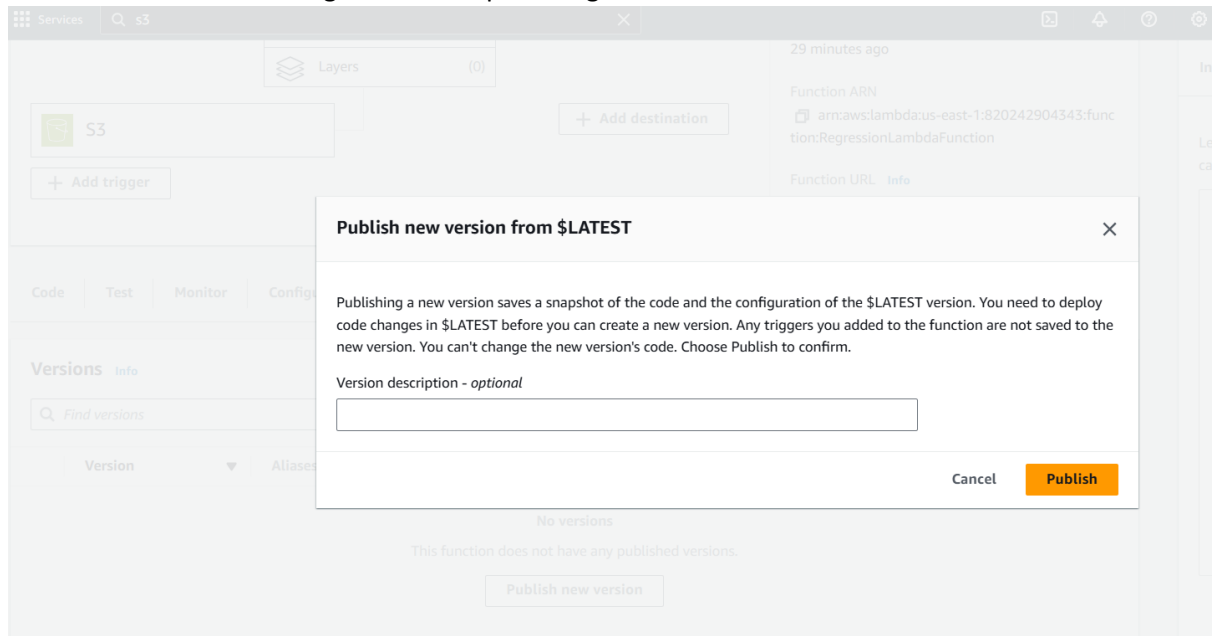
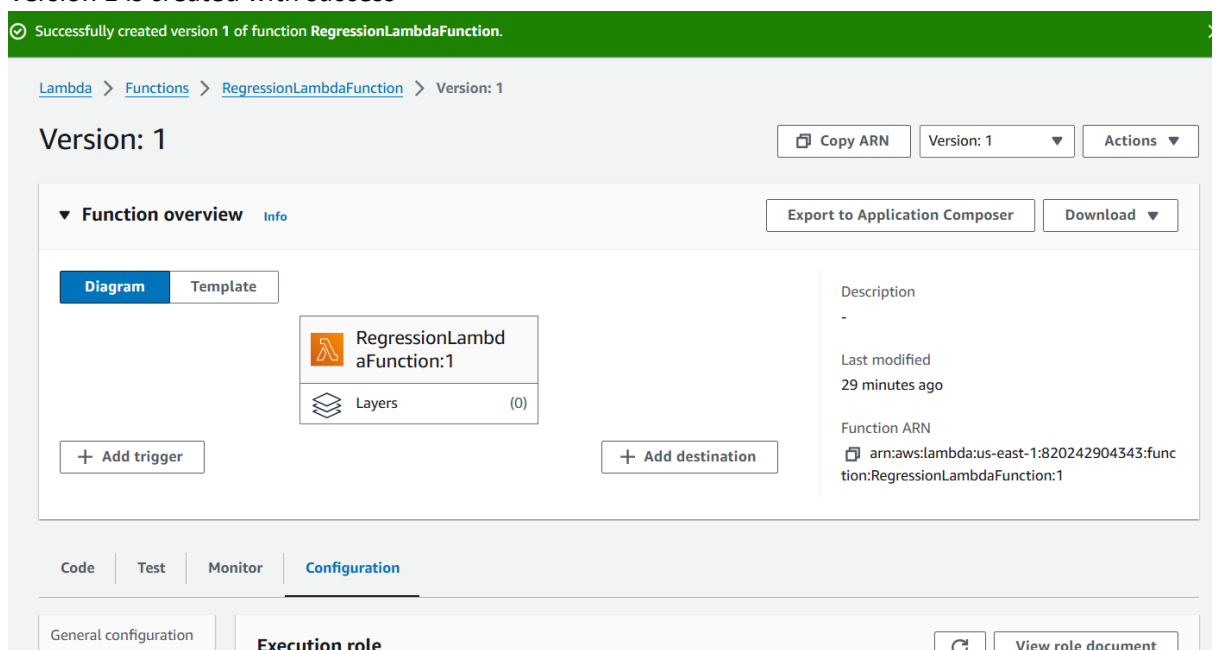


1. Create a version for existing code which prints regression co-relation with 200 success



2. Version 1 is created with success



3. Creating alias for version 1

S3

+ Add trigger

Layers

(0)

+ Add destination

50 minutes ago

Function ARN
arn:aws:lambda:us-east-1:820242904343:func
tion:RegressionLambdaFunction

Function URL [Info](#)
-

Code

Test

Monitor

Configuration

Aliases

Versions

Aliases [Info](#)

Edit

Delete

Create alias

Find aliases

< 1 >

Name	Versions	Description
No aliases This function does not have any aliases.		
<div>Create alias</div>		

Lambda > Functions > RegressionLambdaFunction > Create alias

Create alias

Alias configuration

An alias is a pointer to one or two versions. Choose each version that you want the alias to point to.

