NOTES

EC2 INSTANCE STORAGE

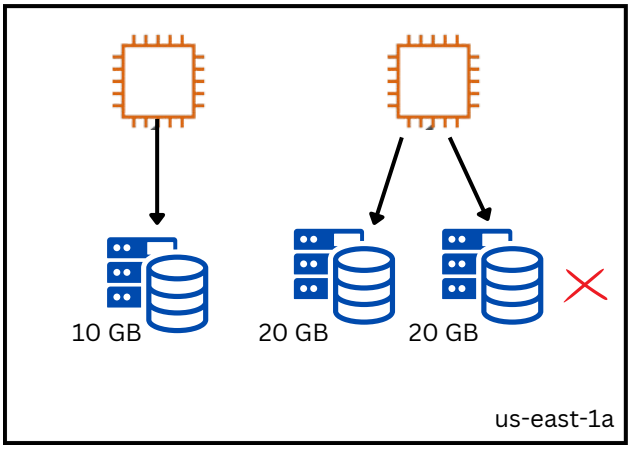
What’s an EBS Volume

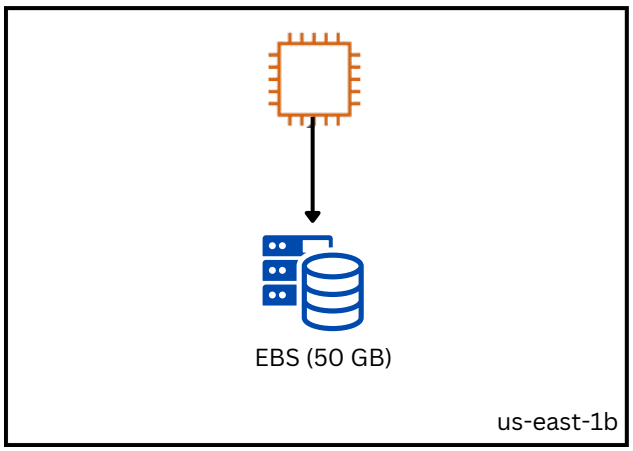
- An EBS Volume (Elastic Block Store) is like a removable storage drive for your cloud server (instance). Here's a simple explanation:
- It’s a network drive that you can attach to your server to store files and data.
- Your data stays safe even if the server is turned off or deleted.
- You can only connect one EBS volume to one server at a time (basic level).
- It works only in the specific area (Availability Zone) where it was created.
- Think of it as a USB stick you plug into your server over the network.
- **Free Tier: You get 30 GB of free storage per month, either as a fast SSD or a slower magnetic drive.**

Here’s a simpler version of the explanation about EBS Volumes:

- It’s a virtual drive (not a physical one).
- It connects to your server using the network, so it might be a tiny bit slower than local storage.
- You can detach it from one server and quickly attach it to another.
- It’s tied to a specific Availability Zone (AZ), meaning:
- A volume in us-east-1a won’t work in us-east-1b.
- To move it to another zone, you need to take a snapshot (a copy) and restore it in the new zone.
- You choose the size (in GB) and speed (IOPS) when creating it.
- You pay for the size and speed you pick, even if you don’t use it fully.
- You can make the drive bigger whenever you need.

EBS Volume - Example





EBS – DELETE ON TERMINATION ATTRIBUTE

Here's a simpler version:

What happens to EBS when a server (EC2 instance) is deleted:

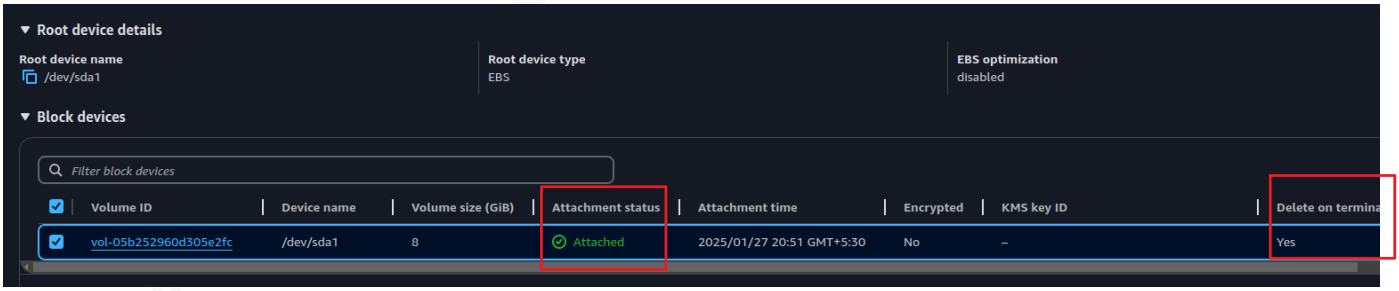
- By default, the main drive (root EBS volume) is deleted when the server is deleted.
- Any extra drives (other attached EBS volumes) are not deleted.

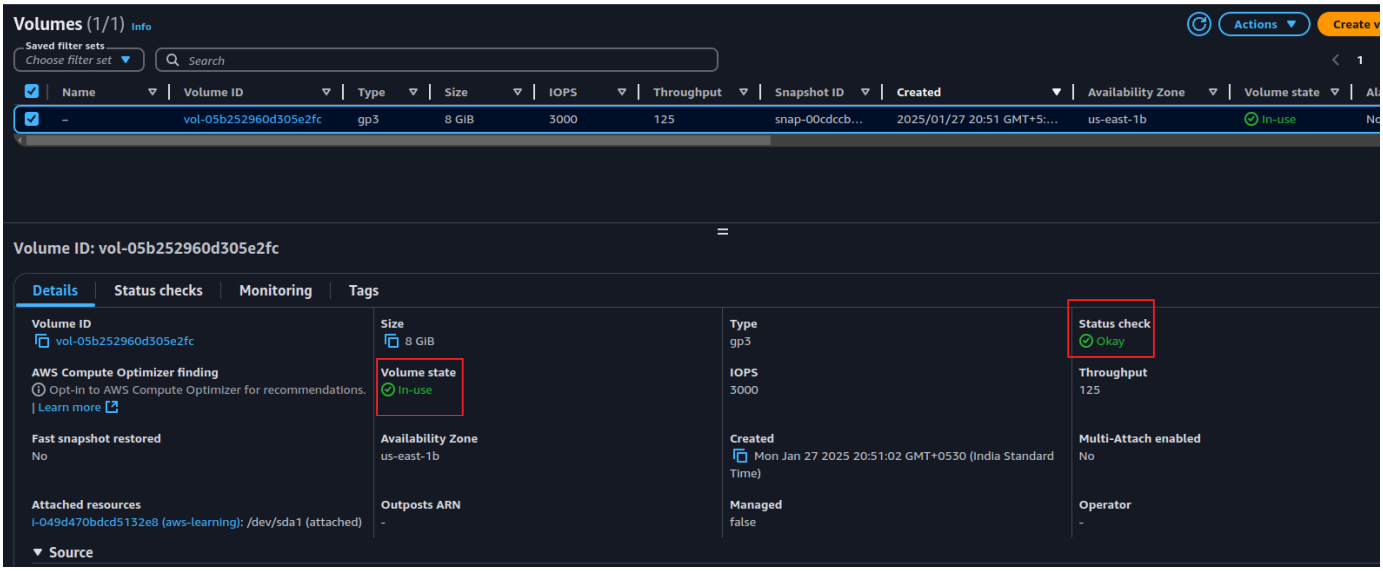
You can change this setting using the AWS Console or CLI.

Example use case: If you want to keep the main drive (root volume) even after deleting the server, you can disable the delete option

Following Steps

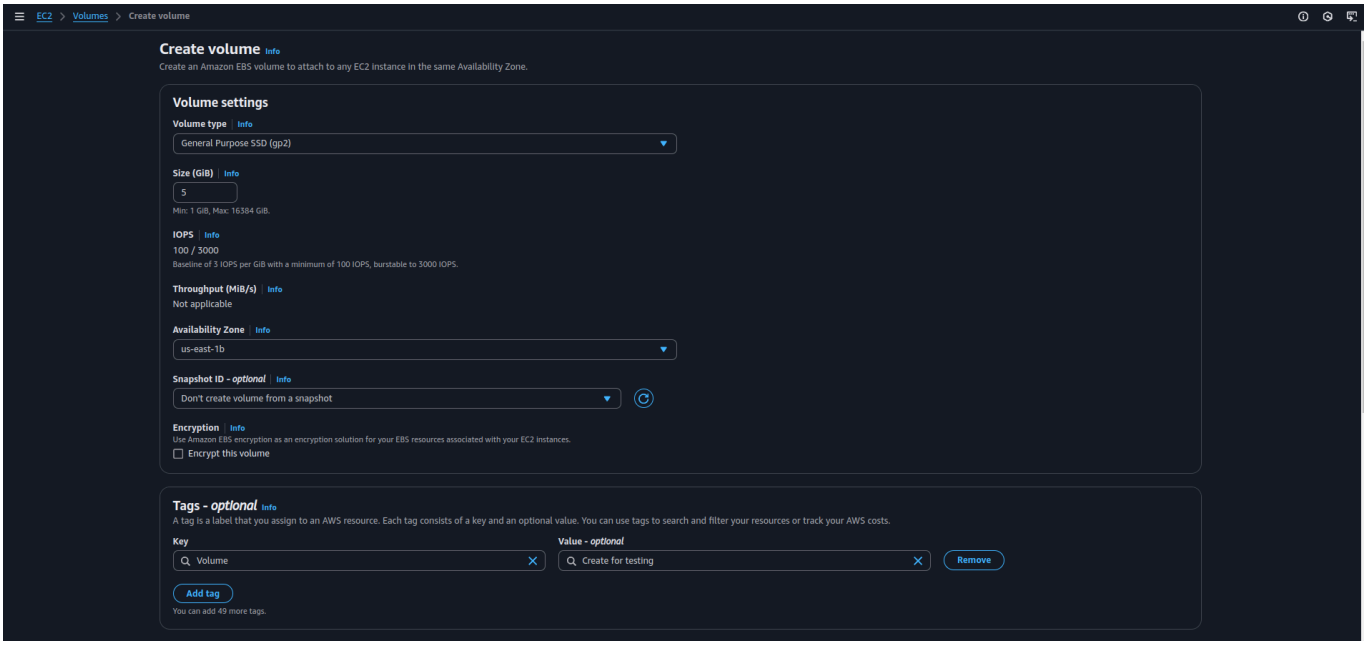
- **C**lick on instance
- **C**lick on Storage tab
- **B**lock devices

