Project Document

AWS Cloud Cost Optimization – Identifying Snapshots and Deleting Stale EBS Snapshots

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Overview

This project aims to reduce unnecessary AWS storage costs by automatically identifying and deleting stale EBS snapshots — snapshots that are:

- Not associated with any volume
- Associated with a volume that no longer exists
- Associated with a volume not attached to any active EC2 instance

This is achieved by running an AWS Lambda function on a scheduled basis (via Event Bridge) to clean up unused snapshots.

Project Objective

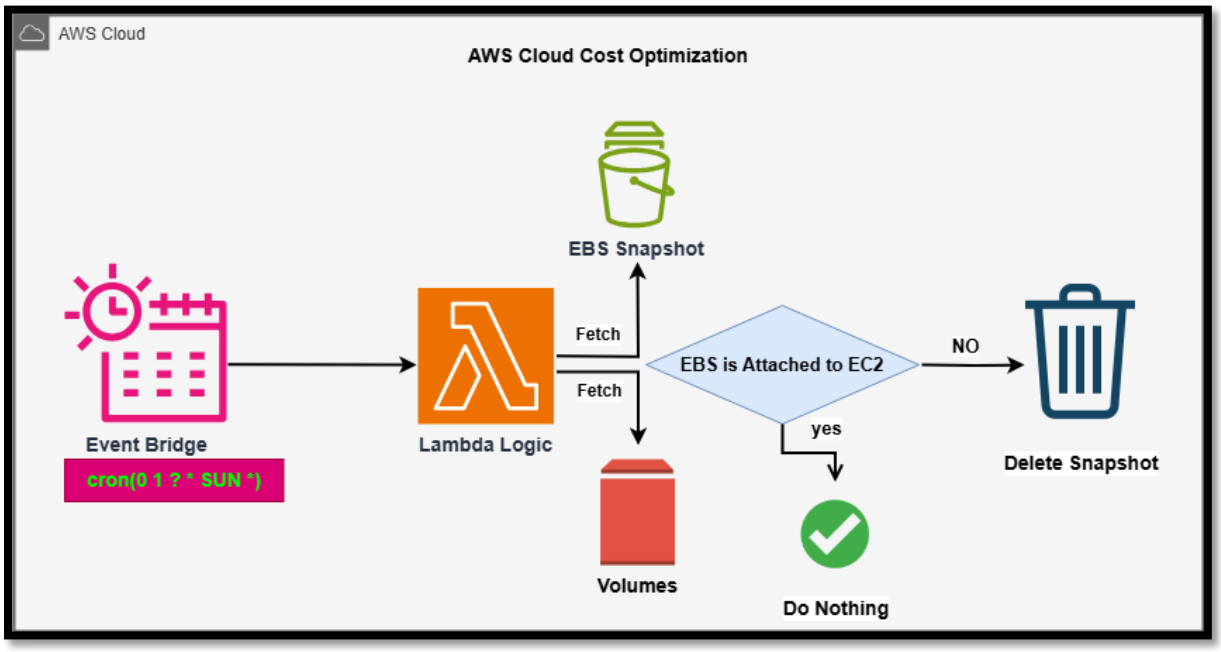
The objective of this project is to:

To optimize EBS storage costs by identifying and deleting stale EBS snapshots using serverless automation.

Architecture Overview

The architecture includes:

1. **Amazon Event Bridge: Triggers the Lambda function on a schedule.**
2. **AWS Lambda: Executes the logic to find and delete stale snapshots.**
3. **Amazon EC2: Source of snapshots and associated volumes.**
4. **Amazon CloudWatch Logs: Stores logs for Lambda executions.**



