

Lambda Function to Remove Unused EBS Volumes



Hungama company has used AWS for server and storage management since 2008. They deliver content to consumers in 47 countries across mobile, Internet, and Internet protocol television (IPTV) services. The company uses Amazon S3 to host more than 60 TB of content and Amazon EC2-EBS and Amazon RDS for server and storage management. As the company grew rapidly, more departments used AWS for development, causing an increase in monthly costs. Hungama reduced monthly costs by 33% by using AWS Trusted Advisor. The Underutilized Amazon EBS volumes check in AWS Trusted Advisor identified a number of unused EBS volumes that were often left over from previous test projects.

In this Lab, we are going to create a Lambda Function which deletes the EBS Volumes which are not-in-use and untagged. This is a major aspect of the Well Architected Framework Pillar-Cost Optimization.

Below is the List of Tasks:

Task 1: Create Unused and Untagged EBS Volumes

Task 2: Create IAM Role

Task 3: Configure Lambda Function


Task 4: Verify Execution of Lambda Function


Task 1: Create Unused and Untagged EBS Volumes

Login to AWS Console.

Navigate to EC2 Service and Click on Create Volume.

Create Two EBS Volumes, one without Tag and another one with Tag as Name: Test.

 Services ▾ Resource Groups ▾ ⭐

 Prasad_SMU ▾ N. Virginia ▾ Support ▾

Volumes > Create Volume

Create Volume

Volume TypeGeneral Purpose SSD (gp2) ⓘ

Size (GiB)100 (Min: 1 GiB, Max: 16384 GiB) ⓘ

IOPS300 / 3000 (Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS) ⓘ

Availability Zone*us-east-1a ⓘ


Throughput (MB/s)Not applicable ⓘ


Snapshot IDSelect a snapshot ⓘ

Encryption☐ Encrypt this volume

Key (128 characters maximum)

Value (256 characters maximum)

 Services ▾ Resource Groups ▾ ⭐

 Prasad_SMU ▾ N. Virginia ▾ Support ▾

Size (GiB)100 (Min: 1 GiB, Max: 16384 GiB) ⓘ

IOPS300 / 3000 (Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS) ⓘ

Availability Zone*us-east-1a ⓘ

Throughput (MB/s)Not applicable ⓘ

Snapshot IDSelect a snapshot ⓘ

Encryption☐ Encrypt this volume

Key (128 characters maximum)

Value (256 characters maximum)

Name

Test ⓘ

Add Tag

49 remaining (Up to 50 tags maximum)

* Required

Cancel Create Volume

You can see that the EBS Volumes have been created and are in Available state not in in-use state, it means they are not assigned to any EC2 Instance. EBS Volume which is attached to EC2 Instance has been renamed to “Do-Not-Delete”.

Name	Volume ID	Size	Volume Type	IOPS	Snapshot	Created	Availability Zone	State
	vol-0c31ce1c...	100 GiB	gp2	300		May 5, 2020 at 8:36...	us-east-1a	available
Test	vol-0ade425...	100 GiB	gp2	300		May 5, 2020 at 8:36...	us-east-1a	available
Do-Not-Delete	vol-0e9a1d0...	8 GiB	gp2	100	snap-0e1167b...	May 2, 2020 at 1:37...	us-east-1a	in-use

Task 2: Create IAM Role

Navigate to IAM Service, click on Roles and click on Create Role.

What are IAM roles?

IAM roles are a secure way to grant permissions to entities that you trust. Examples of entities include the following:

- IAM user in another account
- Application code running on an EC2 instance that needs to perform actions on AWS resources
- An AWS service that needs to act on resources in your account to provide its features
- Users from a corporate directory who use identity federation with SAML

IAM roles issue keys that are valid for short durations, making them a more secure way to grant access.

Additional resources:

- [IAM Roles FAQ](#)
- [IAM Roles Documentation](#)
- [Tutorial: Setting Up Cross Account Access](#)
- [Common Scenarios for Roles](#)

[Create role](#) [Delete role](#)

Showing 10 results

Choose the use case as **Lambda** and click Next.

aws Services Resource Groups

AWS service
EC2, Lambda and others

Another AWS account
Belonging to you or 3rd party

Web identity
Cognito or any OpenID provider

SAML 2.0 federation
Your corporate directory

Allows AWS services to perform actions on your behalf. [Learn more](#)

Choose a use case

Common use cases

EC2
Allows EC2 instances to call AWS services on your behalf.

