Module 9: Lambda Assignment

Problem Statement:

You work for XYZ Corporation. Your corporation wants to launch a new web-based application and they do not want their servers to be running all the time. It should also be managed by AWS. Implement suitable solutions.

Tasks To Be Performed:

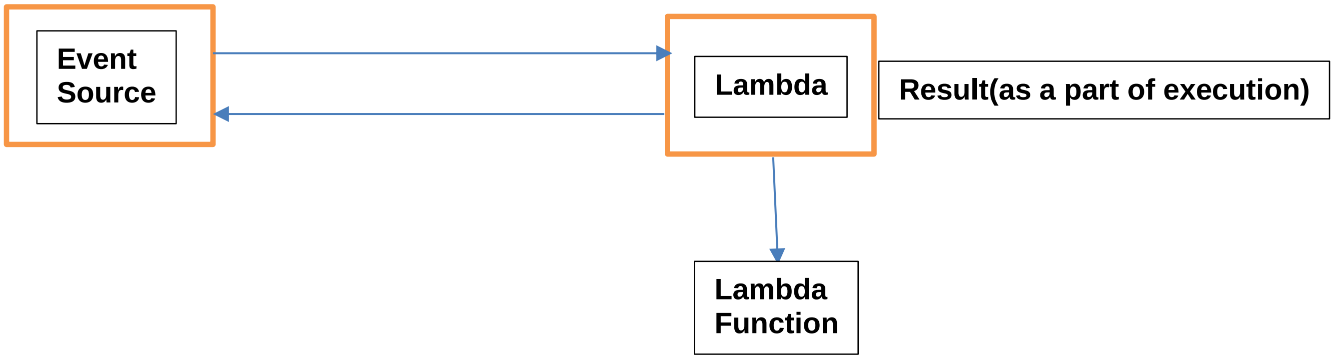
1. Create a sample Python Lambda function.
2. Set the Lambda Trigger as SQS and send a message to test invocations.

Solutions

LAMBDA- It is an event-driven serverless computing service, in simple words Lambda is used for processing pieces of code, and it is also used for integration. Here serverless means without managing the servers or infrastructure or without having visibility into the underlying infrastructure. Here EC2 and Lambda both compute services but the difference is that EC2 is not serverless, we have to manage the infrastructure when we launch an EC2, but that is not the case for Lambda.

Lambda has an identifier called Lambda function, Lambda function is nothing but a piece of code written by the developer and it provides support for different programming languages.

Lambda Architecture



Event source means the source which will invoke/call the Lambda, Lambda will run the Lambda function which will develop by the developer and the result will be there as a part of execution. Since Lambda needs to be invoked/called, it needs to read the data or Lambda will be needed to interact with the source, e.g. let's say I have the S3 bucket and I also have Lambda function. I need to print the content type of the object added to the S3 bucket. Content type means file extension, which means as soon as there is any put event in the S3 bucket, S3 will invoke the Lambda, Lambda will read the content and execute the Lambda function and according to the codes, Lambda will give the result.

Here we will create a bucket first, Management console→ S3→Create Bucket→Bucket Name →Region→Create bucket.

Steps to create Lambda function

Since it is a regional service, so we must select a valid region.
Go to management console→ Search Lambda → Create a function→Author from scratch → Function Name→Runtime (Python3.9)→ Architecture(x86_64) → Change default execution role(Here Lambda has to integrate with the AWS resources and also Lambda has to read the objects from the S3, and second thing is that lambda has to print the content type i.e. the file extension and the print statement will be available in the Cloudwatch logs, so Lambda needs the access to Cloudwatch, so we give admin access permission that lambda needs), so for that, I need to go to the IAM console and then Roles→ Create Roles→ AWS Service → use case (Lambda)→ Next→permissions →Role Name (DemoLambda)→Create Role.

Now go to the Lambda function→Select use an existing role→Existing role (select the role that we created just as 'DemoLambda')→ Create Function.

