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Segment makes it easy to send your data to AWS Lambda (and lots of other destinations). Once you collect your data using Segment's [open source libraries](#), Segment translates and routes your data to AWS Lambda in the format it can use.

[AWS Lambda](#) lets you run code without provisioning or managing servers. You pay only for the compute time you consume - there is no charge when your code is not running.

With Lambda, you can run code for any type of application or backend service - all with zero administration. Just upload your code and Lambda takes care of everything required to run and scale your code with high availability. You can set up your code to automatically trigger from other AWS services or call it directly from any web or mobile app.

[Read more about AWS Lambda on the Segment blog.](#)

Getting started

To get started, you'll need to:

[Build a Lambda function to process Segment events](#)

1. [Go to the Segment IAM policy & role for invoking your Lambda](#)
2. [Set up the Segment IAM policy & role for invoking your Lambda](#)
3. [Configure your Segment Lambda Destination](#)

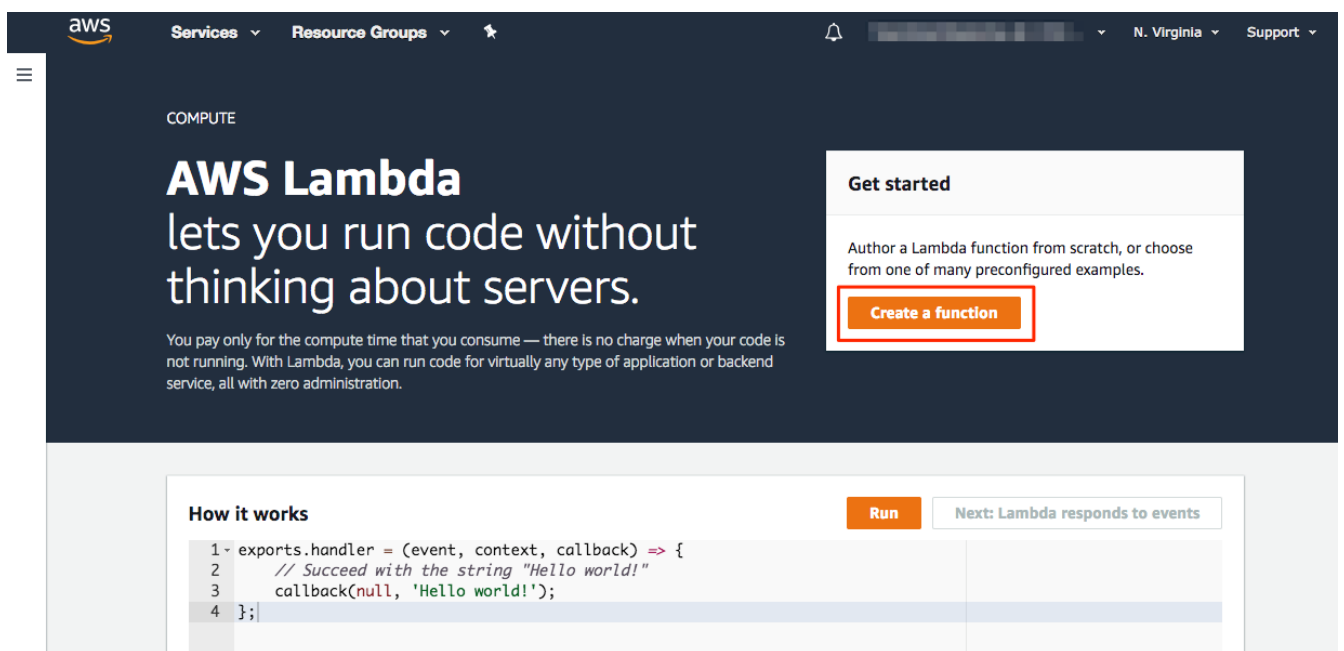
Build a Lambda function to process Segment events

In order to process events from Segment, you need to provide a Lambda function that can handle your event flow.

