



Placement Empowerment Program

Cloud Computing and DevOps Centre

Back Up and Restore a Cloud Instance : Take a snapshot of your cloud VM. Terminate the VM and restore it from the snapshot.

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Introduction

In today's cloud-driven world, ensuring data availability and reliability is paramount. This Proof of Concept (POC) focuses on the **Backup and Restore** process for a cloud instance, showcasing how critical data can be safeguarded and restored efficiently in AWS. By taking a snapshot, terminating the instance, and restoring it from the snapshot, this POC demonstrates the ease and reliability of AWS Elastic Block Store (EBS).

Overview

This POC involves working with Amazon Web Services (AWS) to perform the following tasks:

1. Launching an EC2 instance.
2. Creating an EBS snapshot of the instance's volume to back up its data.
3. Terminating the instance to simulate a failure or cost-saving scenario.
4. Restoring the instance using the snapshot by creating a new volume and attaching it to a new EC2 instance.

The step-by-step approach ensures no unnecessary charges while maintaining data integrity and availability.

Objective

The objective of this POC is to:

1. Demonstrate the process of creating and managing backups in AWS.
2. Explore the capabilities of EBS snapshots for disaster recovery.
3. Understand how to restore a terminated instance and verify data integrity.
4. Highlight cost-saving techniques using AWS Free Tier while ensuring operational readiness.

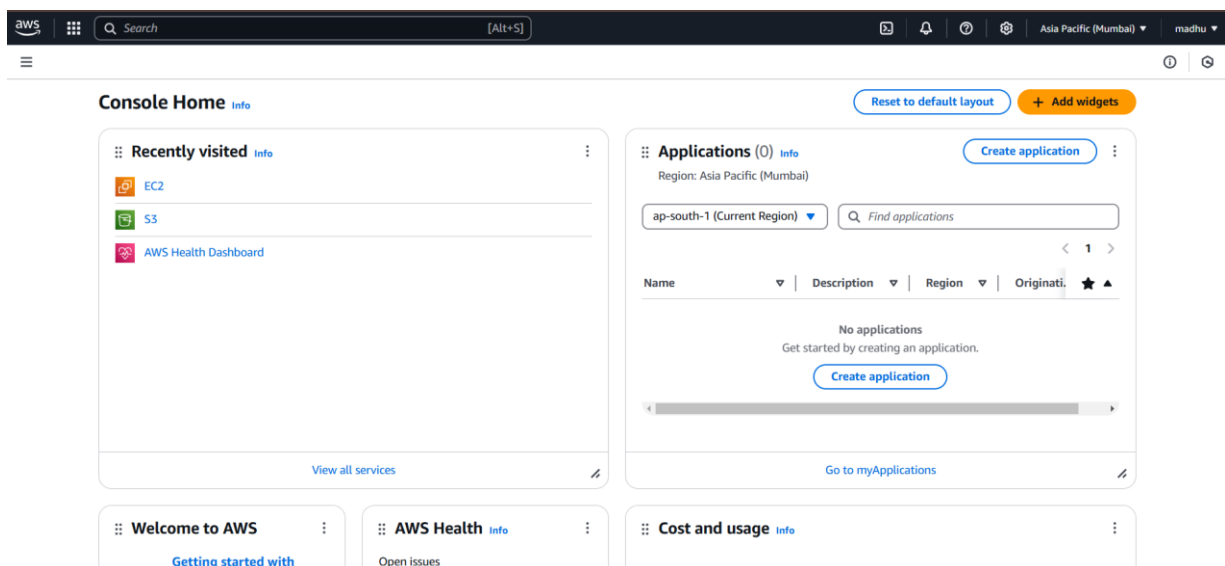
Importance

- 1. Disaster Recovery:** Ensures that critical data can be restored quickly in case of an unexpected failure.
- 2. Cost Optimization:** Demonstrates terminating unused instances and restoring them only when required.
- 3. Scalability and Flexibility:** Showcases AWS's ability to manage snapshots and volumes across regions and availability zones.
- 4. Practical Knowledge:** Provides hands-on experience in working with EC2, EBS, and snapshot-based recovery processes.