Lambda
Allows Lambda functions to call AWS services on your behalf.

Or select a service to view its use cases

API Gateway	CodeDeploy	EMR	KMS	RoboMaker
AWS Backup	CodeGuru	ElastiCache	Kinesis	S3
AWS Chatbot	CodeStar Notifications	Elastic Beanstalk	Lambda	SMS
AWS Support	Comprehend	Elastic Container Service	Lex	SNS
Amplify	Config	Elastic Transcoder	License Manager	SWF

* Required

Cancel **Next: Permissions**

Now select the **AmazonEC2FullAccess** role to give Lambda access to the EC2-EBS.

aws Services Resource Groups

Create role

1 2 3 4

▼ Attach permissions policies

Choose one or more policies to attach to your new role.

Create policy

Filter policies Showing 1 result

	Policy name	Used as
<input checked="" type="checkbox"/>	AmazonEC2FullAccess	Permissions policy (5)

Specify Tags if you wish.

Click on Next: Review.

Give the Role Name as per your choice and click on Create Role.

Create role

1 2 3 4

Review

Provide the required information below and review this role before you create it.

Role name*

Use alphanumeric and '+,=, @, -, _' characters. Maximum 64 characters.

Role description

Maximum 1000 characters. Use alphanumeric and '+,=, @, -, _' characters.

Trusted entities AWS service: lambda.amazonaws.com

Policies [AmazonEC2FullAccess](#)

Permissions boundary Permissions boundary is not set

No tags were added.

* Required

[Cancel](#) [Previous](#) [Create role](#)

Role has been created successfully!!!!

Identity and Access Management (IAM)

- Dashboard
- Access management
 - Groups
 - Users
 - Roles**
 - Policies
 - Identity providers

[IAM Roles Documentation](#)
[Tutorial: Setting Up Cross Account Access](#)
[Common Scenarios for Roles](#)

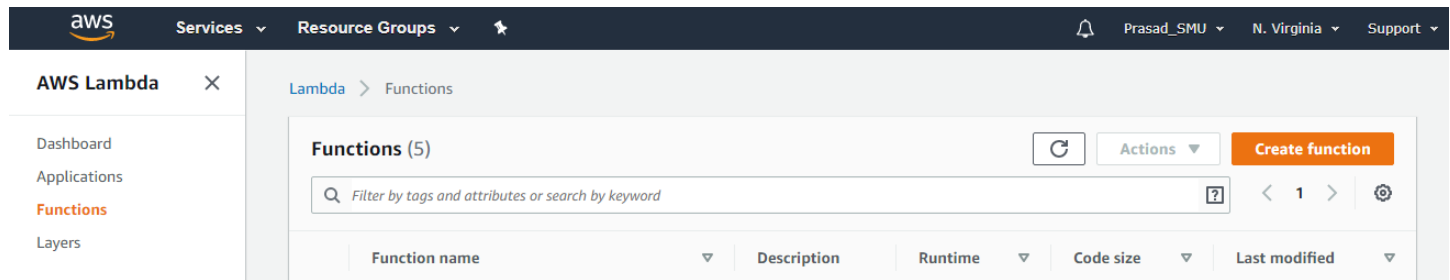
[Create role](#) [Delete role](#)

