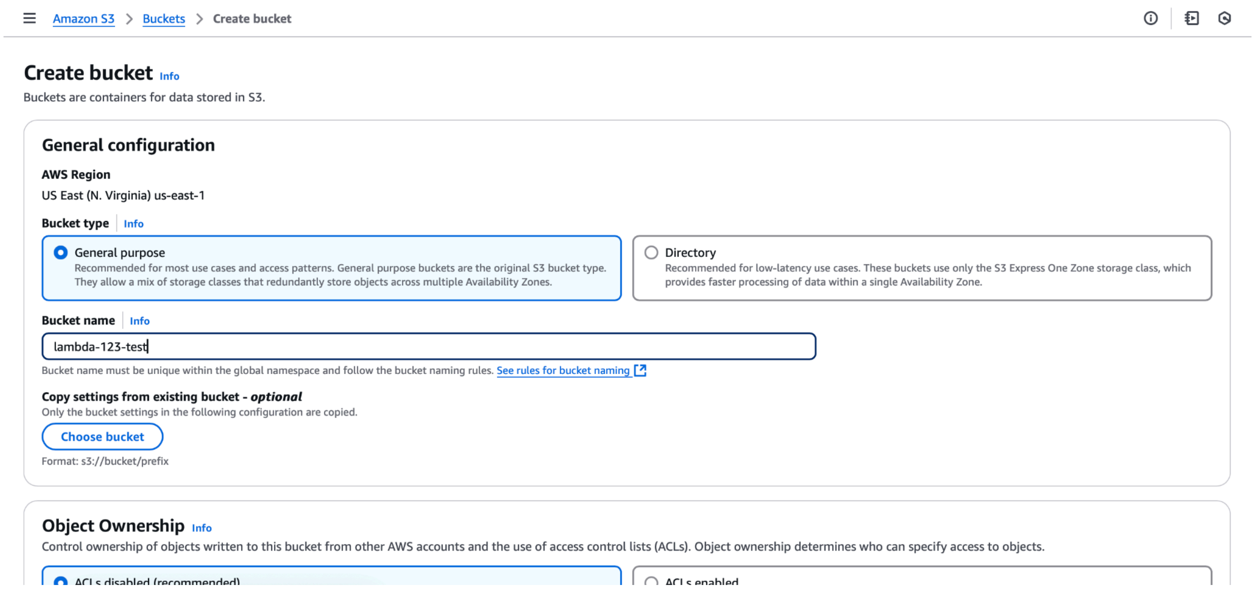
AWS Lambda

We will upload a file to S3 bucket which will trigger the lambda function which will output the content type we have uploaded i.e videos, text, images etc.

Lets create an S3 Bucket



Create bucket Info

Buckets are containers for data stored in S3.

General configuration

AWS Region
US East (N. Virginia) us-east-1

Bucket type Info

● General purpose
Recommended for most use cases and access patterns. General purpose buckets are the original S3 bucket type. They allow a mix of storage classes that redundantly store objects across multiple Availability Zones.

○ Directory
Recommended for low-latency use cases. These buckets use only the S3 Express One Zone storage class, which provides faster processing of data within a single Availability Zone.

Bucket name Info

lambda-123-test

Bucket name must be unique within the global namespace and follow the bucket naming rules. See rules for bucket naming

Copy settings from existing bucket - *optional*
Only the bucket settings in the following configuration are copied.

Format: s3://bucket/prefix

Object Ownership Info

Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.

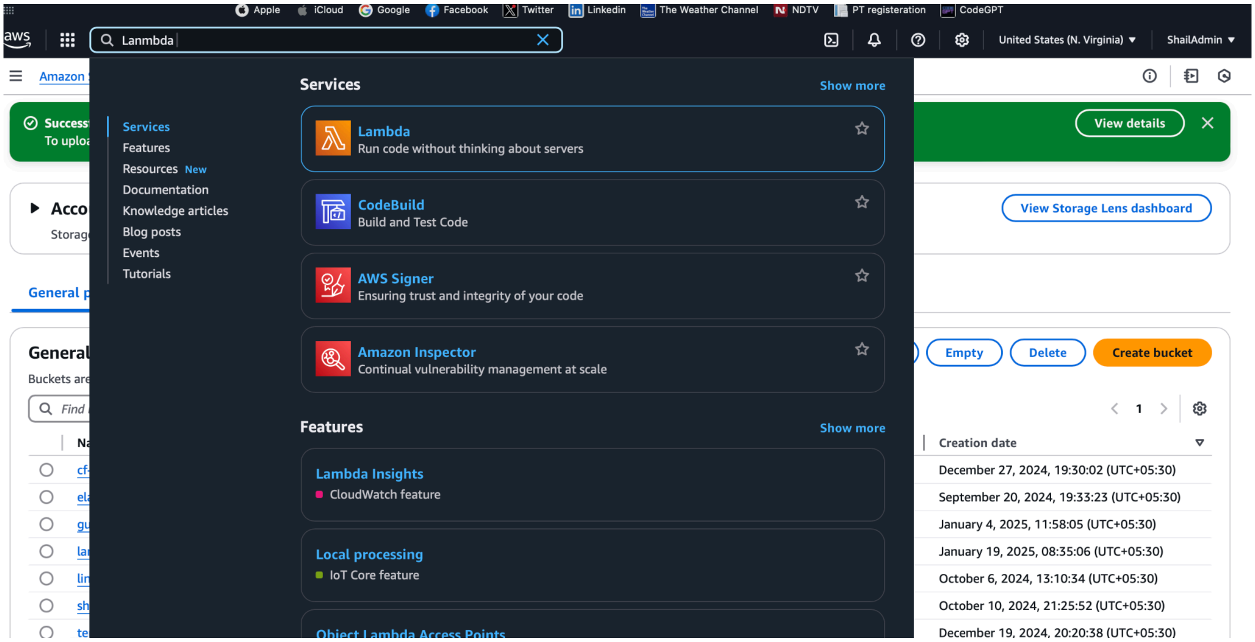
● ACLs disabled (recommended)

○ ACLs enabled

Leave all the functions as default and create a bucket.

Lambda function and S3 Bucket can be in different region

Go to Lambda



Apple iCloud Google Facebook Twitter Linkedin The Weather Channel NDTV PT registeration CodeGPT

aws | Lanmbda | United States (N. Virginia) ▾ | ShailAdmin ▾

Services | Features | Resources New | Documentation | Knowledge articles | Blog posts | Events | Tutorials

Services — Show more

- **Lambda** — Run code without thinking about servers
- **CodeBuild** — Build and Test Code
- **AWS Signer** — Ensuring trust and integrity of your code
- **Amazon Inspector** — Continual vulnerability management at scale

