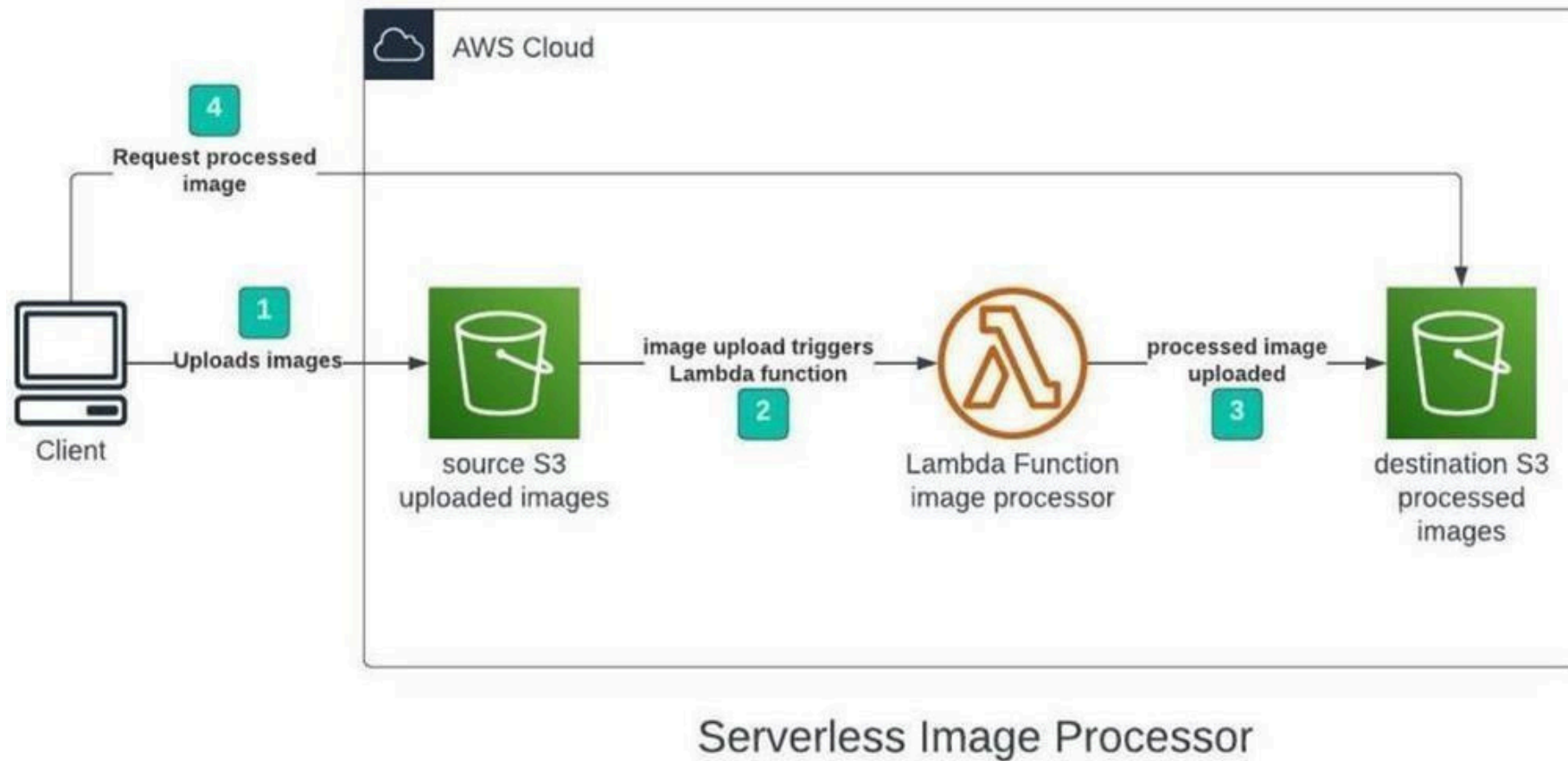


Project-1

Serverless Image Processing

Create a serverless image processing application that automatically resizes and optimizes images uploaded to an Amazon S3 bucket.

- The Serverless Image Handler solution helps you embed images on your websites and mobile applications to drive user engagement. It uses the SHARP Node.js library to provide high- speed image processing without sacrificing image quality.
- To minimize your costs of image optimization, manipulation, and processing, this solution automates version control and provides flexible storage and compute options for file reprocessing.



- **LAB STEPS:-**

- **Step 1: Sign in to AWS Management Console**

1. Click on the Open Console button, and you will get redirected to AWS Console in a new browser tab.

2. On the AWS sign-in page,

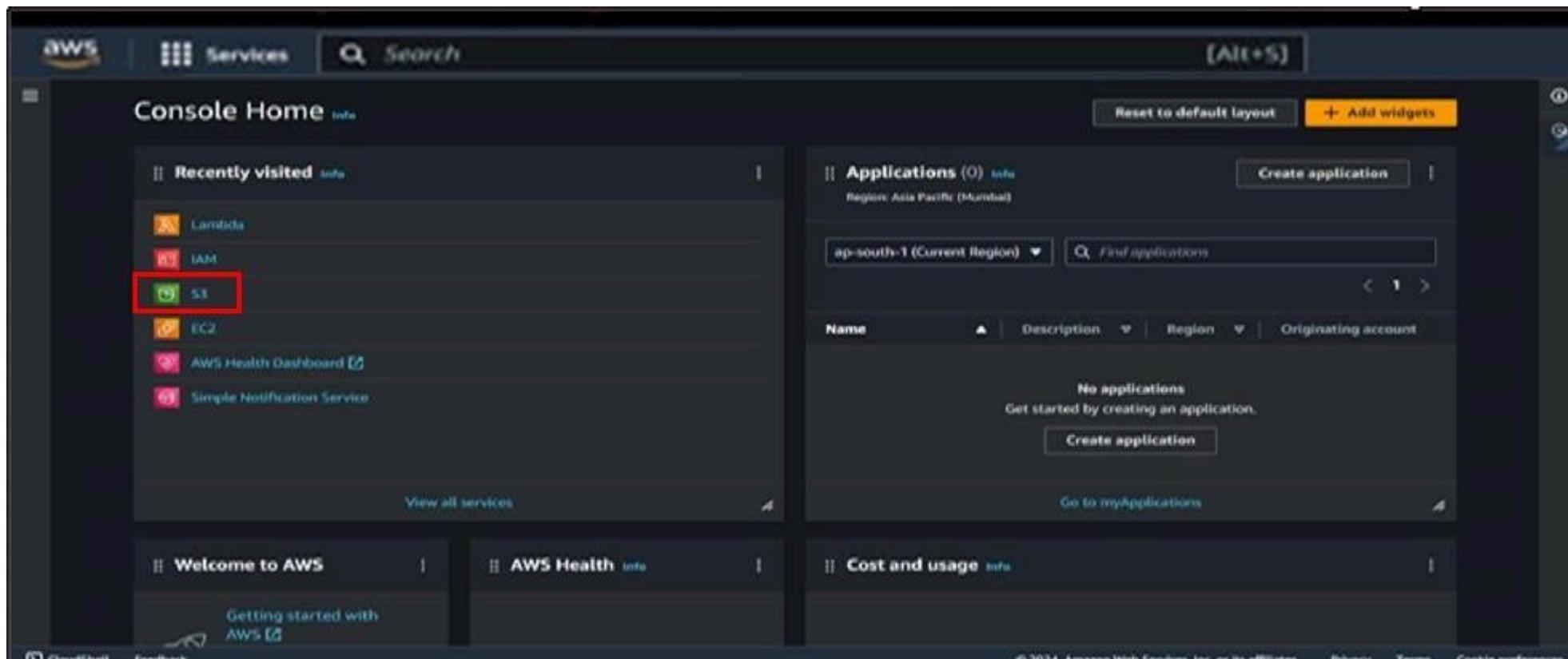
- Leave the Account ID as default. Never edit/remove the 12 digit Account ID present in the AWS Console. otherwise, you cannot proceed with the lab.
- Now copy your User Name and Password in the Lab Console to the IAM Username and Password in AWS Console and click on the Sign in button.

