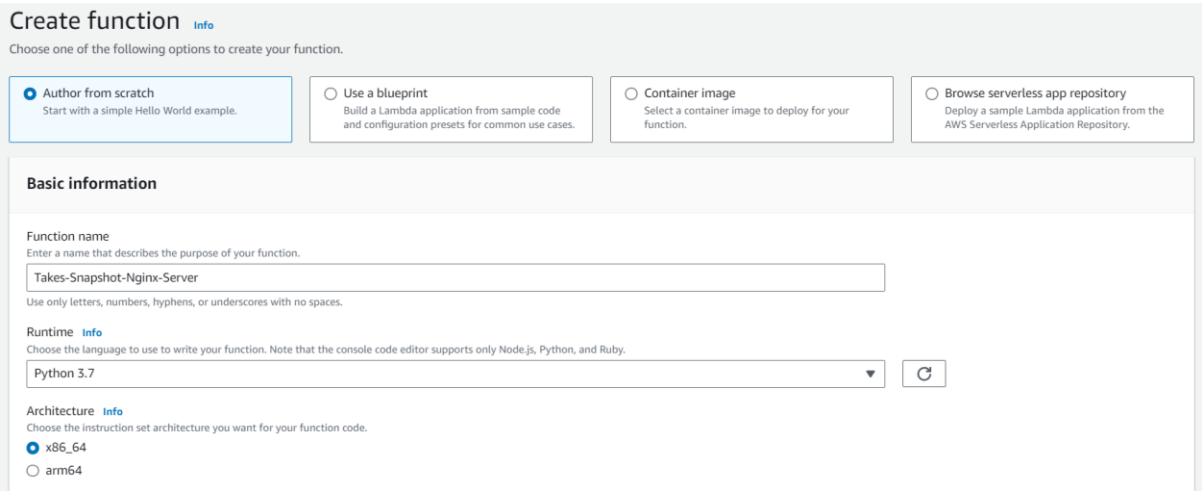
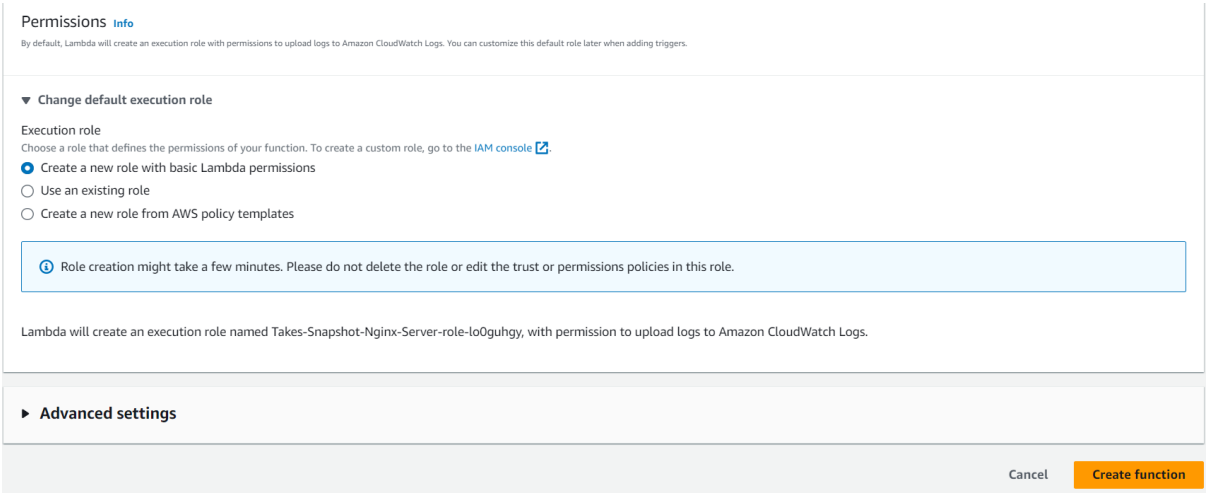
Automation and Scaling

It is important to backup monthly, weekly or daily to protect the data inside EC2 instances. For this, our goal is to ensure that snapshots are taken every day within the project.

AWS Lambda is a service that allows you to run code without dealing with server management or infrastructure. Lambda can interact with event triggers (e.g. file uploads, data updates, scheduled tasks) and automatically run the specified code when these events occur.