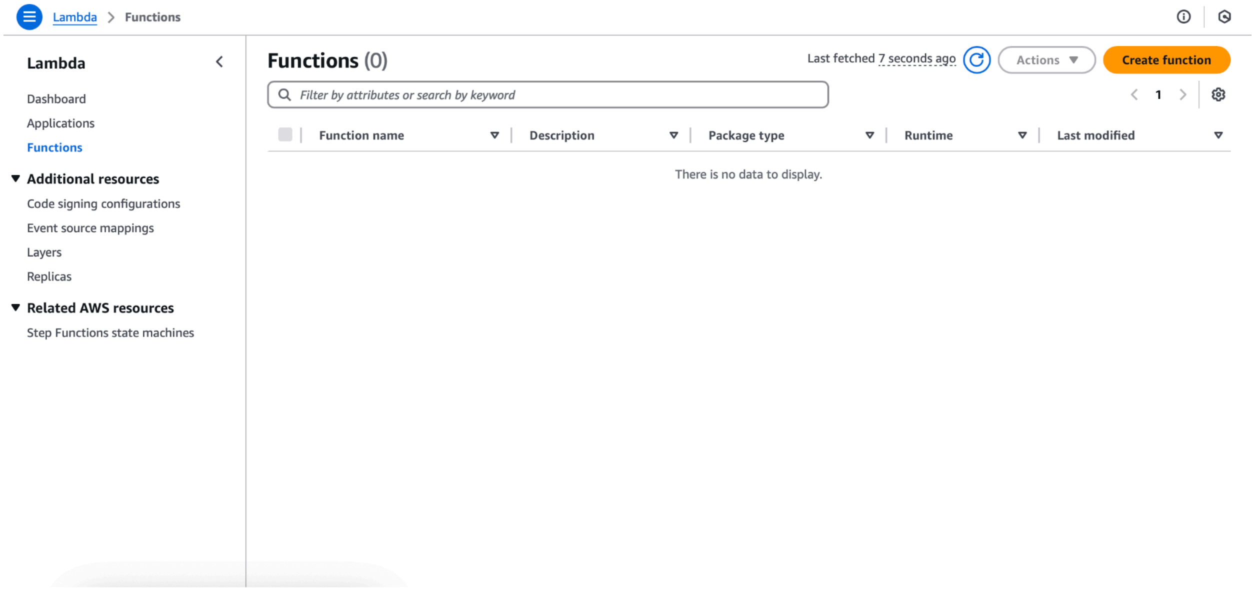
Features — Show more

- **Lambda Insights** — CloudWatch feature
- **Local processing** — IoT Core feature
- **Object Lambda Access Points**

View details | View Storage Lens dashboard | Empty | Delete | Create bucket

Creation date
December 27, 2024, 19:30:02 (UTC+05:30)
September 20, 2024, 19:33:23 (UTC+05:30)
January 4, 2025, 11:58:05 (UTC+05:30)
January 19, 2025, 08:35:06 (UTC+05:30)
October 6, 2024, 13:10:34 (UTC+05:30)
October 10, 2024, 21:25:52 (UTC+05:30)
December 19, 2024, 20:20:38 (UTC+05:30)

Click on Create Function



Lambda > Functions

Lambda

- Dashboard
- Applications
- Functions

▼ **Additional resources**

- Code signing configurations
- Event source mappings
- Layers
- Replicas

▼ **Related AWS resources**

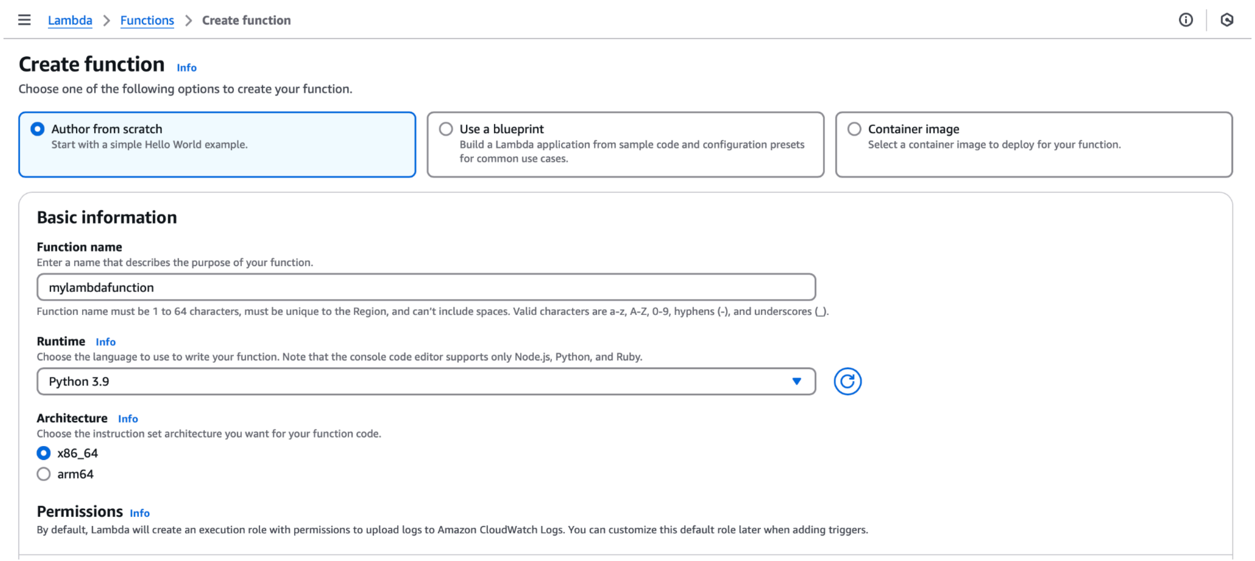
- Step Functions state machines

Functions (0) — Last fetched 7 seconds ago | Actions ▾ | Create function

Filter by attributes or search by keyword

Function name	Description	Package type	Runtime	Last modified

There is no data to display.



Create function Info

Choose one of the following options to create your function.

● Author from scratch
Start with a simple Hello World example.

○ Use a blueprint
Build a Lambda application from sample code and configuration presets for common use cases.

○ Container image
Select a container image to deploy for your function.

Basic information

Function name
Enter a name that describes the purpose of your function.

mylambdafunction

Function name must be 1 to 64 characters, must be unique to the Region, and can't include spaces. Valid characters are a-z, A-Z, 0-9, hyphens (-), and underscores (_).

Runtime Info
Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.

Python 3.9

Architecture Info
Choose the instruction set architecture you want for your function code.

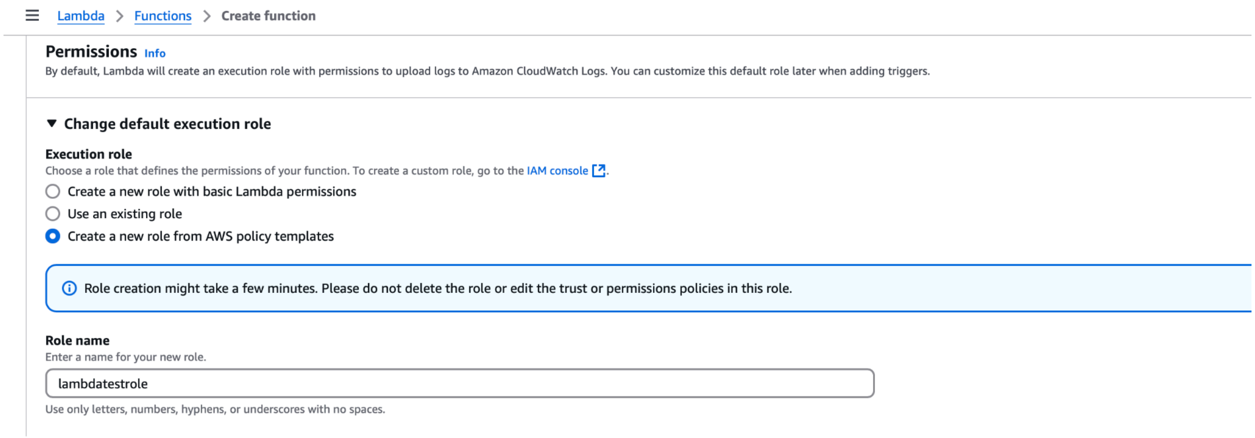
● x86_64
○ arm64

Permissions Info
By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

Enter the function name and select runtime here we have taken python 3.9

Now we need to change default policy template to give permission to aws lambda to read from s3 bucket

We will give role name and amazon s3 permission



Permissions Info
By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

▼ Change default execution role

Execution role
Choose a role that defines the permissions of your function. To create a custom role, go to the IAM console.