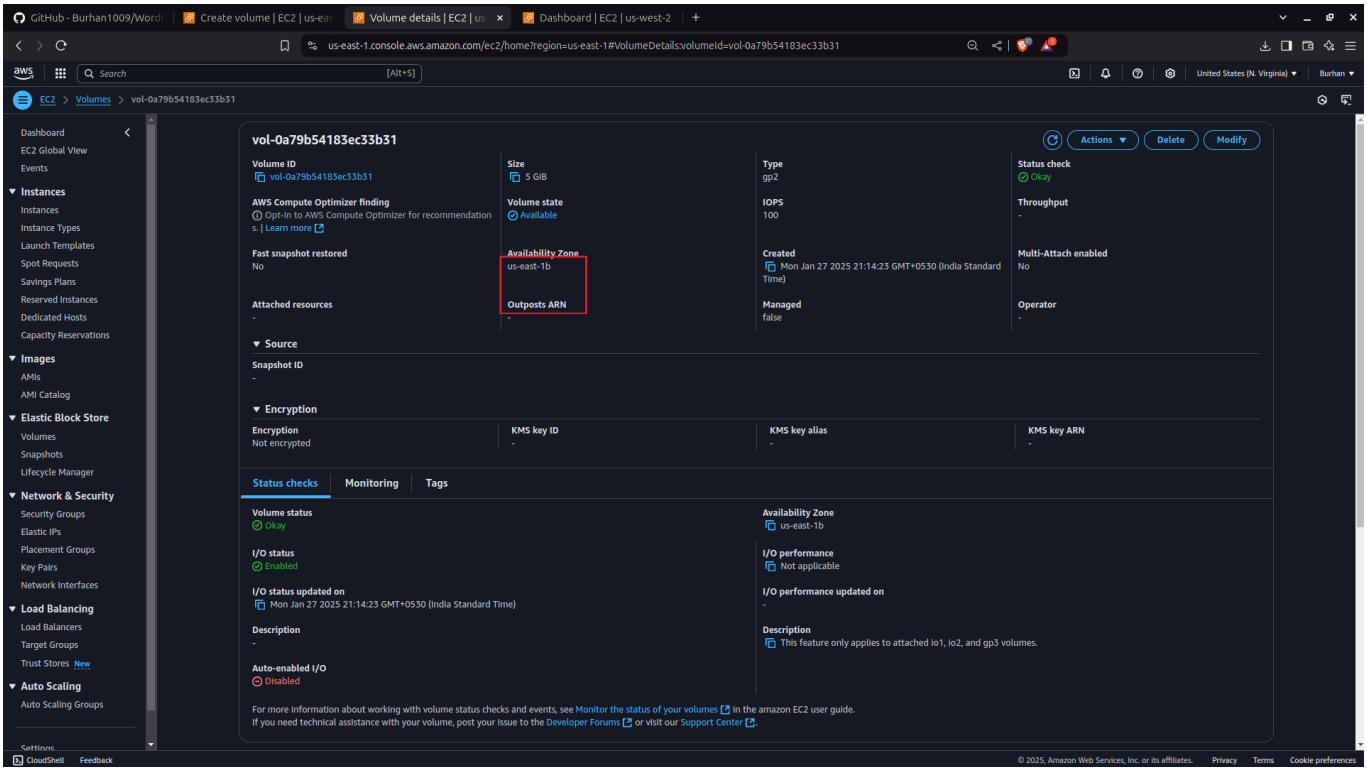




CREATE SECOND VOLUME

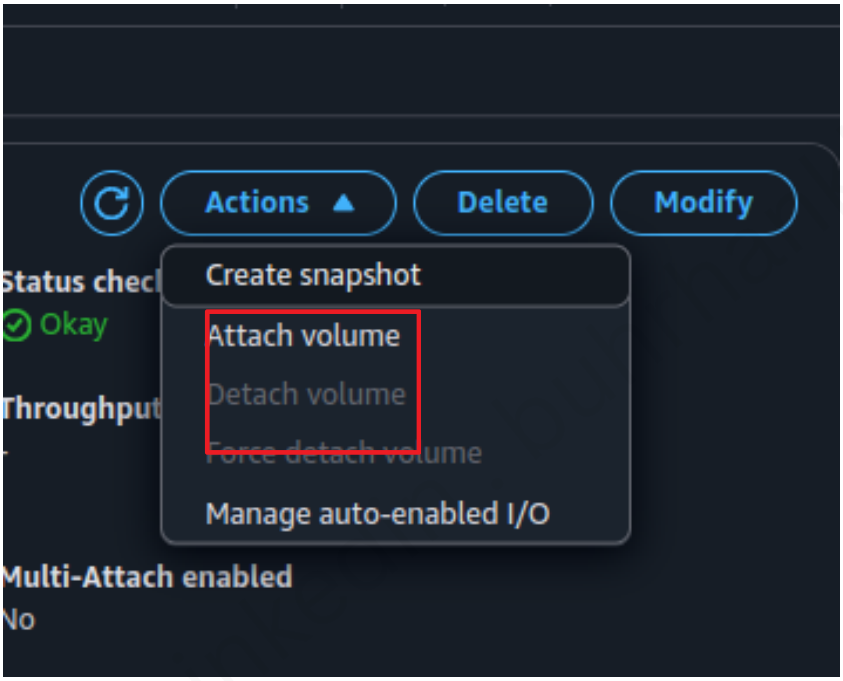
- Click on **Create volume**
- **Volume settings**
- Volume type : **General Purpose SSD gp2**
- Volume Size : **5 GB**
- Available Zone : **us-east-1b**