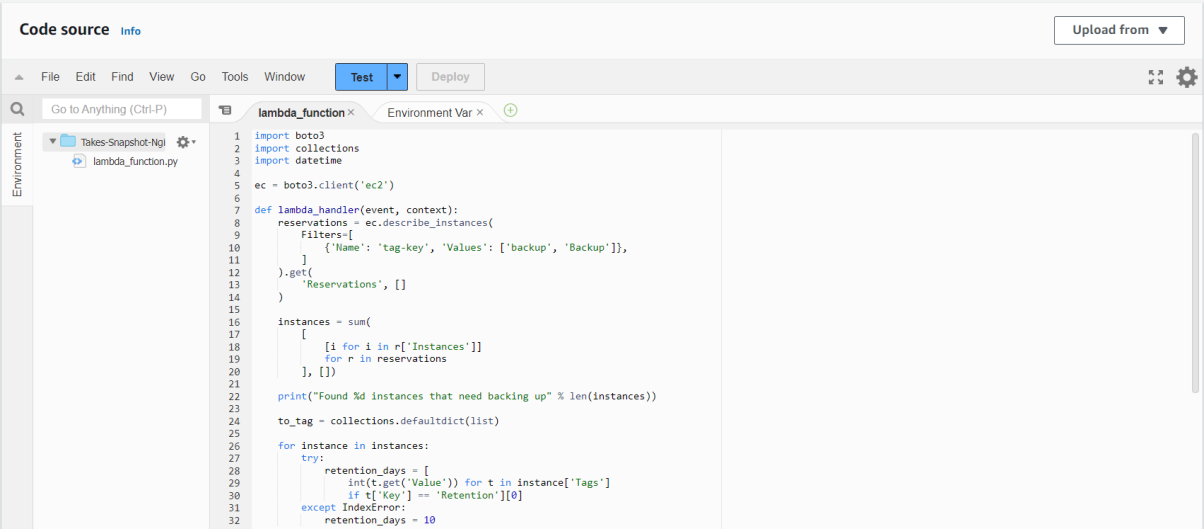
After navigating to the lambda service in the AWS Management console, select the "Create Function" option to create a new function. Select the "Author from Scratch" option in the service. This refers to the creation of an AWS Lambda function starting from scratch. This approach means starting a Lambda function with a blank state and adding its code step by step. Then name the function, select the desired programming language in the "Runtime" option (Python 3.7 will be used in the project). In the "Change Default Execution Role" tab, select "Create a new role with basic Lambda permissions" option (This option will be changed in the future. Then create function by selecting create function option.





A code snippet is written in Lambda. Below you can find the github link to the code. This code allows the ec2 instance to take a snapshot. By selecting the Deploy option, it deploys the AWS Lambda function created in the local development environment of the code to the AWS Lambda service and propagates the updates realized.

https://github.com/mdurmus99/Lambda-Function



Select the Test option and proceed to the code testing phase. After specifying the name, the test is saved by selecting the "Save" option. If you want to try this test it will not work. Because lambda function does not have access to ec2 instances.

Creating AWS IAM Role

AWS Identity and Access Management (IAM) is a service that provides identity-based access and authorization management for users, groups and roles in Amazon Web Services (AWS) services.

To create a new role via the IAM console, select the "Create Role" option in the "Roles" tab. On the "Select trusted entity" page, select "AWS Services" option in the "Trusted entity type" tab and "Lambda" option in the "Use case" tab.

After selecting the "Create Policy" option on the right side of the "Add permissions" page, the following code snippet is written as JSON and the new Policy is created.

After selecting the Policy created on the Roles page, a new role is created.

Step 1
Select trusted entity

Step 2
Add permissions

Step 3
Name, review, and create

Select trusted entity Info

Trusted entity type

- (●) AWS service — Allow AWS services like EC2, Lambda, or others to perform actions in this account.
- ( ) AWS account — Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.
- ( ) Web identity — Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.
- ( ) SAML 2.0 federation — Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.
- ( ) Custom trust policy — Create a custom trust policy to enable others to perform actions in this account.

Use case

Allow an AWS service like EC2, Lambda, or others to perform actions in this account.

Common use cases

- ( ) EC2 — Allows EC2 instances to call AWS services on your behalf.
- (●) Lambda — Allows Lambda functions to call AWS services on your behalf.

Use cases for other AWS services:

Choose a service to view use case

Cancel | Next

IAM > Policies > Create policy

Step 1
Specify permissions

Step 2
Review and create

Specify permissions Info

Add permissions by selecting services, actions, resources, and conditions. Build permission statements using the JSON editor.