3. Once Signed In to the AWS Management Console, Make the default AWS Region as US East (N. Virginia) us-east-1.

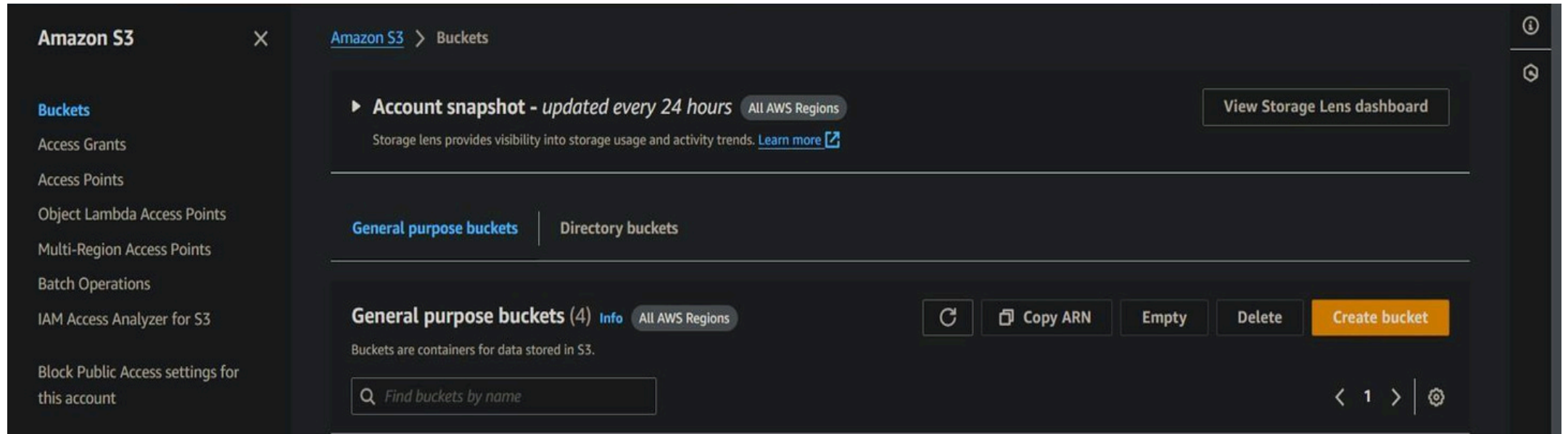
■ Create Two Amazon S3 Buckets

In this task, we will create two AWS S3 buckets i.e the source bucket and the destination bucket by providing the required configurations like name, region etc.

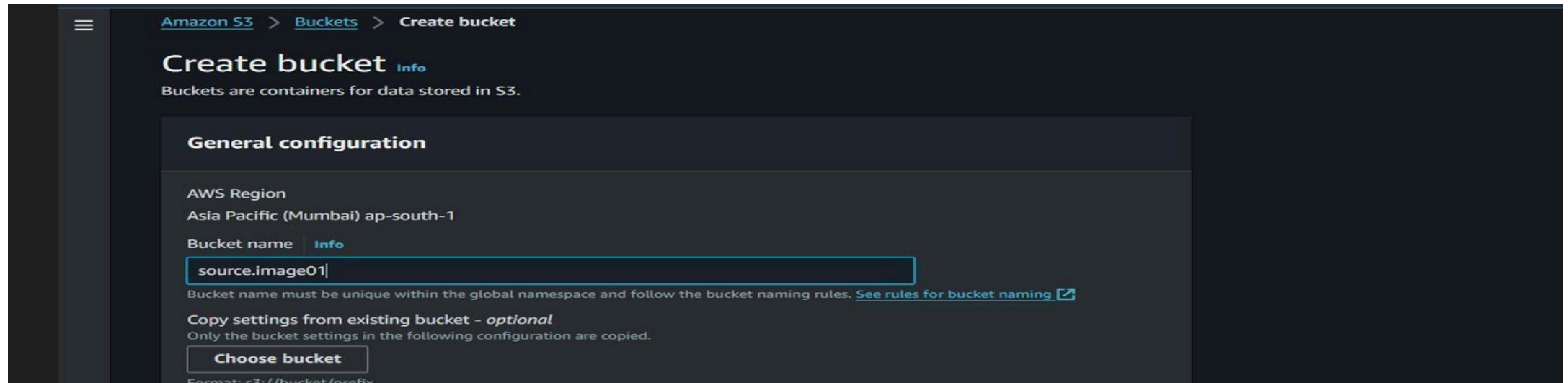
1. Navigate to the **Services** menu in the Top, then click on **S3** in the storage section.