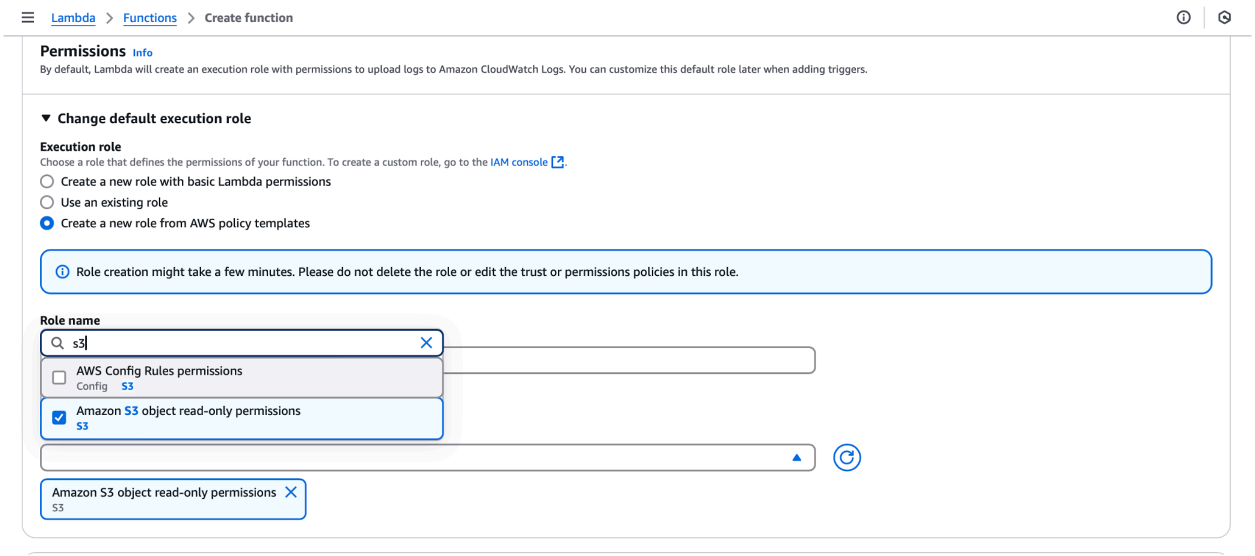
○ Create a new role with basic Lambda permissions
○ Use an existing role
● Create a new role from AWS policy templates

Role creation might take a few minutes. Please do not delete the role or edit the trust or permissions policies in this role.

Role name
Enter a name for your new role.

lambdatestrole

Use only letters, numbers, hyphens, or underscores with no spaces.



Lambda > Functions > Create function

Permissions Info

By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

▼ Change default execution role

Execution role

Choose a role that defines the permissions of your function. To create a custom role, go to the IAM console.

○ Create a new role with basic Lambda permissions
○ Use an existing role
● Create a new role from AWS policy templates

Role creation might take a few minutes. Please do not delete the role or edit the trust or permissions policies in this role.

Role name

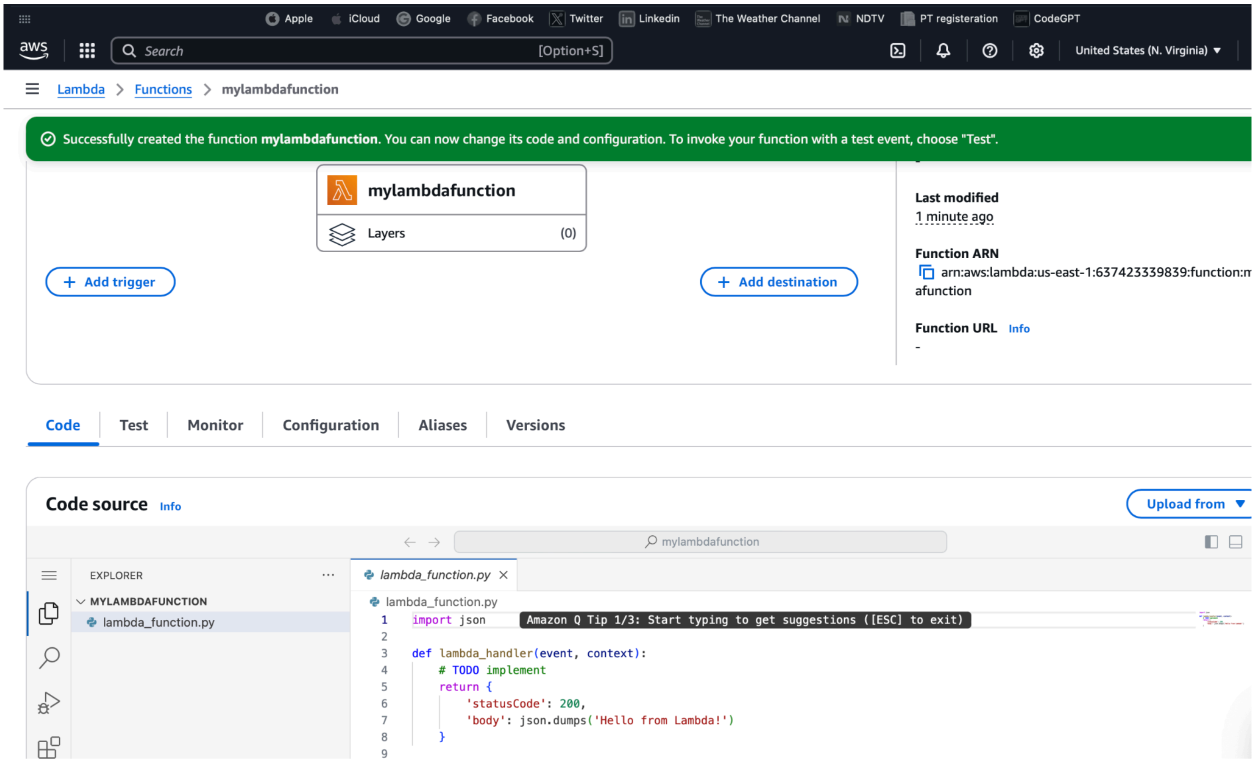
s3

□ AWS Config Rules permissions
Config S3

☑ Amazon S3 object read-only permissions
S3

Amazon S3 object read-only permissions
S3

Let all the settings be default. Click on create Functions.