Policy editor

Visual | JSON | Actions

```
1  {
2    "Version": "2012-10-17",
3    "Statement": [
4      {
5        "Effect": "Allow",
6        "Action": "ec2:*",
7        "Resource": "*"
8      }
9    ]
10 }
11
```

Edit statement

Select a statement

Select an existing statement in the policy or add a new statement.

+ Add new statement

Step 1
Specify permissions

Step 2
Review and create

Review and create

Review the permissions, specify details, and tags.

Policy details

Policy name
Enter a meaningful name to identify this policy.

EC2-Full-Access-Policy

Maximum 128 characters. Use alphanumeric and '+=,.@-_' characters.

Description - *optional*
Add a short explanation for this policy.

Maximum 1,000 characters. Use alphanumeric and '+=,.@-_' characters.

IAM > Roles > Create role

Step 1
Select trusted entity

Step 2
Add permissions

Step 3
Name, review, and create

Add permissions Info

Permissions policies (Selected 1/880) Info

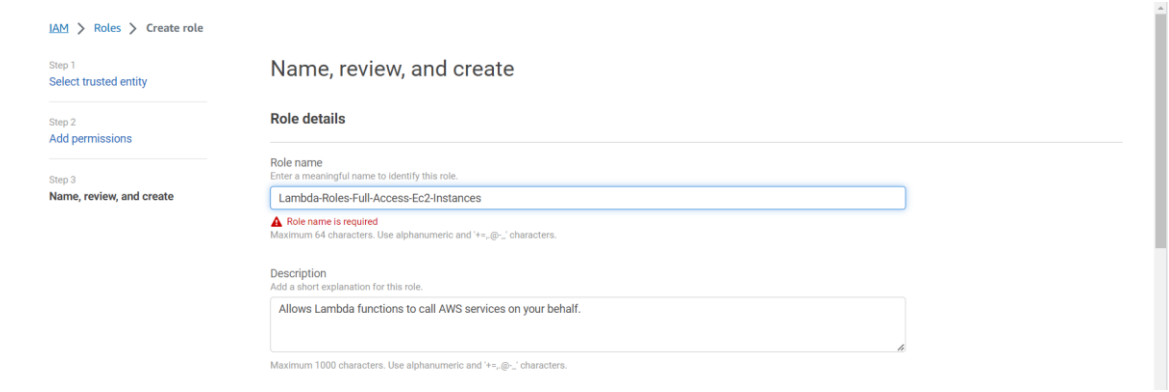
Choose one or more policies to attach to your new role.

Create policy

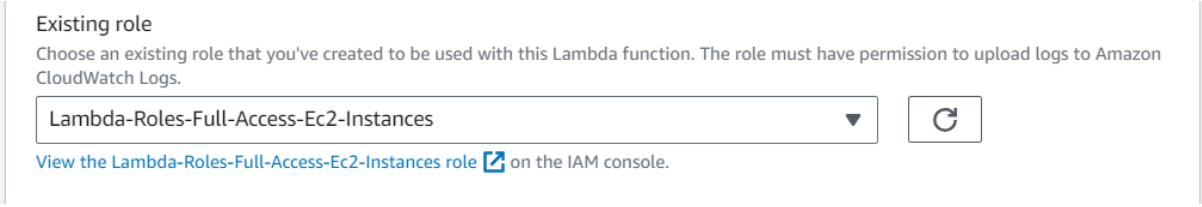
Filter policies by property or policy name and press enter.

