AWS Cloud Cost Optimization

AIM

Optimized AWS resources to improve performance and reduce costs. Implemented IAM roles for secure access control, used Lambda to automate EC2 instance management and EBS snapshot backups, and optimized EBS volumes for efficient storage. Conducted EC2 instance right-sizing and implemented auto-scaling to enhance resource utilization and cost-effectiveness.

Resources

IAM roles, AWS Lambda, EBS snapshots, Volumes, EC2

Procedure

- Sign in to the AWS Console Management.
- For this project we have to create a AWS Lambda Function. For that function we have to create a IAM Roles.
- So, Navigate to IAM service in AWS.
- **Step 1 :-** Click on Policies at left panel, Then click on Create a Policy.
  Select Service as **EC2**
  Enter **Snapshot** in search box.Then, select policies in List or Write Actions
  Describethesnapshot and **Deletethesnapshot**

- Select **ALL** in resources, then click on next. Then enter policy name(i.e. ebs-cost-opt) and click on Create policy.
- Follow the above step to create another policy for EC2.(Name :- EC2)
  select policies in List or Write Actions, i.e.
  DescribeVolumes and **DescribeInstances**
- Now we have 2 policies. Then we have to create an IAM Role for Lambda Function.
- **Step 2 :-** Click on Roles at left panel on the screen. Click on create role
  Select Trusted entity :- AWS Service
  Select Use Case :- Lambda

Select 2 Permission Policies :- **ebs-cost-opt** and **EC2**

- Click on NEXT and give a ROLE name without any spaces (ex :- ebs-cost-opt-role) then click on create role.
- **Step 3 :-** Now we have to create an EC2 instance.
- Navigate to EC2 service. Click on Launch instance

Server name	**ebs-cost-opt-server**
Select AMI	**Ubuntu or Amaxon**
Select Instance Type	**t2 micro free tier eligible**
Create or Select	**key pair**

- Then click on Launch instance.
- **Step 4 :-**Now click on Snapshots at left panel and Create a snapshot.
- **Step 5 :-** Navigate to Lambda service and create a Lambda function to delete unused EBS volume snapshots. Click on create function.

Select	**Author from Scratch**
Function name :-	**Lambda-demo-1**
Run time :-	**Python 3.10**

- Click on **change default execution role** and select **use an existing role** then, it will display our existing role which we created in earlier in IAM. Then click on create function.
- **Step 6 :-** Now we have to upload our code. Here I got this code from some social media so that I forked it. Here is my GitHub project repository URL.

https://github.com/Mamatha7316/AWS-Cloud-Cost-Optimization

- Copy the code from GitHub repo and paste it in down at code section in Lambda function. Then save the code (cntl+s) and click on Deploy.
- Then, click on Test and create a test event. Enter test event name (i.e. Test) then, click on save. Here we will get an error (i.e. invocation time out) so, it shows **Failure.**
- Now, click on **Configuration** and click on **Edit.**
- Here, Increase default invocation time for Lambda to 10 seconds**.** By defaults it shows 3 seconds.
- Then go back to code and click on Test. So, now we will get a **Success** message.
- **Step 7 :-** Now navigate to EC2 and Terminate the instance.
- And again go back to Lambda service, again click on Test
- Here, it will shows a success message i.e. **Deleted EBS snapshot snap-ID(00000000) as it is associated with volume Not found**.

- Here is the conclusion of this project is **The Lambda functions can be scheduled to run automatically using CloudWatch events.**