Lambda > Functions > mylambdafunction

Successfully created the function **mylambdafunction**. You can now change its code and configuration. To invoke your function with a test event, choose "Test".

mylambdafunction

Layers (0)

+ Add trigger

+ Add destination

Last modified
1 minute ago

Function ARN
arn:aws:lambda:us-east-1:637423339839:function:m afunction

Function URL Info
-

Code | Test | Monitor | Configuration | Aliases | Versions

Code source Info

Upload from ▼

mylambdafunction

EXPLORER

MYLAMBDAFUNCTION

lambda_function.py

lambda_function.py

```
import json    Amazon Q Tip 1/3: Start typing to get suggestions ([ESC] to exit)

def lambda_handler(event, context):
    # TODO implement
    return {
        'statusCode': 200,
        'body': json.dumps('Hello from Lambda!')
    }
```

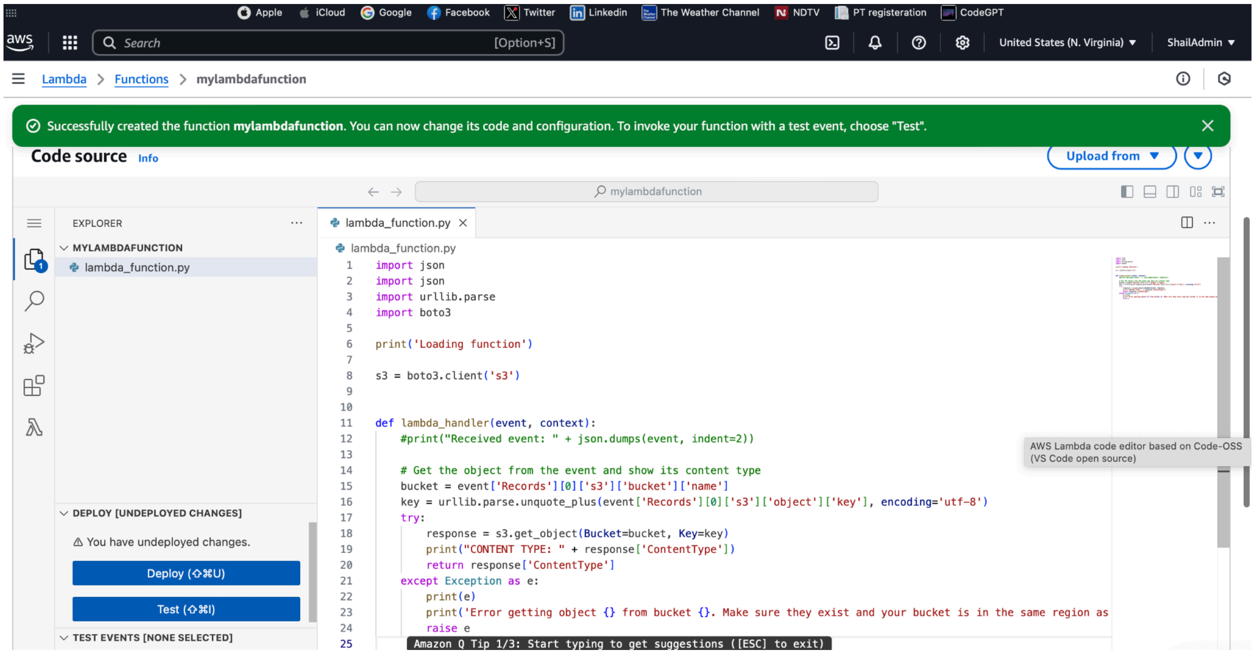
Lambda function is created.

Copy this function

```
import json
import urllib.parse
import boto3

print('Loading function')

s3 = boto3.client('s3')


def lambda_handler(event, context):
    #print("Received event: " + json.dumps(event, indent=2))

    # Get the object from the event and show its content type
    bucket = event['Records'][0]['s3']['bucket']['name']
    key =
urllib.parse.unquote_plus(event['Records'][0]['s3']['object']['key'],
encoding='utf-8')
    try:
        response = s3.get_object(Bucket=bucket, Key=key)
        print("CONTENT TYPE: " + response['ContentType'])
        return response['ContentType']
    except Exception as e:
        print(e)
        print('Error getting object {} from bucket {}. Make sure they
exist and your bucket is in the same region as this
function.'.format(key, bucket))
        raise e
```

This function is been taken from a blueprint

Replace the code



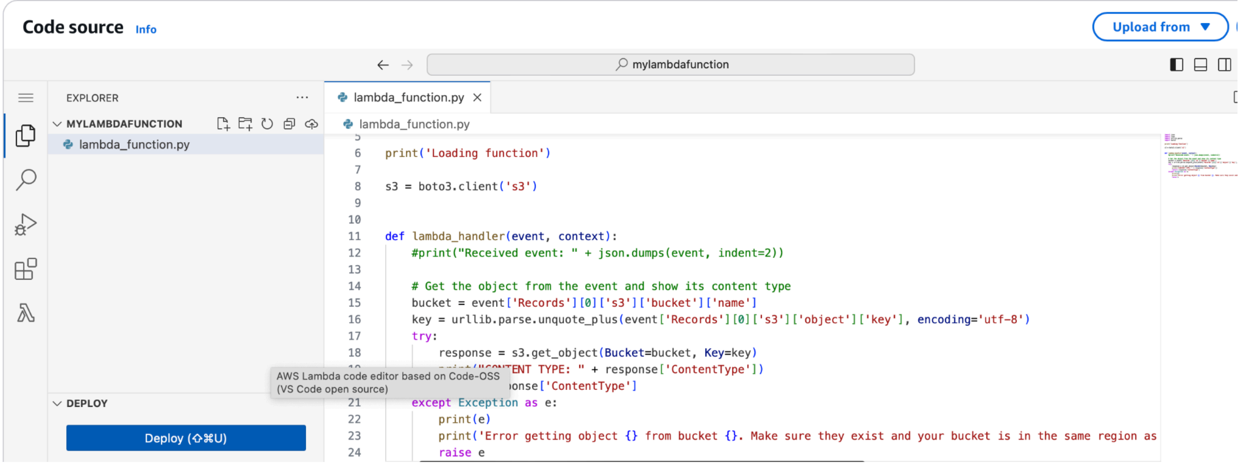
Successfully created the function **mylambdafunction**. You can now change its code and configuration. To invoke your function with a test event, choose "Test".

⚠ You have undeployed changes.

```
import json
import json
import urllib.parse
import boto3

print('Loading function')

s3 = boto3.client('s3')


def lambda_handler(event, context):
    #print("Received event: " + json.dumps(event, indent=2))

    # Get the object from the event and show its content type
    bucket = event['Records'][0]['s3']['bucket']['name']
    key = urllib.parse.unquote_plus(event['Records'][0]['s3']['object']['key'], encoding='utf-8')
    try:
        response = s3.get_object(Bucket=bucket, Key=key)
        print("CONTENT TYPE: " + response['ContentType'])
        return response['ContentType']
    except Exception as e:
        print(e)
        print('Error getting object {} from bucket {}. Make sure they exist and your bucket is in the same region as
        raise e
```

Amazon Q Tip 1/3: Start typing to get suggestions ([ESC] to exit)

