



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.

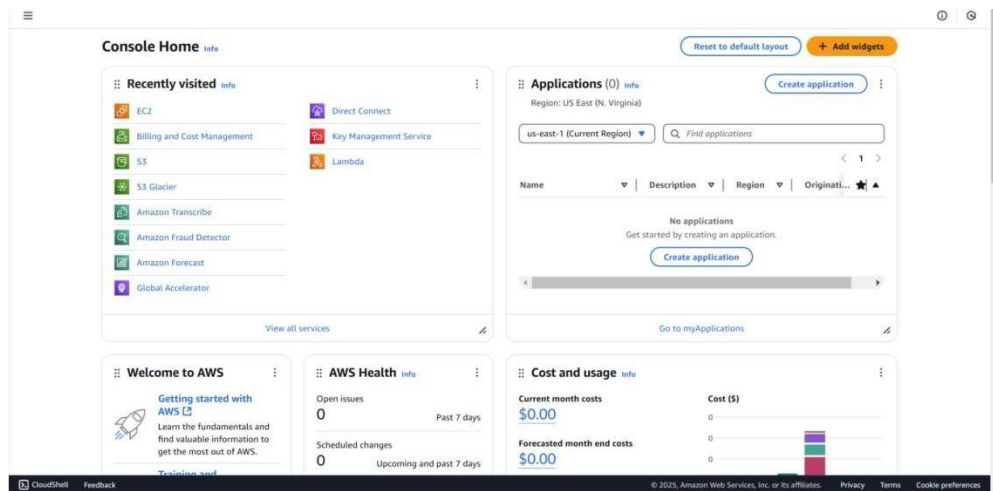
3. Scalability and Flexibility: Showcases AWS's ability to manage snapshots and volumes across regions and availability zones.

4. Practical Knowledge: Provides hands-on experience in working with EC2, EBS, and snapshot-based recovery processes.

STEP-BY-STEP OVERVIEW :

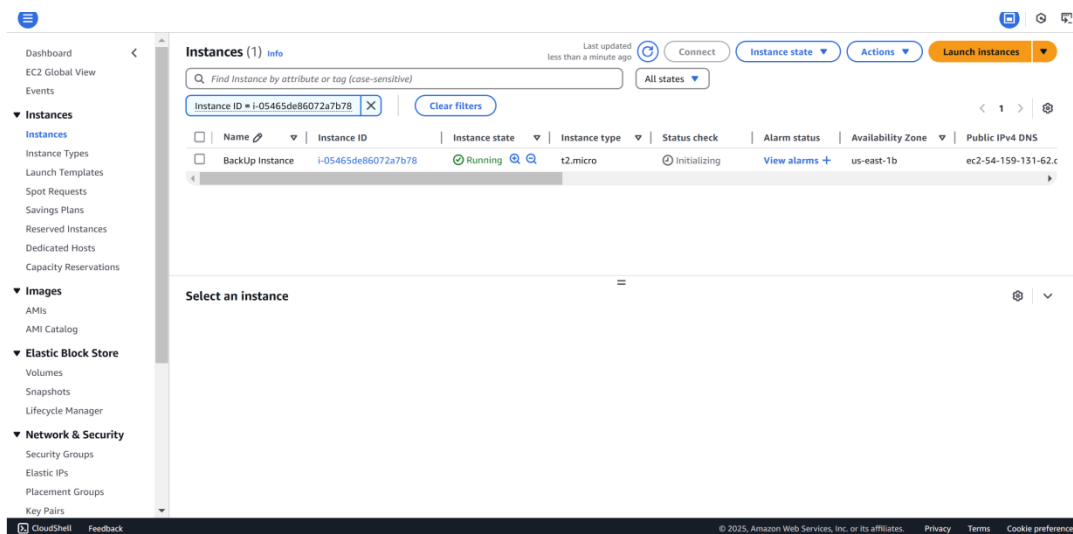
Step 1:

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



Step 2:

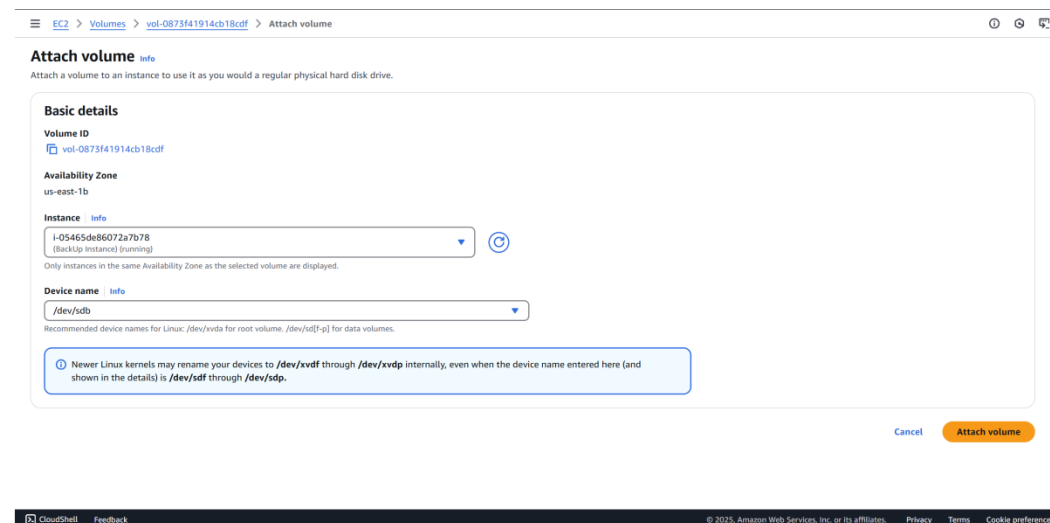
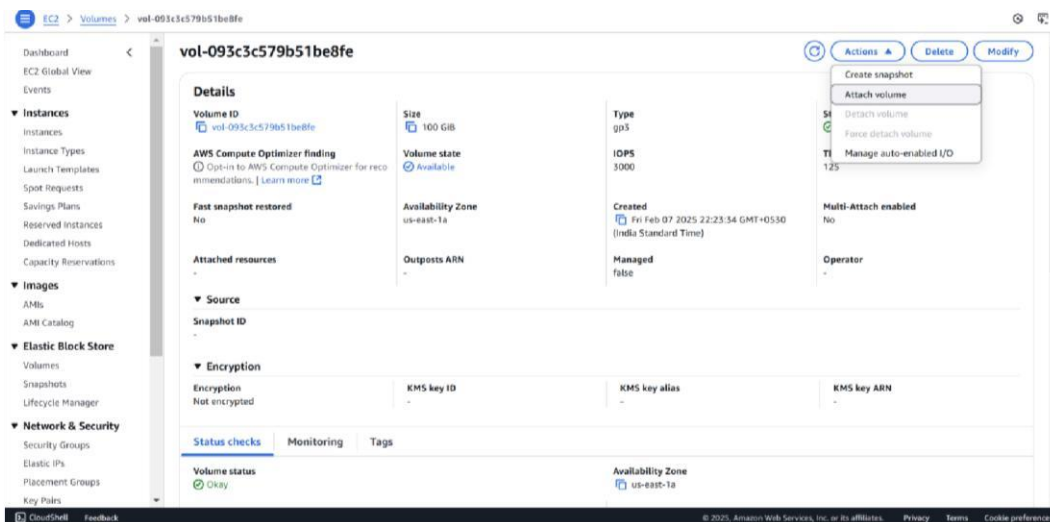
Launch an Ec2 instance (Backup Instance)



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**

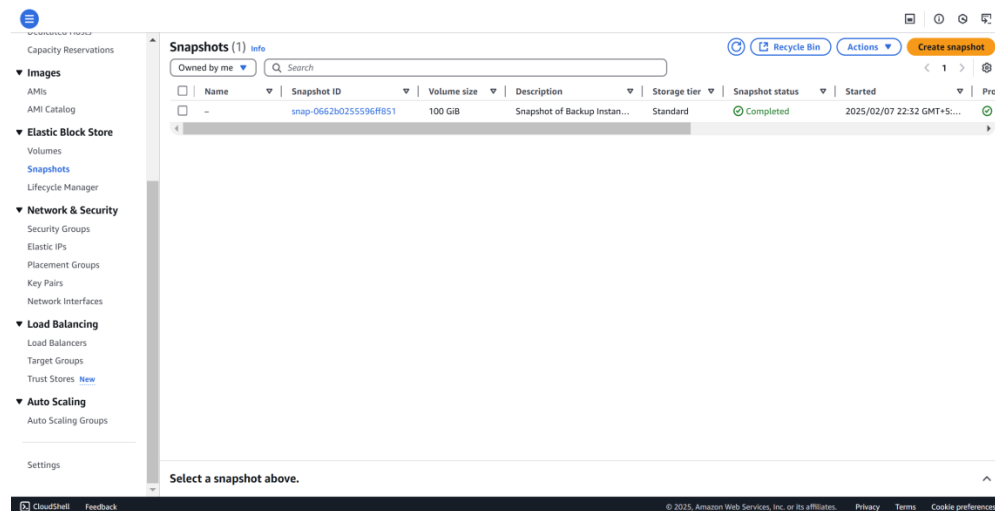
Block Store, click on **Volumes**, then click the **Create Volume** button. Select **General Purpose SSD (gp3)** for the volume type, set the size (e.g., 8 GiB, within Free Tier limits), and choose the availability zone that matches your EC2 instance (e.g., us-east-1b). Leave the other options as default, then click **Create Volume**. Be sure to note the Volume ID for future reference.