Now for adding a trigger, we need to create an S3 bucket first, so after creating the S3 bucket go to Lambda function→ Click on Add trigger→Source(S3)→Put the bucket that you already created→ Tick the I acknowledge→ Add (Now trigger got added to the Lambda function)

Putting up the Lambda code
Go to the Lambda function→code→ Write the codes→Deploy

```python
import json
import boto3
import urllib

def lambda_handler(event, context):
    s3_client = boto3.client('s3')
    bucket_name = event['Records'][0]['s3']['bucket']['name']
    key = event['Records'][0]['s3']['object']['key']
    key = urllib.parse.unquote_plus(key, encoding='utf-8')

    message = 'File' + key + ' is successfully uploaded in bucket ' + bucket_name
    print(message)

    response = s3_client.get_object(Bucket=bucket_name,Key=key)
    contents = response["Body"].read().decode()
    contents = json.loads(contents)

    print("The data in the file is: \n", contents)
```

Now upload a json file to the Bucket, go to the Lambda function →Monitor→View in Cloud watch, and here logs group will be created in the Lambda function. In the log stream, we will able to see that object has been uploaded.

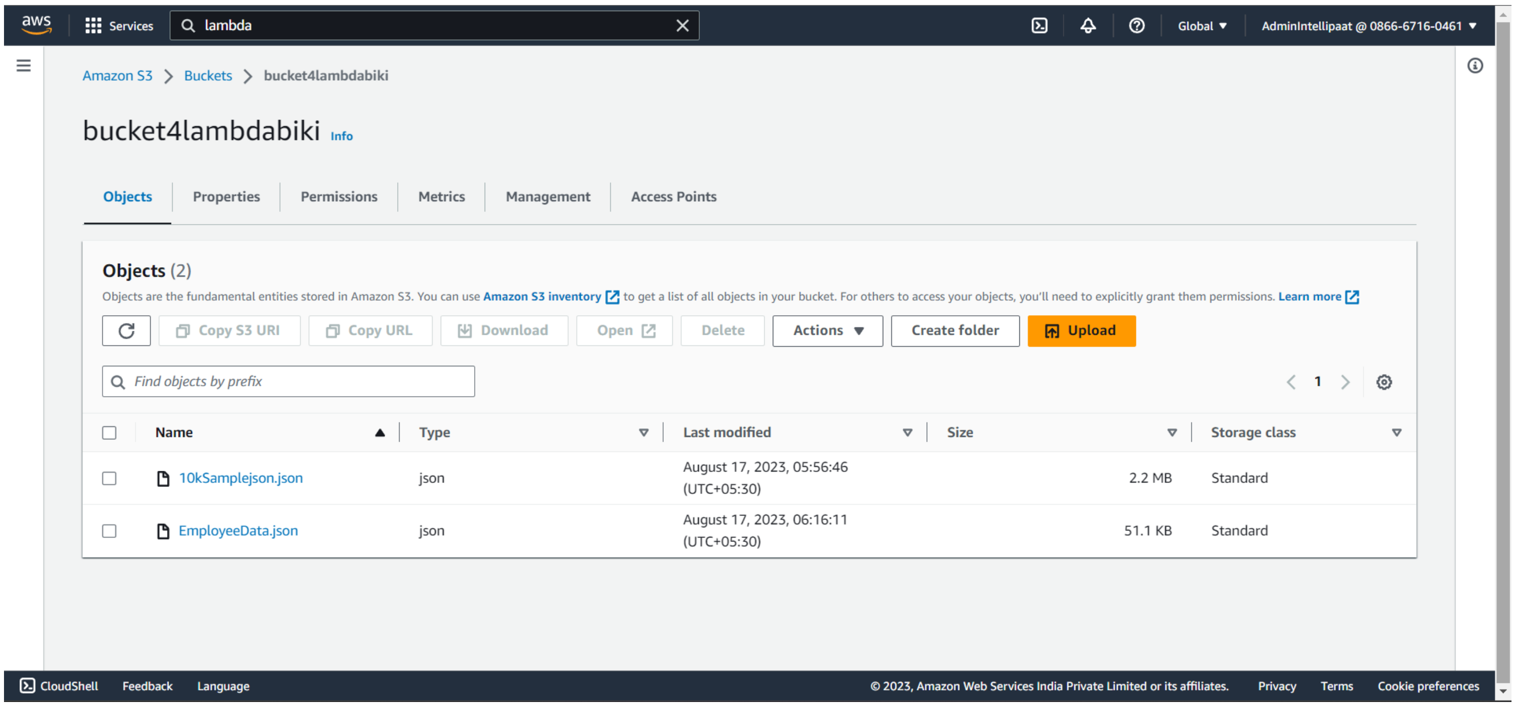
Now its time to add the destination, but before going to add the destination we have to create SQS queue.

