

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.

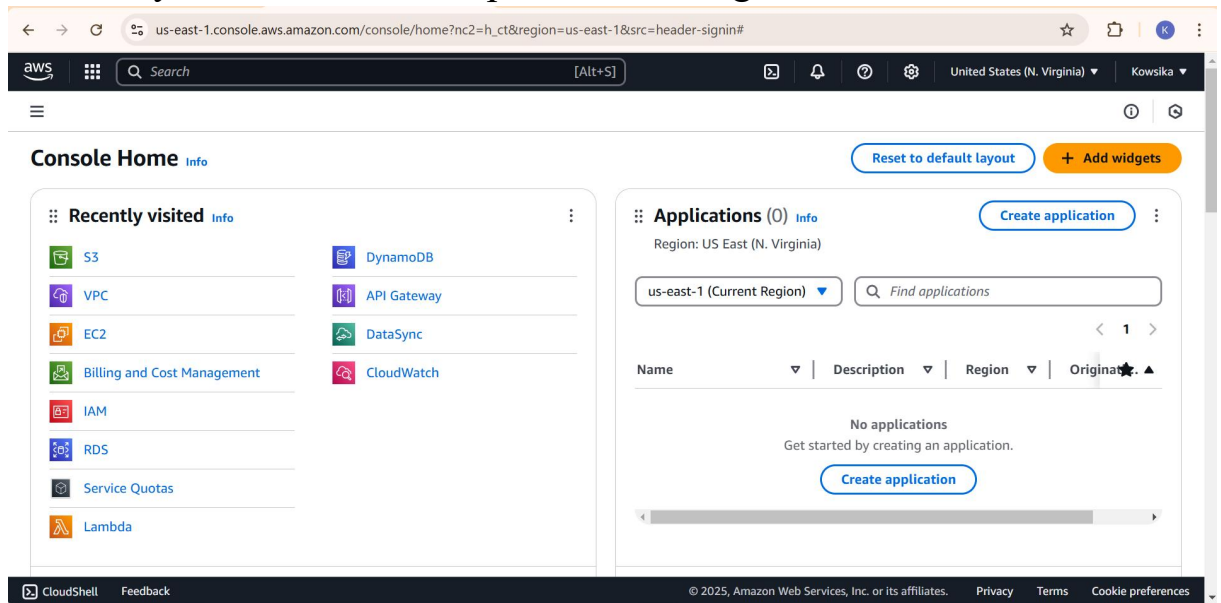
Importance

- 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

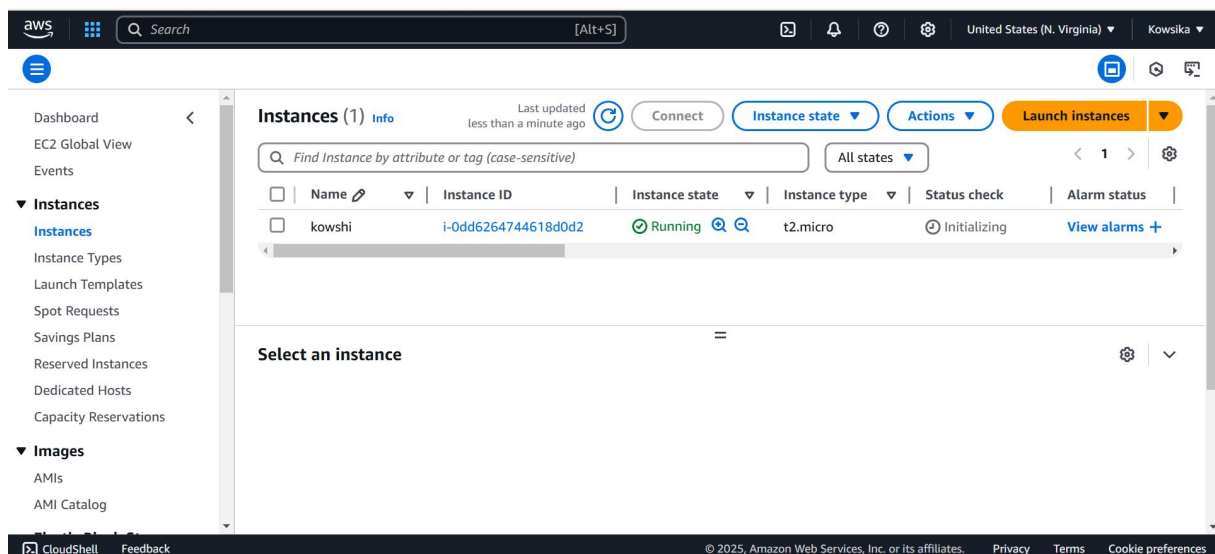
Step 1:

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



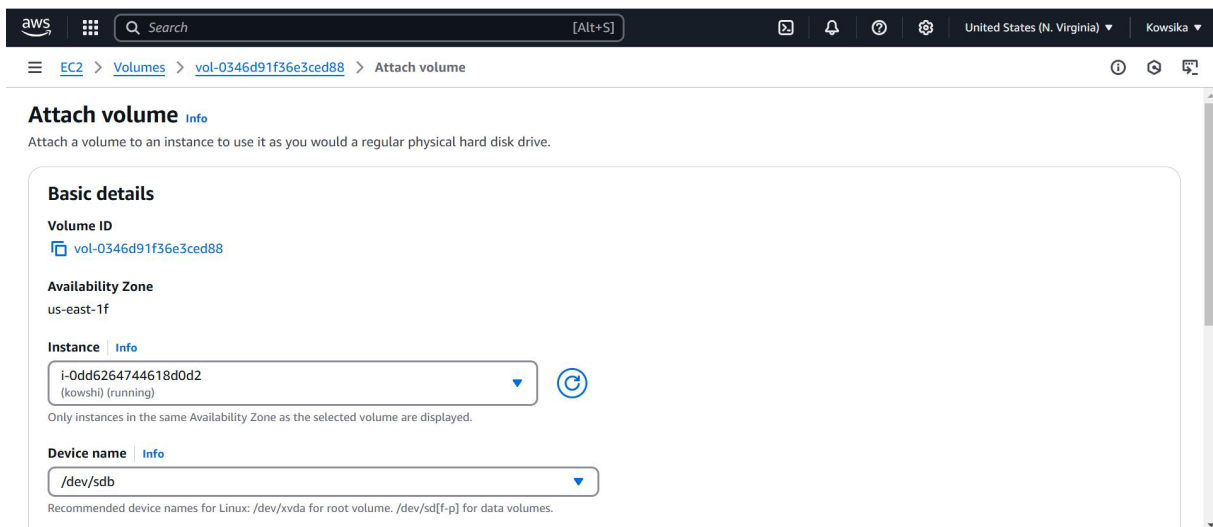
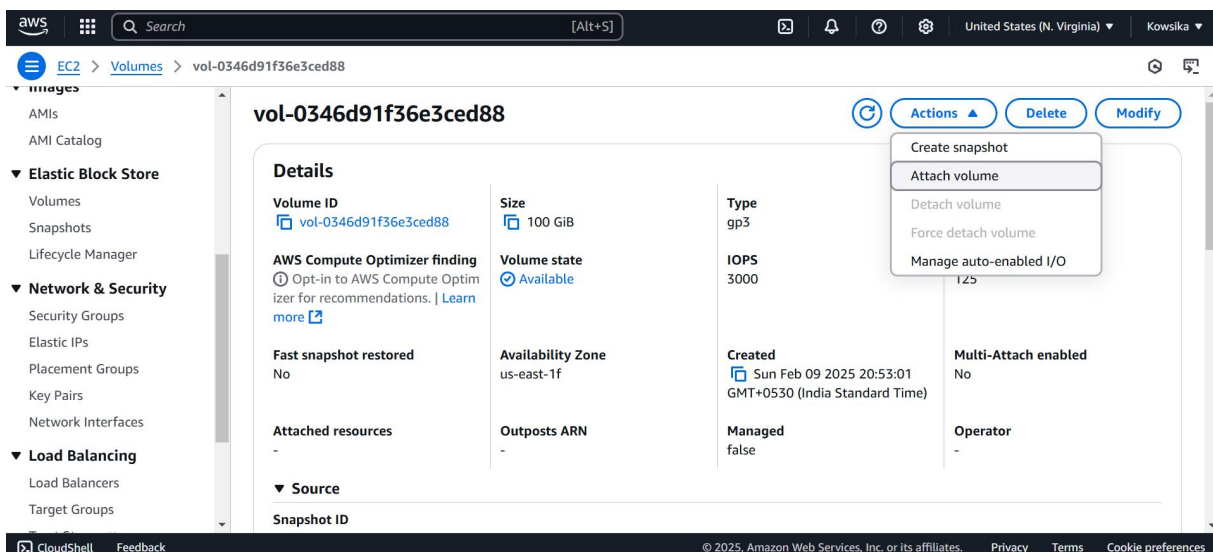
Step 2:

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**.