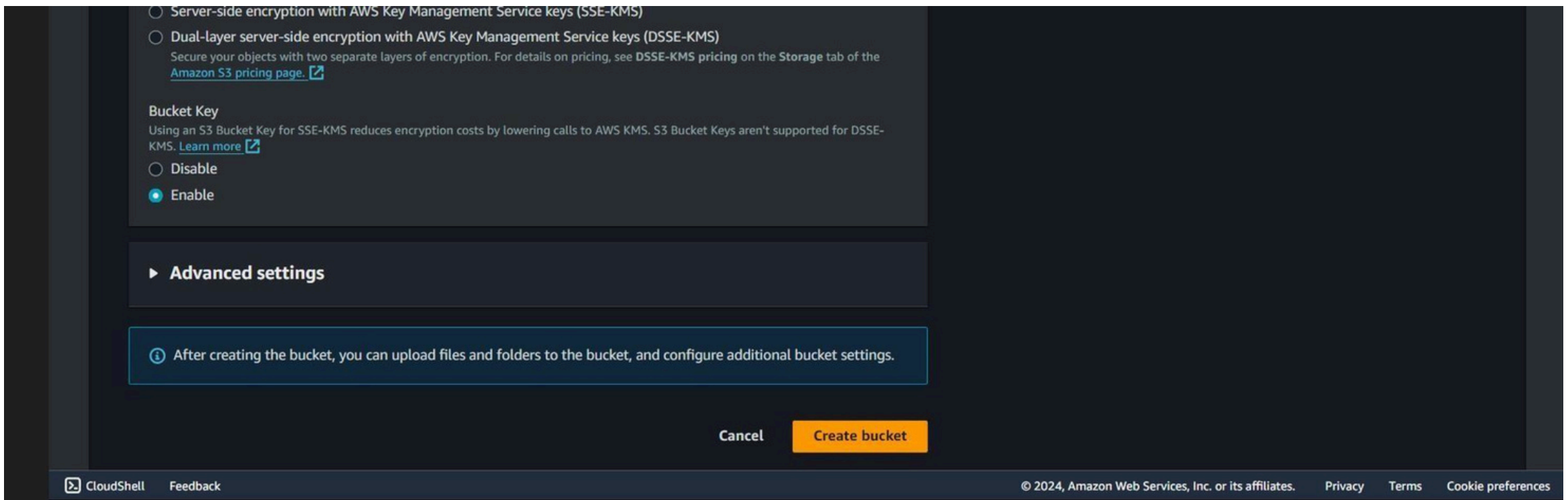
2. Click on Create Bucket button.



3.Create Source Bucket



4.Leave Other settings as Default and click on the **Create Bucket** button



5. Once the Bucket is created successfully, Select your S3 bucket.

- Click on the Copy ARN button to copy the ARN.
- Save the source bucket ARN in a text file for later use.
- `arn:aws:s3:::source.bucket01`

6. Create Destination Bucket

Create bucket Info

Buckets are containers for data stored in S3.

General configuration

AWS Region
Asia Pacific (Mumbai) ap-south-1

Bucket name Info
destinationbucket01

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.

Choose bucket

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)
All objects in this bucket are owned by this account.

☒ ACLs enabled
Objects in this bucket can be owned by other AWS

CloudShell Feedback

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7. Leave Other settings as Default and click on the **Create Bucket** button

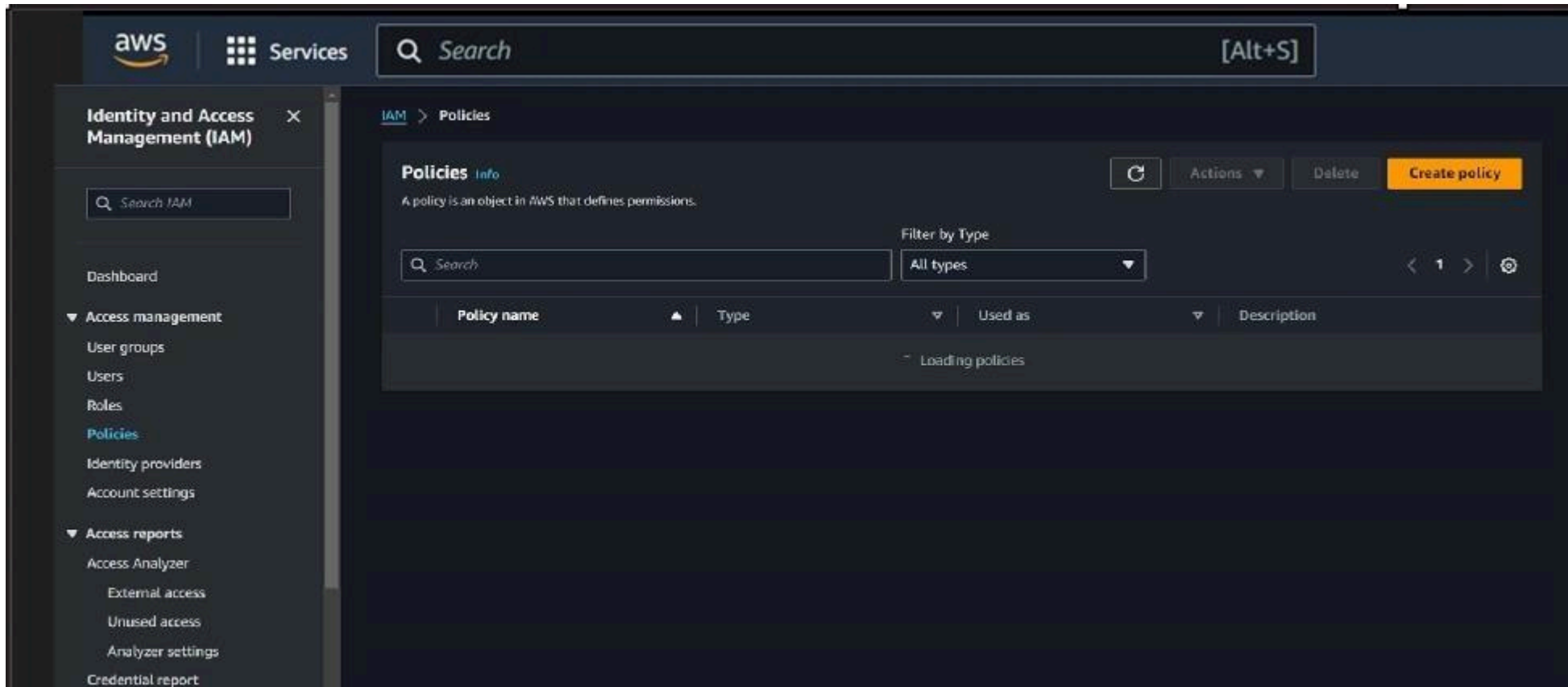
8. Once the Bucket is created successfully, Select your S3 bucket.