Architecture

🛠Components Used

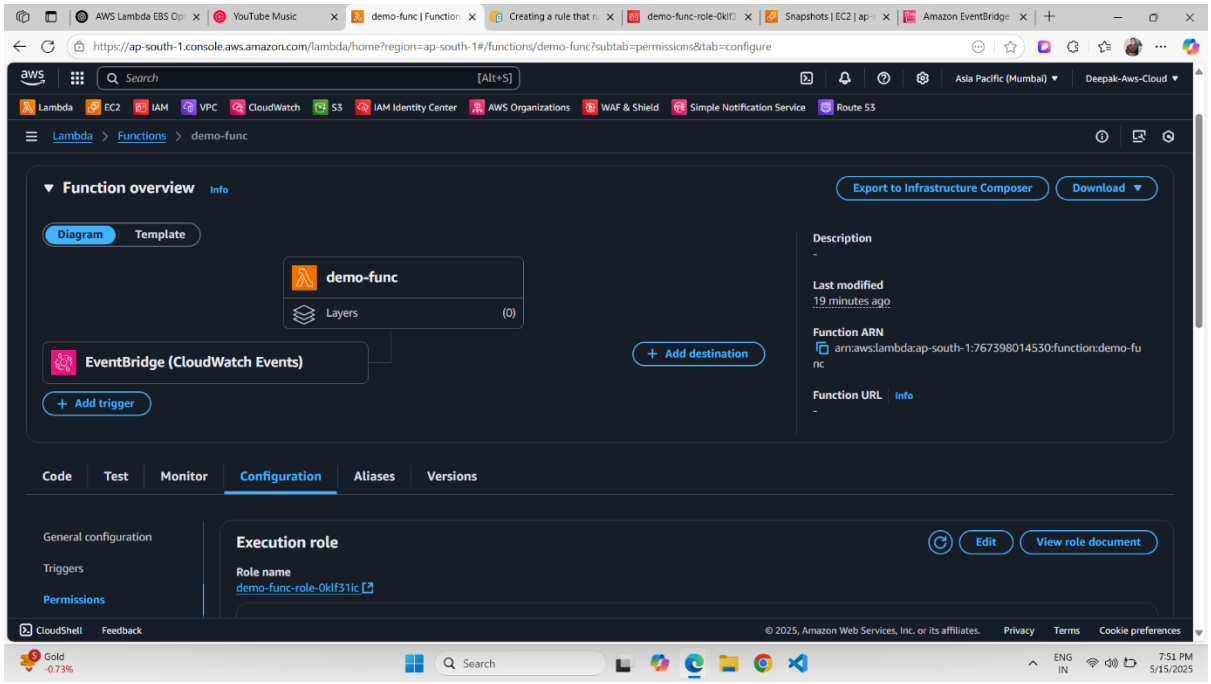
Service	Purpose
AWS Lambda	Executes snapshot cleanup logic
Amazon EC2	Source of EBS volumes and snapshots
Amazon EventBridge	Schedules the Lambda to run periodically
IAM Role	Provides necessary permissions to Lambda
CloudWatch Logs	Logs execution details for monitoring and debugging