Name

CurrentLive

Description - optional

Version

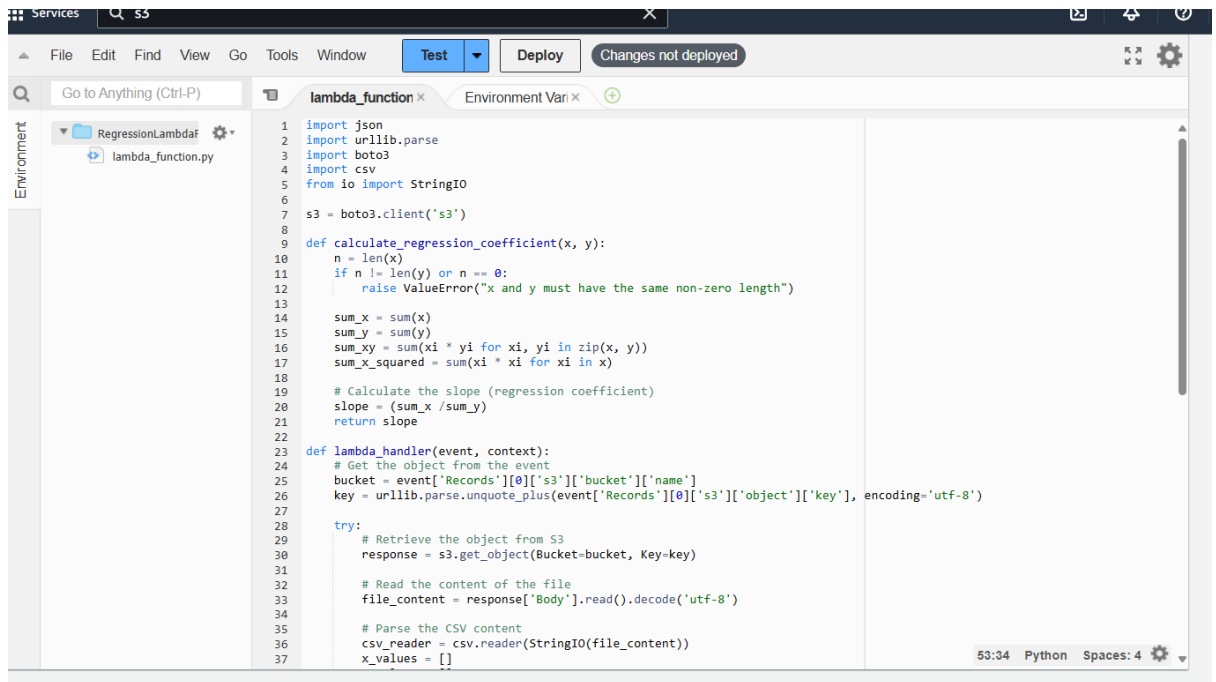
1

► Weighted alias

Cancel

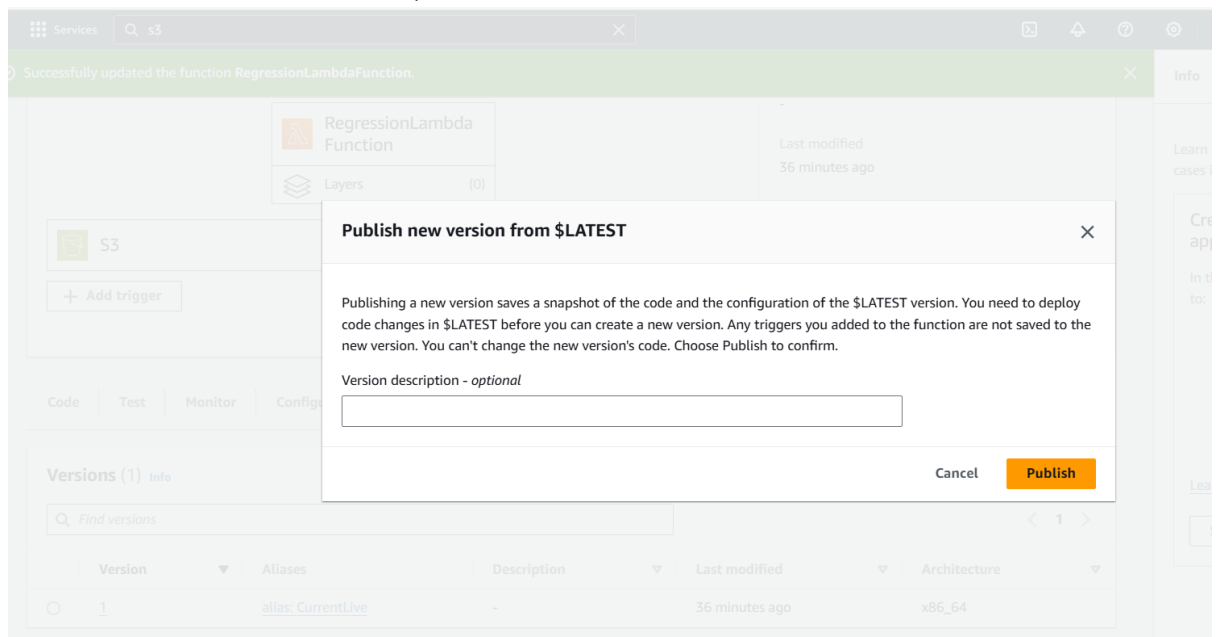
Save

4. Create another version of code with wrong logic and different logs



```
1 import json
2 import urllib.parse
3 import boto3
4 import csv
5 from io import StringIO
6
7 s3 = boto3.client('s3')
8
9 def calculate_regression_coefficient(x, y):
10     n = len(x)
11     if n != len(y) or n == 0:
12         raise ValueError("x and y must have the same non-zero length")
13
14     sum_x = sum(x)
15     sum_y = sum(y)
16     sum_xy = sum(xi * yi for xi, yi in zip(x, y))
17     sum_x_squared = sum(xi * xi for xi in x)
18
19     # Calculate the slope (regression coefficient)
20     slope = (sum_x * sum_y) / sum_x_squared
21     return slope
22
23 def lambda_handler(event, context):
24     # Get the object from the event
25     bucket = event['Records'][0]['s3']['bucket']['name']
26     key = urllib.parse.unquote_plus(event['Records'][0]['s3']['object']['key'], encoding='utf-8')
27
28     try:
29         # Retrieve the object from S3
30         response = s3.get_object(Bucket=bucket, Key=key)
31
32         # Read the content of the file
33         file_content = response['Body'].read().decode('utf-8')
34
35         # Parse the CSV content
36         csv_reader = csv.reader(StringIO(file_content))
37         x_values = []
```

5. Publish the new version with 2 to \$LATEST



Successfully updated the function RegressionLambdaFunction.