Segment allows you to send each call type (`track`, `identify`, etc) to a different Lambda function. The example below shows how to create a new Lambda function from scratch.

To build a Lambda function:

1. [Go to the Lambda service page in your AWS account.](#)
2. [Click **Create a function**](#) to create a new function.



3. [Select **Author from scratch**](#) since Segment will be providing the source code for the function.
4. [Enter a name for your function and select your preferred runtime.](#)
5. [For the **Role** field, select **Create a new role from AWS policy templates** from the dropdown.](#)
6. [Create a **Role name** and leave **Policy templates** empty. This will create a role that can write to Cloud Watch logs. Cloud Watch logs are optional, though Segment supports them in the Segment settings.](#)
7. [Click **Create function**.](#)

Function name
Enter a name that describes the purpose of your function.

personalizeDemo

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

Runtime [Info](#)
Choose the language to use to write your function.

Python 3.7

Permissions [Info](#)
Lambda will create an execution role with permission to upload logs to Amazon CloudWatch Logs. You can configure and modify permissions further when you add triggers.

▼ Choose or create an execution role

Execution role
Choose a role that defines the permissions of your function. To create a custom role, go to the [IAM console](#).

Create a new role from AWS policy templates

ⓘ Role creation might take a few minutes. The new role will be scoped to the current function. To use it with other functions, you can modify it in the IAM console.

Role name
Enter a name for your new role.

personalize-demo-role

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

Policy templates [Info](#)
Choose one or more policy templates.

Cancel Create function

Copy the **ARN** for the Lambda and paste it into the **Lambda** setting in your Segment Lambda destination settings.

If you scroll down on the main page of your new Lambda function, you will see the code editor. You can write code here or use an existing Lambda function. See the [Lambda documentation](#) for more details on creating a Lambda.

Set up Segment IAM policy & role for invoking your Lambda

Segment will need to be able to call (“invoke”) your Lambda in order to process events. This requires you to configure an IAM role for your Lambda which allows the Segment account to invoke your function.

There are two options for setting up the IAM policy and role:

1 Use a [CloudFormation template](#) (recommended)

2 Manually create the policy and role

Use CloudFormation

Using CloudFormation minimizes the setup steps needed, and is Segment’s recommended way to create your Lambda’s policy and role. To use CloudFormation:

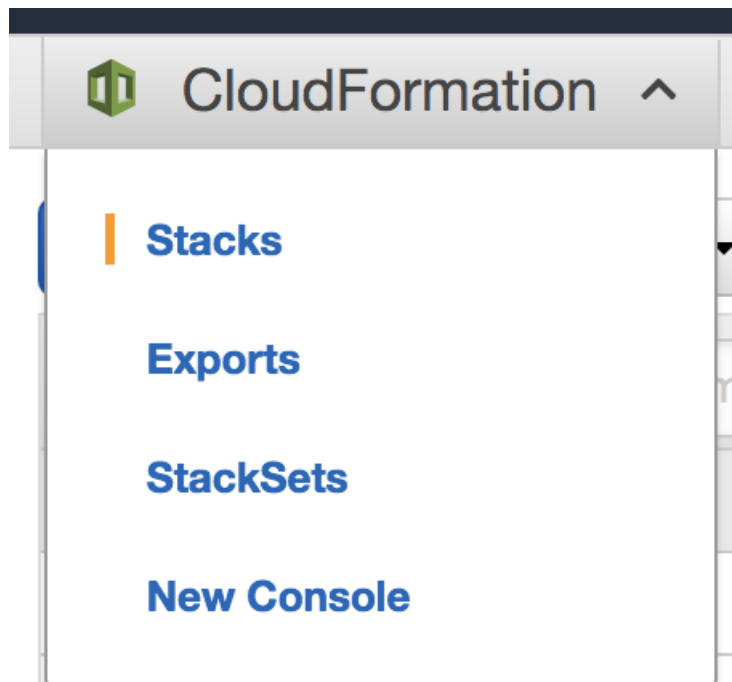
1 Create the CloudFormation Template.