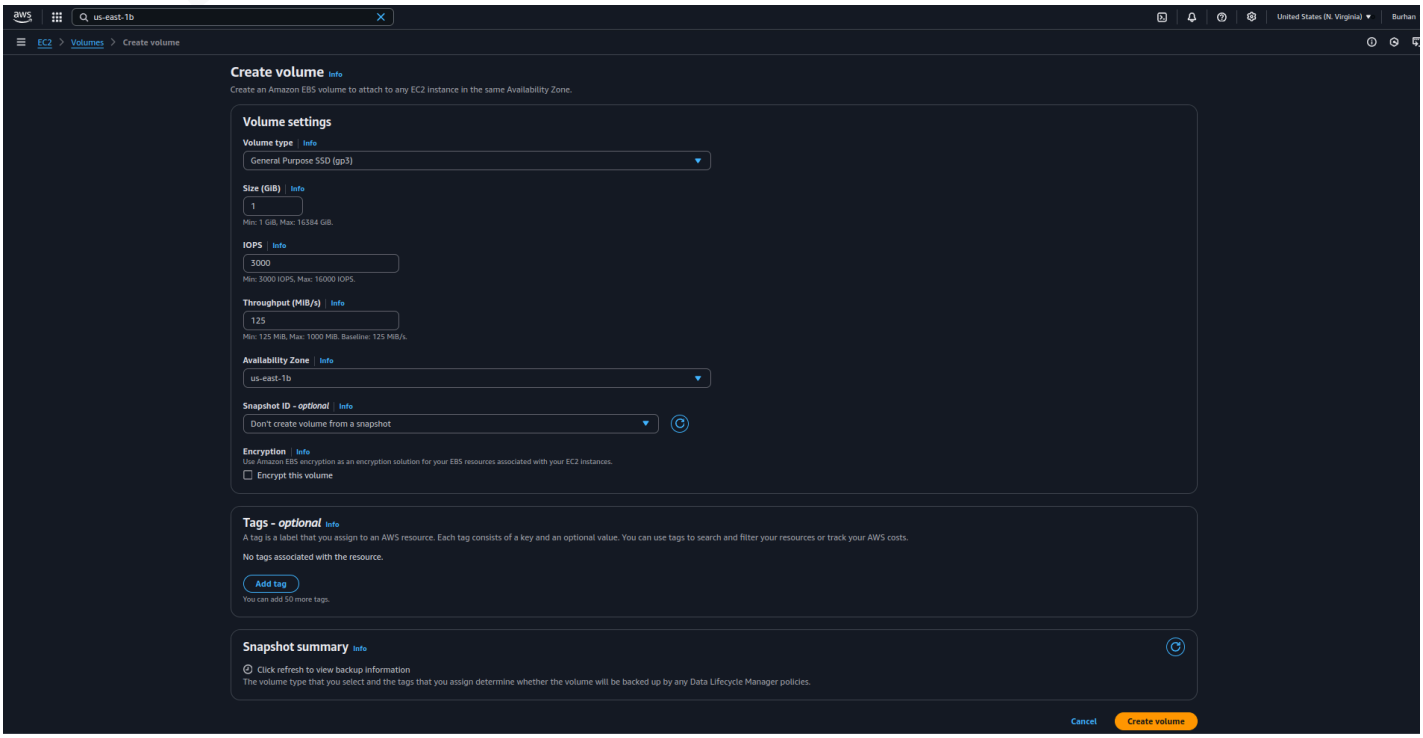




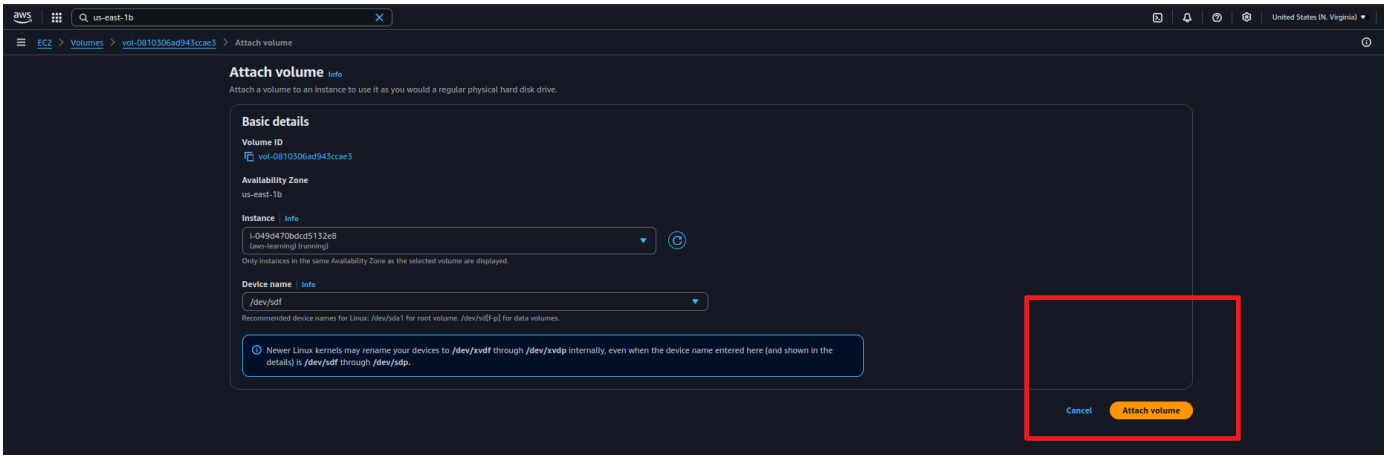
WAIT FOR ATTACHED VOLUME

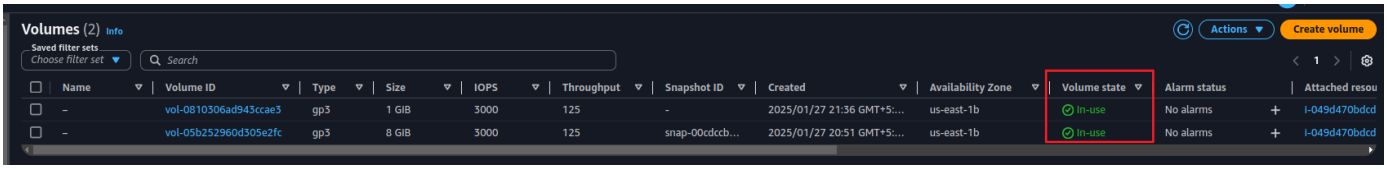
- Click on **Create volume**
- **Volume settings**
- Volume type : **General Purpose SSD gp2**
- Volume Size : **5 GB**
- Available Zone : **us-east-1b**