RegressionLambdaFunction

Layers (0)

S3

+ Add trigger

Code Test Monitor Config

Versions (1) Info

Find versions


Version	Aliases	Description	Last modified	Architecture
1	alias: CurrentLive	-	36 minutes ago	x86_64


Publish new version from \$LATEST

Publishing a new version saves a snapshot of the code and the configuration of the \$LATEST version. You need to deploy code changes in \$LATEST before you can create a new version. Any triggers you added to the function are not saved to the new version. You can't change the new version's code. Choose Publish to confirm.

Version description - optional


Cancel Publish

 S3

 RegressionLambdaFunction
Layers (0)

+ Add destination

Last modified
1 minute ago

Function ARN
 arn:aws:lambda:us-east-1:820242904343:function:RegressionLambdaFunction

Function URL [Info](#)

Code | Test | Monitor | Configuration | Aliases | **Versions**

Versions (2) [Info](#)

Delete | Publish new version

Version

Aliases

Description

Last modified

Architecture

○

[2](#)

-

-

1 minute ago

x86_64

○

[1](#)

[alias: CurrentLive](#)

-

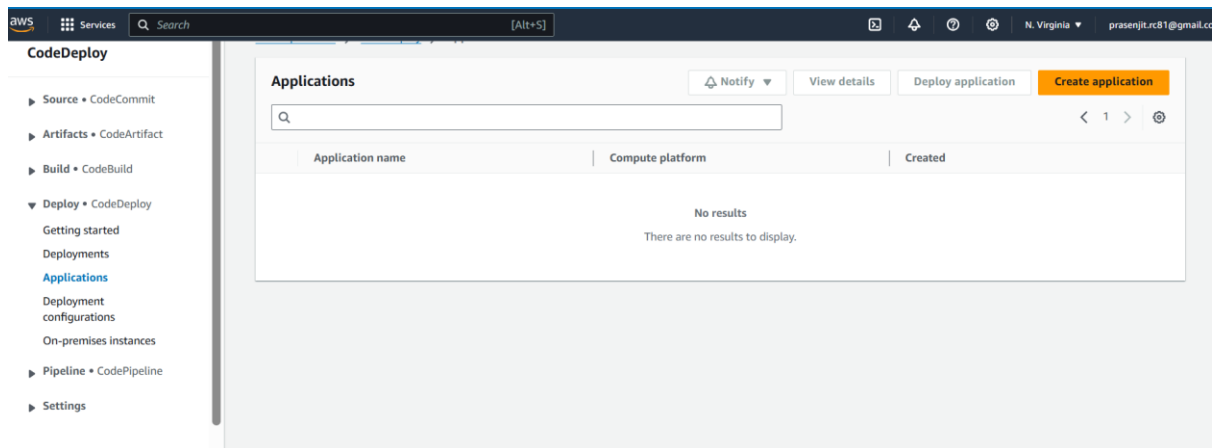
37 minutes ago

x86_64

6. Now the Cloudwatch log showing wrong version of code deployed

Timestamp		Message
		No older events at this moment. Retry
▶	2024-09-07T12:53:54.211Z	INIT_START Runtime Version: python:3.12.v30 Runtime Version ARN: arn:aws:lambda:us-east-1::runtime:acd6500d0e3f6a085fb079
▶	2024-09-07T12:53:54.682Z	START RequestId: 94eddc78-312e-403f-84fe-98aa705c4bc8 Version: \$LATEST
▶	2024-09-07T12:53:55.215Z	CONTENT TYPE: text/plain
▶	2024-09-07T12:53:55.215Z	Number of data points: 5
▶	2024-09-07T12:53:55.215Z	only slope : 0.01
▶	2024-09-07T12:53:55.215Z	Error calucaltion
▶	2024-09-07T12:53:55.250Z	END RequestId: 94eddc78-312e-403f-84fe-98aa705c4bc8
▶	2024-09-07T12:53:55.250Z	REPORT RequestId: 94eddc78-312e-403f-84fe-98aa705c4bc8 Duration: 568.18 ms Billed Duration: 569 ms Memory Size: 128 MB
▶	2024-09-07T12:53:55.584Z	START RequestId: f2f84df4-c852-4f02-805a-c859c2318602 Version: \$LATEST
▶	2024-09-07T12:53:55.609Z	CONTENT TYPE: text/plain
▶	2024-09-07T12:53:55.609Z	Number of data points: 7
▶	2024-09-07T12:53:55.609Z	only slope : 0.11267605633802817
▶	2024-09-07T12:53:55.609Z	Error calucaltion
▶	2024-09-07T12:53:55.629Z	END RequestId: f2f84df4-c852-4f02-805a-c859c2318602
▶	2024-09-07T12:53:55.629Z	REPORT RequestId: f2f84df4-c852-4f02-805a-c859c2318602 Duration: 45.20 ms Billed Duration: 46 ms Memory Size: 128 MB
		No newer events at this moment. <i>Auto retry paused.</i> Resume

7. CodeDeploy create an application



8. Create application

The 'Create application' form is displayed with the title 'Create application'. It contains an 'Application configuration' section with the following fields:

- Application name:** A text input field containing 'AnomalyDetection'. Below the field is the text 'Enter an application name' and '100 character limit'.
- Compute platform:** A dropdown menu with 'AWS Lambda' selected. Above the dropdown is the text 'Choose a compute platform'.
- Tags:** A section with an 'Add tag' button.

At the bottom right of the form are two buttons: 'Cancel' and 'Create application'.

9. Create deployment group

AnomalyDetection

Notify

Delete application

Application details

Name

AnomalyDetection

Compute platform

AWS Lambda

Deployments

Deployment groups

Revisions

Deployment groups

View details

Edit

Create deployment group

< 1 > ⚙

Name	Status	Last attempted deploym...	Last successful deployment	Trigger count
No deployment groups				

10. Create a custom trust policy

1

2

3

4

5

6

7

8

9

10

11

12

13

```

{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "",
      "Effect": "Allow",
      "Principal": {
        "Service": "codedeploy.amazonaws.com"
      },
      "Action": "sts:AssumeRole"
    }
  ]
}
