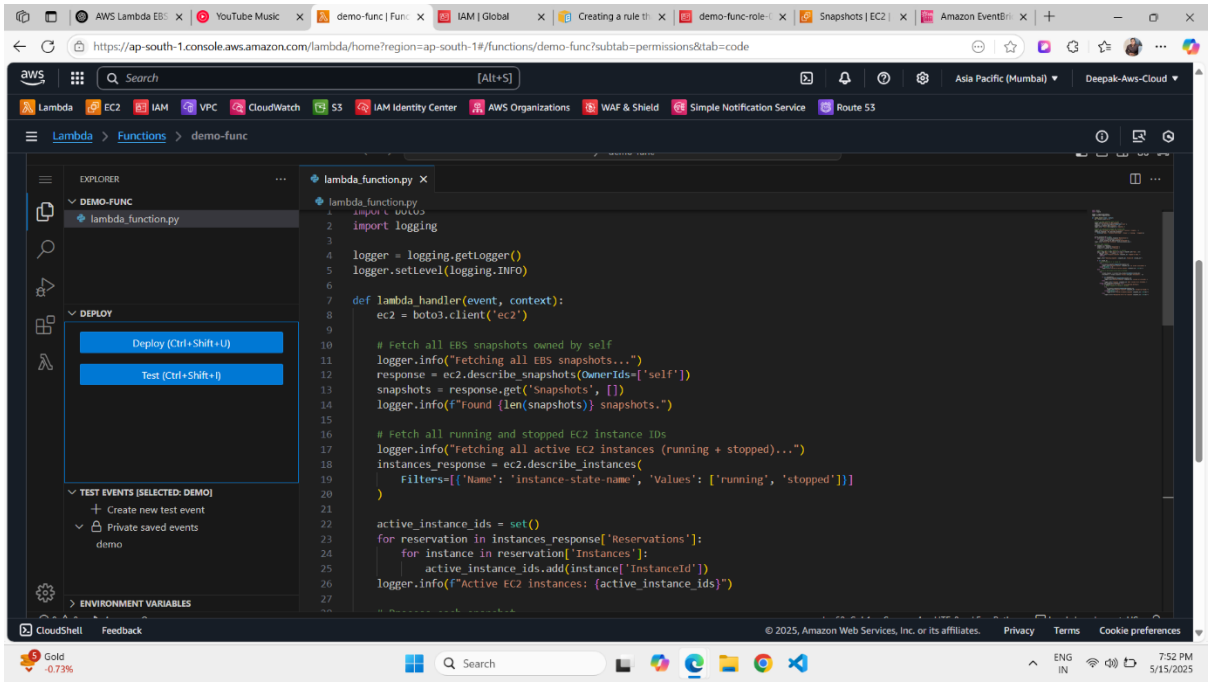
📜 Lambda Function Logic

The Lambda function:

- Fetches all EBS snapshots owned by the account.
- Fetches all active EC2 instances (running or stopped).
- For each snapshot:
  - Deletes it if it is not linked to any volume.
  - Deletes it if the linked volume no longer exists.
  - Deletes it if the volume exists but is not attached to any EC2 instance.
  - Skips snapshots with the tag Keep=true.

Screen Shot:



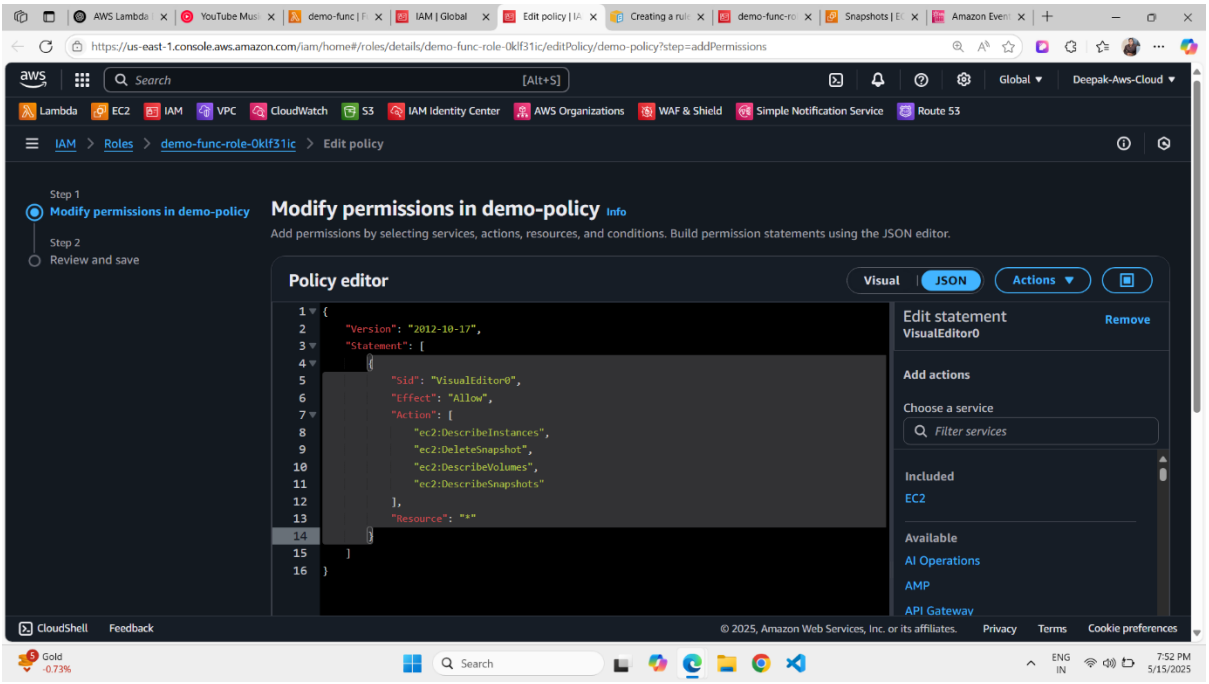


IAM Role Permissions

Attach the following permissions to your Lambda's IAM role:

- **EC2:DescribeSnapshots**
- **EC2:DescribeVolumes**
- **EC2:DescribeInstances**
- **EC2:DeleteSnapshot**

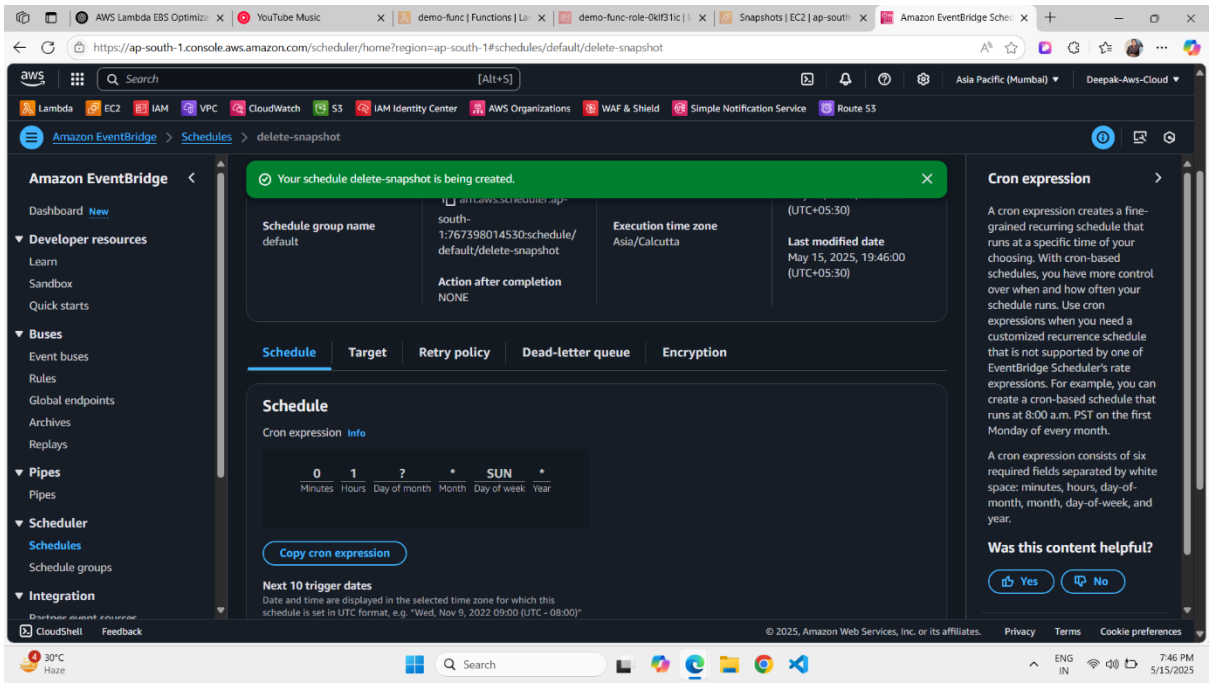
Screen Shot:



Event Bridge (CloudWatch) Trigger

To run the function every Sunday at 1:00 AM UTC, use this cron expression:

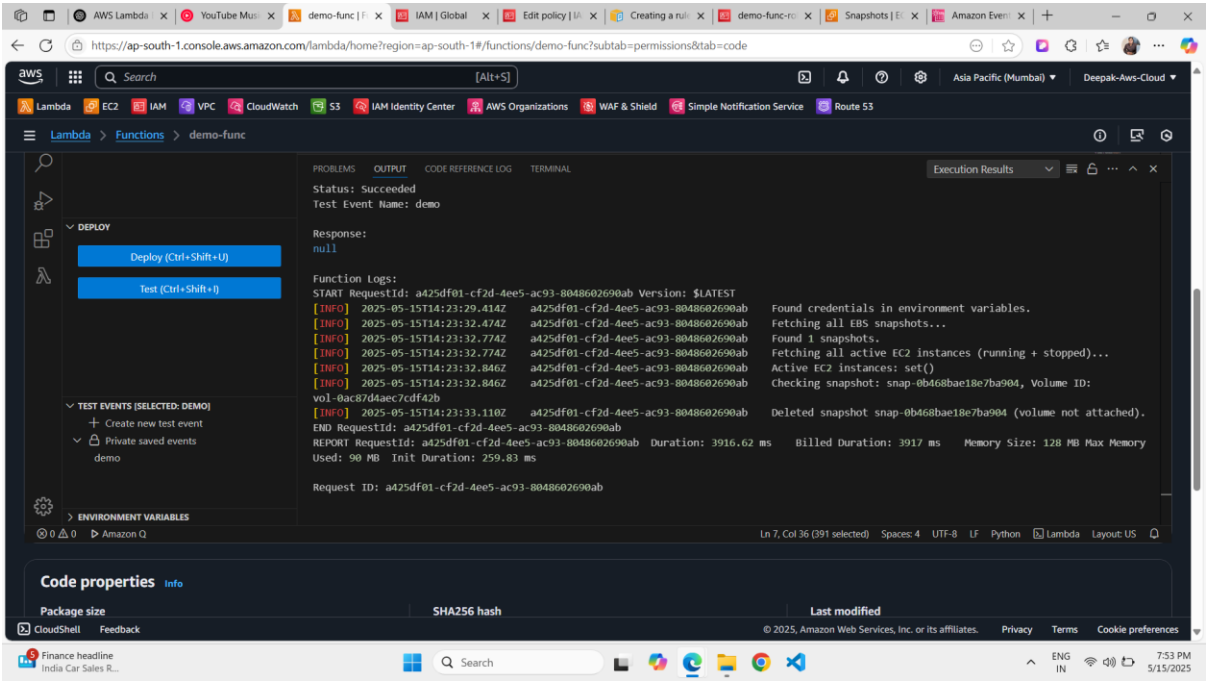
Screenshot:



Testing the Lambda

1. **In Lambda console, click Test.**
2. **Create a test event (name: `demo`) with any sample JSON (or `{}`).**
3. **Run the function.**
4. **Check CloudWatch Logs for output.**
5. **Confirm if unused snapshots were deleted.**

Screenshot:



Benefits

- **Saves cost by deleting unneeded EBS snapshots.**
- **Runs automatically — no manual intervention.**
- **Easily customizable (tags, frequency, filters).**
- **Serverless and low-maintenance.**

Cost Estimation (as of 2025 AWS Pricing)

AWS Service	Usage Estimate	Monthly Cost (USD)
AWS Lambda	~1 execution/week (~4/month) × <1s/runtime	**Free** (under free tier)
Event Bridge	1 rule, 4 invocations/month	**Free** (First 100K invocations are free)
CloudWatch Logs	~2–5 MB/month (log storage)	~$0.01–$0.03
EBS Snapshot Deletion	N/A (deletion is free)	**Free**
IAM Role	For permissions	**Free**

- **Total Monthly Cost:**

$0.01 to $0.03 USD/month