

## Data processing app

### How it works — Step by Step

1. Creates VPC → 2 public subnets in different AZs (mandatory for RDS).
2. Creates RDS MySQL DB in those subnets, publicly accessible.
3. Creates S3 bucket for demo data.
4. Creates Lambda with permissions for:
  - S3 (write files)
  - RDS (read/connect)
  - CloudWatch logs
5. Lambda environment variables include DB connection info.
6. When you manually invoke the Lambda:
  - It uploads a file to the S3 bucket.
  - Tries connecting to the RDS DB and runs SELECT NOW();
  - Logs everything to CloudWatch.
7. CloudWatch Alarms:
  - Trigger if Lambda throws errors.
  - Trigger if RDS CPU utilization > 70%.

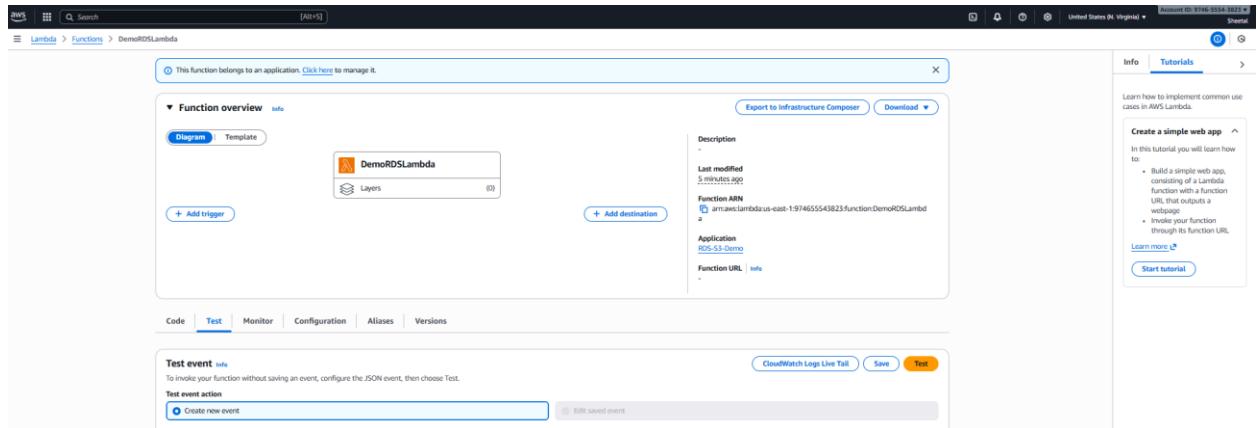
### To Deploy

1. Save the file as rds-s3-lambda-demo.yaml.
2. In AWS Console → CloudFormation → Create stack → With new resources (standard).
3. Upload the file.
4. Provide DB username & password.
5. Deploy.

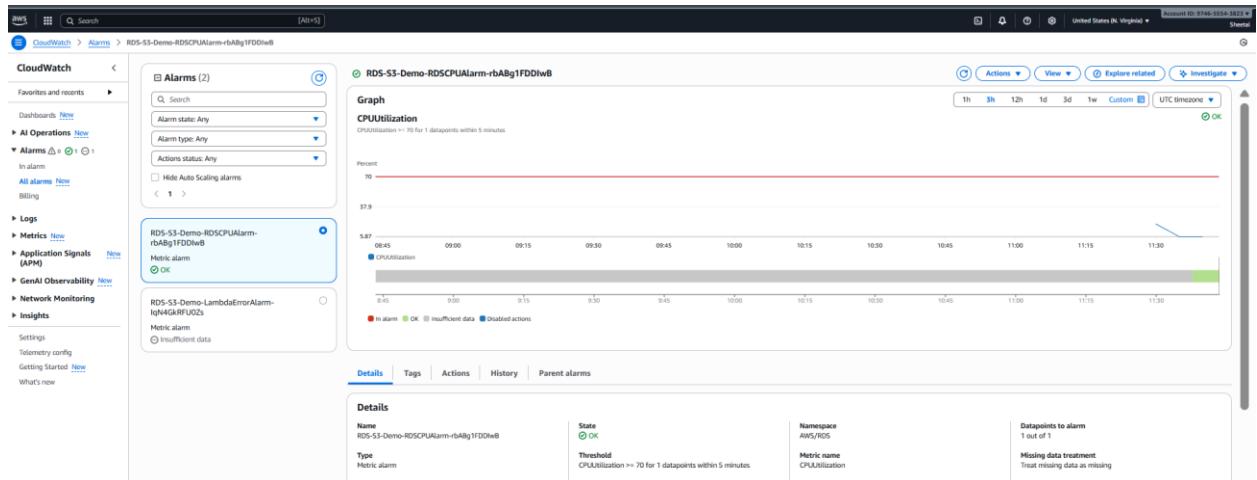
### To Test the Application

## 1 Invoke Lambda manually

- Go to AWS Lambda → DemoRDSLambda → Test → Create test event → Run

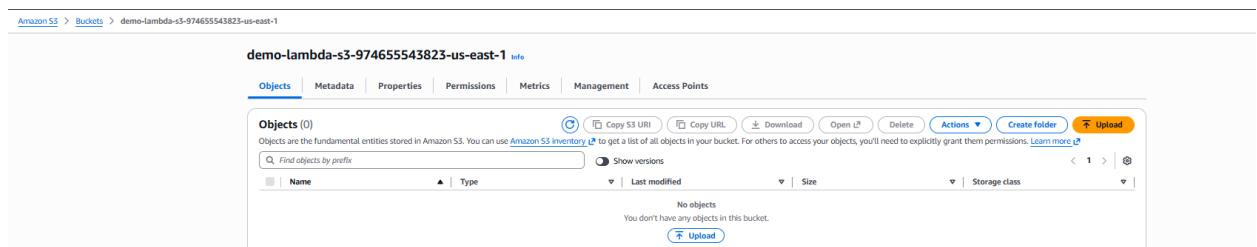


- Check CloudWatch Logs for output.



## 2 Verify S3

- Go to S3 console → demo-lambda-s3-... bucket



The screenshot shows the AWS Lambda console with a success message: "Upload succeeded. For more information, see the Files and folders table." Below this, there's a summary table with two rows: "Succeeded" (1 file, 22.0 B) and "Failed" (0 files, 0 B). At the bottom, there are tabs for "Files and folders" and "Configuration". Under "Files and folders", a table lists a single file named "test1.csv" with a size of 22.0 B and a status of "Succeeded".

### 3 Verify RDS

- Use a MySQL client to connect:
- `mysql -h <RDS_ENDPOINT> -u admin -p`

```
~ $ mysql -h rds-s3-demo-demodb-xcxvo12gxpvm.c8lq0iok4a48.us-east-1.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MySQL connection id is 28
Server version: 8.0.42 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
```

(password = what you entered)

- Run `SELECT NOW();` to confirm DB is running.

```
ERROR 1064 (42000): You have an error in your SQL syntax;
MySQL [(none)]> SELECT NOW();
+-----+
| NOW() |
+-----+
| 2025-11-06 11:40:44 |
+-----+
1 row in set (0.001 sec)

MySQL [(none)]>
```

### 4 Check CloudWatch Alarms

- CloudWatch → Alarms  
You'll see two alarms (one for Lambda, one for RDS).