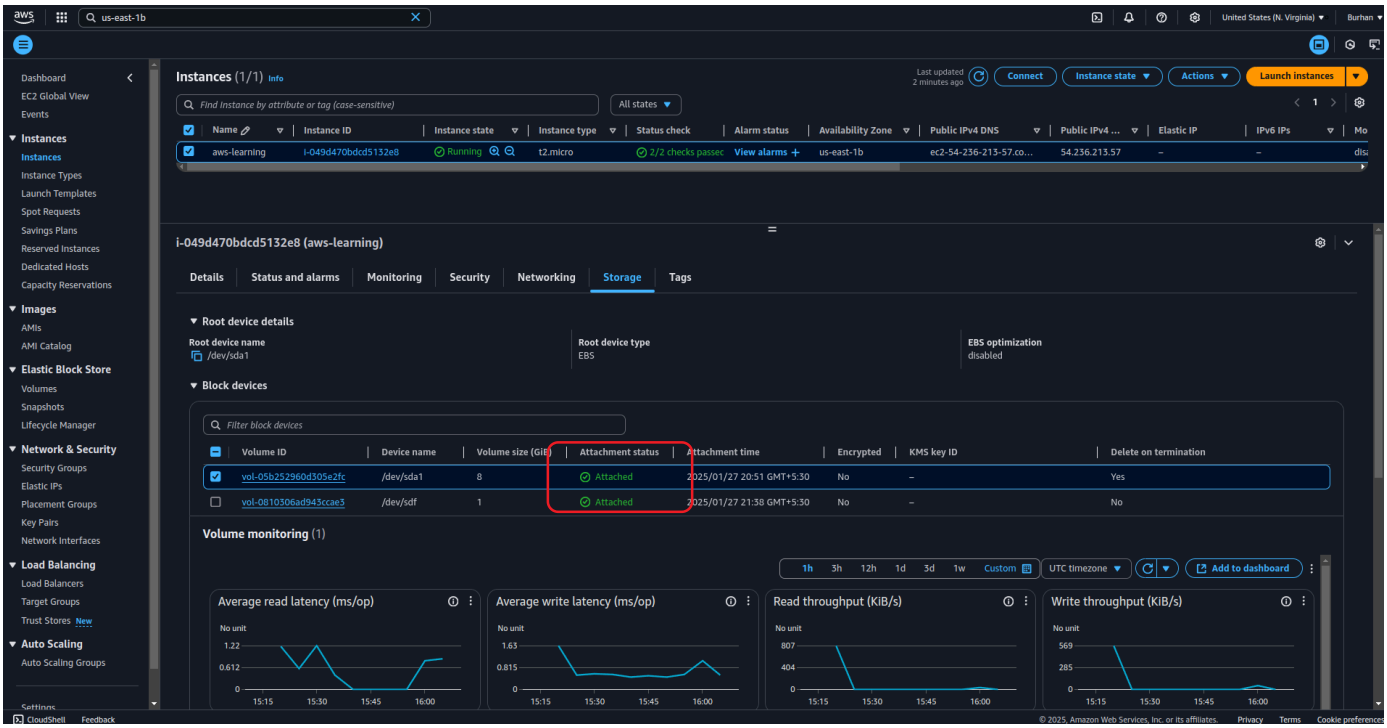


ATTACH VOLUME



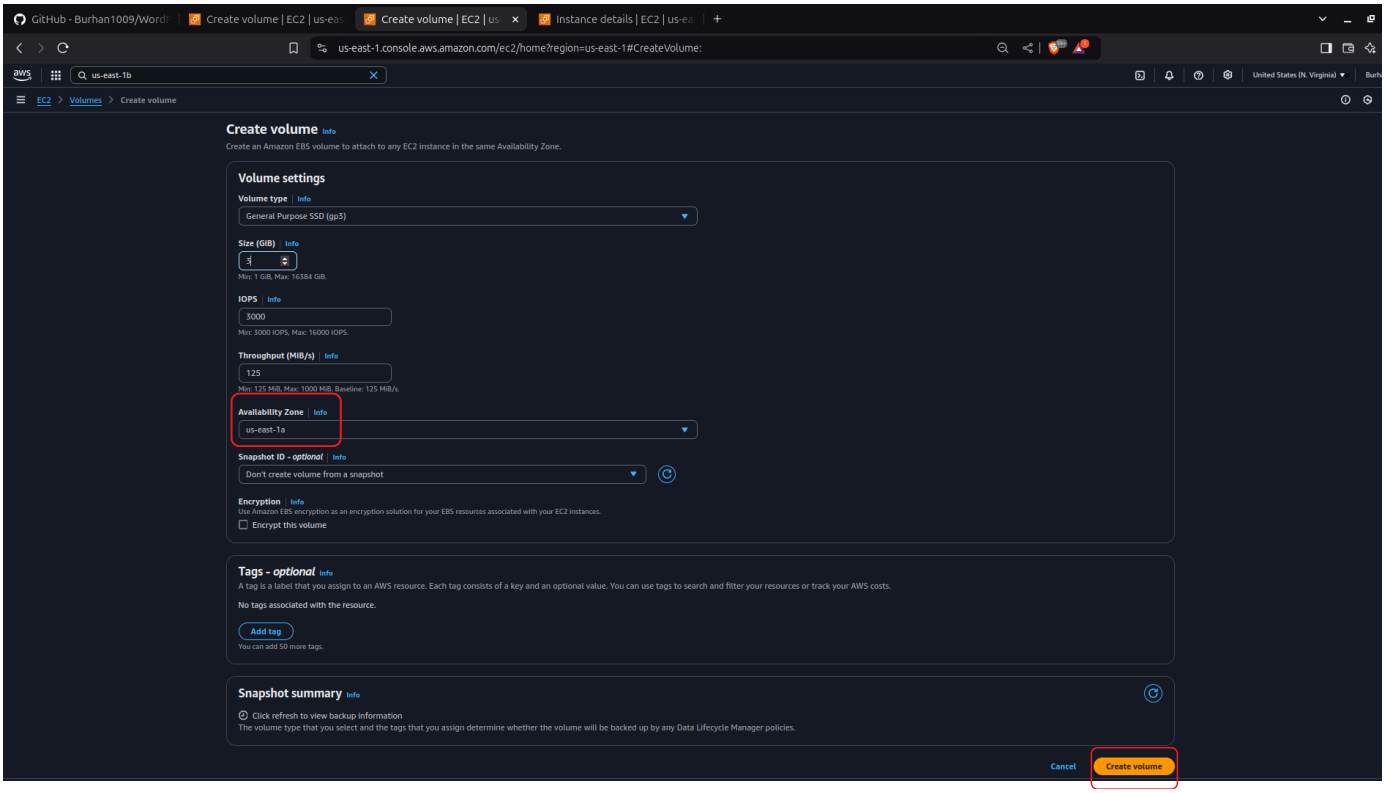


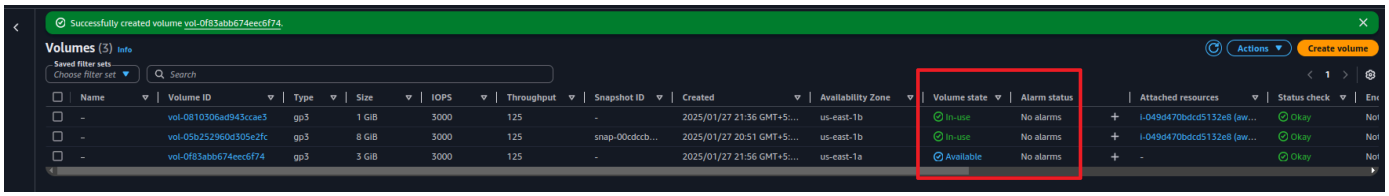
WE HAVE AVAILABLE TWO VOLUMES

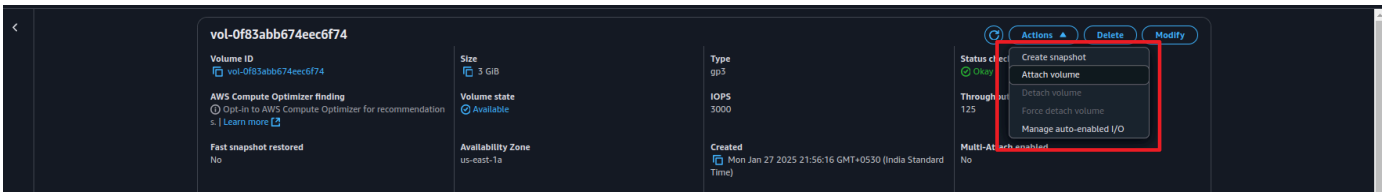


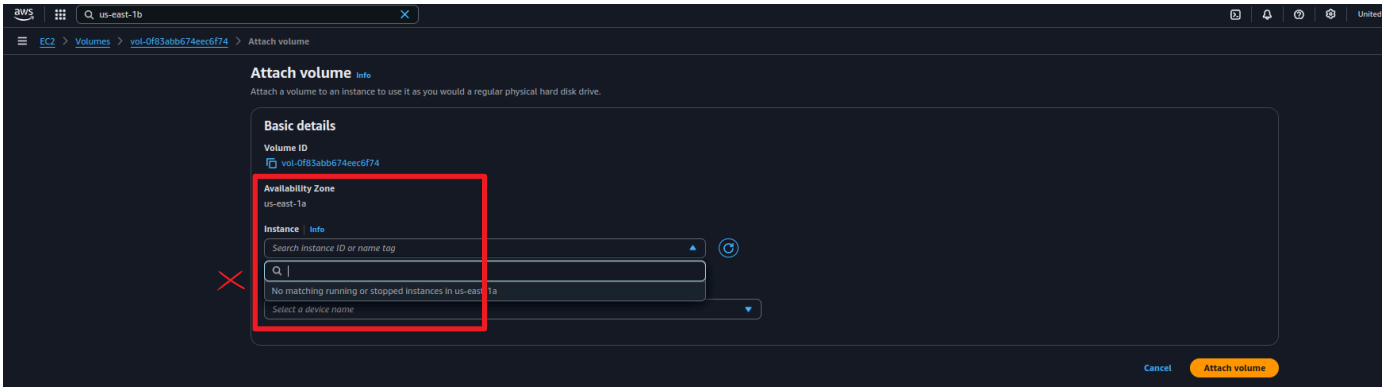
HERE WE CHANGE AVAILABILITY ZONE

- **V**olume type : **General Purpose SSD gp2**
- **V**olume Size : **2 GB**
- Available Zone : **us-east-1a**









NOTES

EBS SNAPSHOT

What’s an EBS Snapshot

- EBS Snapshot (Elastic Block Store Snapshot) is a backup of your data stored in Amazon Web Services (AWS). EBS provides block-level storage volumes that can be attached to your EC2 instances.
- When you create an EBS snapshot, it captures the exact state of your EBS volume at a specific point in time. This snapshot acts like a backup of your data, and you can use it to restore your data or create a new volume if needed.

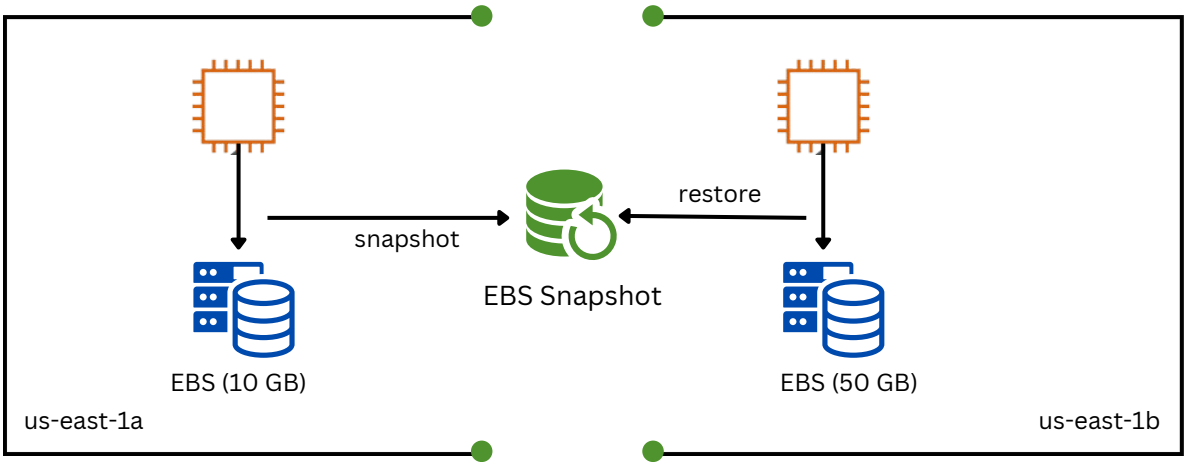
Simple Explanation:

Think of an EBS snapshot like taking a photo of your hard drive at a specific moment. Later, if anything goes wrong, you can use that "photo" (snapshot) to restore your data to how it was when the photo was taken.

Here’s a simpler version of what you're saying:

- Take a backup of your EBS volume: This means creating a copy of your data at a specific moment, like saving a snapshot of what your data looks like right now.
- You don’t have to detach the volume: You can take the backup without stopping or disconnecting the volume, but it’s better to do so for safety.
- You can copy backups to different places: You can move your backups to different availability zones (AZ) or even different regions if needed, for extra protection.

EBS Snapshot - Example



EBS Snapshots Features

Here's a simpler version of the features for EBS Snapshots:

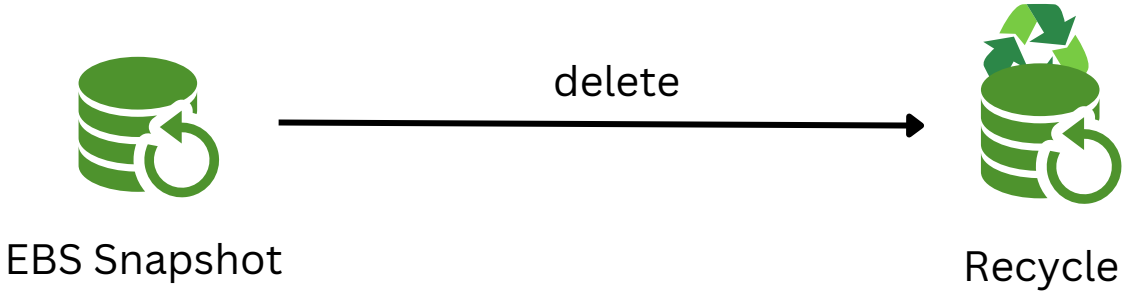
EBS Snapshot Archive

- You can move your backup to a cheaper storage option that saves you up to 75% of the cost.
- If you need to restore it, it might take 1 to 3 days.

Recycle Bin for EBS Snapshots

- You can set rules to keep deleted backups for a while, just in case you delete something by mistake.
- You can decide how long you want to keep these deleted backups (from 1 day to 1 year).

Example



EBS Snapshots Hands On

Creating snapshot..