When lambda invoke the function, lambda runtime will pass two arguments that is event and context, event will have data about function to process ex information about s3 bucket and event will print content type like text images.



```
print('Loading function')

s3 = boto3.client('s3')


def lambda_handler(event, context):
    #print("Received event: " + json.dumps(event, indent=2))

    # Get the object from the event and show its content type
    bucket = event['Records'][0]['s3']['bucket']['name']
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    try:
        response = s3.get_object(Bucket=bucket, Key=key)
        print("CONTENT TYPE: " + response['ContentType'])
        return response['ContentType']
    except Exception as e:
        print(e)
        print('Error getting object {} from bucket {}. Make sure they exist and your bucket is in the same region as
        raise e
```
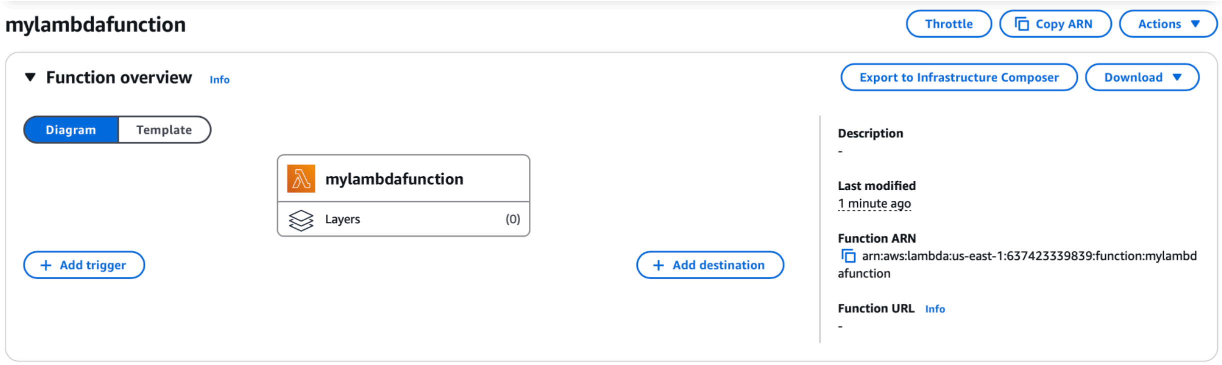

Click on Deploy to deploy the code.

We have added a piece of code, now we need to add trigger

Go to add trigger



mylambdafunction

Function overview Info

mylambdafunction

Layers (0)

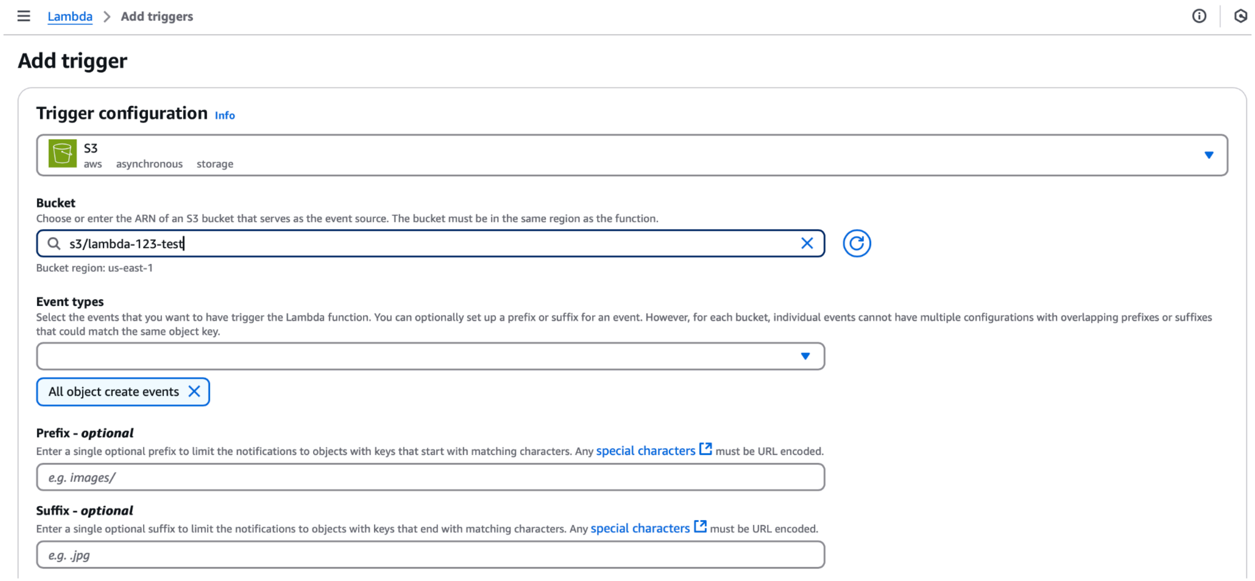
Description
-

Last modified
1 minute ago

Function ARN
arn:aws:lambda:us-east-1:637423339839:function:mylambdafunction

Function URL Info
-

Select S3



Add trigger

Trigger configuration Info

S3
aws asynchronous storage

Bucket
Choose or enter the ARN of an S3 bucket that serves as the event source. The bucket must be in the same region as the function.

s3/lambda-123-test

Bucket region: us-east-1

Event types
Select the events that you want to have trigger the Lambda function. You can optionally set up a prefix or suffix for an event. However, for each bucket, individual events cannot have multiple configurations with overlapping prefixes or suffixes that could match the same object key.

All object create events

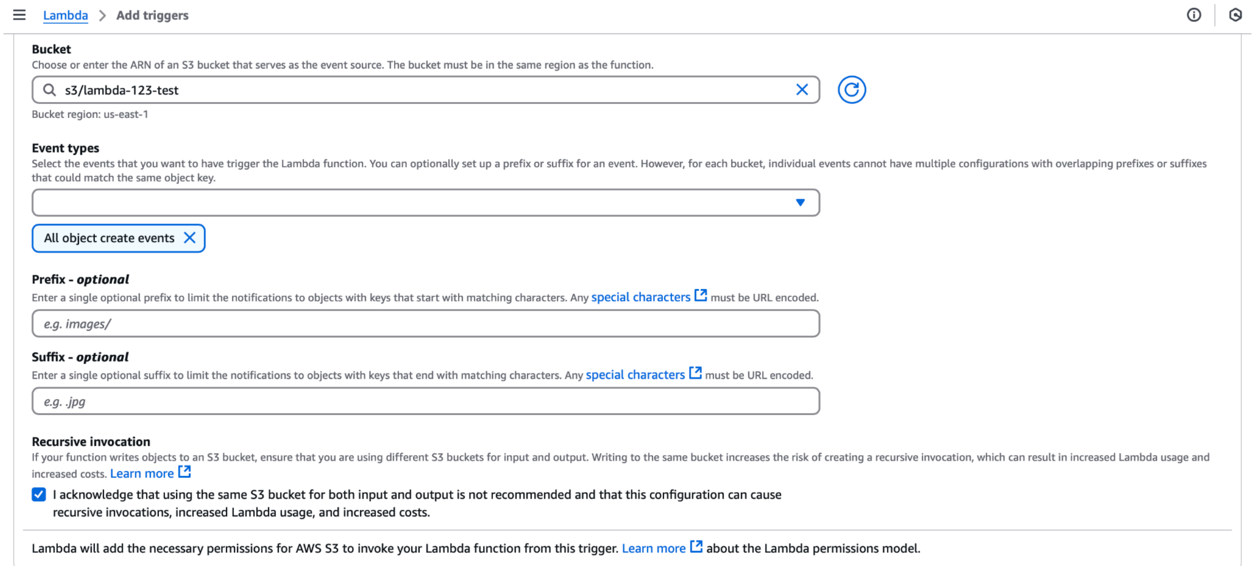
Prefix - *optional*
Enter a single optional prefix to limit the notifications to objects with keys that start with matching characters. Any special characters must be URL encoded.

e.g. images/

Suffix - *optional*
Enter a single optional suffix to limit the notifications to objects with keys that end with matching characters. Any special characters must be URL encoded.

e.g. .jpg

Click on acknowledgement



Bucket

Choose or enter the ARN of an S3 bucket that serves as the event source. The bucket must be in the same region as the function.

s3/lambda-123-test

Bucket region: us-east-1

Event types

Select the events that you want to have trigger the Lambda function. You can optionally set up a prefix or suffix for an event. However, for each bucket, individual events cannot have multiple configurations with overlapping prefixes or suffixes that could match the same object key.