Step-by-Step Overview Step

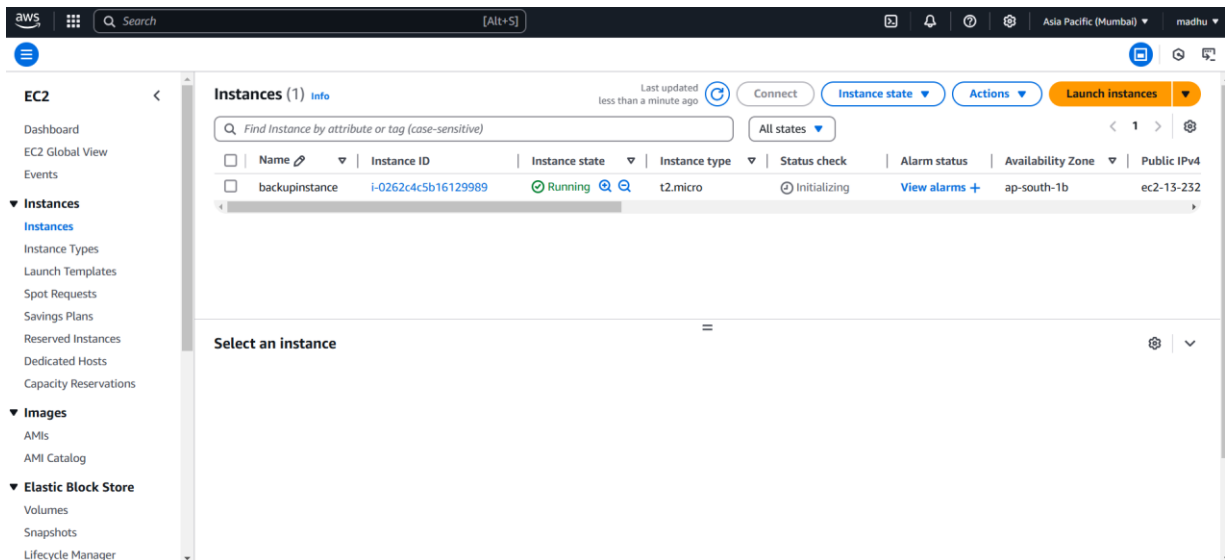
1:

1. Go to [AWS Management Console](#).
2. Enter your username and password to log in.



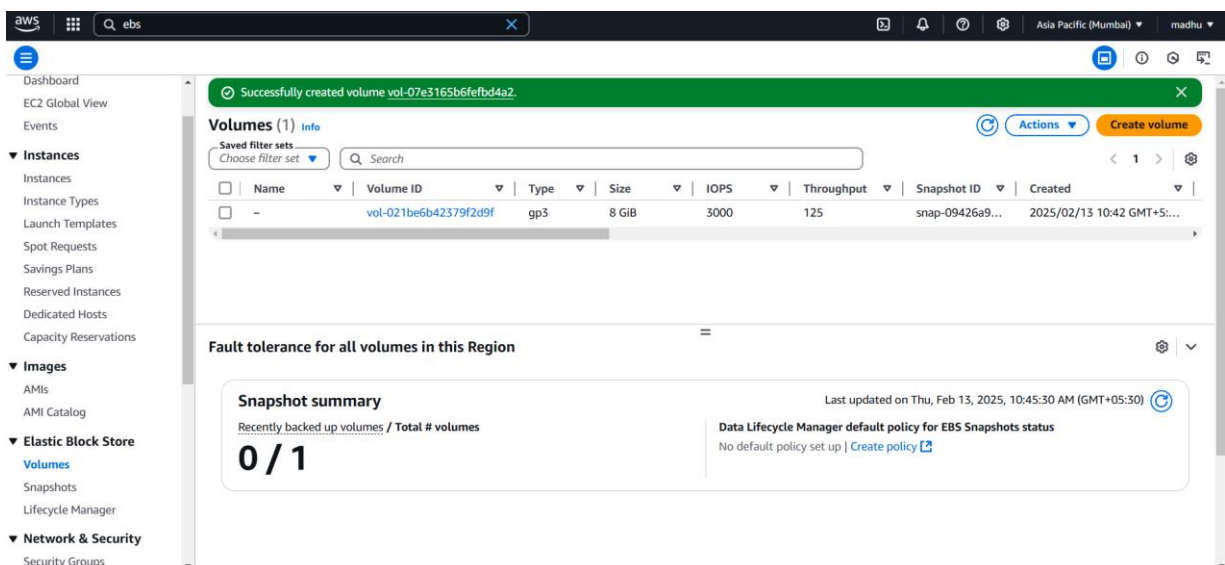
Step 2:

Launch an Ec2 instance.(Backup Instance)



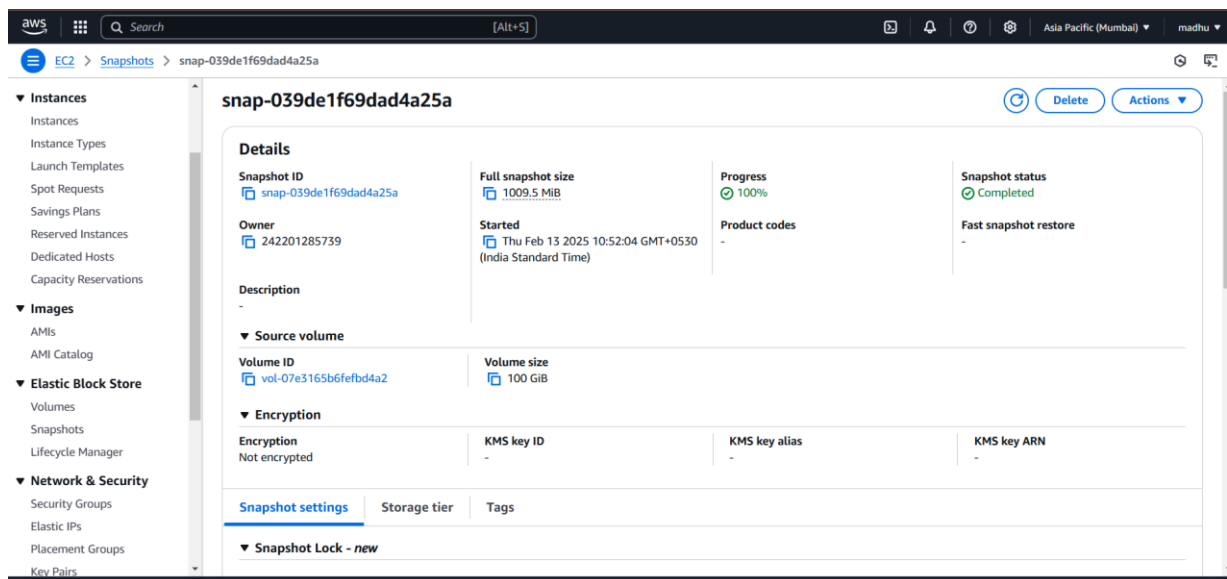
Step 3:

To create a new EBS volume in AWS, go to the EC2 Dashboard in the AWS Management Console by selecting **EC2** from the Services menu. In the left-hand menu, under **Elastic Block Store**, click on **Volumes**, then click the **Create Volume** button. Select **General Purpose SSD (gp3)** for the volume type, set the size (e.g., 8 GiB, within Free Tier limits), and choose the availability zone that matches your EC2 instance (e.g., us-east-1b). Leave the other options as default, then click **Create Volume**. Be sure to note the Volume ID for future reference.



Step 4:

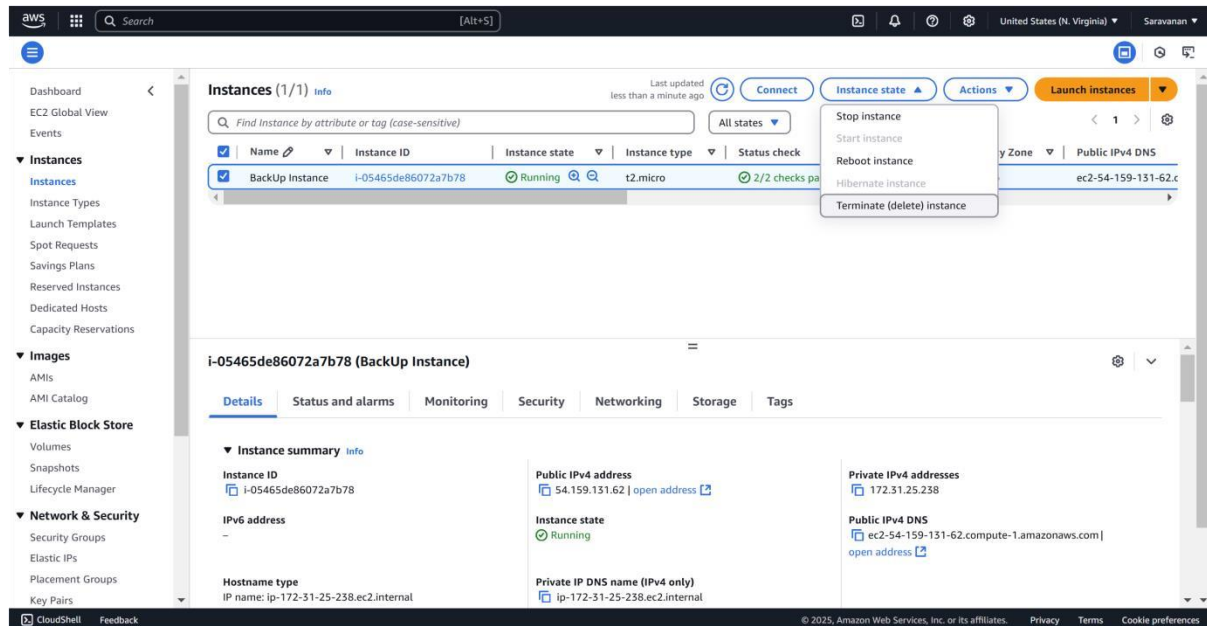
To create a snapshot of your EBS volume, navigate to the EC2 Dashboard in the AWS Management Console and click on **Volumes** under the **Elastic Block Store** section. Locate the volume attached to your instance (it should match the instance name or ID), select it, then click **Actions** > **Create Snapshot**. Add a meaningful description (e.g., "Snapshot of Backup Instance on Feb 7") and click **Create Snapshot**. To monitor its status, go to **Snapshots** under Elastic Block Store in the left menu and wait for the status to change to **Completed**.



Step 5:

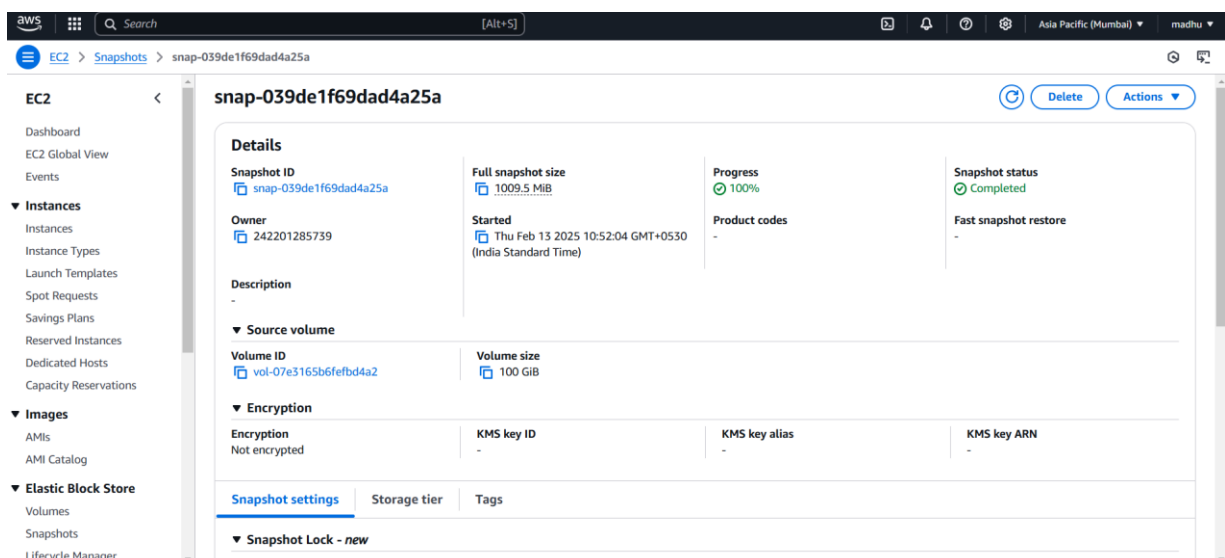
To terminate an EC2 instance, navigate to the EC2 Dashboard in the AWS Management Console and click on **Instances** under the **Instances** section. Locate the instance you want to terminate, then select it and click **Actions** > **Instance State** > **Terminate Instance**. Confirm the