```

Edit statement

Select

Select an existing :
add a n

+ Add

	Policy name 	Type	Description
<input type="checkbox"/>	  AmazonEC2RoleforAWSCodeDeploy	AWS managed	Provides EC2 access to S3 buckets
<input type="checkbox"/>	  AmazonEC2RoleforAWSCodeDeployLimited	AWS managed	Provides EC2 limited access to S3 buckets
<input type="checkbox"/>	  AWSCodeDeployDeployerAccess	AWS managed	Provides access to register applications
<input checked="" type="checkbox"/>	  AWSCodeDeployFullAccess	AWS managed	Provides full access to CodeDeploy
<input type="checkbox"/>	  AWSCodeDeployReadOnlyAccess	AWS managed	Provides read only access to CodeDeploy
<input type="checkbox"/>	  AWSCodeDeployRole	AWS managed	Provides CodeDeploy service role
<input type="checkbox"/>	  AWSCodeDeployRoleForCloudFormation	AWS managed	Provides CodeDeploy service role for CloudFormation
<input type="checkbox"/>	  AWSCodeDeployRoleForECS	AWS managed	Provides CodeDeploy service role for ECS
<input type="checkbox"/>	  AWSCodeDeployRoleForECSLimited	AWS managed	Provides CodeDeploy service role for ECS limited
<input checked="" type="checkbox"/>	  AWSCodeDeployRoleForLambda	AWS managed	Provides CodeDeploy service role for Lambda
<input type="checkbox"/>	  AWSCodeDeployRoleForLambdaLimited	AWS managed	Provides CodeDeploy service role for Lambda limited

► **Set permissions boundary - optional**

Name, review, and create

Role name

AWSCodeDeployRoleForLambda

Maximum 64 characters. Use alphanumeric

Description

Add a short explanation for this role.

Maximum 1000 characters. Use letters (A-Z and a-z), numbers (0-9), tabs, new lines, or any of the following characters: _+ = , . @ - / [()] ! # \$ % ^ * () ; ' " ' .

Step 1: Select trusted entities

Trust policy

Role AWSCodeDeployRoleForLambda created.

[IAM](#) > Roles

Roles (4) Info

An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.

Search

<input type="checkbox"/>	Role name	Trusted entities	Last activity
<input type="checkbox"/>	AWSCodeDeployRoleForLambda	AWS Service: codedeploy	-
<input type="checkbox"/>	AWSServiceRoleForSupport	AWS Service: support (Service-Linker)	-
<input type="checkbox"/>	AWSServiceRoleForTrustedAdvisor	AWS Service: trustedadvisor (Service-Linker)	-
<input type="checkbox"/>	RoleS3ReadAccess	AWS Service: lambda	1 hour ago

[View role](#)

Roles (4) [Info](#)

An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.

Search

< 1 > ⚙

<input type="checkbox"/>	Role name	Trusted entities	Last activity
<input type="checkbox"/>	AWSCodeDeployRoleForLambda	AWS Service: codedeploy	-
<input type="checkbox"/>	AWSServiceRoleForSupport	AWS Service: support (Service-Linker)	-
<input type="checkbox"/>	AWSServiceRoleForTrustedAdvisor	AWS Service: trustedadvisor (Service-Linker)	-
<input type="checkbox"/>	RoleS3ReadAccess	AWS Service: lambda	1 hour ago

11. Create Deployment Group

Deployment group name

Enter a deployment group name

100 character limit

Service role

Enter a service role

Enter a service role with CodeDeploy permissions that grants AWS CodeDeploy access to your target instances.

✕

Deployment settings

Deployment configuration

Choose from a list of default and custom deployment configurations. A deployment configuration is a set of rules that determines how fast an application is deployed and the success or failure conditions for a deployment.

▼

 or

Create deployment configuration

▶ Advanced, optional

12. Create deployment for lambda

Deployment group

MyDeploymentGroup

Compute platform

AWS Lambda

Deployment type

Blue/green

Managed hook execution role

The IAM role used by the CodeDeploy Managed Hook function to perform actions.
[Edit Managed Hook execution role.](#)

Revision type

☐ My application is stored in Amazon S3
☒ Use AppSpec editor

AppSpec language

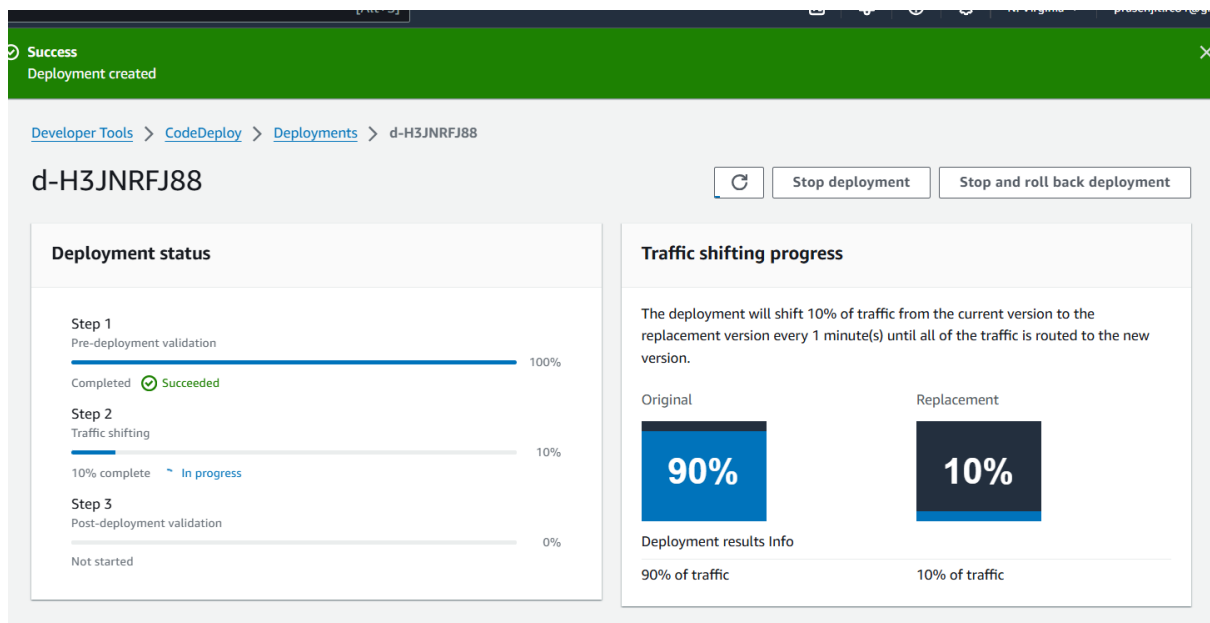
☐ JSON
☒ YAML

```

1 version: 0.0
2 Resources:
3   - RegressionLambdaFunction:
4     Type: AWS::Lambda::Function
5     Properties:
6       Name: "RegressionLambdaFunction"
7       Alias: "CurrentLive"
8       CurrentVersion: "1"
9       TargetVersion: "2"