Showing 1 result

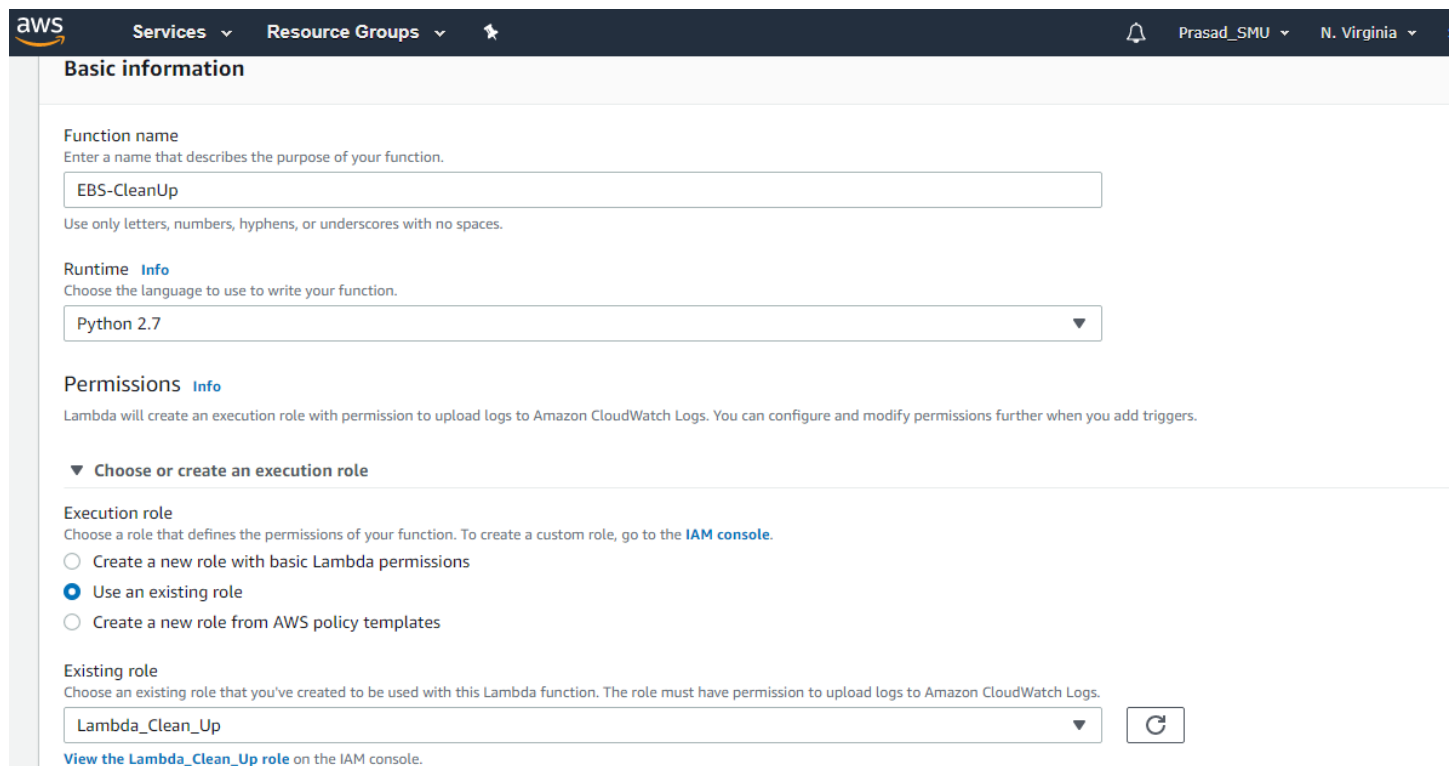
Role name	Trusted entities	Last activity
<input type="checkbox"/> Lambda_Clean_Up	AWS service: lambda	Today

Task 3: Configure Lambda Function

Navigate to Lambda Service and click on Create Function.

