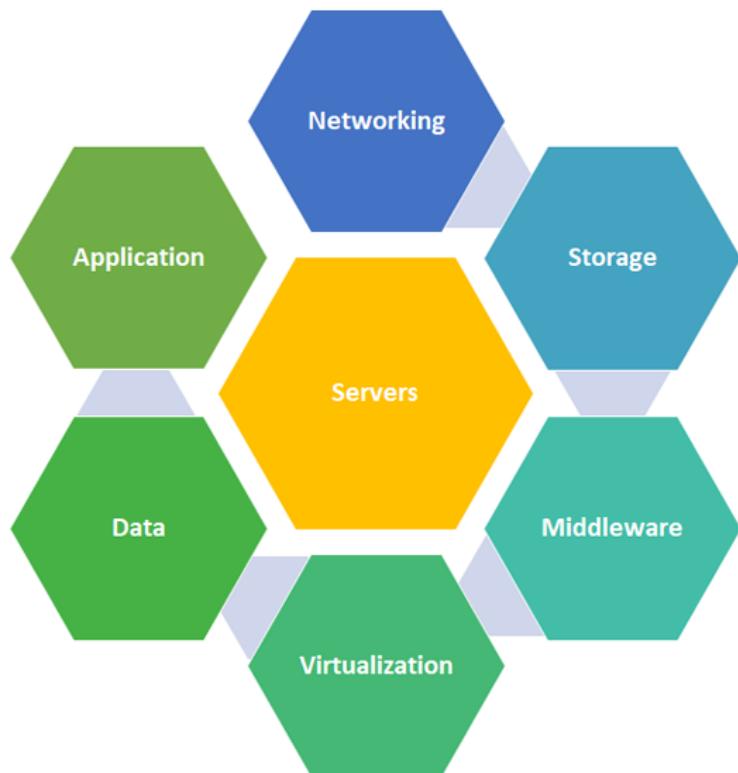
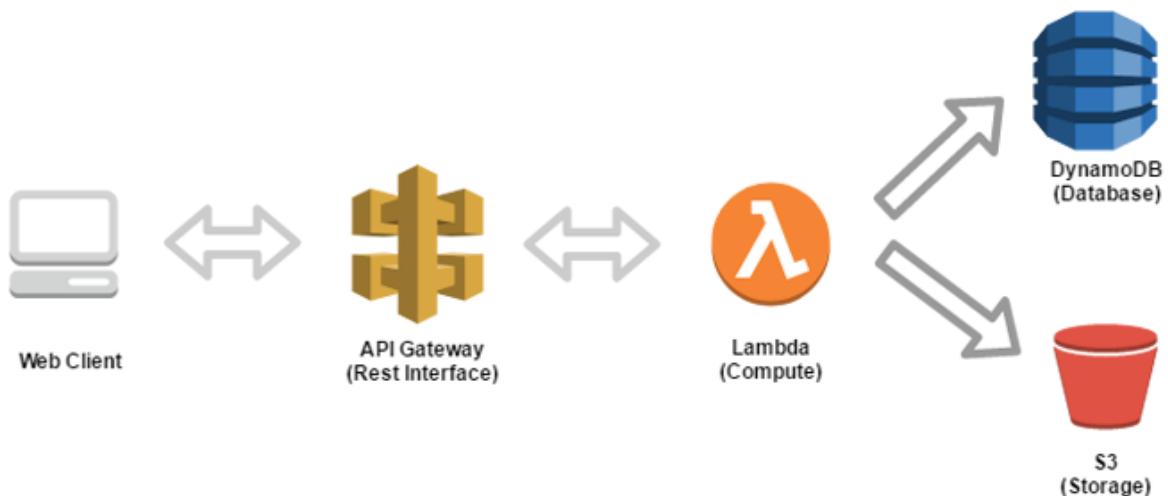


Lesson 01: AWS, Lambda, and Serverless Applications



Serverless Model



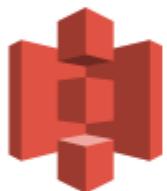
AWS Serverless Ecosystem



Lambda



SNS



S3



DynamoDB



SQS



Amazon Kinesis



Step Function



Athena

[Sign In to the Console](#)

Services ▾ Resource Groups ▾ ⚙

AWS services

Lambda

Lambda
Run Code without Thinking about Servers

Get started

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

Create a function

Create function

Author from scratch
Start with a simple "hello world" example.


Blueprints
Choose a preconfigured template as a starting point for your Lambda function.


Serverless Application Repository
Find and deploy serverless apps published by developers, companies, and partners on AWS.


Name*

Runtime*

Role*
 Defines the permissions of your function. Note that new roles may not be available for a few minutes after creation. [Learn more](#) about Lambda execution roles.