Step 4:

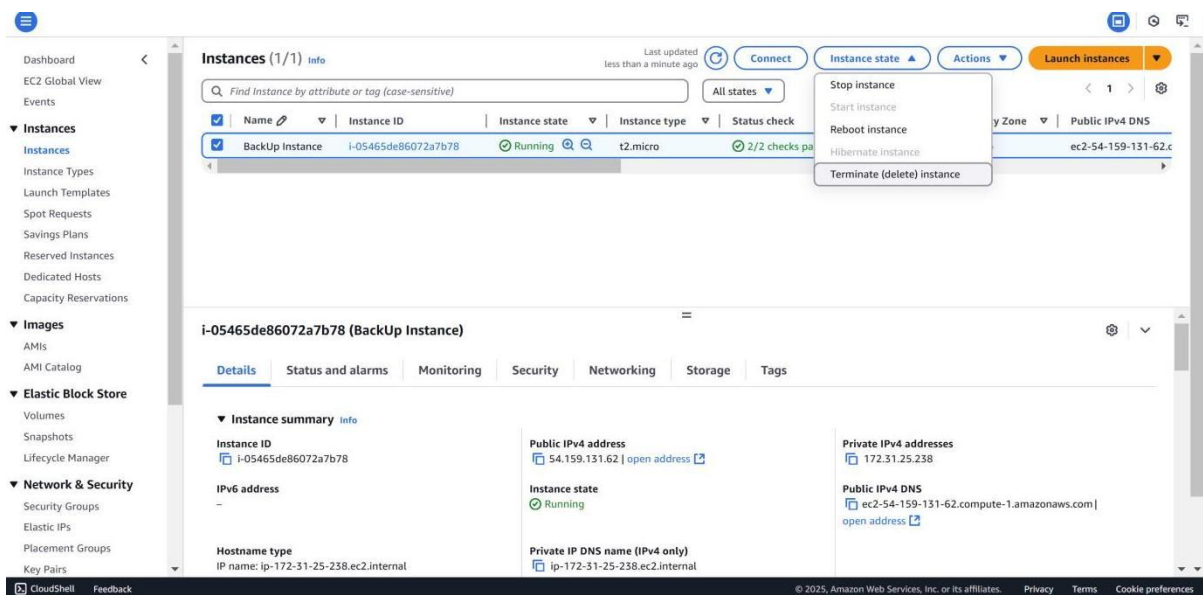
To create a snapshot of your EBS volume, navigate to the EC2 Dashboard in the AWS Management Console and click on **Volumes** under the **Elastic Block Store** section. Locate the volume attached to your instance (it should match the instance name or ID), select it, then click **Actions > Create Snapshot**. 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 at the top reads: EC2 > Volumes > vol-0873f41914cb18cdf > Create snapshot. The page title is 'Create snapshot' with an 'info' icon. 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 sections: 1. 'Source volume' with 'Volume ID' (vol-0873f41914cb18cdf) and 'Availability Zone' (us-east-1b). 2. 'Snapshot details' with a 'Description' field containing 'Snapshot of Backup Instance on Feb 7' and a note '255 characters maximum.' Below this is 'Encryption' status: 'Not encrypted'. 3. 'Tags' section with a note 'No tags associated with the resource.' and an 'Add tag' button. At the bottom right are 'Cancel' and 'Create snapshot' buttons. The footer includes 'CloudShell', 'Feedback', and copyright information for Amazon Web Services, Inc.