The screenshot shows the 'Create snapshot' page in the AWS Management Console. The breadcrumb navigation is 'EC2 > Volumes > vol-0346d91f36e3ced88 > Create snapshot'. The page has a dark header with the AWS logo, a search bar, and user information. The main content area has a 'Description' section with a text input field containing 'snapshot for backup' and a note '255 characters maximum.' Below this is an 'Encryption' section showing 'Not encrypted' with an 'Info' link. The 'Tags' section states 'No tags associated with the resource.' and includes an 'Add tag' button. At the bottom right are 'Cancel' and 'Create snapshot' buttons.

aws [Search] [Alt+S] United States (N. Virginia) Kowsika

EC2 > Volumes > vol-0346d91f36e3ced88 > Create snapshot

Description
Add a description for your snapshot
snapshot for backup
255 characters maximum.

Encryption [Info](#)
Not encrypted

Tags [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 snapshot](#)

The screenshot shows the 'Snapshots' list page in the AWS Management Console. The header includes 'Snapshots (1) Info', a 'Recycle Bin' button, an 'Actions' dropdown, and a 'Create snapshot' button. Below the header is a table with columns: Name, Snapshot ID, Volume size, Description, Storage tier, and Snapshot status. The table contains one entry with a status of 'Pending'.

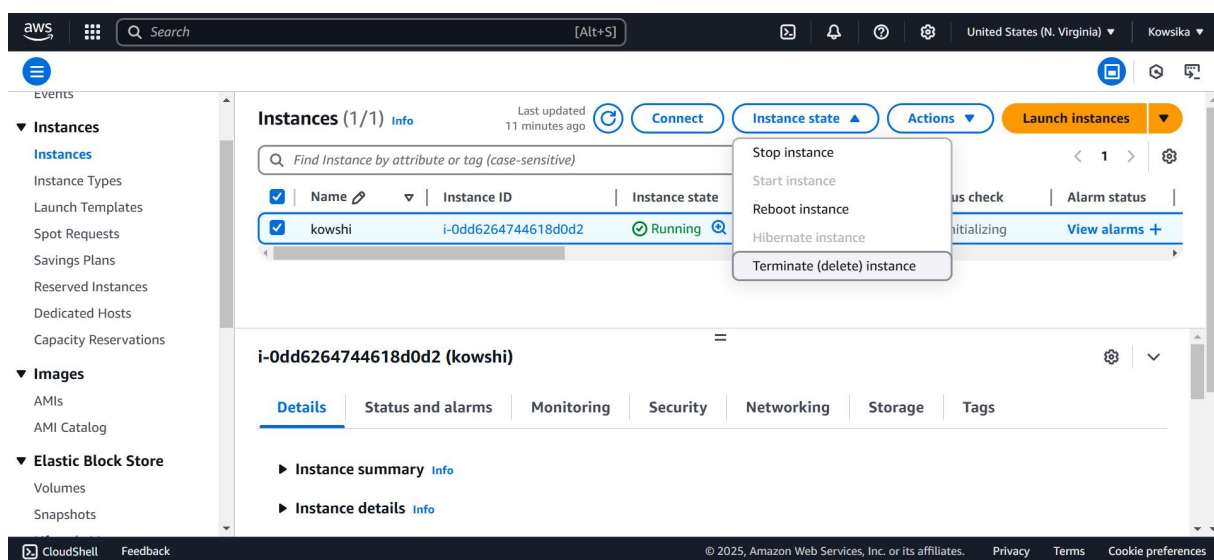
Snapshots (1) [Info](#) [Refresh](#) [Recycle Bin](#) [Actions](#) [Create snapshot](#)

[Owned by me](#)

<input type="checkbox"/>	Name	Snapshot ID	Volume size	Description	Storage tier	Snapshot stat
<input type="checkbox"/>	-	snap-0ff9edba2112076	100 GiB	snapshot for backup	Standard	Pending