All object create events ✕

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e.g. images/

Suffix - *optional*

Enter a single optional suffix to limit the notifications to objects with keys that end with matching characters. Any special characters must be URL encoded.

e.g. .jpg

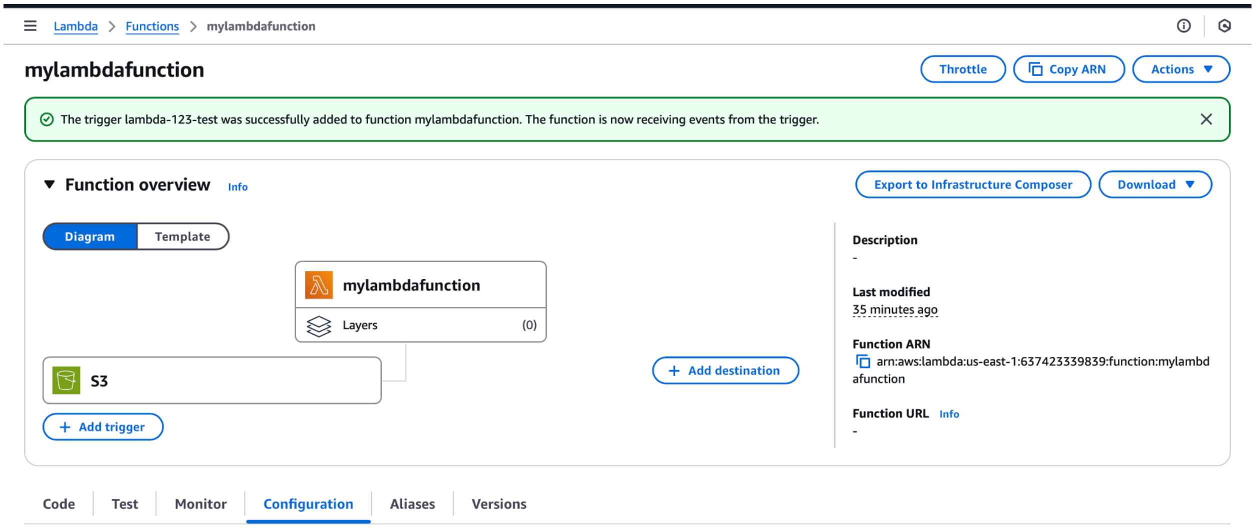
Recursive invocation

If your function writes objects to an S3 bucket, ensure that you are using different S3 buckets for input and output. Writing to the same bucket increases the risk of creating a recursive invocation, which can result in increased Lambda usage and increased costs. Learn more

☑ I acknowledge that using the same S3 bucket for both input and output is not recommended and that this configuration can cause recursive invocations, increased Lambda usage, and increased costs.

Lambda will add the necessary permissions for AWS S3 to invoke your Lambda function from this trigger. Learn more about the Lambda permissions model.

Click on Add



mylambdafunction

The trigger lambda-123-test was successfully added to function mylambdafunction. The function is now receiving events from the trigger.

Description

-

Last modified

35 minutes ago

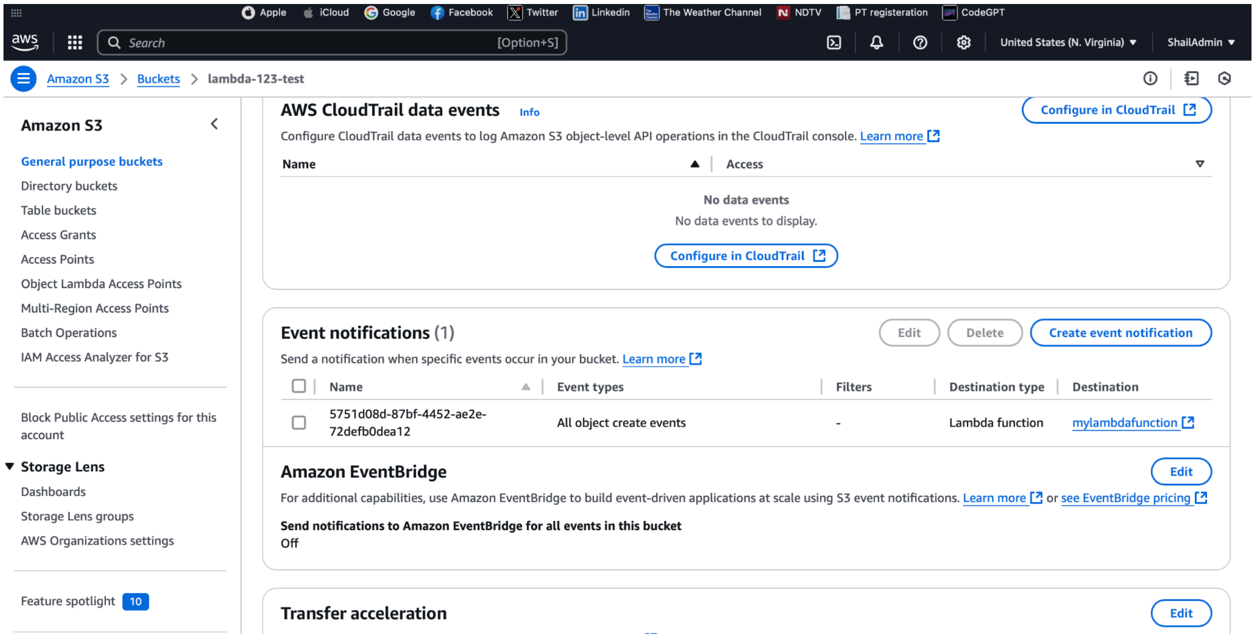
Function ARN

arn:aws:lambda:us-east-1:637423339839:function:mylambdafunction

Function URL Info

-

If you check s3 buckets > Choose your bucket > Properties



AWS CloudTrail data events Info

Configure in CloudTrail

Configure CloudTrail data events to log Amazon S3 object-level API operations in the CloudTrail console. Learn more

Name	Access

No data events

No data events to display.