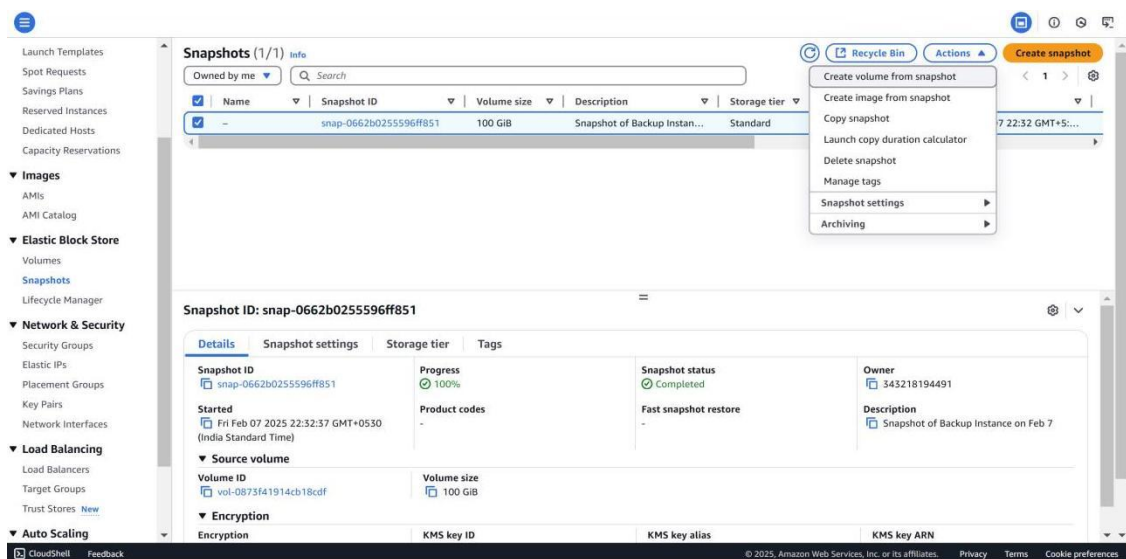
Step 5:

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., useast-1a). Finally, click Create Volume to complete the process.



The screenshot displays the 'Create volume' page in the AWS Management Console. The breadcrumb navigation at the top shows the path: EC2 > Snapshots > snap-0662b0255596ff851 > Create volume. The main heading is 'Create volume' with an 'Info' link. Below this, a subtitle states: 'Create an Amazon EBS volume to attach to any EC2 instance in the same Availability Zone.'

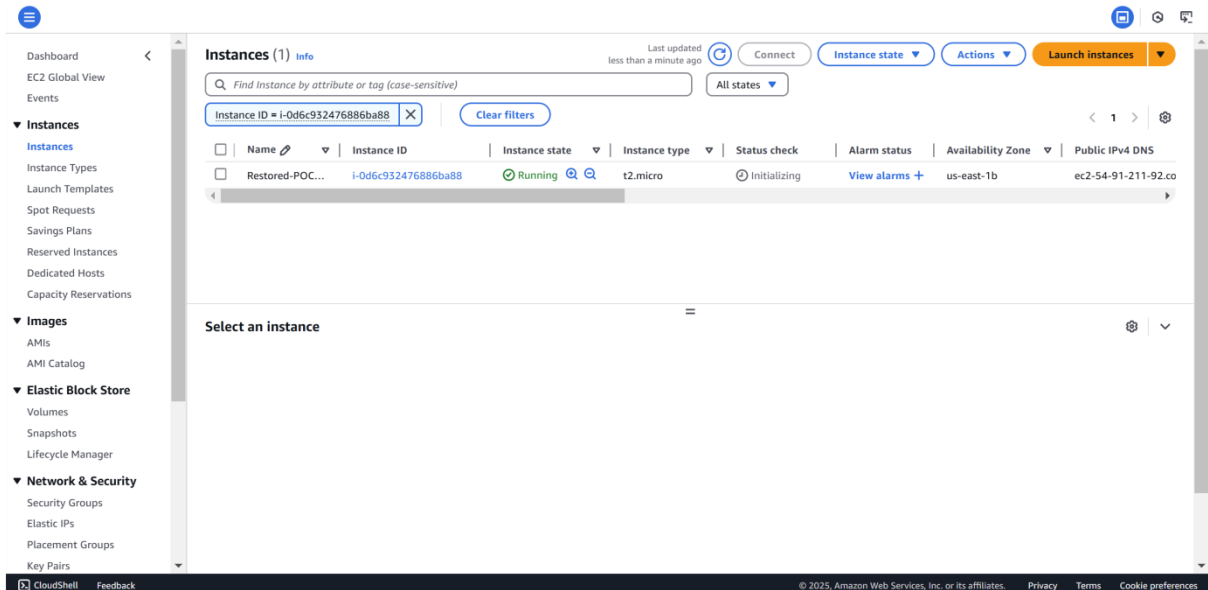
The 'Volume settings' section contains the following fields:

- Snapshot ID:** snap-0662b0255596ff851
- Volume type:** General Purpose SSD (gp3)
- Size (GiB):** 100 (with a range of Min: 1 GiB, Max: 16384 GiB)
- IOPS:** 3000 (with a range of Min: 3000 IOPS, Max: 16000 IOPS)
- Throughput (MiB/s):** 125 (with a range of Min: 125 MiB, Max: 1000 MiB, Baseline: 125 MiB/s)
- Availability Zone:** us-east-1b
- Fast snapshot restore:** Not enabled for selected snapshot

At the bottom of the console window, the footer includes 'CloudShell', 'Feedback', and copyright information: '© 2025, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences'.

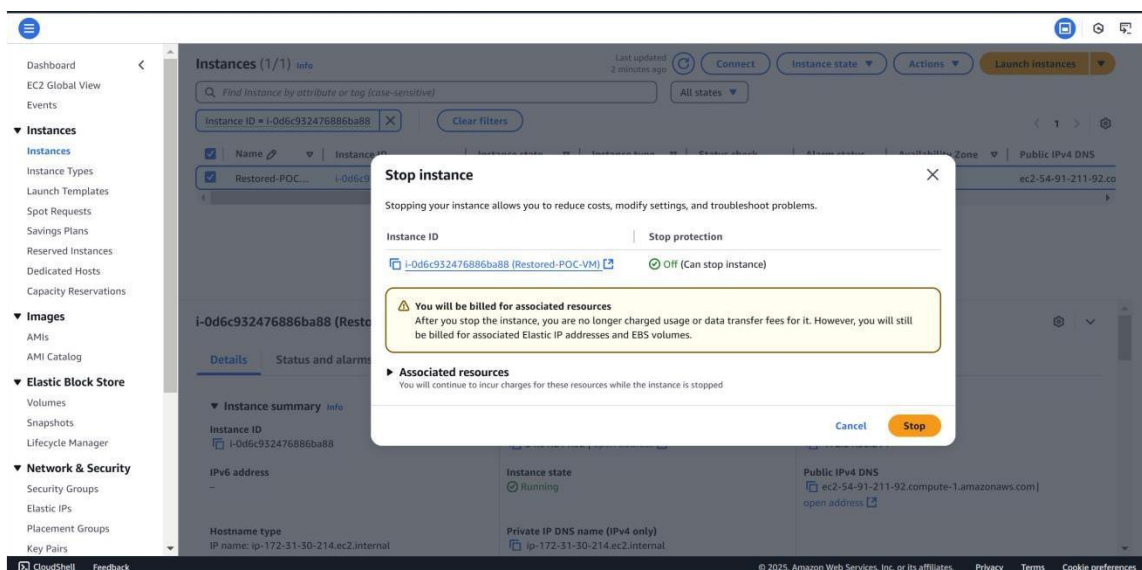
Step 7:

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.



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.



Volumes (1/3) Info

Save filter sets Choose filter set Search

	Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot
<input type="checkbox"/>	-	vol-010810ea03d0f03e7	gp3	8 GiB	3000	125	snaps...
<input type="checkbox"/>	-	vol-0873f41914cb18cdf	gp3	100 GiB	3000	125	-
<input checked="" type="checkbox"/>	-	vol-0347624ebc7060e50	gp3	100 GiB	3000	125	snaps...

Volume ID: vol-0347624ebc7060e50

Details Status checks Monitoring Tags

Volume ID vol-0347624ebc7060e50	Size 100 GiB	Type gp3	Status check Okay
AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more	Volume state Available	IOPS 3000	Throughput 125
Fast snapshot restored No	Availability Zone us-east-1b	Created Fri Feb 07 2025 22:36:36 GMT+0530 (India Standard Time)	Multi-Attach enabled No
Attached resources -	Outposts ARN -	Managed false	Operator -

EC2 > Volumes > vol-0347624ebc7060e50 > Attach volume

Attach volume

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

Basic details

Volume ID
vol-0347624ebc7060e50

Availability Zone
us-east-1b

Instance
i-0d6c932476886ba88 (Restored-POC-VM) (stopped)

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

Device name
/dev/sdb

Recommended device names for Linux: /dev/xvda for root volume, /dev/sd[-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 Attach volume

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.