



ACA Module 13

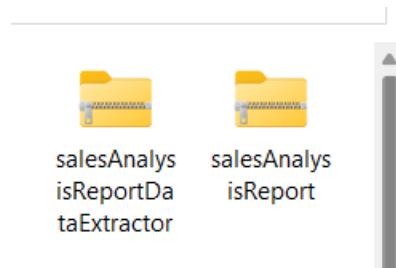
Challenge Lab

COS 20019- Cloud Computing Architecture

Nguyen Manh Dung

5/7/2023

Task 1: Downloading the source code



Answering questions about the lab

The screenshot shows a series of five questions from the AWS Academy Cloud Architecting - Module 13 Challenge Lab Questions:

- Question 1: Why does the salesAnalysisReportDataExtractor.zip file have a package folder?**

It's an optional folder to improve caching within the Lambda function
 The folder contains any Python packages that are used by the Lambda function
 This folder contains debugging information for Python
 This folder is a required folder for Lambda functions that are deployed to a VPC

Submit
- Question 2: Why must the salesAnalysisReportDataExtractor be in a VPC?**

The Lambda function must be able to communicate with the web server instance
 The Lambda function must be able to communicate with the RDS instance
 This Lambda function must be set up differently than the other Lambda function
 This Lambda function must be able to communicate with an email server

Submit
- Question 3: Could the topicARN be stored as an AWS Systems Manager parameter instead of as an environment variable (assuming that the code could be updated)?**

Yes
 No

Submit
- Question 4: Will you receive an email message if you do not confirm the topic subscription?**

Yes
 No

Submit
- Question 5: Frank tells you that he hasn't received an email report in the last few days. What could you do to troubleshoot this issue?**

Restart the Lambda function because it might be stuck
 Update the Python version
 Use the logs from Amazon CloudWatch Logs and review them for errors
 Use the AWS CloudTrail logs and review them for errors

The browser status bar shows: Not secure | c84296a179549914382527t1w085986525307.htmlbucket-nof53qncmw9.s3-website.us-east-1.amazonaws.com

Task 2: Creating the DataExtractor Lambda function in the VPC

Create Security Group

The screenshot shows two browser windows side-by-side. The left window is the AWS Academy assignment page for 'Module 13 Challenge Lab - Implementing a Serverless Architecture for the Cafe'. It displays step 9, which involves creating a security group for the Lambda function. Step 10, 'Update the DatabaseSG security group.', is highlighted. The right window is the EC2 Management Console showing the creation of a new security group named 'LambdaSG'. The details pane shows the security group name, VPC ID, owner, and inbound rules count. The inbound rules tab is selected, showing one rule that allows traffic from the RDS security group 'sg-0a855910e15cfb21b' on port 3306 via TCP.

Update the DatabaseSG security group.

This screenshot shows the same two browser windows. The left window now shows step 10, 'Update the DatabaseSG security group.', which is the focus. The right window shows the EC2 Management Console with the 'Inbound rules' tab selected for the 'DatabaseSG' security group. Two new inbound rules are being configured: one for MySQL/Aurora on port 3306 with a custom source type and one for MySQL/Aurora on port 3306 with a source type of 'sg-0a1f3c0b8815c7c0d'.

Create a Lambda function

The screenshot shows two windows side-by-side. On the left is a browser window for 'awsacademy.instructure.com' displaying the 'Module 13 Challenge Lab - Implementing a Serverless Architecture for the Cafe' assignment. It lists steps 11 and 12 for creating a Lambda function. Step 11 requires creating a Lambda function with specific settings like VPC, role, and security group. Step 12 requires configuring the DataExtractor Lambda function. On the right is a browser window for 'us-east-1.console.aws.amazon.com' showing the 'Create function' wizard. The 'Basic information' step has 'Function name' set to 'SalesAnalysisReportDataExtractor', 'Runtime' set to 'Python 3.8', and 'Architecture' set to 'x86_64'. The 'Permissions' step shows the 'SalesAnalysisReportDERole' selected. Both windows have a toolbar at the bottom with various icons.

This screenshot is similar to the one above, showing the challenge lab assignment on the left and the Lambda function creation interface on the right. The assignment page shows steps 9 through 12. Step 9 involves creating a security group for the Lambda function. Step 10 involves updating the 'DatabaseSG' security group. Step 11 involves creating a Lambda function with specific settings. Step 12 involves configuring the DataExtractor Lambda function. The Lambda function creation interface shows the 'VPC' configuration step, where a VPC is selected and subnets are chosen. The 'Security groups' step shows a security group named 'LambdaSG' selected. Both windows have a toolbar at the bottom with various icons.