```

13. After deployment



Weightage change in lambda

CodeTestMonitorConfigurationAliasesVersions

Aliases (1) Info

EditDeleteCreate alias

Find aliases

< 1

Name	Versions	Description
<div><div></div>CurrentLive</div>	<div>version: 1 (weight=80%) version: 2 (weight=20%)</div>	-

14. Linear deployment going on

Success
Deployment created

Developer Tools > CodeDeploy > Deployments > d-H3JNRFJ88

d-H3JNRFJ88

Refresh

Stop deploymentStop and roll back deployment

Deployment status

Step 1
Pre-deployment validation

Completed ✓ Succeeded 100%

Step 2
Traffic shifting

30% complete ↗ In progress 30%

Step 3
Post-deployment validation

Not started 0%

Traffic shifting progress

The deployment will shift 10% of traffic from the current version to the replacement version every 1 minute(s) until all of the traffic is routed to the new version.

Original

Replacement

70%

30%

Deployment results Info

70% of traffic30% of traffic

CodeTestMonitorConfigurationAliasesVersions

Aliases (1) Info

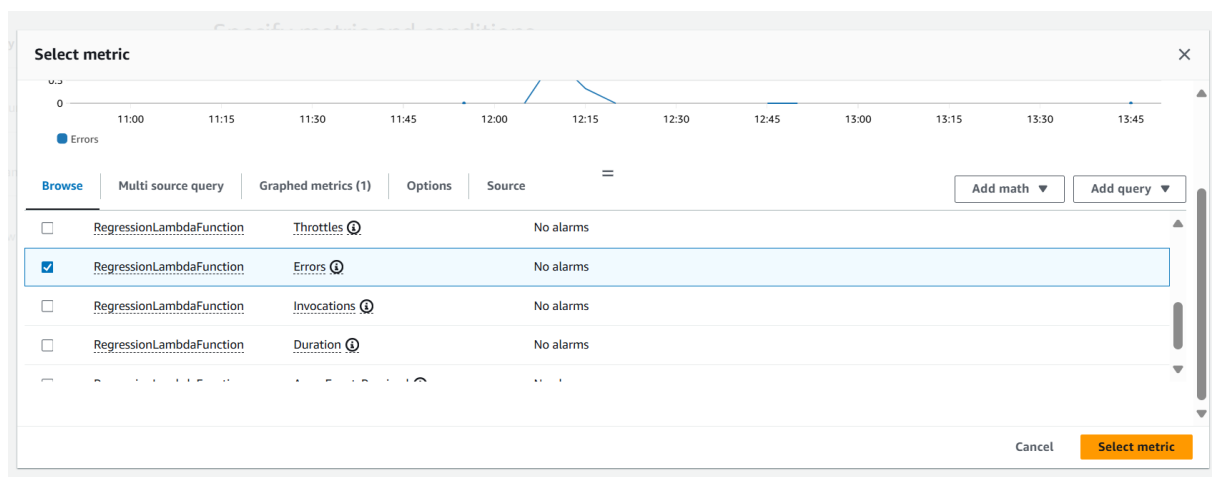
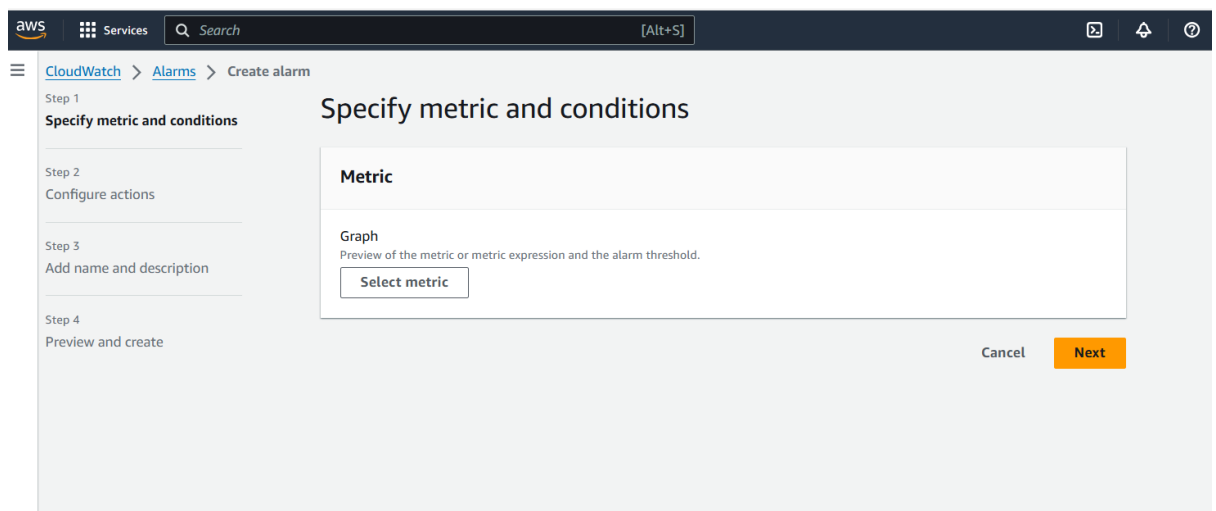
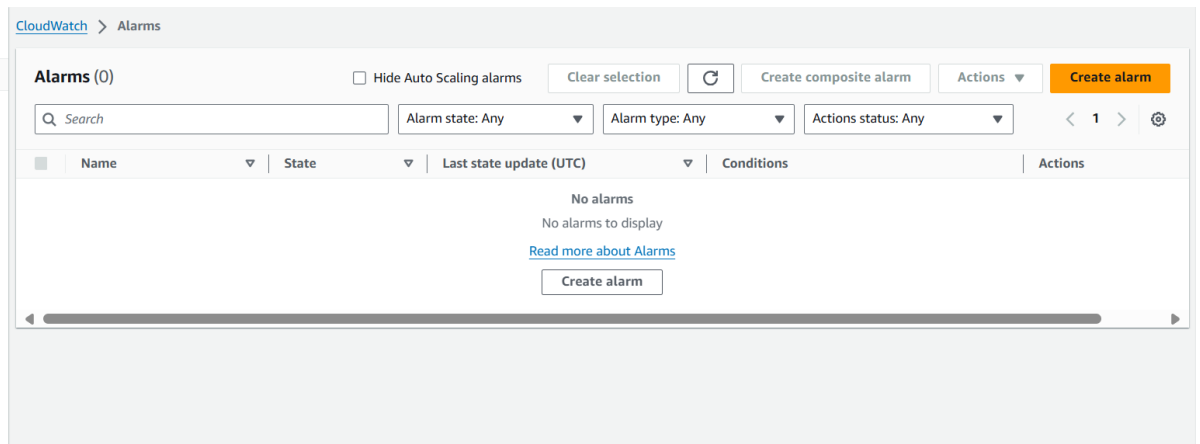
EditDeleteCreate alias