- Click on the Copy ARN button to copy the ARN.
- Save the source bucket ARN in a text file for later use.
- arn:aws:s3:::destinationbucket01

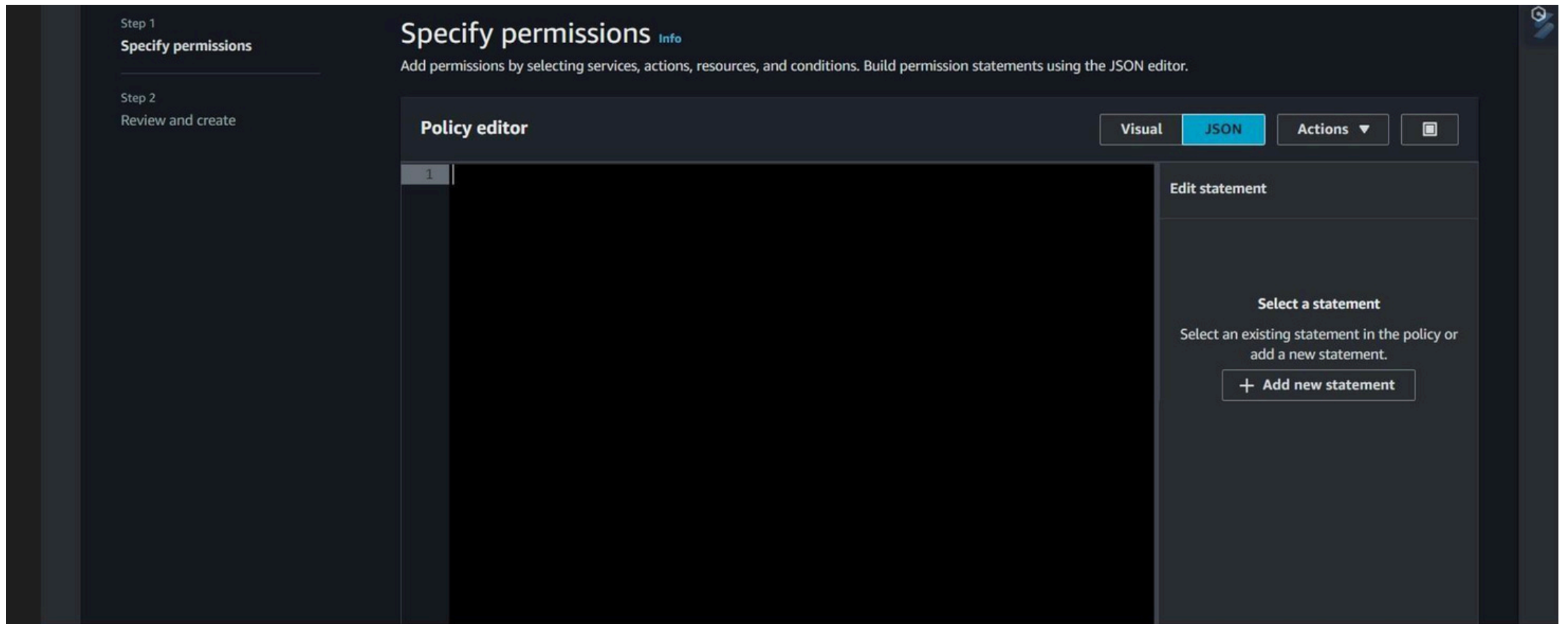
Step 3: Create an IAM Policy

1. Go to **Services** and Select **IAM** under **Security, Identity and Compliance**.

2. Click on **Policies** in the left navigation bar and click on the **Create policy** button.



3. Click on the **JSON** tab, Remove the existing code and copy-paste the below policy statement into the editor:



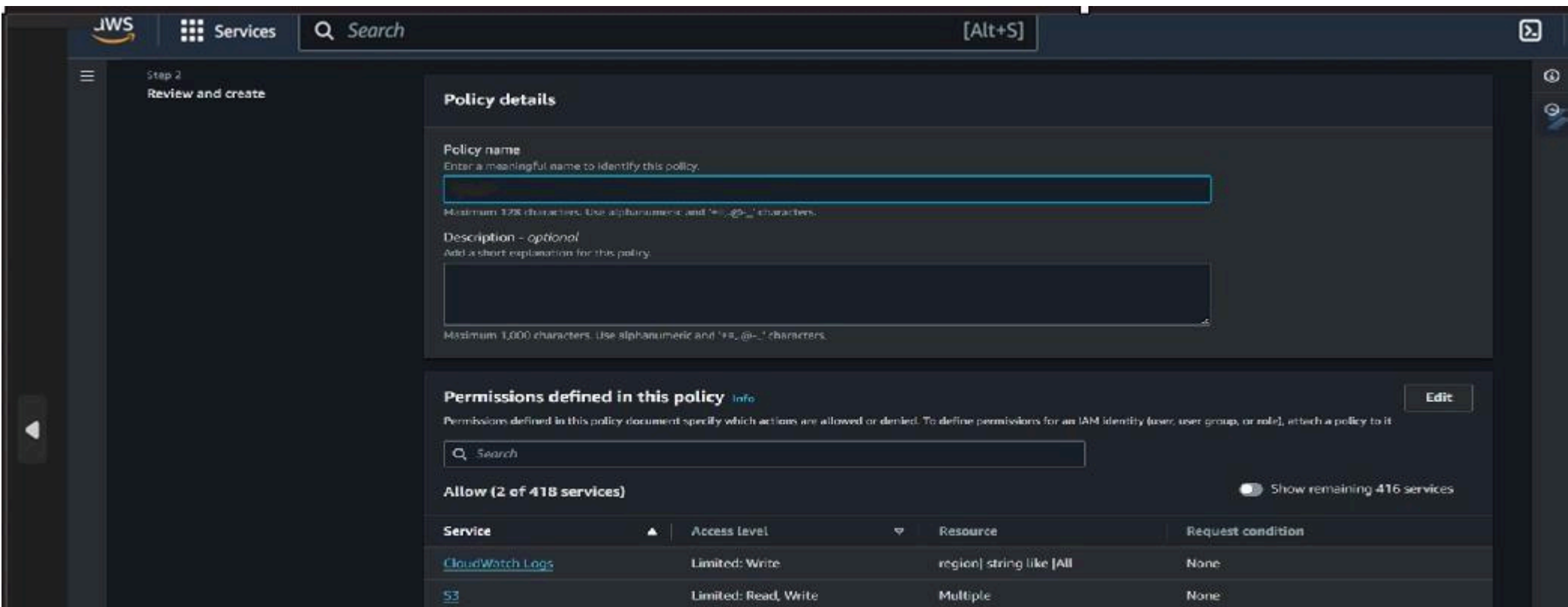
- Policy JSON:

```
{  
  "Version": "2012-10-17",  
  "Statement": [  
    {
```

```
"Effect": "Allow", "Action": [ "logs:PutLogEvents",
    "logs:CreateLogGroup",
    "logs:CreateLogStream"
],
"Resource": "arn:aws:logs:*:*:*"
},
{
    "Effect": "Allow",
    "Action": ["s3:GetObject"],
    "Resource": "arn:aws:s3:::source.bucket01"
},
{
    "Effect": "Allow", "Action": ["s3:PutObject"],
    "Resource": "arn:aws:s3:::destinationbucket01"
}
```