Configure in CloudTrail

Event notifications (1)

Edit Delete Create event notification

Send a notification when specific events occur in your bucket. Learn more

□	Name	Event types	Filters	Destination type	Destination
□	5751d08d-87bf-4452-ae2e-72defb0dea12	All object create events	-	Lambda function	mylambdafunction

Amazon EventBridge

Edit

For additional capabilities, use Amazon EventBridge to build event-driven applications at scale using S3 event notifications. Learn more or see EventBridge pricing

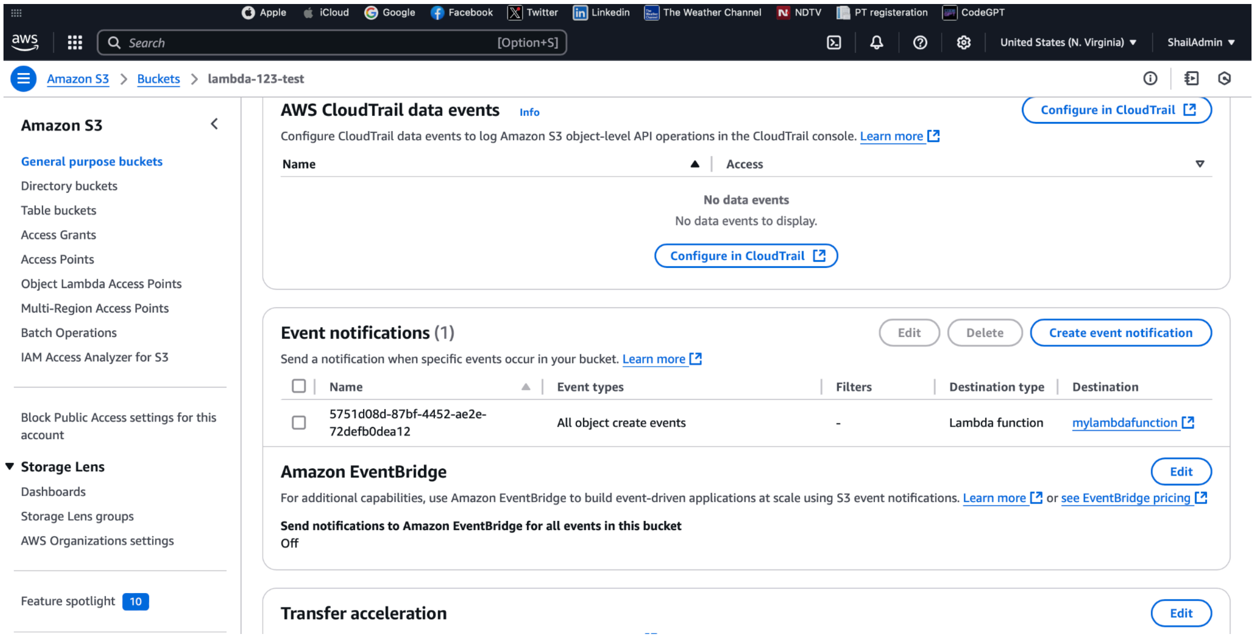
Send notifications to Amazon EventBridge for all events in this bucket
Off

Transfer acceleration

Edit

You will find an event notifications

Under lambda > Lambda function name > configuration > permission
Click on view Policy



AWS CloudTrail data events Info

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Event notifications (1)

Edit | Delete | Create event notification

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Amazon EventBridge

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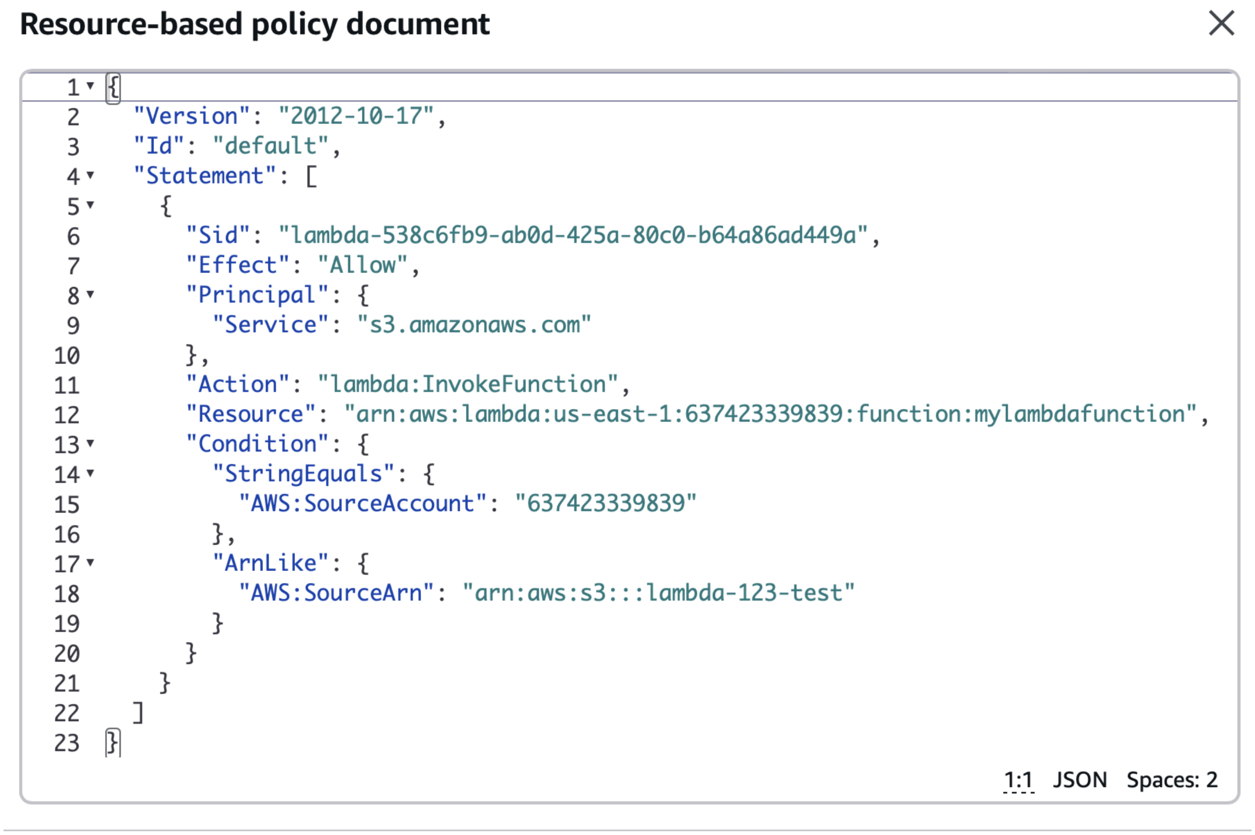
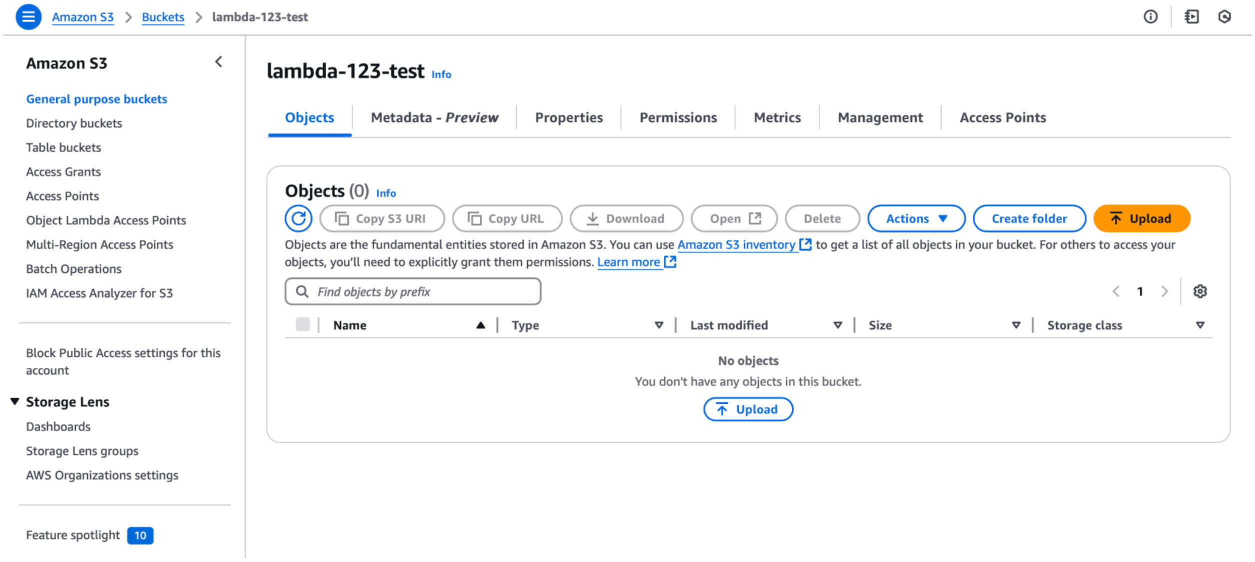