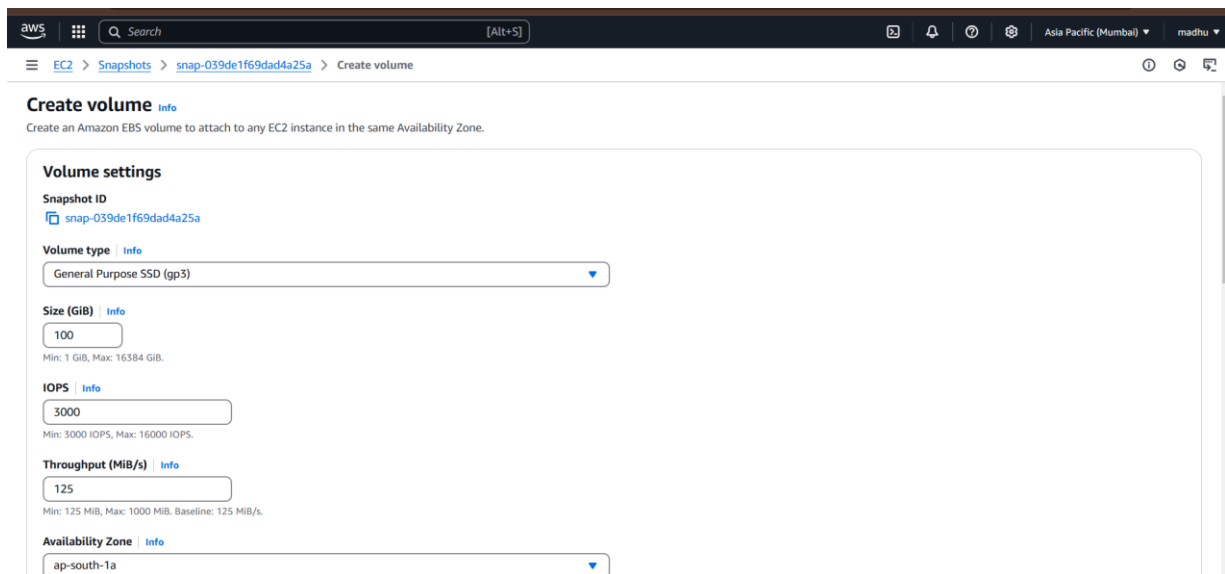
termination by clicking **Terminate**, and refresh the page after a few moments to see the instance state change to **Terminated**.



Step 6:

To create a new volume from the snapshot, go to the EC2 Dashboard and click on **Snapshots** under the **Elastic Block Store** section in the left menu. Select the snapshot you created earlier, then click **Actions** at the top and choose **Create Volume**. In the configuration settings, leave the **Size** as is (it will match the snapshot size) and select the same **Availability Zone** where you want to restore your instance (e.g., us-east-1a). Finally, click **Create Volume** to complete the process.





Create volume [Info](#)

Create an Amazon EBS volume to attach to any EC2 instance in the same Availability Zone.

Volume settings

Snapshot ID
[snap-039de1f69dad4a25a](#)

Volume type [Info](#)
 General Purpose SSD (gp3)

Size (GiB) [Info](#)
 100
 Min: 1 GiB, Max: 16384 GiB.