1 Copy or download the [SegmentLambdaDestinationCFTemplate](#) from the [segment-lambda-recipes](#) GitHub repo.

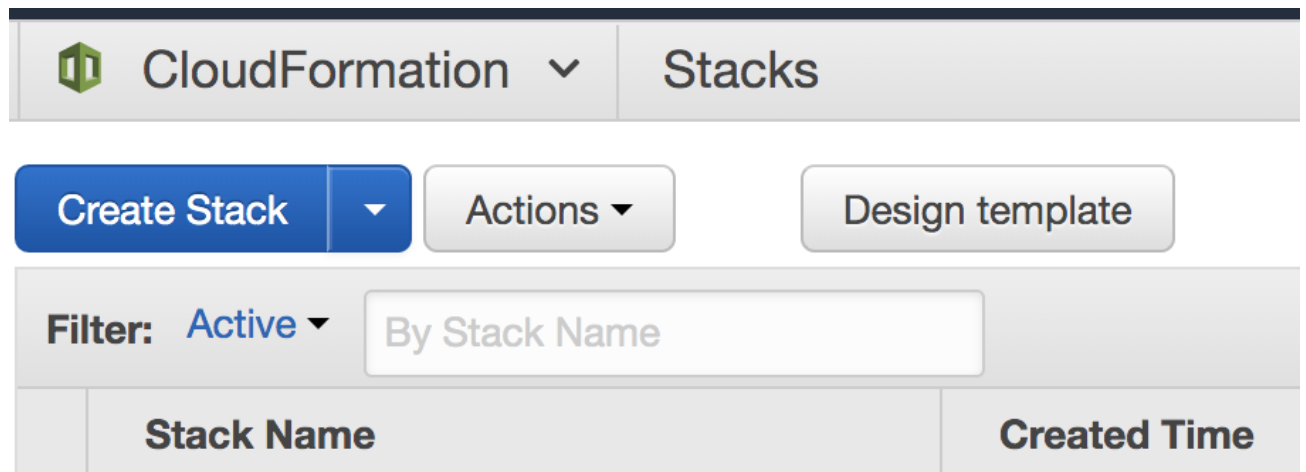
2 Save the file with a name you like, but make sure it doesn’t have a file extension.

2 Create the CloudFormation stack.

1 Within the AWS Console, navigate to **CloudFormation > Stacks**.



2. Click **Create Stack**.



3. On the **Select Template** page, select **Upload a template to Amazon S3**. Using **Choose File**, select the SegmentLambdaDestinationCFTemplate you downloaded in the previous step.

4. Click **Next**.

Select Template

Select the template that describes the stack that you want to create. A stack is a group of related resources that you manage as a single unit.

Design a template Use AWS CloudFormation Designer to create or modify an existing template. [Learn more.](#)

Design template

Choose a template A template is a JSON/YAML-formatted text file that describes your stack's resources and their properties. [Learn more.](#)

☐ Select a sample template

☒ Upload a template to Amazon S3

SegmentLamb...CFTemplate

☐ Specify an Amazon S3 template URL

5 Give your stack a name.

6 For the **ExternalId** parameter, enter the "External ID" setting in your Segment Lambda destination settings.

NOTE: For security purposes, Segment will set your Workspace ID as your External ID. If you're currently using an External ID different from your Workspace ID, reach out to our support team so they can change it and make your account more secure.

7 The **LambdaARN** parameter corresponds to the **Lambda** setting in your Segment Lambda destination settings.

Specify Details

Specify a stack name and parameter values. You can use or change the default parameter values, which are c

Stack name

SegmentLambdaRoleTest

Parameters

ExternalId

external-id

Enter external ID for the role.