Steps to create SQS

- Go to the management console, search SQS.
- Create Que.
- Put the Name.
- Server-side encryption- Disabled.
- Create Que.

Now, time to add a Destination, click on Add Destination→ source(Async)→Condition(on success)→Destination type(SQS queue)→refresh the destination, and you will see the SQS.

Results



Objects (2)

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
10kSamplejson.json	json	August 17, 2023, 05:56:46 (UTC+05:30)	2.2 MB	Standard
EmployeeData.json	json	August 17, 2023, 06:16:11 (UTC+05:30)	51.1 KB	Standard

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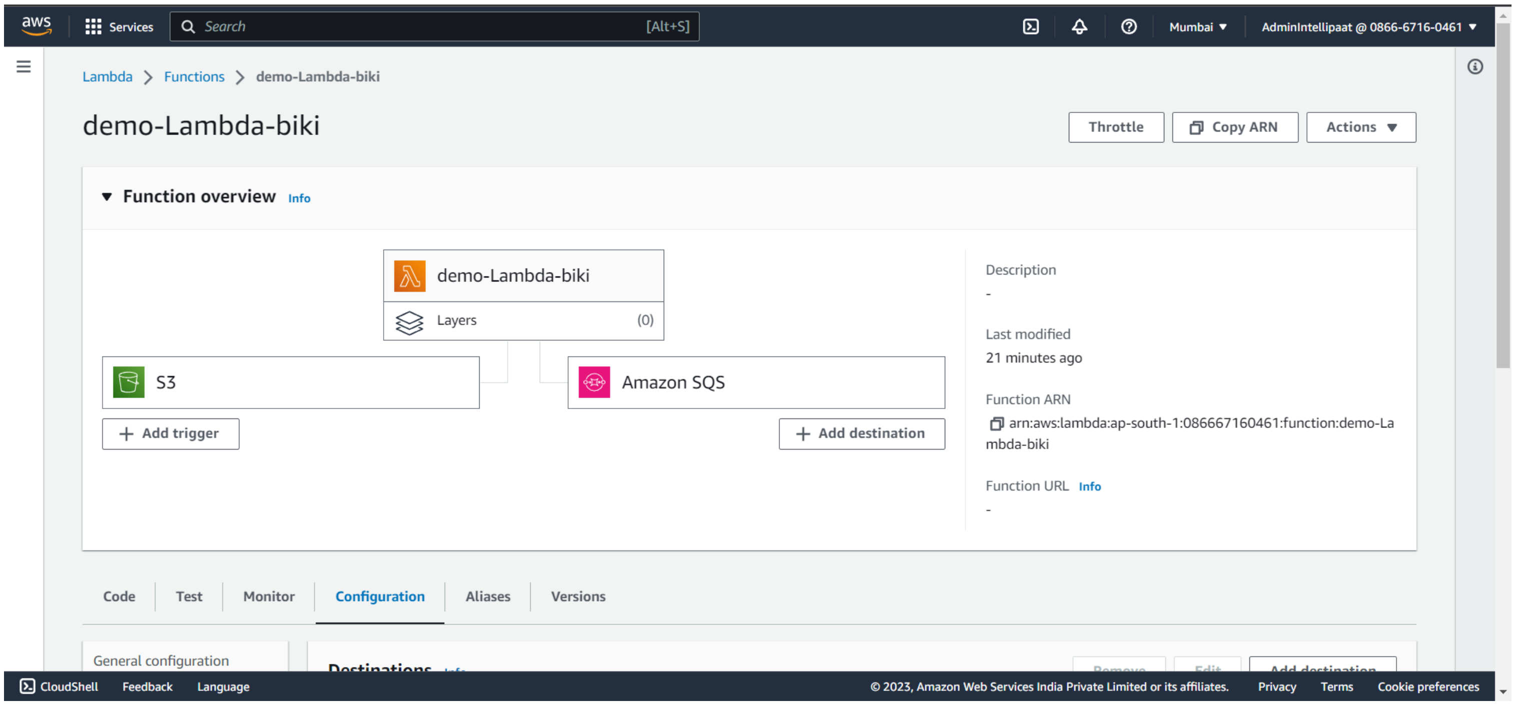