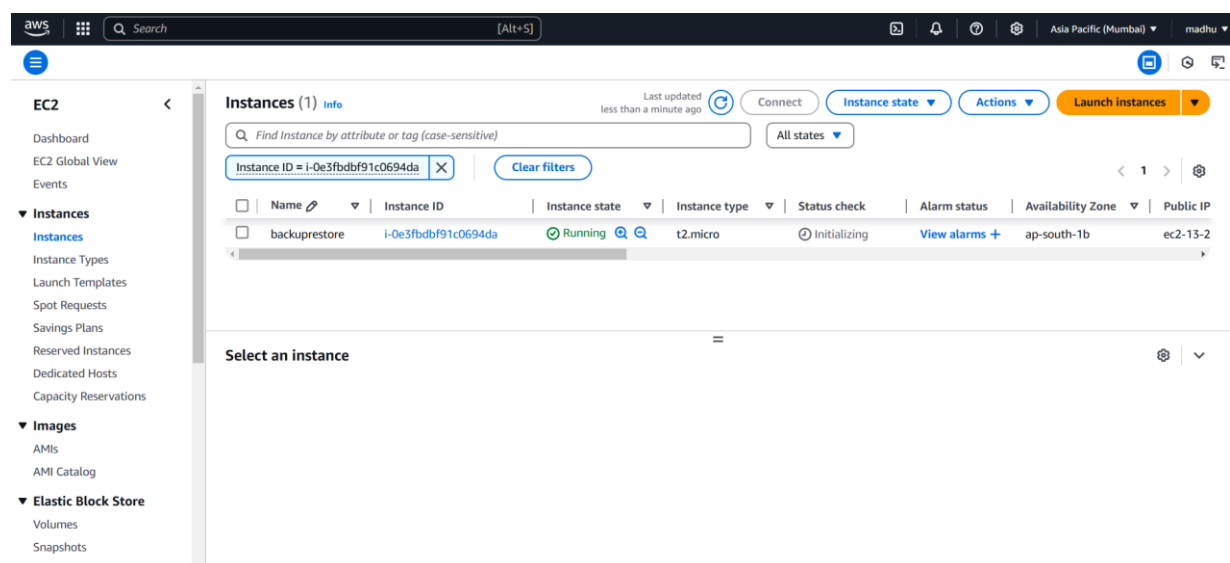
IOPS [Info](#)
 3000
 Min: 3000 IOPS, Max: 16000 IOPS.

Throughput (MiB/s) [Info](#)
 125
 Min: 125 MiB, Max: 1000 MiB, Baseline: 125 MiB/s.

Availability Zone [Info](#)
 ap-south-1a

Step 7:

To launch a new instance, go to the EC2 Dashboard and click **Launch Instances**. Set the name of the new instance (e.g., **Restored-POCVM**) and choose the same AMI (e.g., **Amazon Linux 2023 Free Tier eligible**) as the original instance. Select **t2.micro** for the instance type (Free Tier eligible). Configure the instance as needed, but skip the storage section for now.



Instances (1) [Info](#)

Last updated less than a minute ago [Connect](#) [Instance state](#) [Actions](#) [Launch instances](#)

Find Instance by attribute or tag (case-sensitive) [All states](#)

Instance ID = i-Oe3fbd91c0694da [Clear filters](#)

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
<input type="checkbox"/>	backuprestore	i-Oe3fbd91c0694da	Running	t2.micro	Initializing	View alarms +	ap-south-1b	ec2-13-2

Select an instance

Step 8:

To attach the volume to the instance, first, stop the instance temporarily after it is launched by selecting the new instance, then click **Actions** > **Instance State** > **Stop Instance**. Next, go to **Volumes** in the left menu and select the new volume created from the snapshot. Click **Actions** > **Attach Volume**, and in the pop-up window, choose the new instance to attach the volume.

The screenshot displays the AWS Management Console interface. The top section shows the 'Instance summary for i-0e3fbd9f91c0694da (backuprestore)'. A modal dialog titled 'Stop instance' is open, prompting the user to stop the instance. The dialog includes the instance ID, a 'Stop protection' toggle, and a warning about billing for associated resources. Below the dialog, the 'Volumes' page is visible, showing a table of volumes. The first volume, 'vol-07e3165b6fefbd4a2', is selected. A context menu is open over this volume, showing options like 'Attach volume' and 'Detach volume'. The 'Attach volume' option is highlighted.

Instance summary for i-0e3fbd9f91c0694da (backuprestore)

Updated less than a minute ago

Instance ID: i-0e3fbd9f91c0694da

Public IPv4 address: ...

Private IPv4 addresses: ...

IPv6 address: ...

Hostname type: IP name: ip-172-31-2-186.ap...

Answer private resource DN: IP v4 (A): 13.233.163.78 [Public IP]

Auto-assigned IP address: 13.233.163.78 [Public IP]

IAM Role: ...

IMDSv2: Required

Instance ARN: arn:aws:ec2:ap-south-1:242201285739:instance/i-0e3fbd9f91c0694da

Managed: false

Stop instance

Stopping your instance allows you to reduce costs, modify settings, and troubleshoot problems.