- **Step 1 Open the EC2 Dashboard**

1. In the search bar at the top, type "EC2" and select EC2 from the results.
2. This will open the EC2 Dashboard.

- **Step 2: Go to "Volumes"**

1. In the left-hand menu under "Elastic Block Store", click on "Volumes".
2. This will show a list of all your EBS volumes.

- **Step 4: Select the Volume to Snapshot**

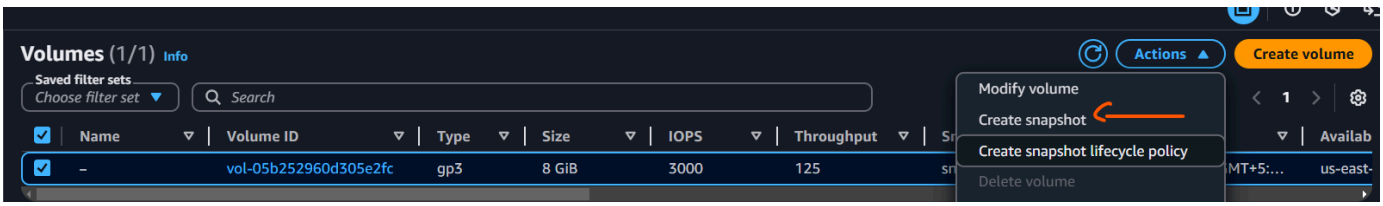
1. From the list of volumes, select the EBS volume you want to create a snapshot of.
2. Click on the volume to open its details.

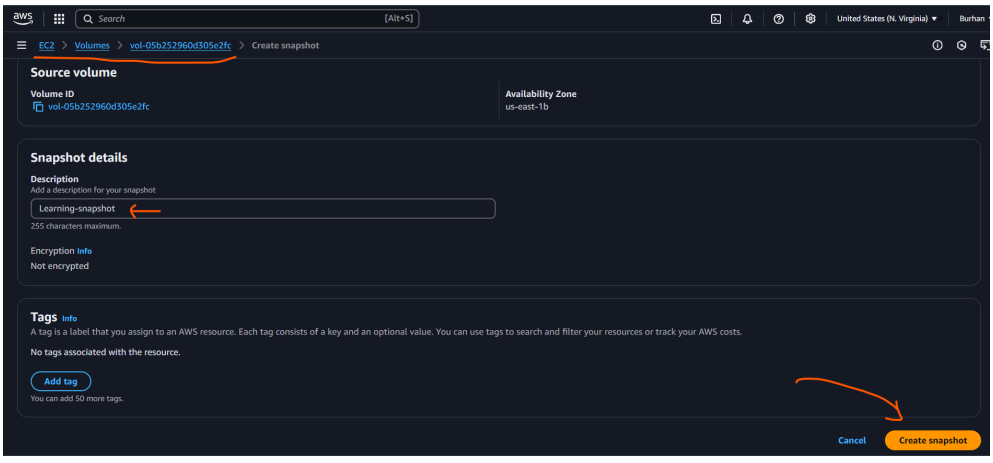
- **Step 5: Create Snapshot**

1. With the volume selected, click the "Actions" button at the top.
2. From the dropdown menu, choose "Create Snapshot".

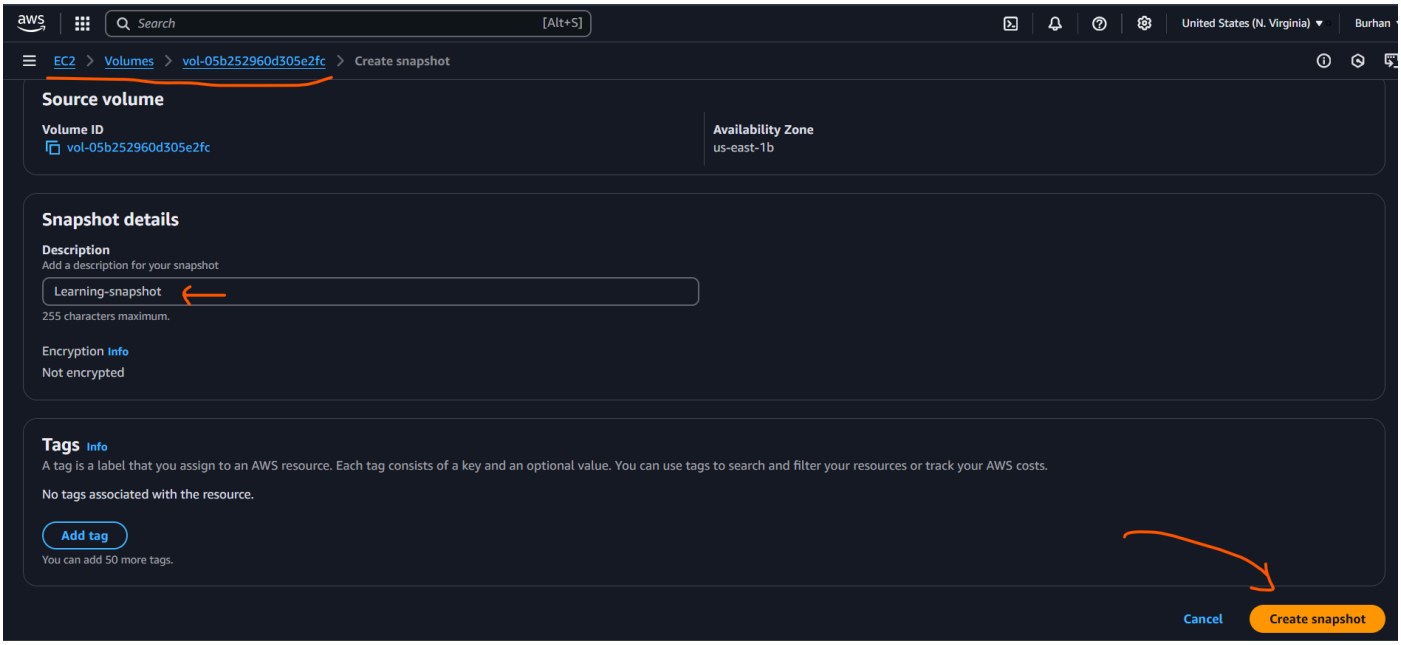
- **Step 6: Provide Snapshot Details**
- A new window will pop up asking you to provide a name and description for your snapshot

1. Name: Give your snapshot a meaningful name.
2. Description: Add an optional description (e.g., "Backup before update")
3. **After filling in the details, click "Create Snapshot".**