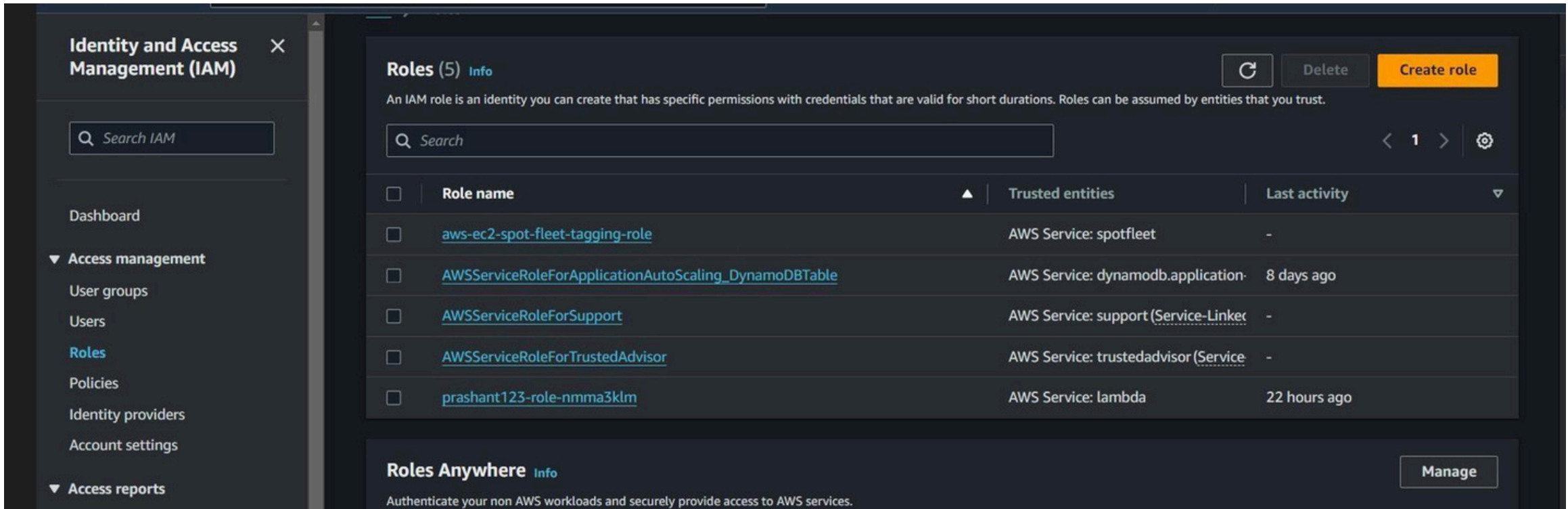
```
]
}
```

- 4. Leave Everything as default and click on **Next** button.
- 5. On the Review Policy page:
- 6. Enter **Policy Name** and Click on the **Create policy** button



Step 4: Create an IAM Role

1. In the left menu, click on **Roles** and click on the **Create Role** button.



2. Select Lambda from AWS Services list.

- From Trusted Entity Type: Select AWS Service
- From Use case: Select Lambda

- Click on Next button.

The screenshot shows the 'Select trusted entity' step in the AWS IAM console. The interface is dark-themed. On the left, a sidebar shows the progress: Step 1 (Select trusted entity), Step 2 (Add permissions), and Step 3 (Name, review, and create). The main area is titled 'Select trusted entity' with an 'Info' link. Below the title, there's a section for 'Trusted entity type' with five options: 'AWS service' (selected), 'AWS account', 'Web identity', 'SAML 2.0 federation', and 'Custom trust policy'. Each option has a brief description. Below this is a 'Use case' section with a description and a dropdown menu labeled 'Service or use case'. At the bottom right, there are 'Cancel' and 'Next' buttons.

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.

Service or use case

Choose a service or use case ▼

Cancel Next

Use case

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

Service or use case

Lambda

Choose a use case for the specified service.

Use case

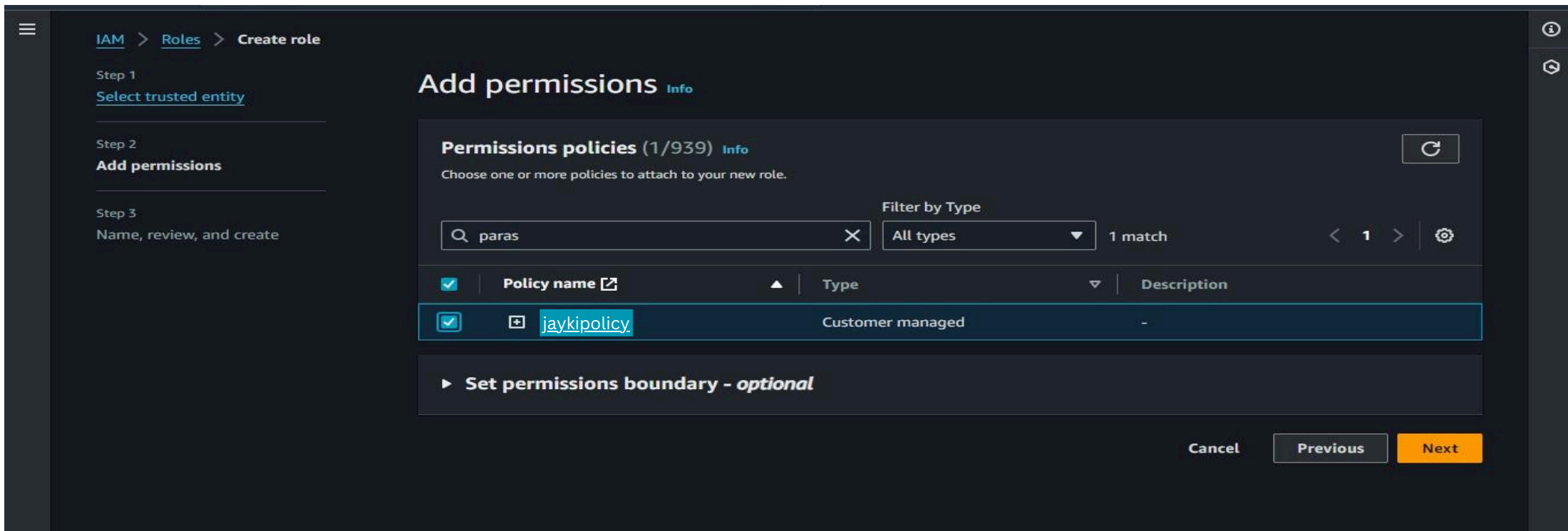
☒ Lambda

Allows Lambda functions to call AWS services on your behalf.