Instance ID: i-0e3fbd9f91c0694da (backuprestore)

Stop protection: Off (Can stop instance)

You will be billed for associated resources
After you stop the instance, you are no longer charged usage or data transfer fees for it. However, you will still be billed for associated Elastic IP addresses and EBS volumes.

Associated resources
You will continue to incur charges for these resources while the instance is stopped

Cancel Stop

Volumes (1/3)

Name	Volume ID	Type	Size	IOPS	Throughput
-	vol-07e3165b6fefbd4a2	gp3	100 GiB	3000	125
-	vol-057dbf43cf873fd9f	gp3	8 GiB	3000	125
-	vol-021be6b42379f2d9f	gp3	8 GiB	3000	125

Volume ID: vol-07e3165b6fefbd4a2

Details | Status checks | Monitoring | Tags

Volume ID	Size	Type	Status check
vol-07e3165b6fefbd4a2	100 GiB	gp3	Okay

AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations. [Learn more](#)

Volume state
Available

Fast snapshot restored
No

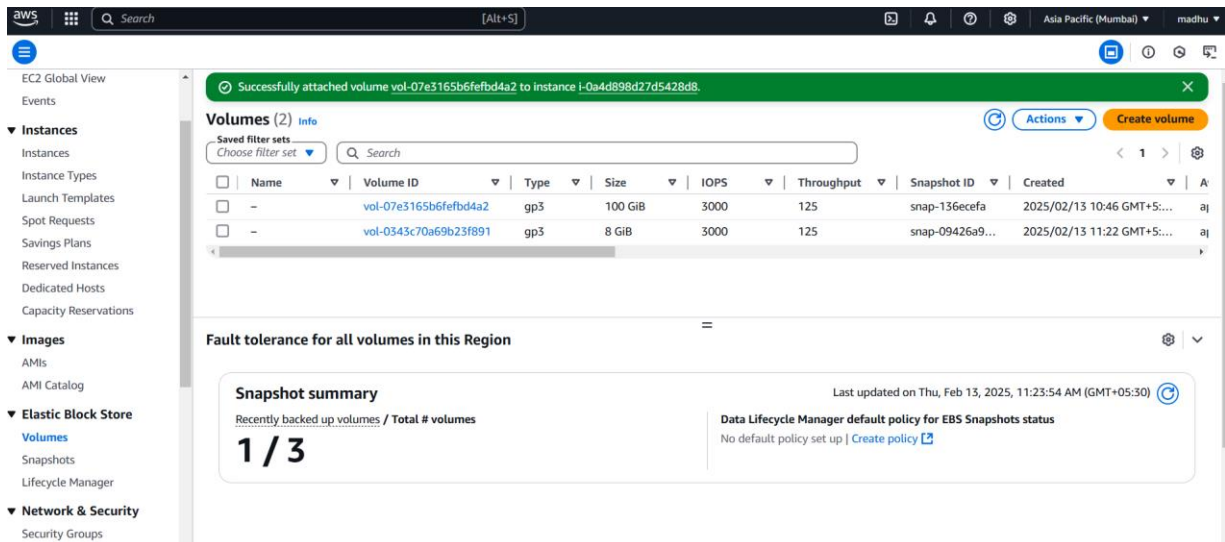
Availability Zone
ap-south-1a

IOPS
3000

Created
Thu Feb 13 2025 10:46:05 GMT+0530 (India Standard Time)

Throughput
125

Multi-Attach enabled
No



Verify the Restoration

1. Connect to the instance using SSH or other methods.
2. Check if the files, data, and configurations match the original setup.

POC is **completed** successfully:

1. **Created a Snapshot** of your instance.
2. **Terminated the Instance** to avoid extra charges.
3. **Restored the Instance** using the snapshot by creating a volume and attaching it to a new VM.

Outcome

By completing this POC of **Back Up and Restore a Cloud Instance** in AWS, you will:

1. **Create and manage snapshots** of EC2 instances, enabling easy backup of instance data without manual intervention.

- 2. Terminate instances** while ensuring that important data remains intact through the backup snapshot.
- 3. Restore an instance** from a snapshot by creating a new EBS volume and attaching it to a fresh EC2 instance.
- 4. Verify the restoration process**, ensuring data integrity and proper functionality after the instance is restored.
- 5. Gain practical knowledge** of AWS services like EC2, EBS snapshots, and how to use them for backup and recovery, which is vital for disaster recovery and business continuity in the cloud.