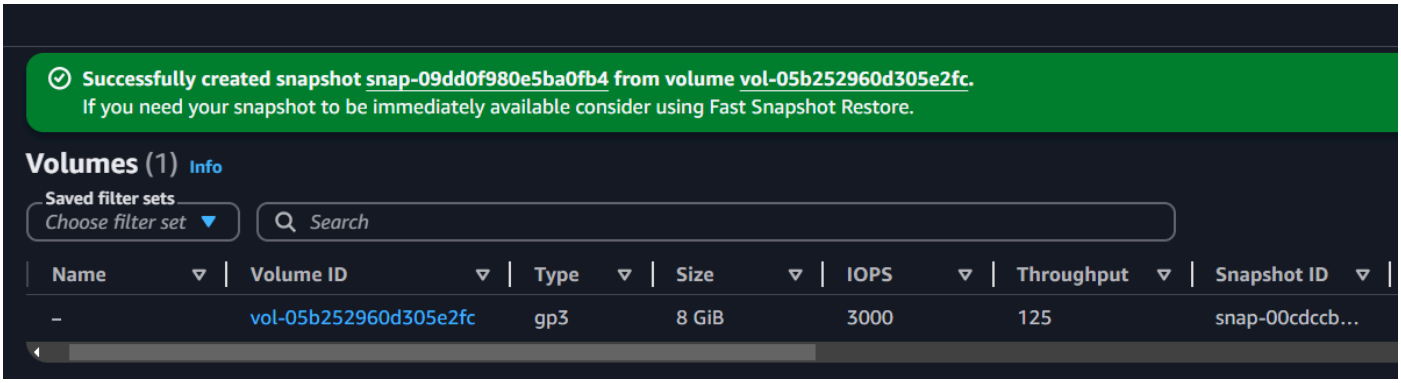


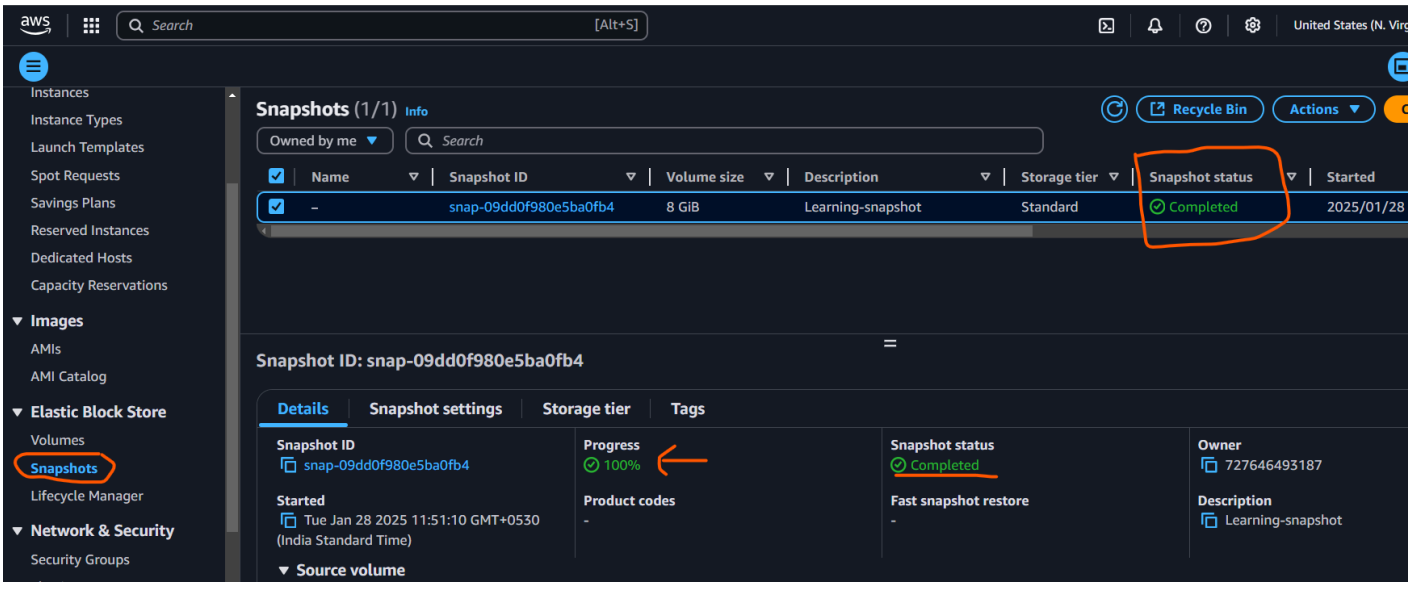


EBS Snapshots Hands On



Successfully created snapshot





Create a Volume from Snapshot

- **Step 1 Create Volume from Snapshot**

1. With the snapshot selected, click the "Actions" button at the top.
2. From the dropdown menu, choose "Create Volume"

- **Step 2 Configure Volume Details**

1. In the "Create Volume" dialog, set the following
2. Availability Zone: Select the availability zone where you want to create the volume. Ensure it matches the zone of the EC2 instance if you plan to attach it.
3. Size: The size will default to the snapshot size but can be increased.
4. Volume Type: Choose the appropriate volume type (e.g., General Purpose SSD, Provisioned IOPS SSD).
5. Encryption: If the snapshot is encrypted, the volume will also be encrypted. Otherwise, you can optionally enable encryption for the new volume.

- **Step 3 Create the Volume**

1. After configuring the volume details, click the "Create Volume" button.
2. The volume will now be created, and its status will show as "creating".
3. Once the process is complete, the status will change to "available".

- **Step 4 Create the Volume**

1. After configuring the volume details, click the "Create Volume" button.
2. The volume will now be created, and its status will show as "creating".
3. Once the process is complete, the status will change to "available".

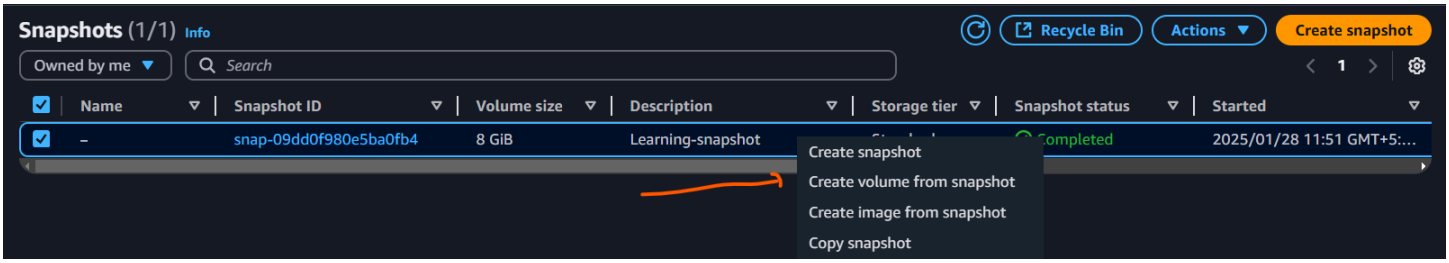
- **Step 5 Attach the Volume to an Instance (Optional)**

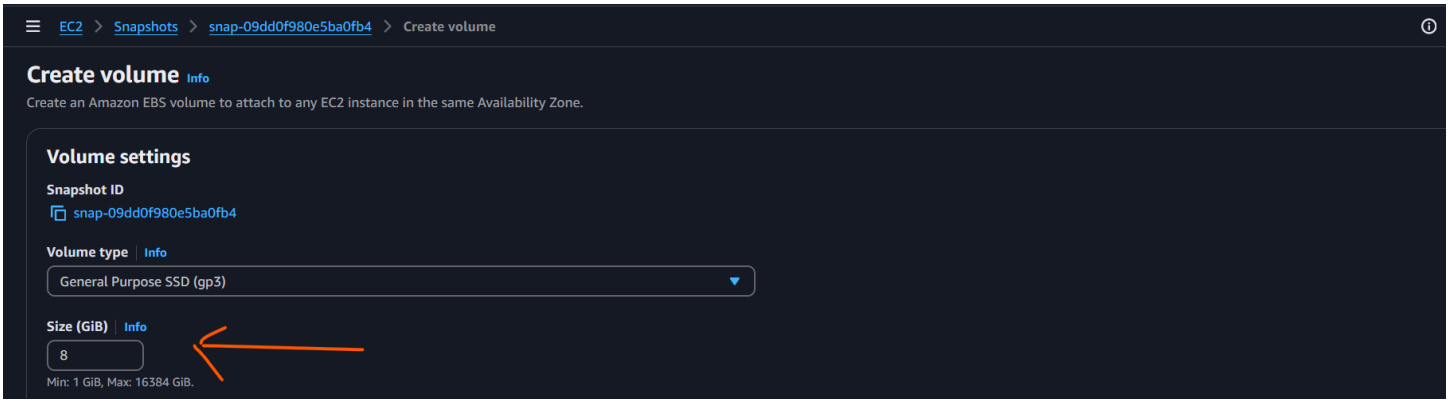
1. If needed, attach the volume to an EC2 instance:
2. Go to the "Volumes" section under "Elastic Block Store" in the EC2 dashboard.
3. Select the newly created volume and click the "Actions" button.
4. From the dropdown, choose "Attach Volume".
5. In the "Attach Volume" dialog, select the instance to attach the volume to.
6. Click "Attach" to complete the process.

- **Step 6 Verify the Volume**

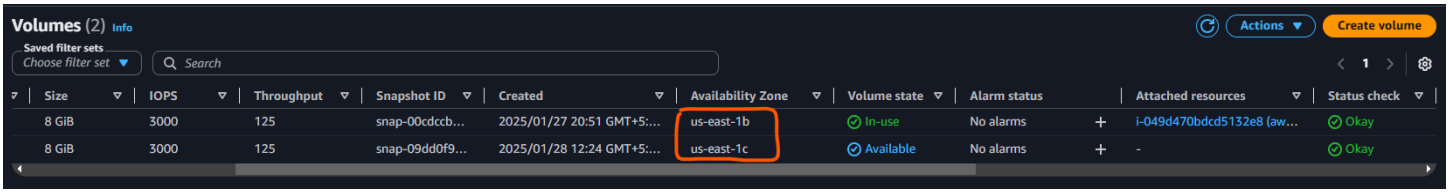
1. Log in to the EC2 instance (if attached) to verify that the new volume is available.
2. Use commands like lsblk or df -h to list block devices and mounted file systems.