Find aliases

< 1 >

Name	Versions	Description
<div><div></div>CurrentLive</div>	<div>version: 1 (weight=70%) version: 2 (weight=30%)</div>	-

15. Create Alarm through CloudWatch Loggroup



Services

Search

[Alt+S]

Step 4

Preview and create

Count

1

0.5

0

11:00

12:00

13:00

Errors

Errors (expected)

AWS/Lambda

Metric name

Errors

FunctionName

RegressionLambdaFunction

Statistic

Average

Period

1 minute

Conditions

Threshold type

Static

Use a value as a threshold

Anomaly detection

Use a band as a threshold

Whenever Errors is...

Define the alarm condition

Outside of the band

Greater than the band

Lower than the band

Services

Search

[Alt+S]

Step 2

Configure actions

Step 3

Add name and description

Step 4

Preview and create

Notification

Alarm state trigger

Define the alarm state that will trigger this action.

In alarm

The metric or expression is outside of the defined threshold.

OK

The metric or expression is within the defined threshold.

Insufficient data

The alarm has just started or not enough data is available.

Send a notification to the following SNS topic

Define the SNS (Simple Notification Service) topic that will receive the notification.

Select an existing SNS topic

Create new topic

Use topic ARN to notify other accounts

Create a new topic...

The topic name must be unique.

Default_CloudWatch_Alarms_Topic

SNS topic names can contain only alphanumeric characters, hyphens (-) and underscores (_).

Email endpoints that will receive the notification...

Add a comma-separated list of email addresses. Each address will be added as a subscription to the topic above.

Remove

Turn on Recommendations to pre-populate the wizard with the recommended alarms.

CloudWatch > Alarms > Create alarm

Step 1
[Specify metric and conditions](#)

Step 2
[Configure actions](#)

Step 3
[Add name and description](#)

Step 4
Preview and create

Preview and create

Step 1: Specify metric and conditions

Metric

Graph
This alarm will trigger when the blue line goes outside the band for 1 datapoints within 1 minute.

Count

1

0.5

0

11:00 12:00 13:00

Errors Errors (expected)

Namespace
AWS/Lambda

Metric name
Errors

FunctionName
RegressionLambdaFunction

Statistic
Average

Period
1 minute

Edit

16. Add alarm to CodeDeploy to trigger rollback using the above notification. Click on Edit.

aws Services Search [Alt+S]

Developer Tools > CodeDeploy > Applications > AnomalyDetection > MyDeploymentGroup

MyDeploymentGroup

Edit Delete Create deployment

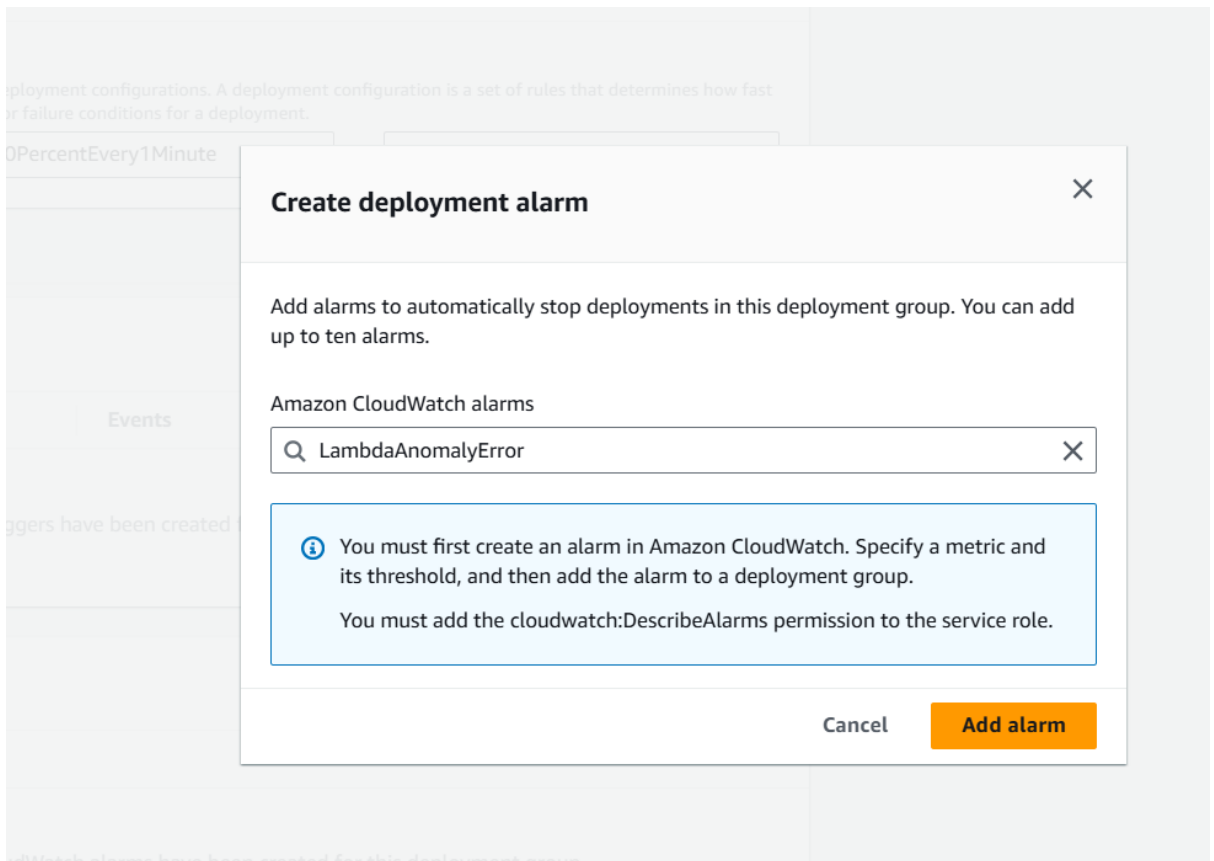
Deployment group details

Deployment group name MyDeploymentGroup	Application name AnomalyDetection	Compute platform AWS Lambda
Deployment type Blue/green	Service role ARN arn:aws:iam::820242904343:role/AWSCodeDeployRoleForLambda	Deployment configuration CodeDeployDefault.LambdaLinear10PercentEvery1Minute
Rollback enabled False		

