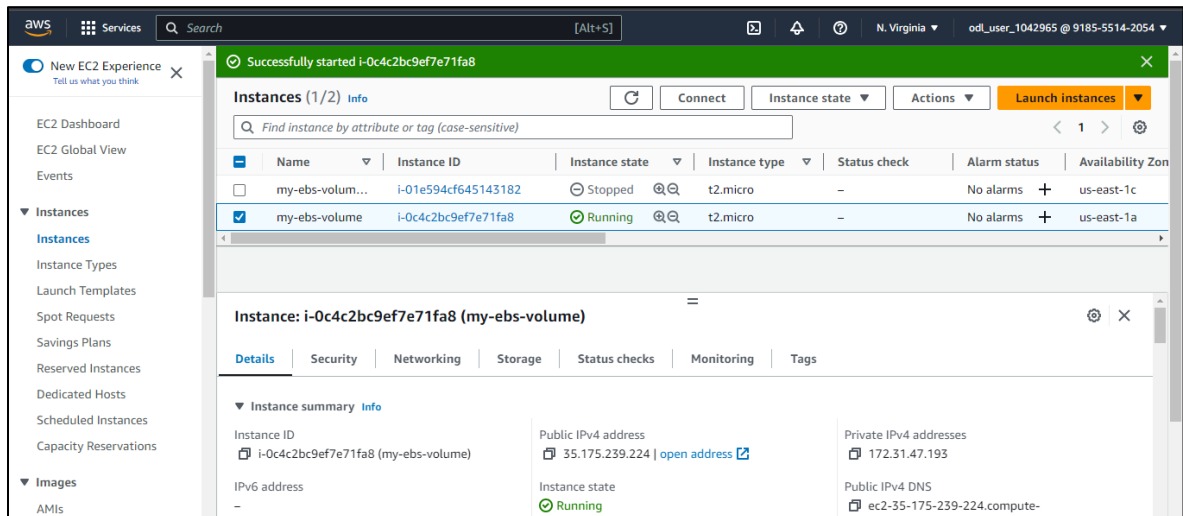
The **New volume** with 13 GiB has been successfully attached.



6.3 Navigate to the Instances page, select **my-ebs-volume**, click on the **Instance state** tab, and select **Start instance**



You must use the **us-east-1a** availability zone.



By following these steps, you have successfully implemented a procedure to dynamically scale the Elastic Block Store (EBS) volume of a Linux Virtual Machine to optimize storage capacity and performance.