# Cost Optimisation using AWS Lambda

August 31, 2025

In this project, AWS `t2.micro` EC2 instances were created to simulate a working environment. Each instance was attached to one or more EBS volumes. To ensure data backup and recovery, snapshots were created for each volume. This setup allowed us to analyze how quickly snapshots accumulate and how unused snapshots can lead to increased storage costs over time.

To optimize cloud usage and reduce costs, an AWS Lambda function was implemented. The Lambda function periodically checks all snapshots in the account and compares them against currently running EC2 instances and their attached volumes. If a snapshot is not associated with any active instance, the function automatically deletes it. This ensures that unused snapshots do not consume unnecessary storage.

## Lambda Function Example

```
import boto3

def lambda_handler(event, context):
    ec2 = boto3.client('ec2')
    snapshots = ec2.describe_snapshots(OwnerIds=['self'])['
        Snapshots']
    instances = ec2.describe_instances()['Reservations']

    used_volumes = set()
    for reservation in instances:
        for instance in reservation['Instances']:
            for mapping in instance.get('BlockDeviceMappings'
                , []):
                used_volumes.add(mapping['Ebs']['VolumeId'])

    for snap in snapshots:
        if snap['VolumeId'] not in used_volumes:
            print(f"Deleting␣snapshot:␣{snap['SnapshotId']}")
            ec2.delete_snapshot(SnapshotId=snap['SnapshotId'
                ])
```

Listing 1: AWS Lambda Snapshot Cleaner

# Results

The following images illustrate the state of the snapshots before and after the cleanup was performed. The Lambda function successfully identified and deleted unused snapshots, improving overall cloud cost efficiency.

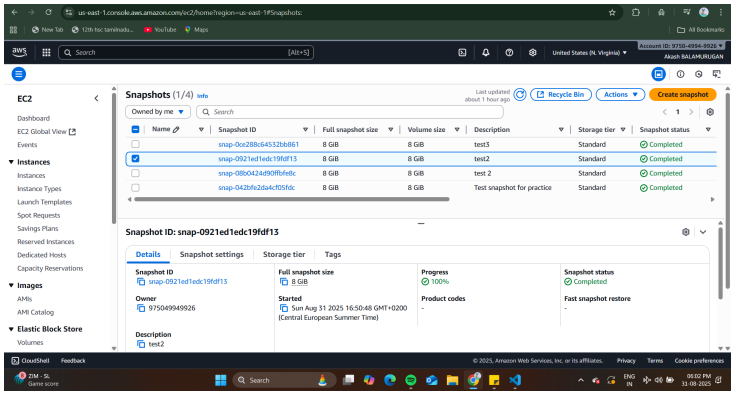


Figure 1: Snapshots before cleanup

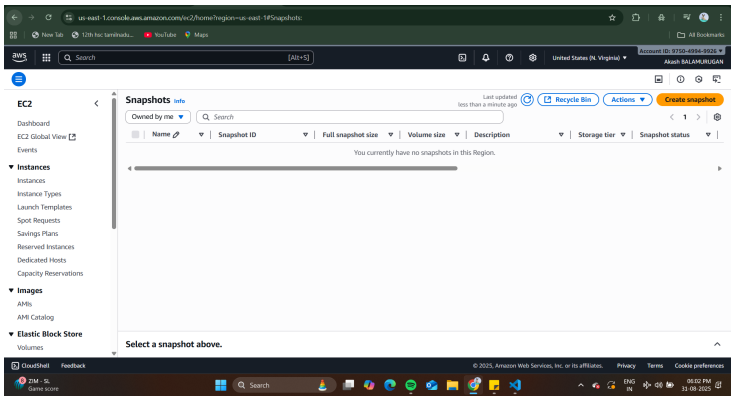


Figure 2: Snapshots after cleanup

# Learnings

From this project, it was observed that organizations often accumulate large amounts of unused data, such as old EBS snapshots, which remain unnoticed and contribute to rising cloud bills. Manual management of such data is time-consuming and error-prone.

By leveraging serverless automation with AWS Lambda, these unused resources can be continuously monitored and cleaned up. This approach

can improve overall cloud efficiency by nearly **80%**, enabling organizations to reduce costs, minimize storage waste, and maintain a more sustainable infrastructure strategy.

# Conclusion

This project demonstrates how AWS Lambda can be effectively used to automate the cleanup of unused snapshots. By removing snapshots not linked to running EC2 instances, storage costs can be reduced significantly, leading to improved resource utilization and better cloud optimisation.