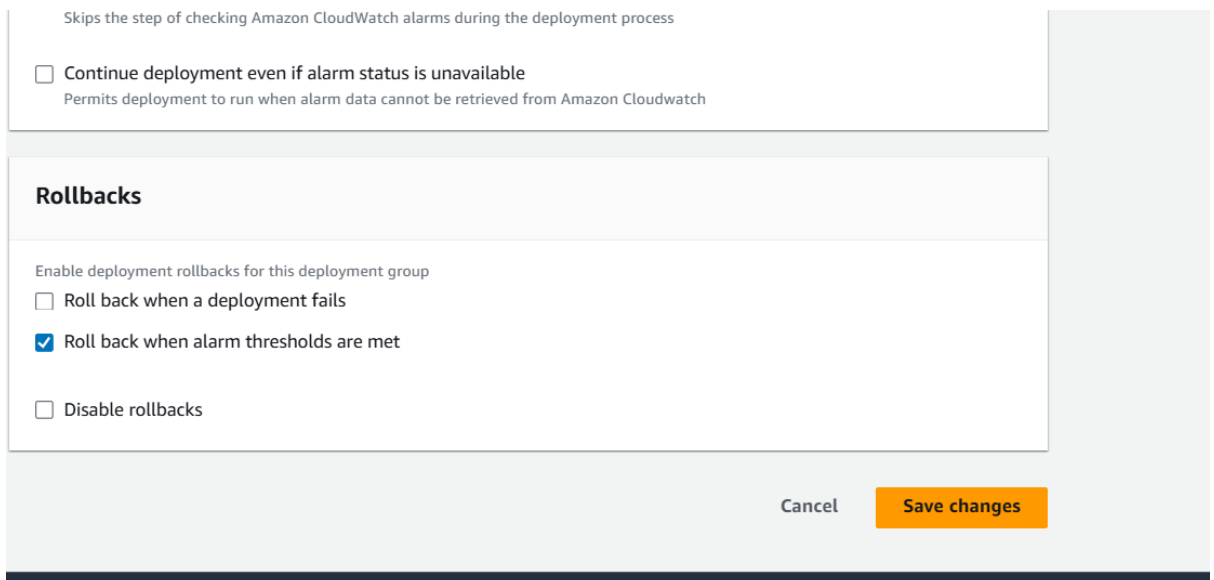
Triggers

Name	Events	Type
------	--------	------

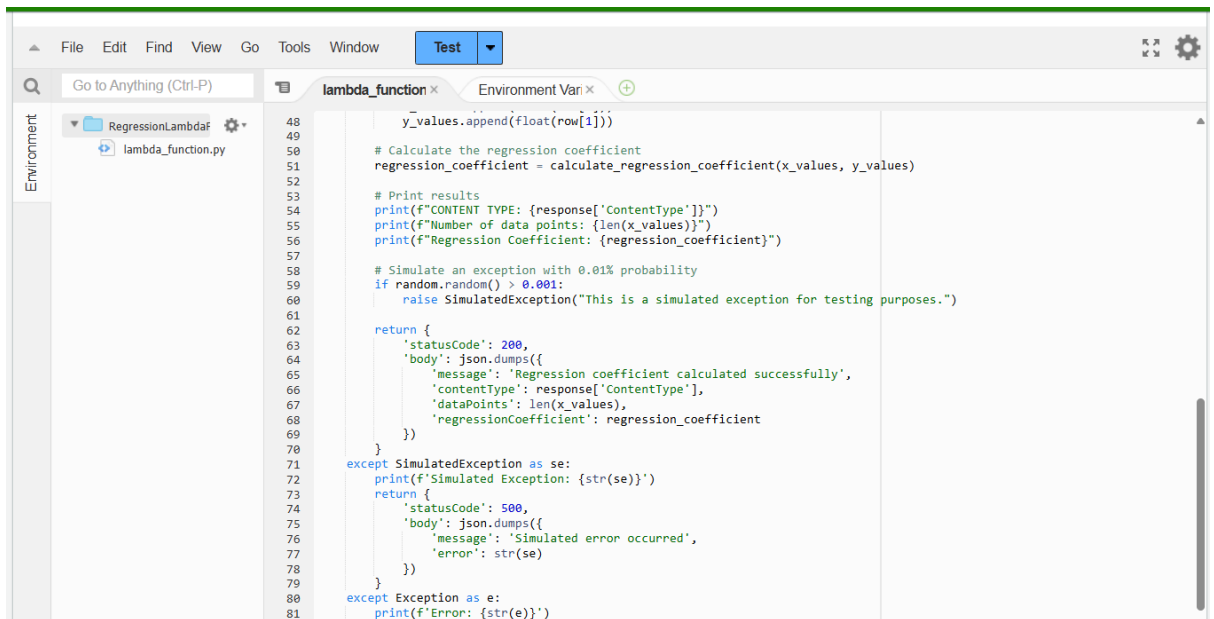
17. Add Alarms in advanced section



18. Enable roll back when threshold met

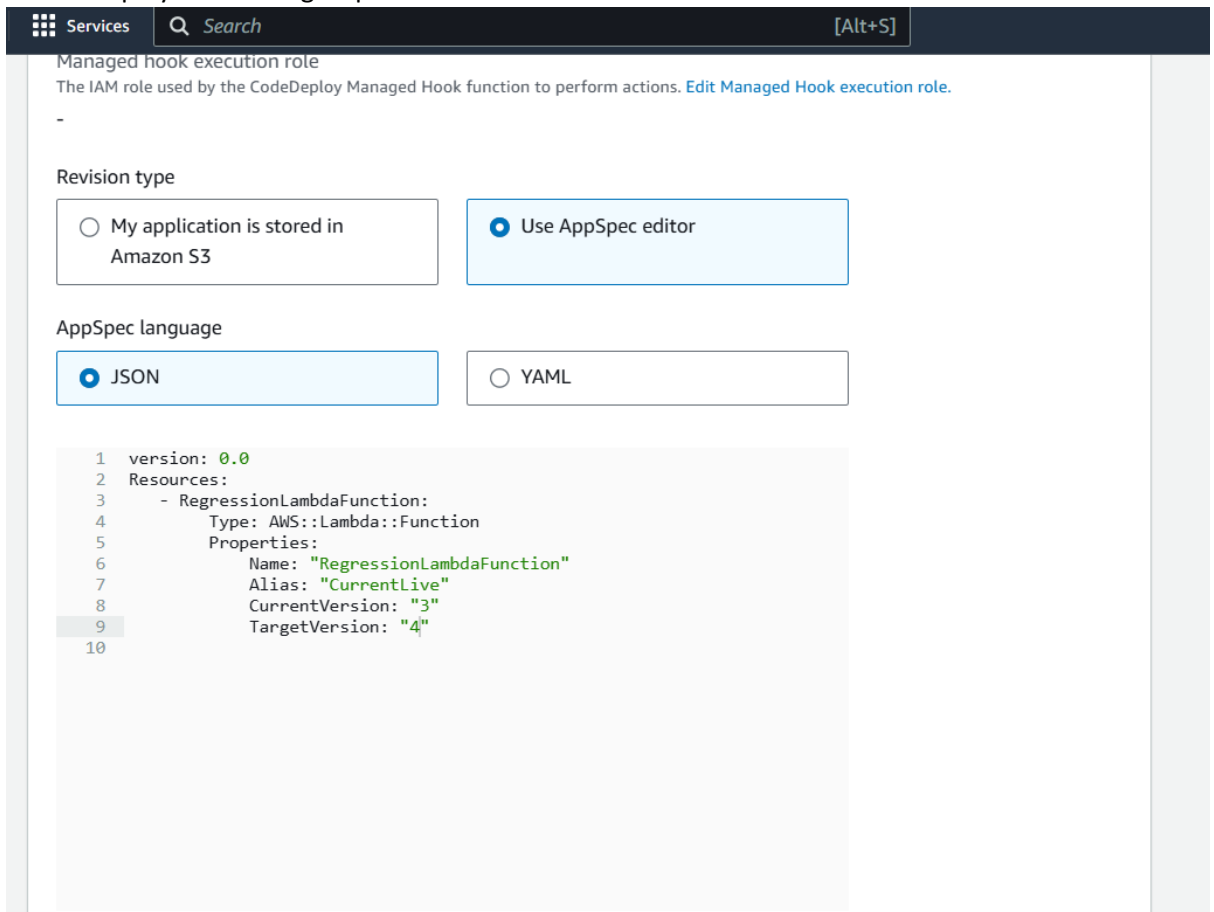


19. Throwing Error Simulation from Lambda code



Version 4 is updated

20. Create deployment with group



21. Deployment starts

Layers (0)

S3

+ Add trigger

+ Add destination

Function ARN
arn:aws:lambda:us-east-1:820242904343:func
tion:RegressionLambdaFunction
Function URL [Info](#)

Code

Test

Monitor

Configuration

Aliases

Versions

Aliases (1) [Info](#)

Edit

Delete

Create alias

< 1 >

	Name	Versions	Description
<input type="radio"/>	CurrentLive	version: 3 (weight=90%) version: 4 (weight=10%)	-

Success
Deployment created

[Developer Tools](#) > [CodeDeploy](#) > [Deployments](#) > d-XPRNX8L88

d-XPRNX8L88

Refresh

Stop deployment

Stop and roll back deployment

Deployment status

Step 1
Pre-deployment validation
Completed ✓ Succeeded 100%

Step 2
Traffic shifting
10% complete ↻ In progress 10%

Step 3
Post-deployment validation
Not started 0%

Traffic shifting progress

The deployment will shift 10% of traffic from the current version to the replacement version every 1 minute(s) until all of the traffic is routed to the new version.

Original

Replacement

90%

10%

Deployment results Info

90% of traffic 10% of traffic

22. Error simulated

RegressionLambdaFunction

Layers (0)

S3

+ Add trigger

+ Add destination

Last modified
4 minutes ago

Function ARN
arn:aws:lambda:us-east-1:820242904343:func
tion:RegressionLambdaFunction

Function URL [Info](#)

Code

Test

Monitor

Configuration