Lambda > Functions > demo-Lambda-biki

demo-Lambda-biki

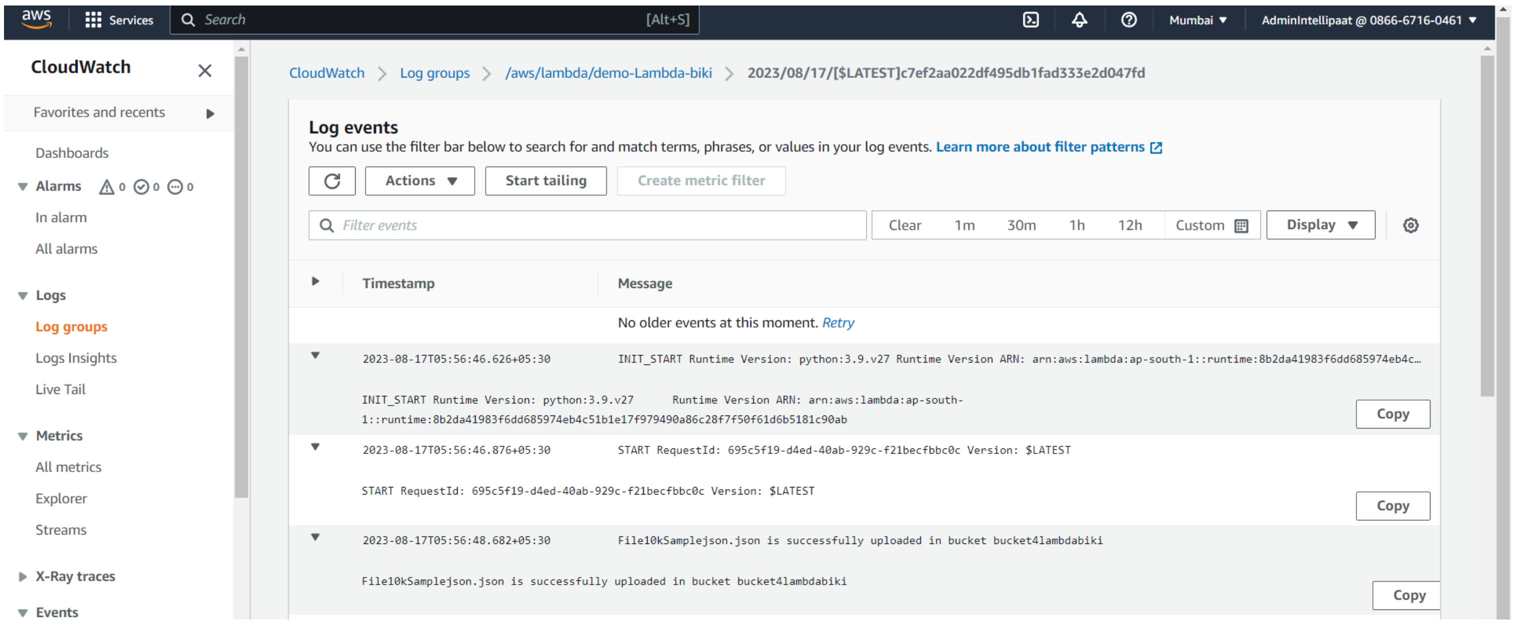
Function overview

Description
-

Last modified
21 minutes ago

Function ARN
arn:aws:lambda:ap-south-1:086667160461:function:demo-Lambda-biki

Function URL
-

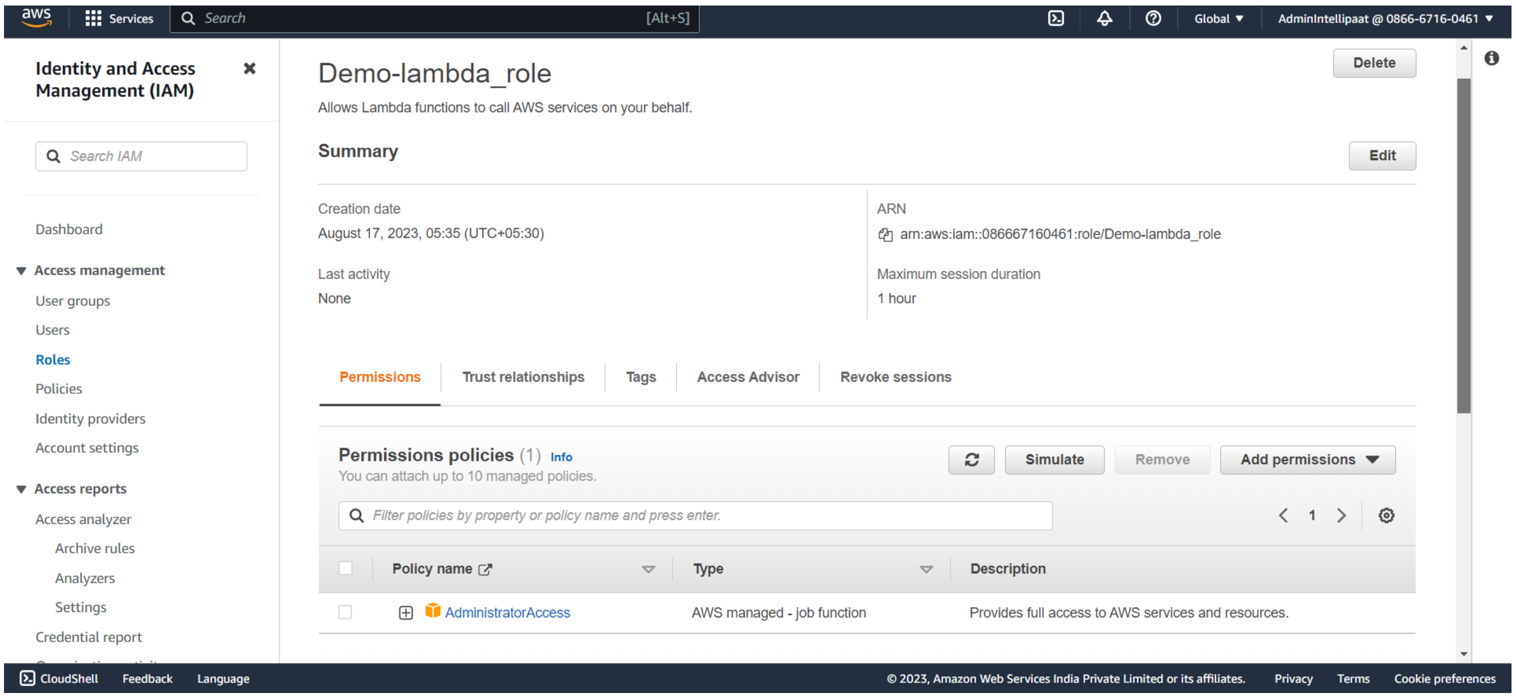


CloudWatch > Log groups > /aws/lambda/demo-Lambda-biki > 2023/08/17/[$LATEST]c7ef2aa022df495db1fad333e2d047fd

Log events

You can use the filter bar below to search for and match terms, phrases, or values in your log events. Learn more about filter patterns

```
Timestamp                        Message
                                 No older events at this moment. Retry
2023-08-17T05:56:46.626+05:30    INIT_START Runtime Version: python:3.9.v27 Runtime Version ARN: arn:aws:lambda:ap-south-1::runtime:8b2da41983f6dd685974eb4c…

INIT_START Runtime Version: python:3.9.v27      Runtime Version ARN: arn:aws:lambda:ap-south-
1::runtime:8b2da41983f6dd685974eb4c51b1e17f979490a86c28f7f50f61d6b5181c90ab

2023-08-17T05:56:46.876+05:30    START RequestId: 695c5f19-d4ed-40ab-929c-f21becfbbc0c Version: $LATEST

START RequestId: 695c5f19-d4ed-40ab-929c-f21becfbbc0c Version: $LATEST

2023-08-17T05:56:48.682+05:30    File10kSamplejson.json is successfully uploaded in bucket bucket4lambdabiki

File10kSamplejson.json is successfully uploaded in bucket bucket4lambdabiki
```



Demo-lambda_role

Allows Lambda functions to call AWS services on your behalf.

Summary

Creation date
August 17, 2023, 05:35 (UTC+05:30)

ARN
arn:aws:iam::086667160461:role/Demo-lambda_role

Last activity
None

Maximum session duration
1 hour

Permissions policies (1)
You can attach up to 10 managed policies.

Filter policies by property or policy name and press enter.

Policy name	Type	Description
AdministratorAccess	AWS managed - job function	Provides full access to AWS services and resources.

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