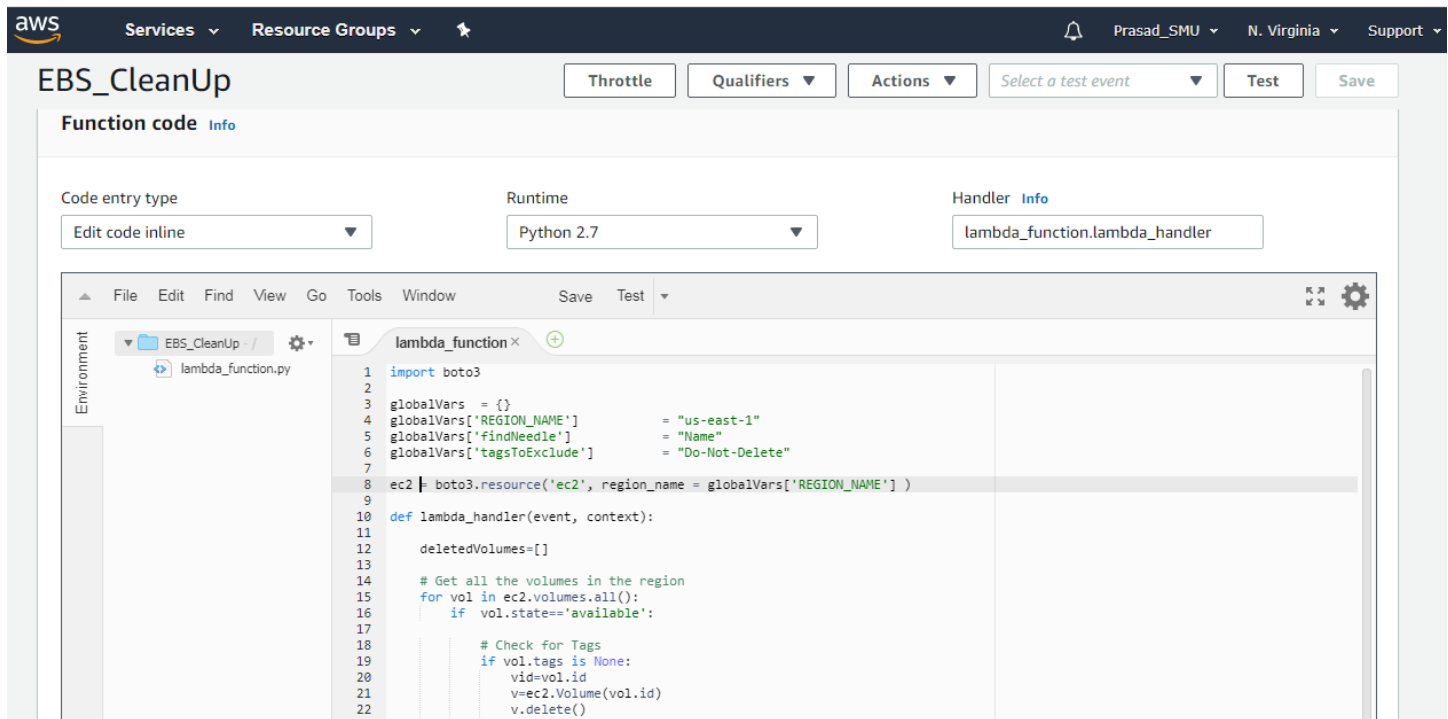


Give the Function Name as per your choice, select the Runtime as Python 2.7 and select the existing role as the role which you created in Task 2. Click on Create Function.



Under Function Code, paste the Python Code which I've provided.

Python Code will identify & remove untagged and unused EBS Volumes from N. Virginia (US-EAST-1) region.

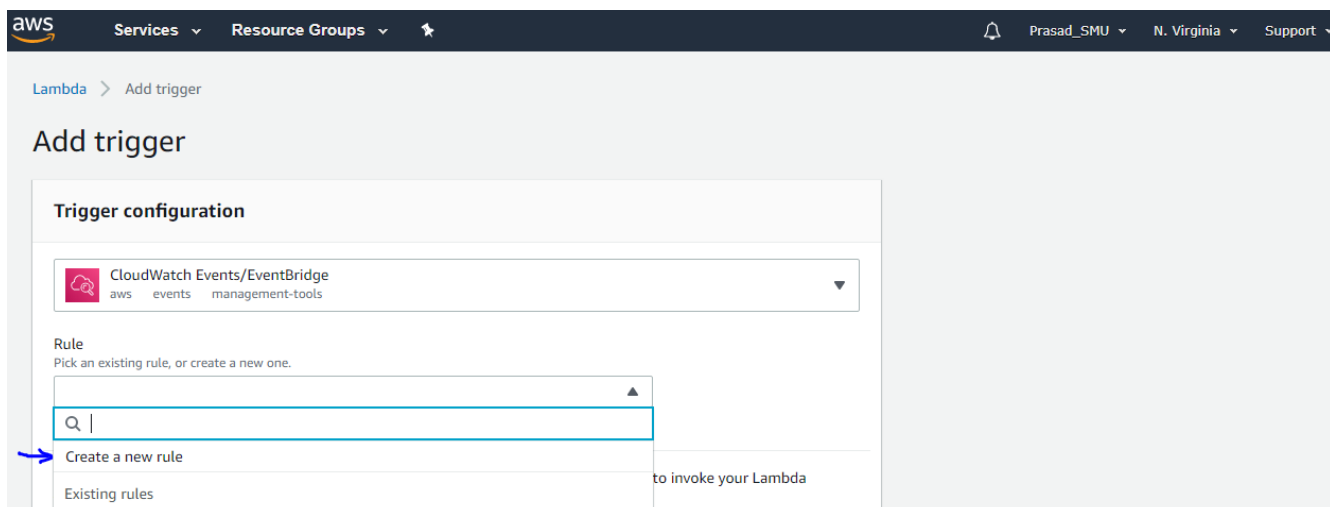


Click on SAVE.