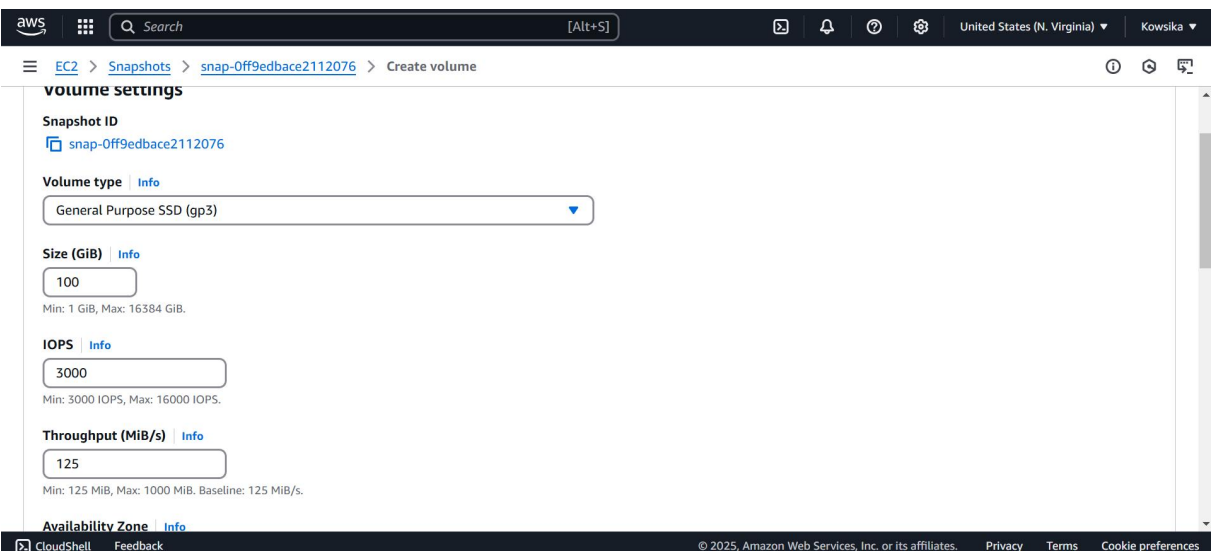
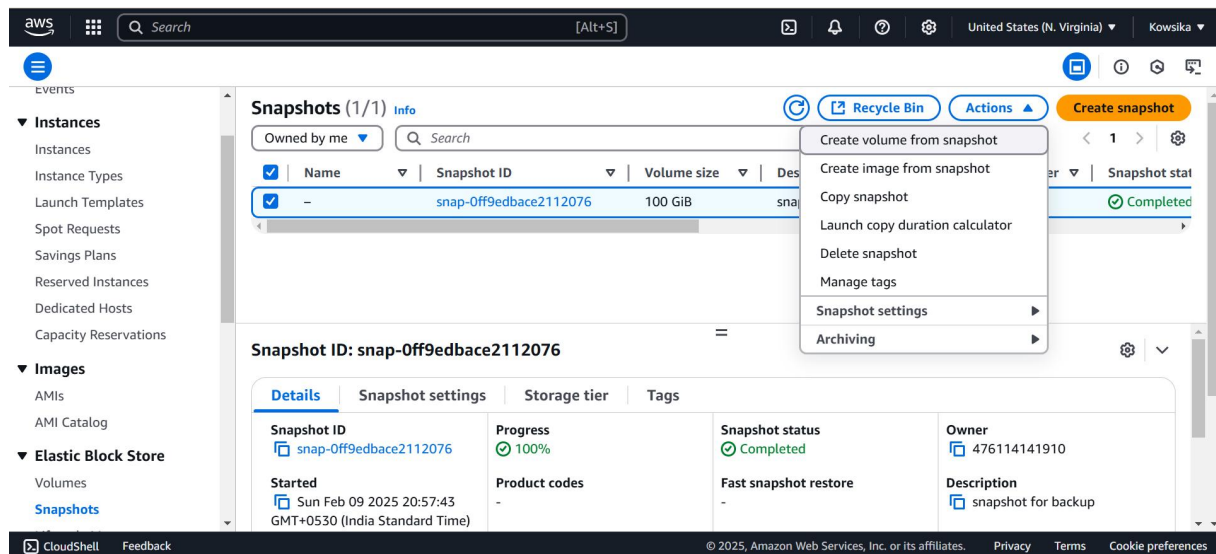
Step 5:

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**.