Cancel

Next

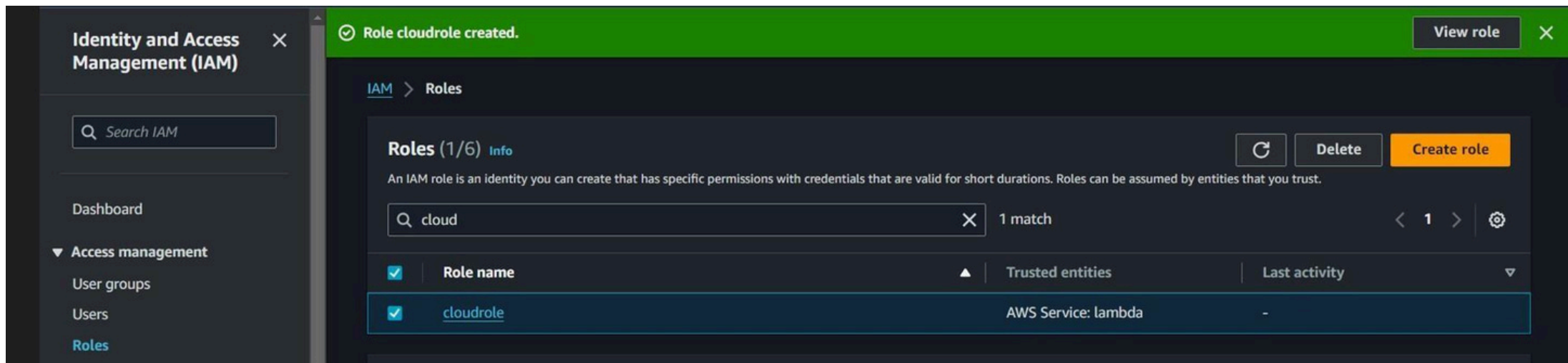
3. Select your **policy** and click on the **Next** button.



4.Role Name: Enter **cloudrole**

5.Click on the **Create Role** button.

- You have successfully created an IAM role by name cloudrole.



Task 5: Creating Lambda function

1. Go to AWS Lambda Console, Navigate to functions section . Click **Create function**

Compute

AWS Lambda

lets you run code without
thinking about servers.

You pay only for the compute time that you consume — there is no charge when your code is not running. With Lambda, you can run code for virtually any type of application or backend service, all with zero administration.

Get started

Author a Lambda function from scratch, or choose from one of many preconfigured examples.

Create a function

2. Name it and select runtime and Leave all other settings as default.

Lambda > Functions > Create function

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.

lamdafunction

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

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

Node.js 18.x

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

☒ x86_64

☐ arm64

Permissions Info

Info Tutorials ×

Learn how to implement common use cases in AWS Lambda.

Create a simple web app ^

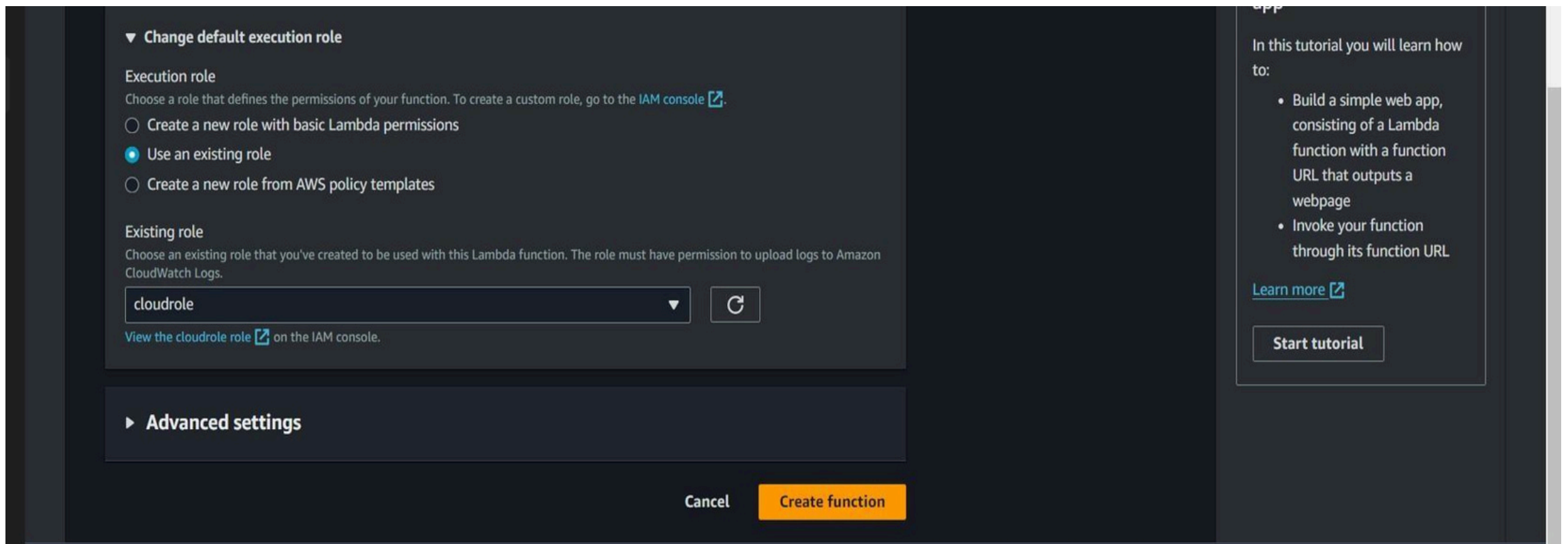
In this tutorial you will learn how to:

- Build a simple web app, consisting of a Lambda function with a function URL that outputs a webpage
- Invoke your function through its function URL

[Learn more](#)

Start tutorial

3. Change Default execution role and create function



4. Edit Environment Variables

[Code](#)[Test](#)[Monitor](#)[Configuration](#)[Aliases](#)[Versions](#)

General configuration

[Triggers](#)[Permissions](#)[Destinations](#)[Function URL](#)[Environment variables](#)[Tags](#)[VPC](#)[RDS databases](#)

General configuration [Info](#)

[Edit](#)

Description

-

Memory

128 MB

Ephemeral storage

512 MB

Timeout

0 min 3 sec

SnapStart [Info](#)