< 1 2 3 4 5 6 7 ... 44 >

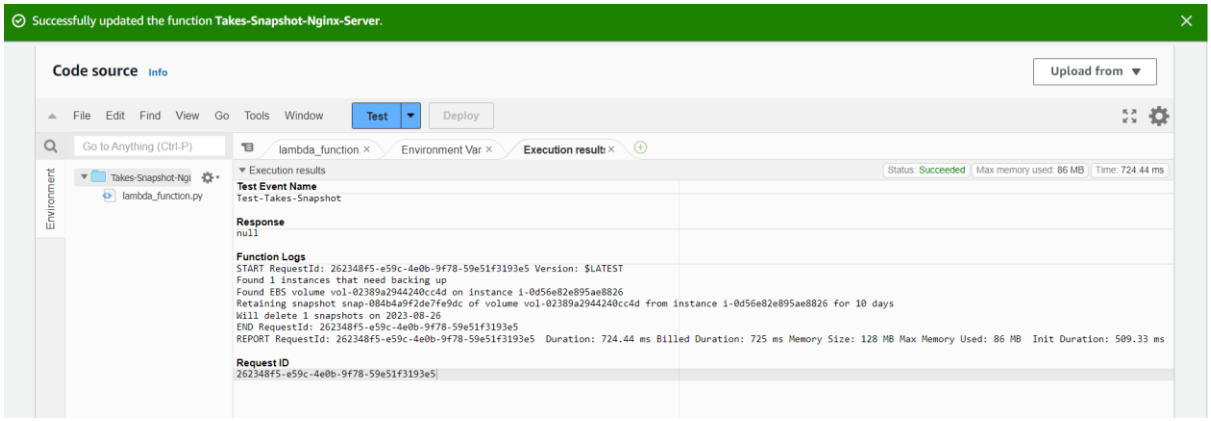
Policy name	Type	Description
Amazon_EventBridge_Invoke_Action_On_EBS_Volume_1...	Custom...	
AWSLambdaBasicExecutionRole-1a065579-063c-49b3-8...	Custom...	
AWSLambdaBasicExecutionRole-485ed90c-4c4b-408c-b...	Custom...	
AWSLambdaBasicExecutionRole-75639c6c-1640-42b2-9...	Custom...	
AWSLambdaBasicExecutionRole-a38b76de-91b1-404b-a...	Custom...	
AWSLambdaBasicExecutionRole-c08be9fe-7529-4106-94...	Custom...	
AWSLambdaBasicExecutionRole-d27f24cc-ba15-44f8-a1...	Custom...	
CloudWatch-Log-Project	Custom...	
☑ EC2-Full-Access-Policy	Custom...	

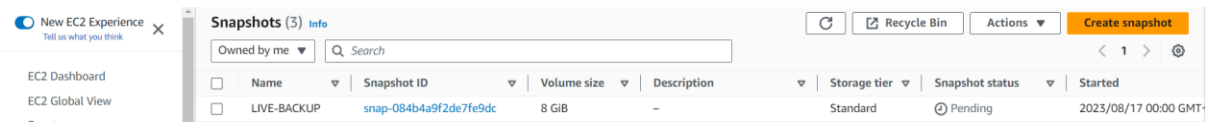


Let's go back to the Lambda page. On the page, in the "Configuration" tab, select the "Permissions" option and select the "Edit" option to edit. Select the role we created in the "Existing Role" option at the bottom.



The code block is tested and it is confirmed that there is a snapshot named "LIVE-BACKUP" on the snapshot page.

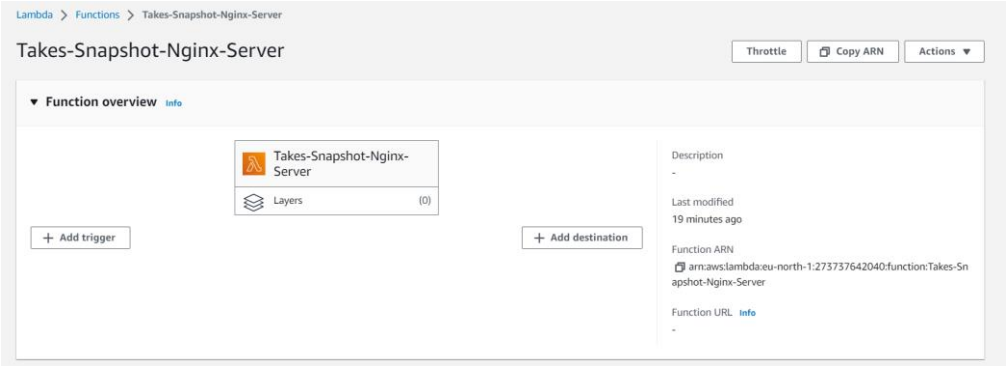




Automating Work in Cron

AWS EventBridge enables applications and microservices to integrate with event-based architectures, create scheduled transactions and manage events in real time.

An EventBridge rule is created by selecting the "Add Trigger" option on the Lambda service page.



In the "Trigger configuration" tab, select the "EventBridge" option. After adding a rule name and description, select "Rule Type" option as "Schedule expression". In the "Schedule expression" field, type “cron(0 23 * * ? *)”. This expression specifies the minute field 0, the hour field 23, any day of the day (every day of every month) and any month. The asterisk symbol (*) represents all values, while the question mark (?) is used for a specific 5ont hor day.