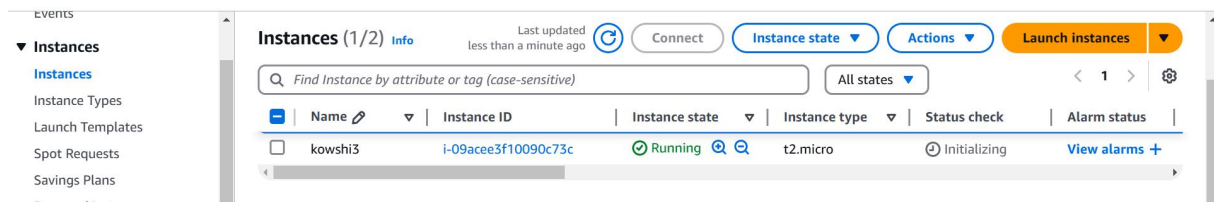
Step 6:

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.



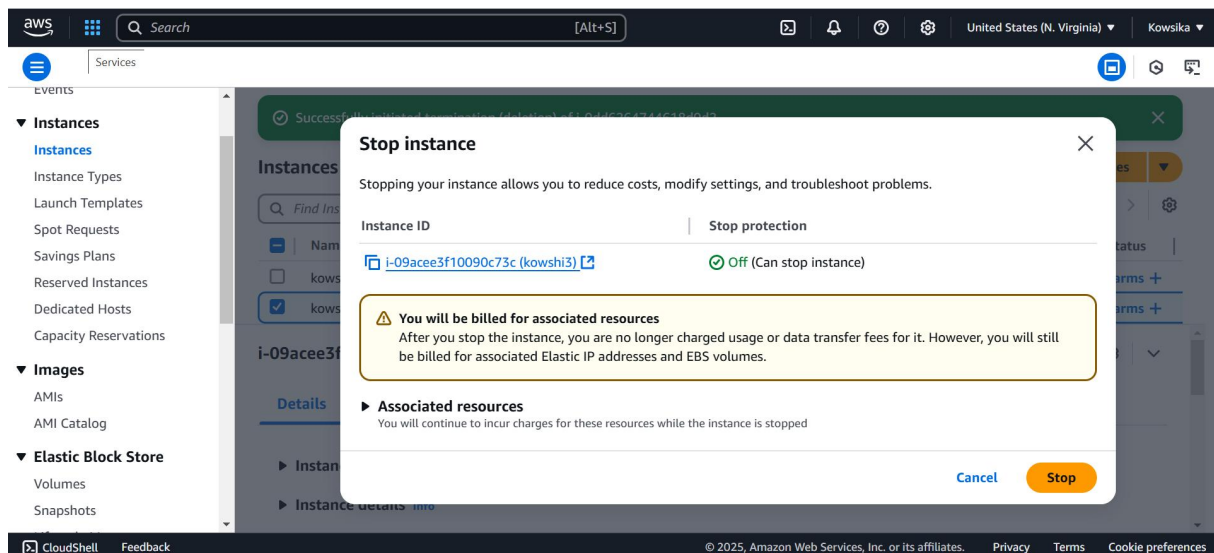
Step 7:

To launch a new instance, go to the EC2 Dashboard and click **Launch Instances**. Set the name of the new instance (e.g., **Restored-POC- VM**) 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.



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.



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Events

Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

Images

AMIs

AMI Catalog

Elastic Block Store

Volumes

Snapshots

Volumes (1/3) Info

Saved filter sets

Choose filter set

Search

Name

Volume ID

Type

Size

vol-0346d91f36e3ced88

gp3

100 GiB

vol-067cf663f4387b75d

gp3

8 GiB

vol-0355e22448b9c58bc

gp3

100 GiB

Volume ID: vol-0355e22448b9c58bc

Details

Status checks

Monitoring

Tags

Volume ID

vol-0355e22448b9c58bc

AWS Compute Optimizer finding

Opt-in to AWS Compute Optimizer for recommendations. | Learn

Size

100 GiB

Volume state

Available

Type

gp3

IOPS

3000

Status check

Okay

Throughput

125

Modify volume

Create snapshot

Create snapshot lifecycle policy

Delete volume

Attach volume

Detach volume

Force detach volume

Manage auto-enabled I/O

Manage tags

Fault injection

Create volume

Snapshot ID

vol-0355e22448b9c58bc

vol-0355e22448b9c58bc

CloudShell

Feedback

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EC2

Volumes

vol-0355e22448b9c58bc

Attach volume

Basic details

Volume ID

vol-0355e22448b9c58bc

Availability Zone

us-east-1f

Instance

Info

i-09acee3f10090c73c

(kowsi3) (stopped)

i-09acee3f10090c73c

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

Device name

Info

/dev/sdb

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.

CloudShell

Feedback

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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.