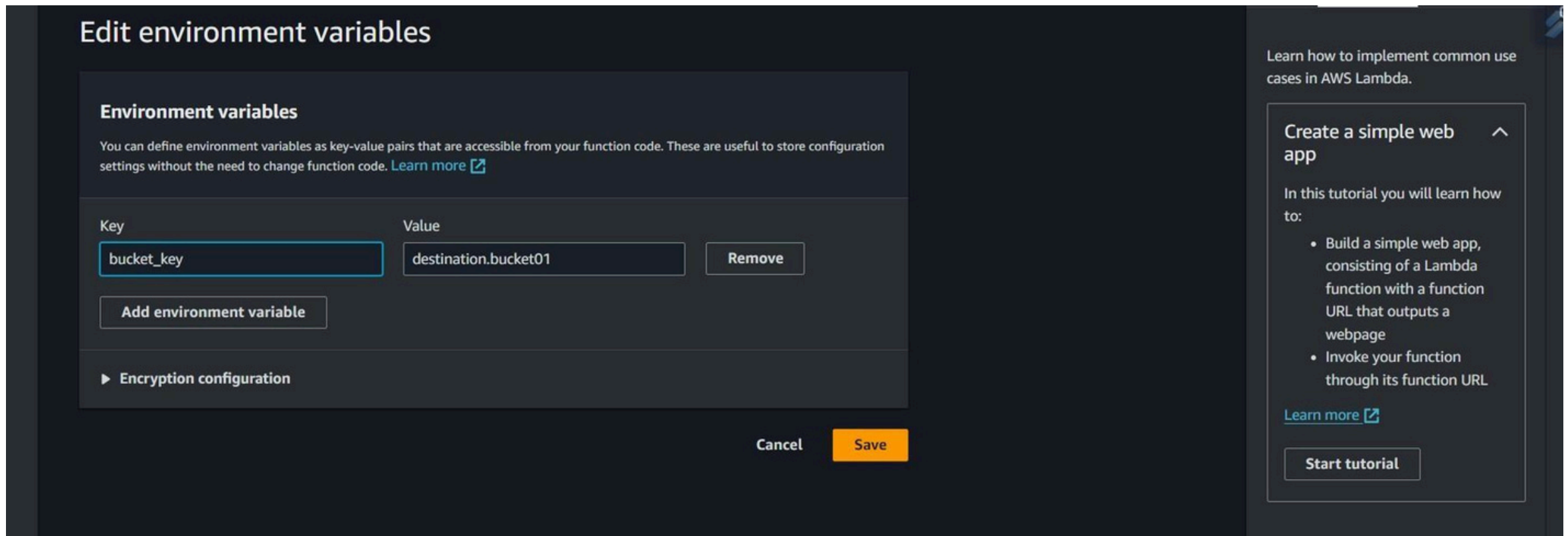
None

Create a simple web app

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- Invoke your function through its function URL

[Learn more](#)[Start tutorial](#)



Step 6: Test Lambda Function

- *Go to AWS Lambda console. Navigate to Functions section.
- *open function then will be created
- *open test console
- *template=s3-put

Test event Info

Save

Test

To invoke your function without saving an event, configure the JSON event, then choose Test.

Test event action

☒ Create new event

☐ Edit saved event

Event name

event123

Maximum of 25 characters consisting of letters, numbers, dots, hyphens and underscores.

Event sharing settings

☒ Private

☐ Shareable

This event is only available in the Lambda console and to the event creator. You can configure a total of 10. [Learn more](#)

This event is available to IAM users within the same account who have permissions to access and use shareable events. [Learn more](#)

Template - optional

s3-put

Create a simple web app

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- Build a simple web app, consisting of a Lambda function with a function URL that outputs a webpage
- Invoke your function through its function URL

[Learn more](#)

Start tutorial

EVENT JSON:

```
{
```

```
  "Records": [
```

```
    {
```

```
      "eventVersion": "2.0",
```

```
"eventSource": "aws:s3",  
  
"awsRegion": "us-east-1",  
  
"eventTime": "1970-01-01T00:00:00.000Z",  
"eventName": "ObjectCreated:Put", "userIdentity": {  
  "principalId": "EXAMPLE"  
},  
  
"requestParameters": { "sourceIPAddress": "127.0.0.1" "sourceIPAddress": "127.0.0.1"  
},  
"responseElements": {  
  "x-amz-request-id": "EXAMPLE123456789", "x-amz-id-2":  
  "EXAMPLE123/5678abcdefghijklambdaisawesome/mnopqrstuvwxyzAB CDEFGH"  
}, "s3": {"s3SchemaVersion": "1.0",  
  "configurationId": "testConfigRule", "bucket": {  
    "name": " source.bucket01", "ownerIdentity": {
```

```
"principalId": "EXAMPLE"
},
"arn": "arn:aws:s3:::source.bucket01"
},
"object": {
  "key": "18981044.jpg",
  "size": 1024,
  "eTag": "0123456789abcdef0123456789abcdef", "sequencer": "0A1B2C3D4E5F678901" } } }
]
}
```

Now We can Test:

The screenshot displays the AWS Lambda console interface. At the top, there are tabs for 'Code', 'Test', 'Monitor', 'Configuration', 'Aliases', and 'Versions'. The 'Test' tab is active, showing a green banner with a checkmark icon and the text 'Executing function: succeeded (logs [link])'. Below this, there is a 'Test event' section with an 'Info' link and 'Save' and 'Test' buttons. The 'Test event' section contains instructions: 'To invoke your function without saving an event, configure the JSON event, then choose Test.' It includes a 'Test event action' section with two radio buttons: 'Create new event' (selected) and 'Edit saved event'. Below this is an 'Event name' input field containing 'event123', with a note: 'Maximum of 25 characters consisting of letters, numbers, dots, hyphens and underscores.' The 'Event sharing settings' section has two radio buttons: 'Private' (selected) and 'Shareable'. Below 'Private' is a note: 'This event is only available in the Lambda console and to the event creator. You can configure a total of 10. [Learn more]'. Below 'Shareable' is a note: 'This event is available to IAM users within the same account who have permissions to access and use shareable events. [Learn more]'. At the bottom, there is a 'Template - optional' section. On the right side of the console, there is a 'Tutorials' sidebar with a close button. It contains the text 'Learn how to implement common use cases in AWS Lambda.' and a section titled 'Create a simple web app' with an upward arrow. Below this, it says 'In this tutorial you will learn how to:' followed by a list of two bullet points: 'Build a simple web app, consisting of a Lambda function with a function URL that outputs a webpage' and 'Invoke your function through its function URL'. There is a '[Learn more]' link and a 'Start tutorial' button at the bottom of the sidebar.

Code Test Monitor Configuration Aliases Versions

Executing function: succeeded (logs [link])
Details

Test event Info Save Test

To invoke your function without saving an event, configure the JSON event, then choose Test.

Test event action

Create new event Edit saved event

Event name

event123

Maximum of 25 characters consisting of letters, numbers, dots, hyphens and underscores.

Event sharing settings

Private

This event is only available in the Lambda console and to the event creator. You can configure a total of 10. [Learn more]

Shareable

This event is available to IAM users within the same account who have permissions to access and use shareable events. [Learn more]

Template - optional

Info Tutorials

Learn how to implement common use cases in AWS Lambda.