Lambda will automatically create a role with permissions from the selected policy templates. Note that basic Lambda permissions (logging to CloudWatch) will automatically be added. If your function accesses a VPC, the required permissions will also be added.

Role name*
 Enter a name for your new role.

Policy templates
 Choose one or more policy templates. A role will be generated for you before your function is created. [Learn more](#) about the permissions that each policy template will add to your role.

Cancel Create function

✓ Congratulations! Your Lambda function "myFirstLambdaFunction" has been successfully created. You can now change its code and configuration. Click on the "Test" button to input a test event when you are ready to test your function. X

myFirstLambdaFunction

Function code [Info](#)

Code entry type <input type="text" value="Edit code inline"/>	Runtime <input type="text" value="Node.js 6.10"/>	Handler Info <input type="text" value="index.handler"/>
--	--	--

File Edit Find View Goto Tools Window

myFirstLambdaFunction - index.js

```

1  exports.handler = (event, context, callback) => {
2      // Implement your function here
3      const response = {
4          statusCode: 200,
5          body: JSON.stringify('Hello from Lambda!'),
6      };
7      callback(null, response);
8 }
  
```

Environment

9:1 JavaScript Spaces: 4

Basic settings

Description

myFirstLambdaFunction_settings

Memory (MB) Info

Your function is allocated CPU proportional to the memory configured.



128 MB

Timeout Info

0 min 3 sec

myFirstLambdaFunction

Qualifiers ▾

Actions ▾

Select a test event.. ▾

Test

Save

Qualifiers ▾

Actions ▾

Select a test event.. ▾

Test

Save

Configure test event



A function can have up to 10 test events. The events are persisted so you can switch to another computer or web browser and test your function with the same events.

- Create new test event
- Edit saved test events

Event template

Hello World

Event name

myTestEvent

```
1 {  
2   "key3": "value3",  
3   "key2": "value2",  
4   "key1": "value1"  
5 }
```

Execution result: succeeded ([logs](#))

▶ Details



Execution result: succeeded (logs) X

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
8
```

Summary

Code SHA-256	FPzhAv07Nq9IeCtG+nD+E3wVRIOHIRJ8nZ/ZCJJy1M=	Request ID	519fd5b5-2560-11e8-ae20-e37b20048a93
Duration	15.52 ms	Billed duration	100 ms
Resources configured	128 MB	Max memory used	20 MB

Log output

The area below shows the logging calls in your code. These correspond to a single row within the CloudWatch log group corresponding to this Lambda function. [Click here](#) to view the CloudWatch log group.