Create a Volume from Snapshot

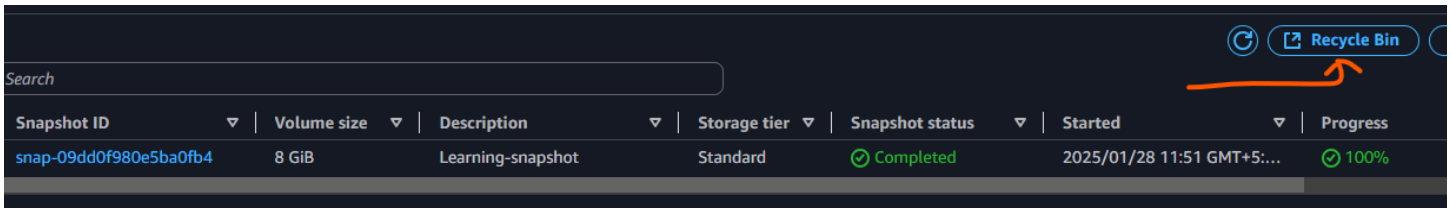




Tow Volume Available on Instance

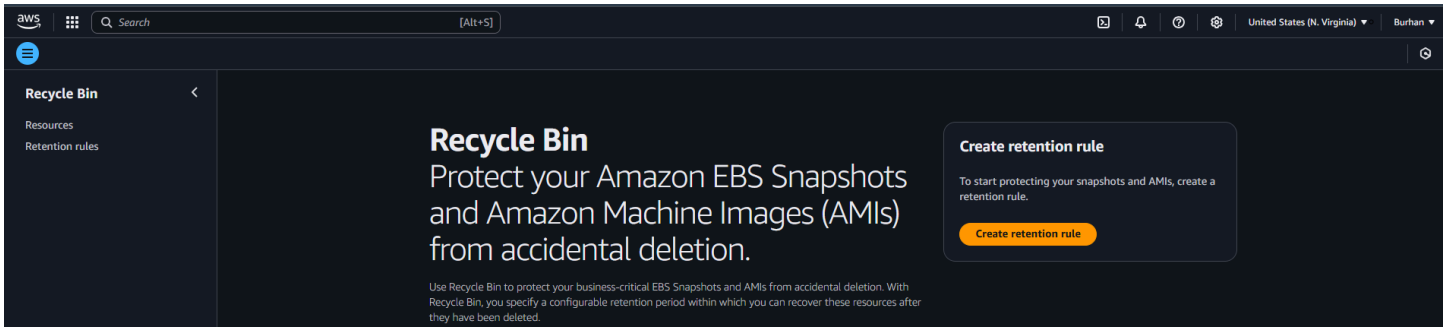


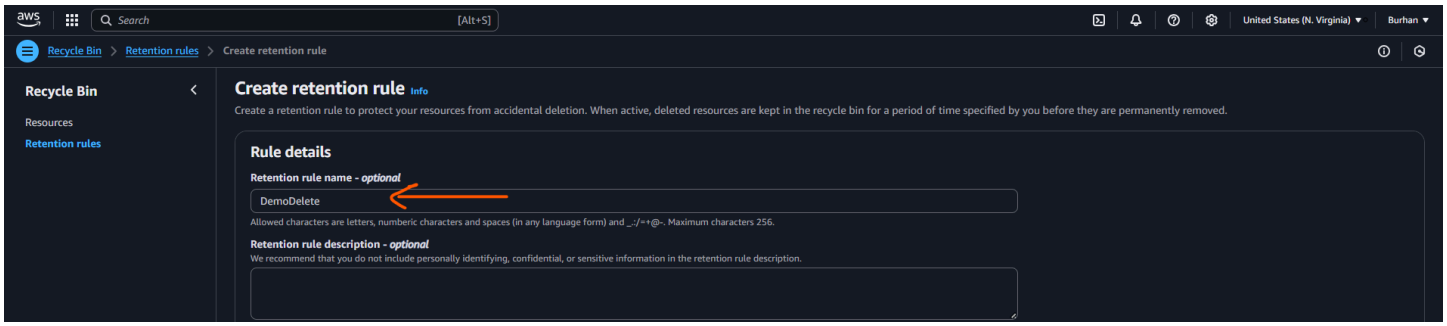
In AWS, the Volume Snapshot Recycle Bin is a feature that allows you to recover Amazon Elastic Block Store (EBS) snapshots that were deleted accidentally or intentionally. When you delete a snapshot, it is not immediately removed from AWS. Instead, it is moved to the Snapshot Recycle Bin, where it is retained for a specified period (typically up to 30 days) before being permanently deleted. This provides a safety net for recovering important snapshots