Upload code

The screenshot shows the AWS Academy assignment interface and the AWS Lambda function configuration interface side-by-side.

AWS Academy Assignment:

- Assignment: Module 13 Challenge Lab - Implementing a Serverless Architecture for the Cafe
- Task 14: Create a second Lambda function with the following settings:
 - Function name: salesAnalysisReport
 - Runtime: Python 3.8
 - Role: salesAnalysisReportRole
- Task 15: Configure the salesAnalysisReport Lambda function as follows:
 - Code: Upload the salesAnalysisReport.zip file
 - Description: Lambda function to generate and send the daily sales report
 - Handler: salesAnalysisReport.lambda_handler
 - Memory Size: 128 MB
 - Timeout (seconds): 30
- Task 4: Creating an SNS topic**
- Task 16: Create a standard SNS topic with the following configuration

AWS Lambda Function Overview:

- Function Name: salesAnalysisReportDataExtractor
- Description: Lambda function to generate and send the daily sales report
- Last modified: 1 minute ago
- Code: salesAnalysisReportDataExtractor.zip (113.79 KB)
- Action: Save

Configure Description

The screenshot shows the AWS Academy assignment interface and the AWS Lambda function configuration interface side-by-side.

AWS Academy Assignment:

- Assignment: Module 13 Challenge Lab - Implementing a Serverless Architecture for the Cafe
- Task 12: Configure the DataExtractor Lambda function as follows:
 - Code: Upload the salesAnalysisReportDataExtractor.zip file
 - Description: Lambda function to extract data from database
 - Handler: salesAnalysisReportDataExtractor.lambda_handler
 - Memory Size: 128 MB
 - Timeout (seconds): 30
- Task 13: Return to the browser tab with the multiple-choice questions for this lab, and answer the following question:
 - Question 2: Why must the salesAnalysisReportDataExtractor be in a VPC?
- Task 3: Creating the salesAnalysisReport Lambda function**
- In this task, you will create the Lambda function that generates and sends the daily sales

AWS Lambda Basic Settings:

- Description: Lambda function to extract data from database
- Memory: 128 MB
- Ephemeral storage: 512 MB
- SnapStart: None
- Timeout: 0 min 30 sec
- Execution role: Use an existing role (selected)
- Existing role: salesAnalysisReportDERole

Edit Handler

The screenshot shows two windows side-by-side. On the left is the AWS Academy challenge lab for 'Module 13 Challenge Lab - Implementing a Serverless Architecture for the Cafe'. It displays instructions for creating a Lambda function, including details like VPC, subnets, security group, and handler. On the right is the AWS Lambda 'Edit runtime settings' dialog, which shows a message about a new Python 3.10 runtime available. The Lambda function name is 'SalesAnalysisReportDataExtractor.lambda_handler'.

Task 3: Creating the salesAnalysisReport Lambda function

Create a second Lambda function

The screenshot shows two windows side-by-side. On the left is the AWS Academy challenge lab for 'Module 13 Challenge Lab - Implementing a Serverless Architecture for the Cafe'. It displays instructions for creating a second Lambda function, including details like function name, runtime, and role. On the right is the AWS Lambda 'Create function' dialog, where a new function named 'salesAnalysisReport' is being created with Python 3.8 as the runtime and 'Author from scratch' selected.

Upload code

The screenshot shows two browser windows. The left window is an assignment page from AWS Academy titled 'Module 13 Challenge Lab - Implementing a Serverless Architecture for the Cafe'. It includes instructions for creating a second Lambda function named 'salesAnalysisReport' with specific settings like Python 3.8 runtime and a memory size of 1.28 MB. The right window is the AWS Lambda console, showing the 'Edit basic settings' for the 'salesAnalysisReport' function. A modal dialog is open for uploading a .zip file, which contains the Lambda function code. The AWS Lambda interface shows the ARN of the function and its configuration options.

Configure Description and Timeout

This screenshot shows the same setup as the previous one, but with the configuration dialog for the 'salesAnalysisReport' Lambda function open. In the 'Basic settings' tab, the 'Description' field is populated with 'Lambda function to generate and send the daily sales report'. The 'Timeout' field is set to 30 seconds. Other configuration options like Memory, Ephemeral storage, and Snapshotting are also visible in the dialog.