Create a simple web app ^

In this tutorial you will learn how to:

- Build a simple web app, consisting of a Lambda function with a function URL that outputs a webpage
- Invoke your function through its function URL

[Learn more]

Start tutorial

Step 7: Creating S3 Trigger

*Add trigger

*Select s3

*choose source Bucket name

*Now Add

The screenshot displays the AWS Lambda console interface for a function named 'lamdafunction'. The breadcrumb navigation at the top shows 'Lambda > Functions > lamdafunction'. The function name 'lamdafunction' is prominently displayed at the top left of the main content area. To the right of the name are buttons for 'Throttle', 'Copy ARN', and an 'Actions' dropdown menu. Below the function name, there are buttons for 'Export to Application Composer' and 'Download'. The 'Function overview' section is expanded, showing a 'Diagram' tab and a 'Template' tab. The diagram shows a Lambda function icon labeled 'lamdafunction' connected to an 'S3' bucket icon. Below the diagram is a '+ Add trigger' button. To the right of the diagram is a '+ Add destination' button. The 'Layers' section shows '(0)' layers. On the right side of the console, there is a sidebar with 'Info' and 'Tutorials' tabs. The 'Tutorials' tab is active, showing a tutorial titled 'Create a simple web app'. The tutorial text states: 'In this tutorial you will learn how to:'. It lists two bullet points: 'Build a simple web app, consisting of a Lambda function with a function URL that outputs a webpage' and 'Invoke your function through its function URL'. Below the list is a 'Learn more' link and a 'Start tutorial' button. The bottom navigation bar includes tabs for 'Code', 'Test', 'Monitor', 'Configuration' (which is active), 'Aliases', and 'Versions'.

Lambda > Functions > lamdafunction

lamdafunction

Throttle Copy ARN Actions

Function overview Info

Export to Application Composer Download

Diagram Template

lamdafunction

Layers (0)

S3

+ Add trigger

+ Add destination

Description

-

Last modified

2 minutes ago

Function ARN

arn:aws:lambda:ap-south-1:905418447105:function:lamdafunction

Function URL Info

-

Info Tutorials

Learn how to implement common use cases in AWS Lambda.

Create a simple web app

In this tutorial you will learn how to:

- Build a simple web app, consisting of a Lambda function with a function URL that outputs a webpage
- Invoke your function through its function URL


[Learn more](#)

Start tutorial

Code Test Monitor Configuration Aliases Versions

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.

Bucket region: ap-south-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.

Suffix - optional

Enter a single optional suffix to limit the notifications to objects with keys that end with matching characters.

Learn how to implement common use cases in AWS Lambda.

Create a simple web app

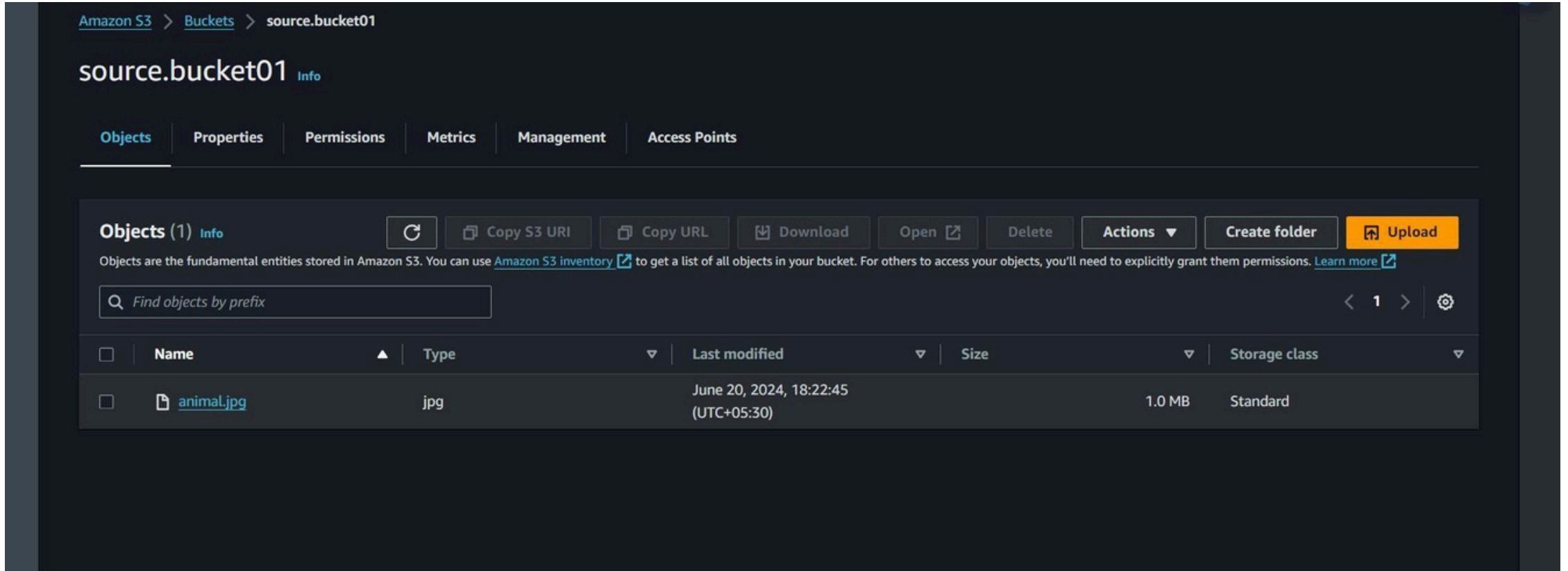
In this tutorial you will learn how to:

- Build a simple web app, consisting of a Lambda function with a function URL that outputs a webpage
- Invoke your function through its function URL

[Learn more](#)

Start tutorial

Step 8: Upload image in Source Bucket



Original Image



Destination Bucket

destination.bucket01 Info

- Objects
- Properties
- Permissions
- Metrics
- Management
- Access Points

Objects (1) Info

↺

Copy S3 URI

Copy URL

Download

Open ↗

Delete

Actions ▼

Create folder

Upload

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](#)


Find objects by prefix

<

1

>

⚙

<input type="checkbox"/>	Name	Type	Last modified	Size	Storage class
<input type="checkbox"/>	 animal.jpg	jpg	June 20, 2024, 18:31:30 (UTC+05:30)	8.4 KB	Standard

Objects (1) Info

↺

Copy S3 URI

Copy URL

Download

Open ↗

Delete

Actions ▼

Create folder

Upload

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](#)


Find objects by prefix

<

1

>

⚙

<input type="checkbox"/>	Name	Type	Last modified	Size	Storage class
<input type="checkbox"/>	 animal.jpg	jpg	June 20, 2024, 18:31:30 (UTC+05:30)	8.4 KB	Standard

Resize Image