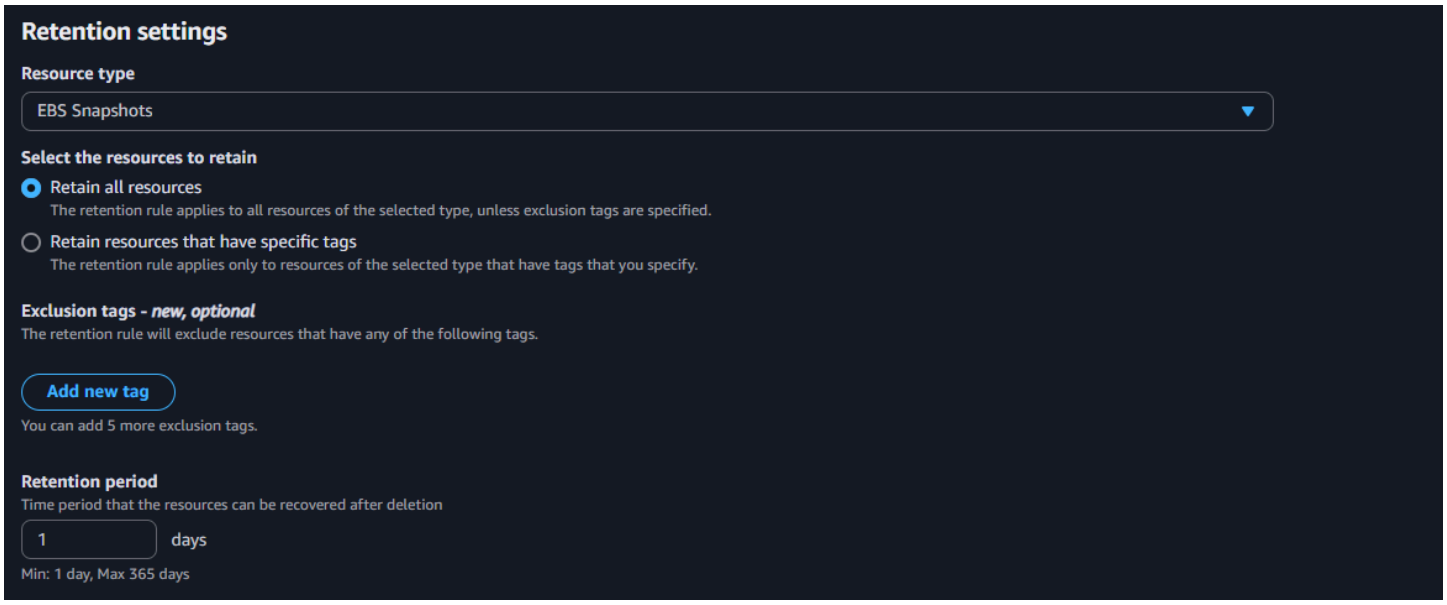


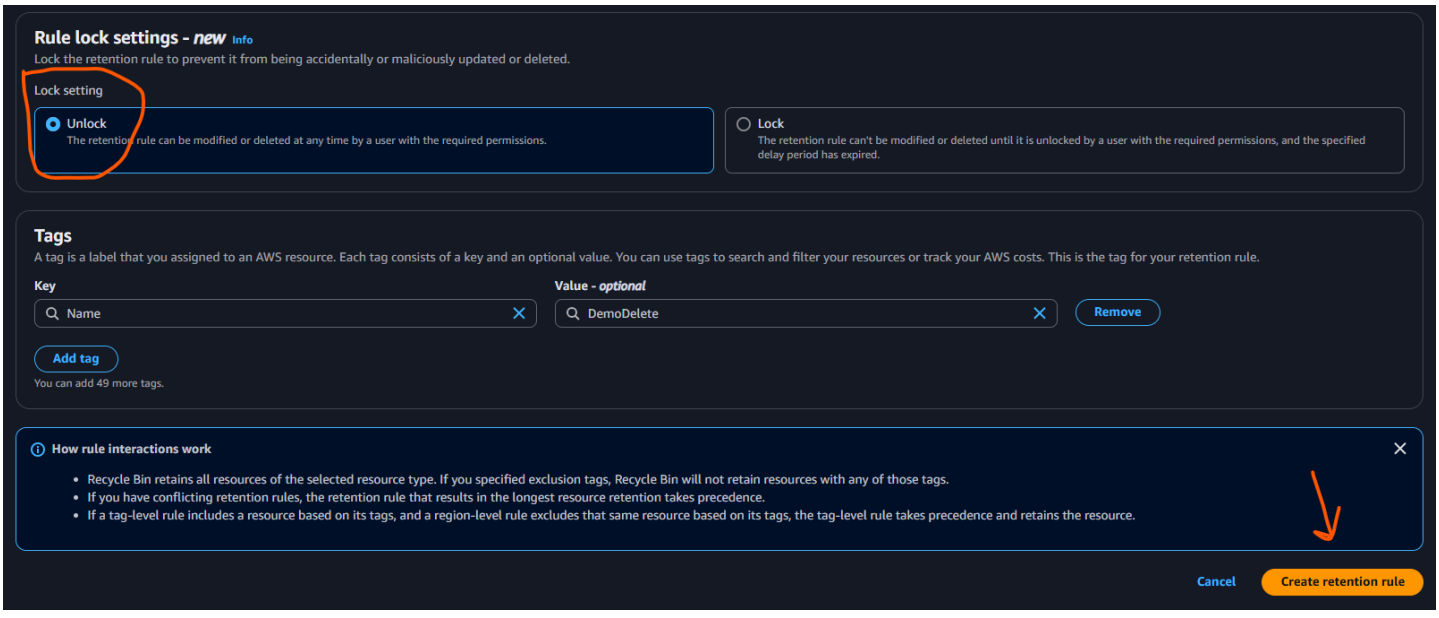
How to Active Recycle Bin

Click On Recycle Bin & Create retention rule



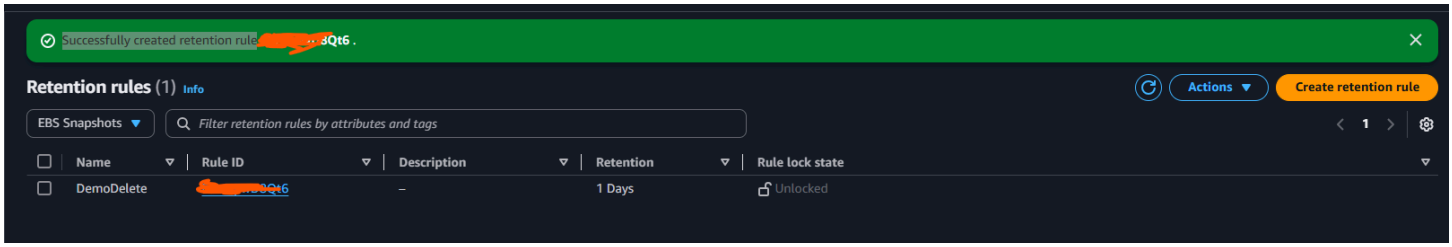


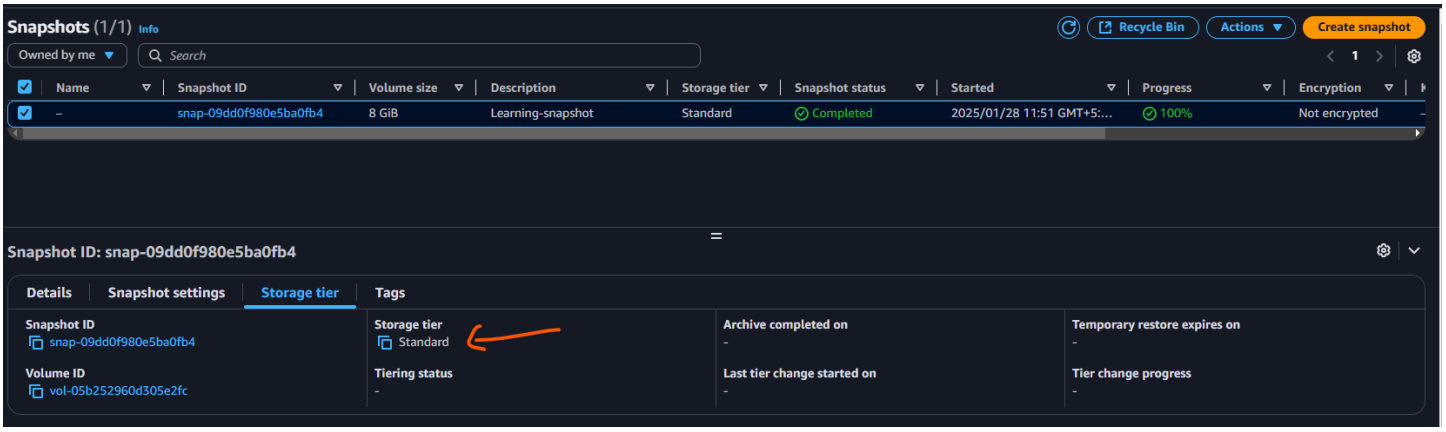




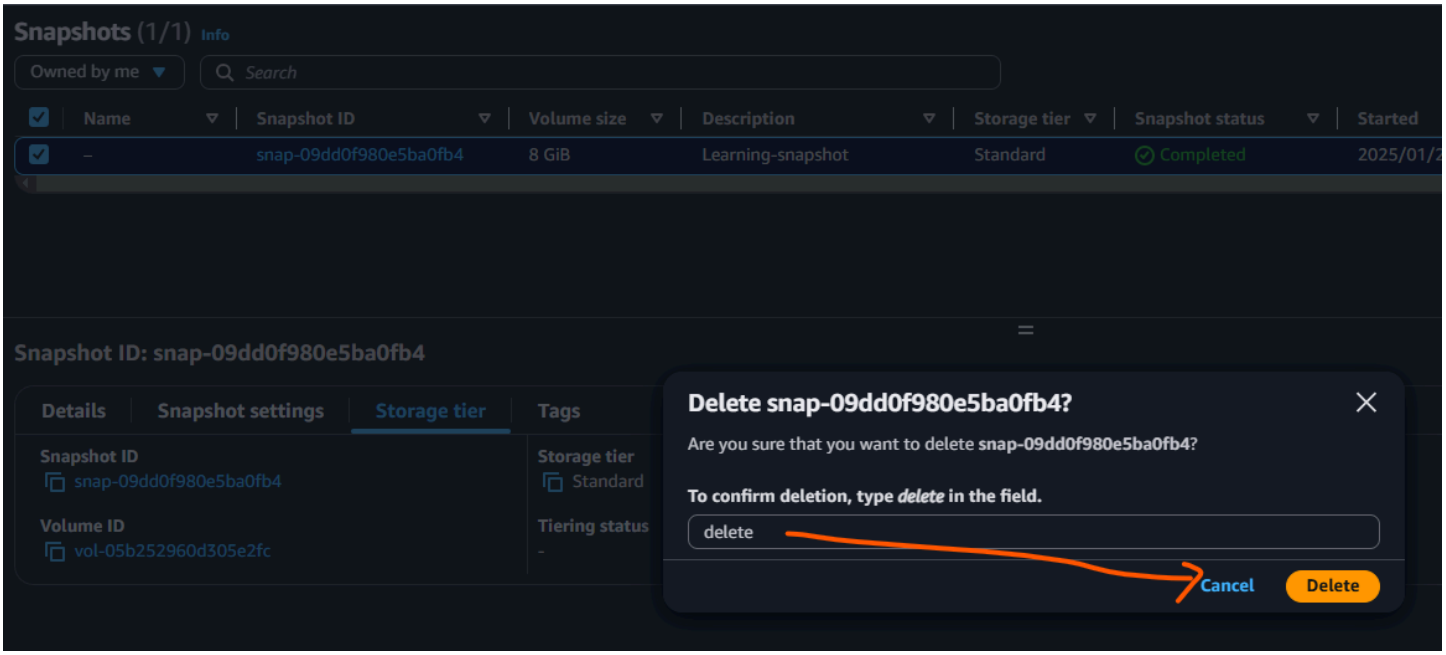
How to Active Recycle Bin

Successfully created retention rule

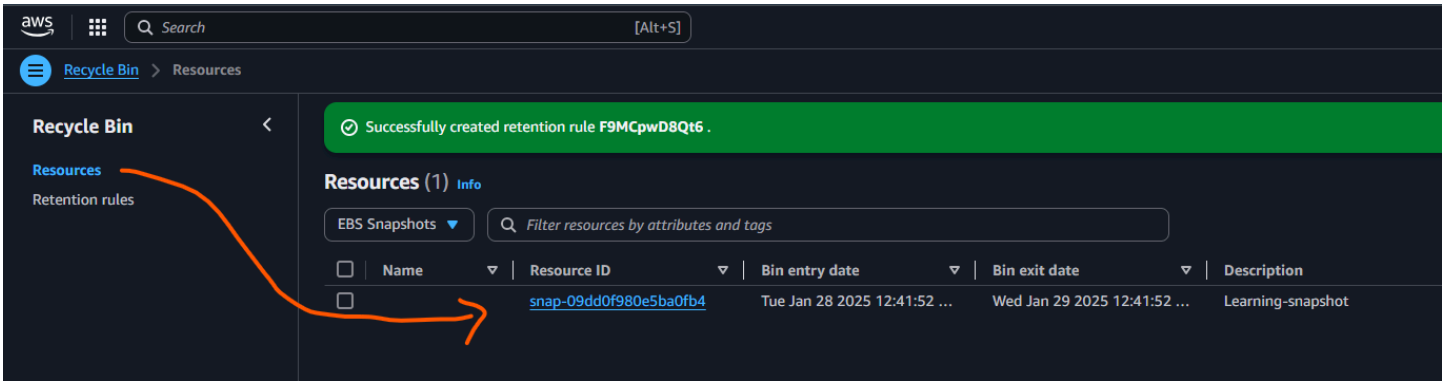




Delete Snapshot



Recycle Bin Resources to Recover your snapshot



NOTES

Terraform configuration that creates an AWS infrastructure with the following components

- **EBS Volume:** Creates an Elastic Block Store (EBS) volume.
- **EBS Snapshot:** Takes a snapshot of the volume.
- **Recycle Bin:** Adds the snapshot to an AWS Recycle Bin with a specified retention period.

Explanation of the Code

- **AWS Provider**: Specifies the AWS region to deploy resources.
- **EBS Volume:** Creates a 8 GiB EBS volume in the specified availability zone.
- **EBS Snapshot:** Creates a snapshot of the EBS volume.

Recycle Bin Rule

- Configures the Recycle Bin to retain snapshots for 7 days.
- Applies to resources of type EBS_SNAPSHOT.

Tag Snapshot for Recycle Bin: Adds a tag to the snapshot, associating it with the Recycle Bin.

Steps to Use

1. Save this code to a file, e.g., **main.tf.**
2. Run the following commands: **terraform init , terraform plan , terraform apply**
3. Confirm the resources to create by typing **yes** when prompted.

main.tf > resource "aws_ebs_volume" "example" > tags

```hcl
provider "aws" {
  region = "us-east-1" # Change to your preferred region
}

# Create an EBS Volume
resource "aws_ebs_volume" "example" {
  availability_zone = "us-east-1a" # Adjust as per your region
  size              = 8            # Size in GiB
  tags = {
    Name = "example-ebs-volume"
  }
}

# Create a Snapshot of the Volume
resource "aws_ebs_snapshot" "example" {
  volume_id = aws_ebs_volume.example.id
  tags = {
    Name = "example-ebs-snapshot"
  }
}
```

1

2

```hcl
# Create a Snapshot of the Volume
resource "aws_ebs_snapshot" "example" {
  volume_id = aws_ebs_volume.example.id
  tags = {
    Name = "example-ebs-snapshot"
  }
}

# Create a Recycle Bin Rule
resource "aws_recycle_bin_rule" "example" {
  resource_type = "EBS_SNAPSHOT"

  retention_period {
    retention_period_value = 7 # Retain for 7
    retention_period_unit  = "DAYS"
  }

  tags = {
    Name = "example-recycle-bin-rule"
  }
}

# Add the Snapshot to the Recycle Bin using a
resource "aws_tag" "example_snapshot_tag" {
  resource_id = aws_ebs_snapshot.example.id
  key         = "recycle-bin"
  value       = "true"
}
```