Specification Sheet: EBS Snapshot Expiry Manager

Solution Overview

EBS Snapshot Expiry Manager is a production-ready AWS-native automation system that intelligently manages the lifecycle of Amazon EBS snapshots.
It identifies, tracks, and automatically deletes or archives aged snapshots based on configurable retention periods. The solution helps organizations optimize storage costs, enforce data retention compliance, and maintain operational hygiene with minimal human intervention.

Problem Statement

In most AWS environments, snapshots are created frequently for backups or migrations but rarely cleaned up. Over time, this results in:

- **Rising storage costs** due to thousands of inactive or outdated snapshots.
- **Lack of retention policy enforcement**, increasing audit and compliance risk.
- **Manual cleanup efforts** that consume engineering time and are prone to human error.
- **Limited visibility** into snapshot lifecycle, age, and associated costs.

These challenges create operational inefficiencies and financial waste for organizations managing multiple AWS accounts and regions.

Solution Description

EBS Snapshot Expiry Manager automates the entire cleanup workflow using an **event-driven, serverless architecture**.

How It Works

1. **Daily Scan:**
   An AWS Lambda function is triggered by an Amazon EventBridge rule on a daily schedule.
2. **Snapshot Evaluation:**
   The Lambda function uses DescribeSnapshots() to identify snapshots older than the configured retention period (default: 90 days).
3. **Automated Actions:**
   Based on configuration, the solution either:
   - Deletes outdated snapshots, or

- Archives them to **Amazon S3 Glacier Deep Archive** for long-term retention.

4. **Audit Logging:**
   Metadata for all scanned and deleted snapshots is stored in **Amazon DynamoDB**, including Snapshot ID, Volume ID, creation date, and estimated cost impact.
5. **Email Reporting:**
   A summary report is sent to stakeholders via **Gmail SMTP**, providing visibility into deleted snapshots and cost savings.
6. **Security Controls:**
   All credentials and secrets are encrypted and managed using **AWS Secrets Manager** and **AWS KMS**.

Key Features

Feature	Description
Automated Lifecycle Management	Scans and deletes aged snapshots daily based on configurable retention policy.
Cost Optimization	Identifies unused storage and reduces costs by up to 60%.
Multi-Region Support	Monitors and manages snapshots across multiple AWS regions.
Audit Logging	DynamoDB logs provide full traceability and compliance reporting.
Email Notifications	Sends daily or weekly summary reports to FinOps/Security teams.
Secure by Design	Uses IAM least privilege, KMS encryption, and Secrets Manager.
Terraform Deployment	Fully reproducible IaC setup deploys in under 10 minutes.

AWS Services Used

AWS Service	Purpose
Amazon EventBridge (CloudWatch Events)	Schedules daily Lambda invocation.
AWS Lambda (Python 3.11)	Executes snapshot scan, deletion, and logging.
Amazon EC2	Snapshot inventory source.
Amazon DynamoDB	Audit table with TTL and cost metadata.
Amazon Glacier Deep Archive (Optional)	Long-term archival for compliance data.
AWS Secrets Manager	Secure storage of Gmail app credentials.
AWS Key Management Service (KMS)	Encryption for secrets and DynamoDB at rest.
AWS IAM	Defines least-privilege permissions for Lambda roles.

Business Benefits

- **Cost Savings:** Automatically reduces EBS storage costs by up to 50–70%.
- **Compliance:** Supports SOC 2, ISO 27001, and NIST retention requirements.
- **Operational Efficiency:** Frees engineers from manual cleanup tasks.
- **Scalable:** Works seamlessly across accounts and regions with minimal setup.
- **Low Cost:** Serverless design costs less than $2 per month in typical environments.

Architecture Summary

Flow:
CloudWatch (EventBridge Schedule) → Lambda (Scan, Delete, Archive) → DynamoDB (Logs) → Gmail SMTP (Notifications)

Optional:
Glacier Archive integration for long-term data retention.

Security:
KMS + Secrets Manager for credentials, IAM least-privilege access for Lambda, encrypted DynamoDB storage.

Deployment Overview

Step	Description
1️⃣	Clone the GitHub repository
2️⃣	Configure terraform.tfvars (region, retention days, email settings)
3️⃣	Deploy using Terraform (terraform init, terraform apply)
4️⃣	Validate via Gmail alert and DynamoDB logs
5️⃣	(Optional) Enable Glacier archival mode

Deployment completes in less than **10 minutes** with zero manual resource setup.

Technical Specifications

Parameter	Default Value
Retention Period	90 days
Regions Supported	Multi-region
Runtime	Python 3.11
Database	DynamoDB (with TTL)
Notification	Gmail SMTP (App Password)
Deployment	Terraform v1.3+
IAM Policy Type	Least Privilege
Average AWS Cost	<$2/month

Business Category

- **AWS Partner Solution Category:** Cost Optimization & Governance

- **Use Case:** Storage Lifecycle Management / FinOps Automation
- **Solution Type:** Serverless + IaC (Infrastructure as Code)

About Before You Solutions

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