LambdaARN

arn:aws:lambda:us-west-2:123456789012:fun

Lambda ARN to invoke.

8 You can leave the next page as is, no changes needed.

9 On the last page, review your template details and click **Create**.

10 You will now see your new Stack listed in the Stacks page.

Create Stack ▾		Actions ▾	Design template
Filter: Active ▾ By Stack Name			
	Stack Name	Created Time	Status
<input checked="" type="checkbox"/>	SegmentLambdaRoleTest	2019-05-08 10:22:52 UTC-0700	CREATE_IN_PROGRESS

Once the status is **CREATE_COMPLETE**, click on the name of your Stack.

On the Stack Detail page under the **Resources** section, you will see a policy and role listed.

▼ Resources				
To view detailed drift information for specific resources, visit the Drift Details page .				
Logical ID	Physical ID	Type	Drift Status	Status
invokeLambdaPolicy	Segme-invo-1JA5DI73RY060	AWS::IAM::Policy	NOT_CHECKED	CREATE_COMPLETE
invokeLambdaRole	SegmentLambdaRoleTest-invokeLambdaRole-19K2CC0ACNGMT	AWS::IAM::Role	NOT_CHECKED	CREATE_COMPLETE

Click the **Physical ID** of the role. You will be redirected to the summary page for the role within the IAM console.

Copy the **Role ARN** and copy it into the **Role Address** setting in your Segment Lambda destination settings.

Using the examples provided, your Segment Lambda destination settings will look something like this:

Connection Settings

Lambda	arn:aws:lambda:us-west-2:874799288871:function:my-function	▶
Region	us-west-2	▶
Role Address	arn:aws:iam::874799288871:role/SegmentLambdaRoleTest-invokeLambdaRole-19K2CC0ACNGMT	▶

Optional Settings

Client Context	0	▶
External ID	external-id	▶
Log Type	None	▶

Create Policy and Role Manually

Create an IAM policy

To create an IAM policy:

- 1 Sign in to the [Identity and Access Management \(IAM\) console](#).
- 2 Follow these instructions to [Create an IAM policy](#) to allow Segment permission to invoke your Lambda function.
- 3 Select the **Create Policy from JSON** option and use the following template policy in the **Policy Document** field. Be sure to change the {region}, {account-id} and {function-names} with the applicable values. An example of a Lambda ARN is: `arn:aws:lambda:us-west-2:355207333203:function:my-example-function`.



NOTE: You can put in a placeholder ARN for now, as you will need to come back to this step to update the ARN of your Lambda once you create that.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "lambda:InvokeFunction"
      ],
      "Resource": [
        "lambda ARN 1",
        "lambda ARN 2",
        "...",
        "lambda ARN n"
      ]
    }
  ]
}
```

Create an IAM role

To create an IAM role:

- 1 Sign in to the [Identity and Access Management \(IAM\) console](#).
- 2 Follow these instructions to [Create an IAM role](#) to allow Segment permission to invoke your Lambda function.
- 3 While setting up the new role, add the policy you created in the [previous section](#).
- 4 Finish with any other set up items you may want (like tags).
- 5 Search for and select your new roles from the [IAM home](#).
- 6 Select the **Trust Relationships** tab, then click **Edit trust relationship**.

Summary

Role ARN

Role description

Instance Profile ARNs

Path

Creation time

Maximum CLI/API session duration

Give this link to users who can switch roles in the console

Permissions

Trust relationships

Tags

A

You can view the trusted entities that can assume the r

Edit trust relationship

Trusted entities

The following trusted entities can assume this role.

Trusted entities

The account 595280932656

Copy and paste the following code into your trust relationship. You should replace `<your-source-id>` with either the Source ID of the attached Segment source (the default) or the External ID set in your AWS Lambda destination settings.

- `arn:aws:iam::595280932656:role/customer-lambda-prod-destination-access` refers to Segment's AWS Account, and is what allows Segment's Destination to access the role to invoke your Lambda.



Note: Source ID can be found by navigating to **Settings > API Keys** from your Segment source homepage.