Resource-based policy document

```
{
  "Version": "2012-10-17",
  "Id": "default",
  "Statement": [
    {
      "Sid": "lambda-538c6fb9-ab0d-425a-80c0-b64a86ad449a",
      "Effect": "Allow",
      "Principal": {
        "Service": "s3.amazonaws.com"
      },
      "Action": "lambda:InvokeFunction",
      "Resource": "arn:aws:lambda:us-east-1:637423339839:function:mylambdafunction",
      "Condition": {
        "StringEquals": {
          "AWS:SourceAccount": "637423339839"
        },
        "ArnLike": {
          "AWS:SourceArn": "arn:aws:s3:::lambda-123-test"
        }
      }
    }
  ]
}
```

Explanation of what we did now

To test go to s3 bucket and upload a file



lambda-123-test Info

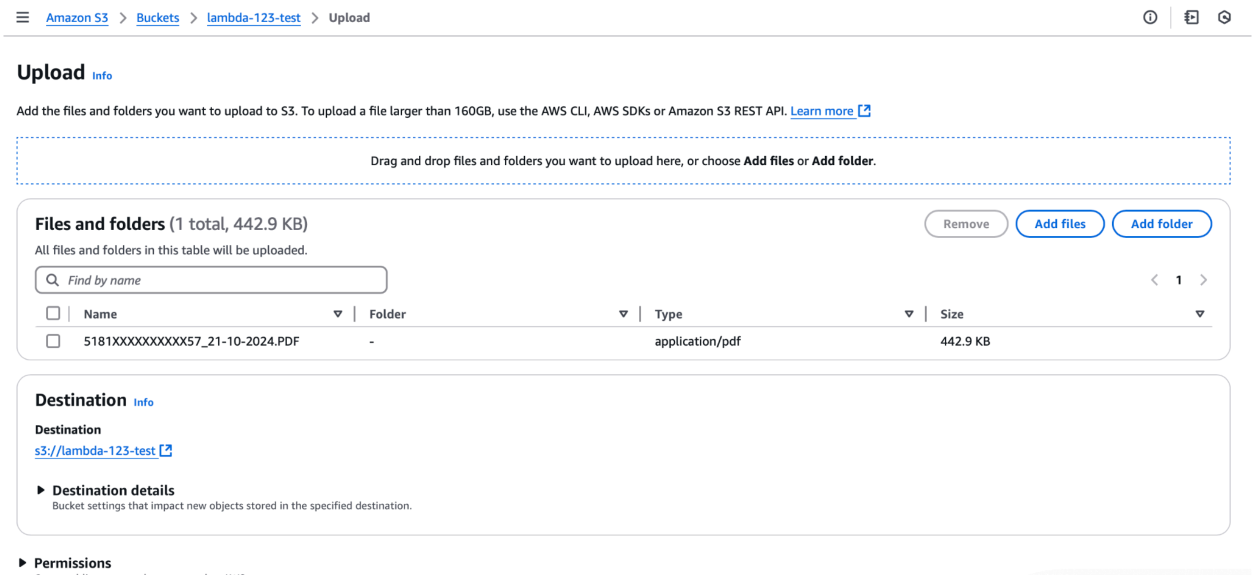
Objects (0) Info

Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more

Name	Type	Last modified	Size	Storage class

No objects

You don't have any objects in this bucket.



Upload Info

Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDKs or Amazon S3 REST API. Learn more

Drag and drop files and folders you want to upload here, or choose **Add files** or **Add folder**.

Files and folders (1 total, 442.9 KB)

All files and folders in this table will be uploaded.

Name	Folder	Type	Size
5181XXXXXXXXXX57_21-10-2024.PDF	-	application/pdf	442.9 KB

Destination Info

Destination

s3://lambda-123-test

Destination details

Bucket settings that impact new objects stored in the specified destination.

Permissions

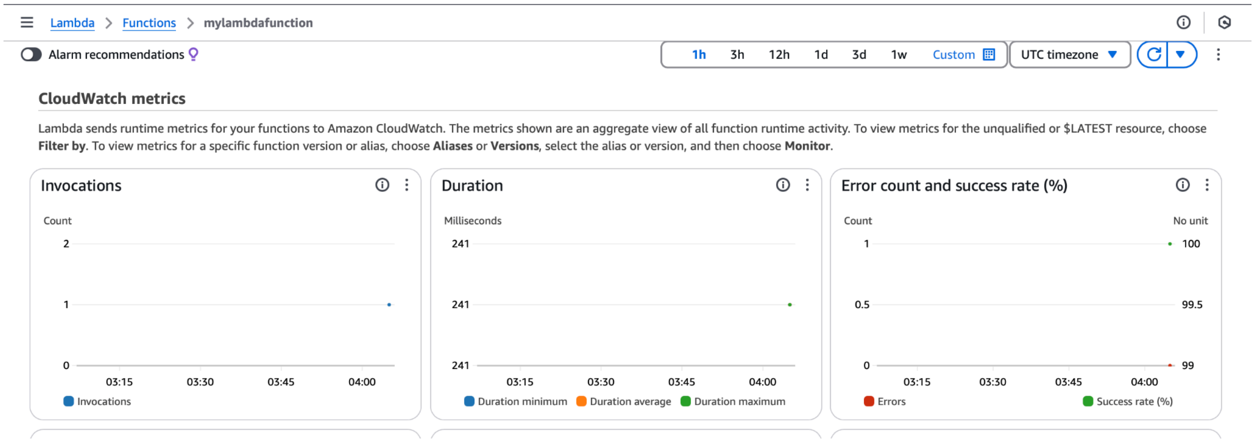
Upload the file. This will trigger lambda function

We will go to lambda function > Monitor > then select custom time 1 hour.

And refresh

It may take some time to be visible

You will find invocation as 1



CloudWatch metrics

Lambda sends runtime metrics for your functions to Amazon CloudWatch. The metrics shown are an aggregate view of all function runtime activity. To view metrics for the unqualified or $LATEST resource, choose **Filter by**. To view metrics for a specific function version or alias, choose **Aliases** or **Versions**, select the alias or version, and then choose **Monitor**.

You can also check logs