Edit Handler

Task 4: Creating an SNS topic

Update the salesAnalysisReport Lambda function by adding the following environment variable:

The sales analysis report uses an SNS topic to send the report to email subscribers. In this task, you will create an SNS topic and update the environment variables of the salesAnalysisReport Lambda function to store the topic Amazon Resource Name (ARN).

16. Create a standard SNS topic with the following configuration:
 - o **Name:** SalesReportTopic
 - o **Display Name:** Sales Report Topic
17. Update the salesAnalysisReport Lambda function by adding the following environment variable:
 - o **Variable Name:** topicARN
 - o **Variable Value:** The ARN of the topic you just created
18. Return to the browser tab with the multiple-choice questions for this lab, and answer the following question:
 - o **Question 3:** Could the topicARN be stored as an AWS Systems Manager parameter instead of as an environment variable (assuming that the code could be updated)?

Task 5: Creating an email subscription to the SNS topic

Task 5: Creating an email subscription to the SNS topic

To receive the sales report through email, you must create an email subscription to the topic that you created in the previous task.

19. Create a new email subscription to the topic. Use an email address that you can easily access for this lab.
20. Confirm the email subscription from your email client.
Note: If you don't receive an email confirmation, check your **Junk** or **Spam** folder.
21. Return to the browser tab with the multiple-choice questions for this lab, and answer the following question:
 - o **Question 4:** Will you receive an email message if you do not confirm the topic subscription?

Task 6: Testing the salesAnalysisReport Lambda function

Task 6: Testing the salesAnalysisReport Lambda function

Task 6: Testing the salesAnalysisReport Lambda function

Before creating the daily reporting event, you must test that the salesAnalysisReport Lambda function works correctly.

22. Create a test for the salesAnalysisReport Lambda function.

Tip: You don't need to worry about parameters, so enter an event name and accept the default hello-world test event.

23. Run the salesAnalysisReport test. If the test succeeds, you should have an email report in a couple of minutes.

24. If the Lambda function test execution failed, use the logs to review any errors, address them, and run the test again. Here are some troubleshooting tips that you can try:

- Review the logs from Amazon CloudWatch Logs for both Lambda functions:
 - If you see an error about connecting to the café database, check that your security groups are configured correctly.
 - If you see an error about timeout, check that the timeout is set to 30 seconds.

Succeeded

function works correctly.

22. Create a test for the salesAnalysisReport Lambda function.

Tip: You don't need to worry about parameters, so enter an event name and accept the default hello-world test event.

23. Run the salesAnalysisReport test. If the test succeeds, you should have an email report in a couple of minutes.

24. If the Lambda function test execution failed, use the logs to review any errors, address them, and run the test again. Here are some troubleshooting tips that you can try:

- Review the logs from Amazon CloudWatch Logs for both Lambda functions:
 - If you see an error about connecting to the café database, check that your security groups are configured correctly.
 - If you see an error about timeout, check that the timeout is set to 30 seconds.
 - If you see an error about lambda_function not found, check that you have configured the correct handler.
- Review your work to make sure that you completed all the steps.
- Go to the Submitting your work section and follow the steps to submit your work. The submission report will show whether you completed the previous steps correctly.

Task 7: Setting up an Amazon EventBridge event to trigger the Lambda function each day

The screenshot shows two browser windows side-by-side. The left window is the AWS Academy challenge interface for 'Module 13 Challenge Lab - Implementing a Serverless Architecture for the Cafe'. It displays the task description: 'Task 7: Setting up an Amazon EventBridge event to trigger the Lambda function each day'. The right window is the AWS Lambda console under 'Amazon EventBridge > Rules > Create rule'. The 'Define rule detail' step is shown, with the rule name set to 'my-rule' and the event bus set to 'default'. The 'Rule type' section has the 'Schedule' option selected. Below the rule creation form, a note about 'EventBridge Scheduler - A new AWS scheduling capability!' is visible.

Select pattern

This screenshot continues from the previous one. The left window remains the same challenge interface. The right window now shows the 'Define schedule' step of the rule creation process. Under 'Schedule pattern', the 'A fine-grained schedule that runs at a specific time, such as 8:00 a.m. PST on the first Monday of every month.' option is selected. Below this, a cron expression is defined as '0 * ? * * *'. The 'Next' button is visible at the bottom of the right-hand form.

Select Target

Succeeded create rule