```
```json
{
 "Version": "2012-10-17",
 "Statement": [
 {
 "Effect": "Allow",
 "Principal": {
 "AWS": "arn:aws:iam::595280932656:role/customer-lambda-prod-destination-access"
 },
 "Action": "sts:AssumeRole",
 "Condition": {
 "StringEquals": {
 "sts:ExternalId": "YOUR_SEGMENT_SOURCE_ID"
 }
 }
 }
]
}
```

If you have multiple Sources using this Role, or require the use of multiple External Ids, replace the `sts:ExternalId` setting above with:

```
"sts:ExternalId": ["YOUR_SEGMENT_SOURCE_ID", "ANOTHER_SOURCE_ID", "AN_EXTERNAL_ID", "ANOTHER_EXTERNAL_ID"]
```



## Configure Segment Lambda Destination

To configure your Segment Lambda destination:

1 In the Segment source that you want to connect to your Lambda destination, click **Add Destination**.

2 Search and select the **Lambda** destination and enter details for [these settings options](#)

## FAQ

### What is the Log Type Setting?

This setting controls the [Log Type](#) for your Lambda function using Cloud Watch. Select option `Tail` if you would like to see [detailed logs](#) in Cloud Watch.

### My Lambda <> Segment connection is timing out, what do I do?

Due to how the event delivery system, [Centrifuge](#), works, your Lambda can't take more than 5 seconds to run per message. If you're consistently running into timeout issues, you should consult the [AWS Lambda docs](#), as well as docs for your language of choice, for tips on optimizing performance.

**Handling Common Errors** You can find delivery logs in Destination > [Event Delivery](#).

Here are some common errors you may come across and how to resolve:

**Execution Error** - occurs when the lambda throws an error. Check out the code to ensure the lambda will succeed for that event.

**Operation timedout** - occurs when the lambda takes more than 5s to respond.

**Accessdenied** - occurs when IAM permissions are not set up correctly. Check the IAM policy and role.

**Invalid Credentials** - occurs when IAM permissions are not set up correctly. Check the IAM policy and role.

## Settings

Segment lets you change these destination settings from the Segment app without having to touch any code.

SETTING	DESCRIPTION
Client Context	<code>map</code> , defaults to <code>{}</code> .  An optional map to pass to the Lambda function. See <a href="#">AWS Lambda documentation</a> for more information.
External ID (Read-Only)	<code>string</code> , defaults to <code>#SEGMENT_WORKSPACE_ID</code> .  This is an optional string Segment will use to assume the role provided to invoke the Lambda function. If this setting is not defined, we'll use the Source ID. This value is read-only. Reach out to support if you wish to change it. For more information about external IDs while assuming AWS roles, check <a href="#">here</a> .
Lambda (required)	<code>string</code> . The name of the Lambda function to invoke. These are the supported name formats: * Function name ( <code>my-function</code> ) or with alias ( <code>my-function:v1</code> ). * Function ARN ( <code>arn:aws:lambda:us-west-2:123456789012:function:my-function</code> ). * Partial ARN ( <code>123456789012:function:my-function</code> ). You can append a version number or alias to any of the formats.
Log Type	<code>select</code> . Lambda <a href="#">log type</a> . By default <code>None</code> . Select <code>Tail</code> if you would like to see detailed logs in Cloud Watch.
Region (required)	<code>string</code> . AWS Region where the lambda lives. E.G. <code>us-west-2</code> , <code>eu-west-3</code>
Role Address (required)	<code>string</code> . The address of the AWS role that will be invoking Lambda (ex: <code>arn:aws:iam::874699288871:role/example-role</code> ).

## Need support?

Questions? Problems? Need more info? Contact Segment Support for assistance!

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