Aliases

Versions

✖

Executing function: failed ([logs](#))

Details

Diagnose with Amazon Q

Test event [Info](#)

Save

Test

To invoke your function without saving an event, configure the JSON event, then choose Test.

23. SNS generated

ALARM: "LambdaAnomalyError" in US East (N. Virginia)

Inbox x

AWS Notifications <no-reply@sns.amazonaws.com>
to me ▾

3:36 PM (14 minutes ago) ☆ 😊 ↶ ⋮

You are receiving this email because your Amazon CloudWatch Alarm "LambdaAnomalyError" in the US East (N. Virginia) region has entered the ALARM state, because "Threshold Crossed: 1 out of the last 1 datapoints [5.0 (07/09/24 14:35:00)] was greater than the threshold (1.0) (minimum 1 datapoint for OK -> ALARM transition)." at "Saturday 07 September, 2024 14:36:17 UTC".

View this alarm in the AWS Management Console:
<https://us-east-1.console.aws.amazon.com/cloudwatch/deeplink.js?region=us-east-1#alarmsV2:alarm/LambdaAnomalyError>

Alarm Details:

24. Deployment rolled back

Deployment status

Step 1
Pre-deployment validation
Completed Succeeded 100%

Step 2
Traffic shifting
Failed Failed 0%

Step 3
Post-deployment validation
Not started Skipped 0%

Traffic shifting progress

The deployment will shift 10% of traffic from the current version to the replacement version every 1 minute(s) until all of the traffic is routed to the new version.

Original

Replacement

100%

0%

Deployment results Info

100% of traffic 0% of traffic

25. Version 3 is rolled back

Code

Test

Monitor

Configuration

Aliases

Versions

Aliases (1) [Info](#)

Edit

Delete

Create alias

Find aliases

< 1 >

	Name ▲	Versions	Description ▼
<input type="radio"/>	CurrentLive	version: 3 (weight=100%)	-