On the Top Left corner, click on Add Trigger.

Under Trigger Configuration, from dropdown select CloudWatch.

Under Rule, click on Create Rule.



Create the Rule as follows.

Give Rule Name & Description Name as per your choice.

Select the Rule Type as Schedule Expression & specify Schedule Expression as **rate(1 minute)**.

It means CloudWatch will continuously trigger the Lambda Function for every 1 Minute.

Click on Add.

aws Services Resource Groups

Rule
Pick an existing rule, or create a new one.
Create a new rule

Select or create a new rule

Rule name*
Enter a name to uniquely identify your rule.
TriggerforVolCleanUp

Rule description
Provide an optional description for your rule.
TriggerforVolCleanUp

Rule type
Trigger your target based on an event pattern, or based on an automated schedule.
☐ Event pattern
☒ Schedule expression

Schedule expression*
Self-trigger your target on an automated schedule using Cron or rate expressions. Cron expressions are in UTC.
rate(1 minute)
e.g. rate(1 day), cron(0 17 ? * MON-FRI *)

Lambda will add the necessary permissions for Amazon CloudWatch Events/EventBridge to invoke your Lambda function from this trigger. [Learn more](#) about the Lambda permissions model.

CloudWatch Trigger to the Lambda Function has been added successfully.

EBS_CleanUp Throttle Qualifiers Actions

Configuration Permissions Monitoring

▼ Designer

EBS_CleanUp

Layers (0)

CloudWatch Events/EventBridge

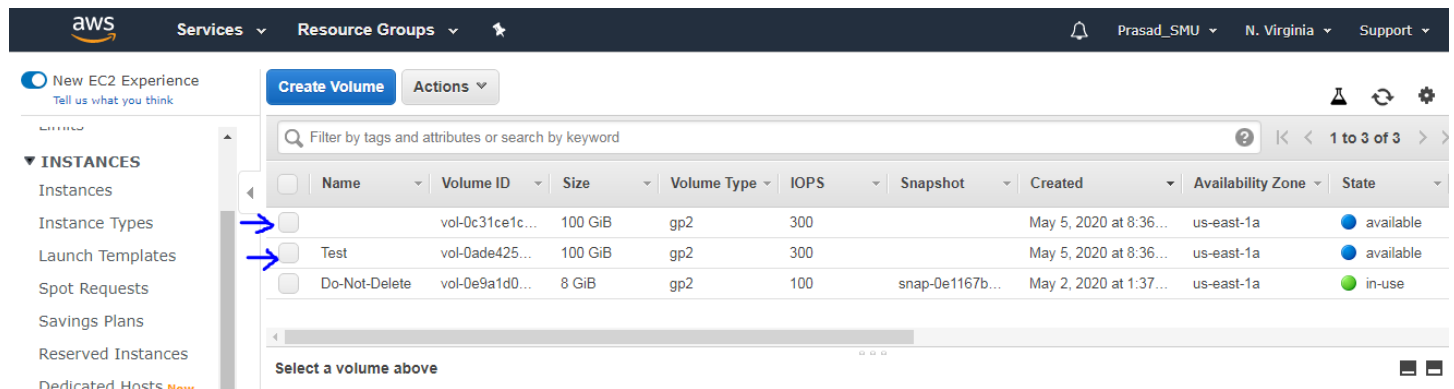
+ Add trigger

Task 4: Verify Execution of Lambda Function

Save the Lambda Function.

Navigate to EC2 Service and click on Volumes.

Two Volumes which we created in Task1 are still exist.



Wait for One Minute.

After One Minute, CloudWatch will trigger the Lambda Function.

Lambda Function will identify & remove untagged and unused EBS Volumes from N. Virginia (US-EAST-1) region.

Refresh the EBS Volumes.

You'll notice the untagged and unused volumes have been deleted.



This completes the Lab on Lambda Function to Remove Unused EBS Volumes.

For Questions, contact me on pbhavsar@smu.edu .