```
START RequestId: 519fd5b5-2560-11e8-ae20-e37b20048a93 Version: $LATEST
END RequestId: 519fd5b5-2560-11e8-ae20-e37b20048a93
REPORT RequestId: 519fd5b5-2560-11e8-ae20-e37b20048a93 Duration: 15.52 ms Billed Duration: 100 ms Memory Size: 128 MB Max Memory Used: 20 MB
```

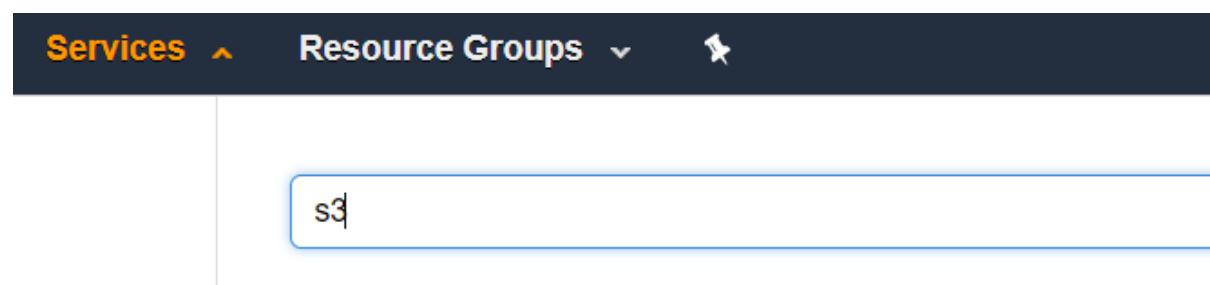
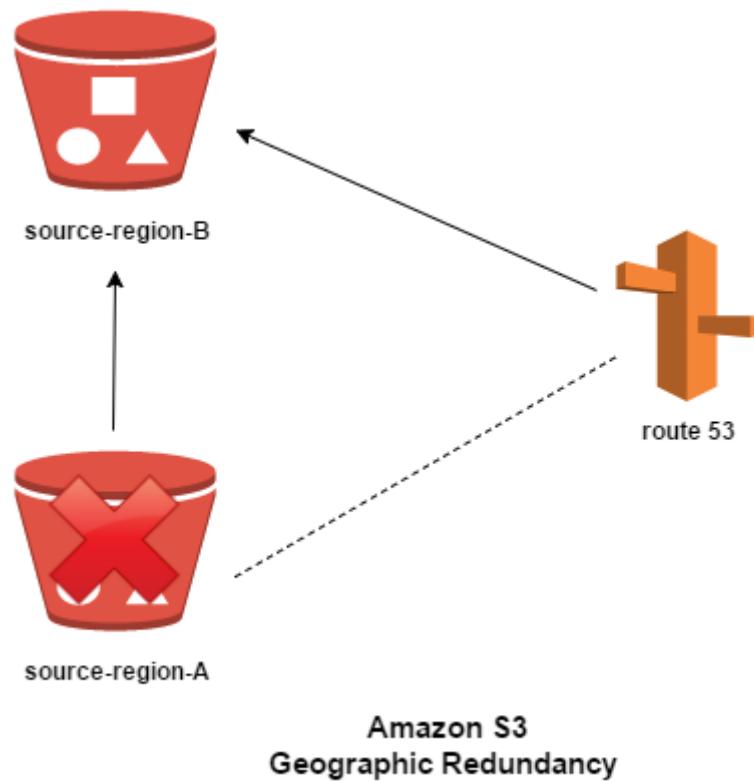
Memory (MB)	Free tier seconds per month	Price per 100ms (\$)
128	3,200,000	0.000000208
192	2,133,333	0.000000313
256	1,600,000	0.000000417
320	1,280,000	0.000000521
384	1,066,667	0.000000625
448	914,286	0.000000729
512	800,000	0.000000834
576	711,111	0.000000938
640	640,000	0.000001042
704	581,818	0.000001146
768	533,333	0.000001250

Execution result: succeeded (logs) X

► Details

Lesson 02: Working with the AWS Serverless Platform

<http://aws-serverless.s3.amazonaws.com/CreateS3Object.csv>





Amazon S3



Search for buckets

+ Create bucket

Delete bucket

Empty bucket

Create bucket

X

① Name and region ② Configure options ③ Set permissions ④ Review

Name and region

Bucket name (optional)
www.aws-serverless.tk

Region
US East (Ohio)

Copy settings from an existing bucket

Select bucket (optional)
2 Buckets

Create **Cancel** **Next**

Create bucket

Properties

Versioning

Keep all versions of an object in the same bucket. [Learn more ↗](#)

Server access logging

Log requests for access to your bucket. [Learn more ↗](#)

Tags

You can use tags to track project costs. [Learn more ↗](#)

Key Value
+ Add another

Object-level logging

Record object-level API activity using AWS CloudTrail for an additional cost. See [CloudTrail pricing ↗](#) or [learn more ↗](#)

Default encryption

Automatically encrypt objects when they are stored in S3. [Learn more ↗](#)

► Advanced settings

Management

Previous Next

Create bucket

Note: You can grant access to specific users after you create the bucket.

Public access settings for this bucket

Use the Amazon S3 block public access settings to enforce that buckets don't allow public access to data. You can also configure the Amazon S3 block public access settings at the account level. [Learn more ↗](#)

Manage public access control lists (ACLs) for this bucket ⓘ

Block new public ACLs and uploading public objects (Recommended) ⓘ
 Remove public access granted through public ACLs (Recommended) ⓘ

Manage public bucket policies for this bucket ⓘ

Block new public bucket policies (Recommended) ⓘ
 Block public and cross-account access if bucket has public policies (Recommended) ⓘ

Manage system permissions

Do not grant Amazon S3 Log Delivery group write access to this bucket

Previous Next

Create bucket

4 Review

Name and region

Bucket name **www.aws-serverless.tk** Region US East (N. Virginia)

Options

Versioning	Disabled
Server access logging	Disabled
Tagging	0 Tags
Object-level logging	Disabled
Default encryption	None
CloudWatch request metrics	Disabled
Object lock	Disabled

Permissions

Block new public ACLs and uploading public objects	False
Remove public access granted through public ACLs	False
Block new public bucket policies	False
Block public and cross-account access if bucket has public policies	False
System permissions	Disabled

Previous Create bucket

Amazon S3 > www.aws-serverless.com

Overview Properties Permissions Public Management

Versioning
Keep multiple versions of an object in the same bucket.
[Learn more](#)
 Disabled

Server access logging
Set up access log records that provide details about access requests.
[Learn more](#)
 Disabled

Static website hosting
Host a static website, which does not require server-side technologies.
[Learn more](#)
 Disabled

Static website hosting



Endpoint : <http://www.aws-serverless.com.s3-website-us-east-1.amazonaws.com>

-  Use this bucket to host a website [i](#) [Learn more](#)

Index document

index.html

Error document

error.html

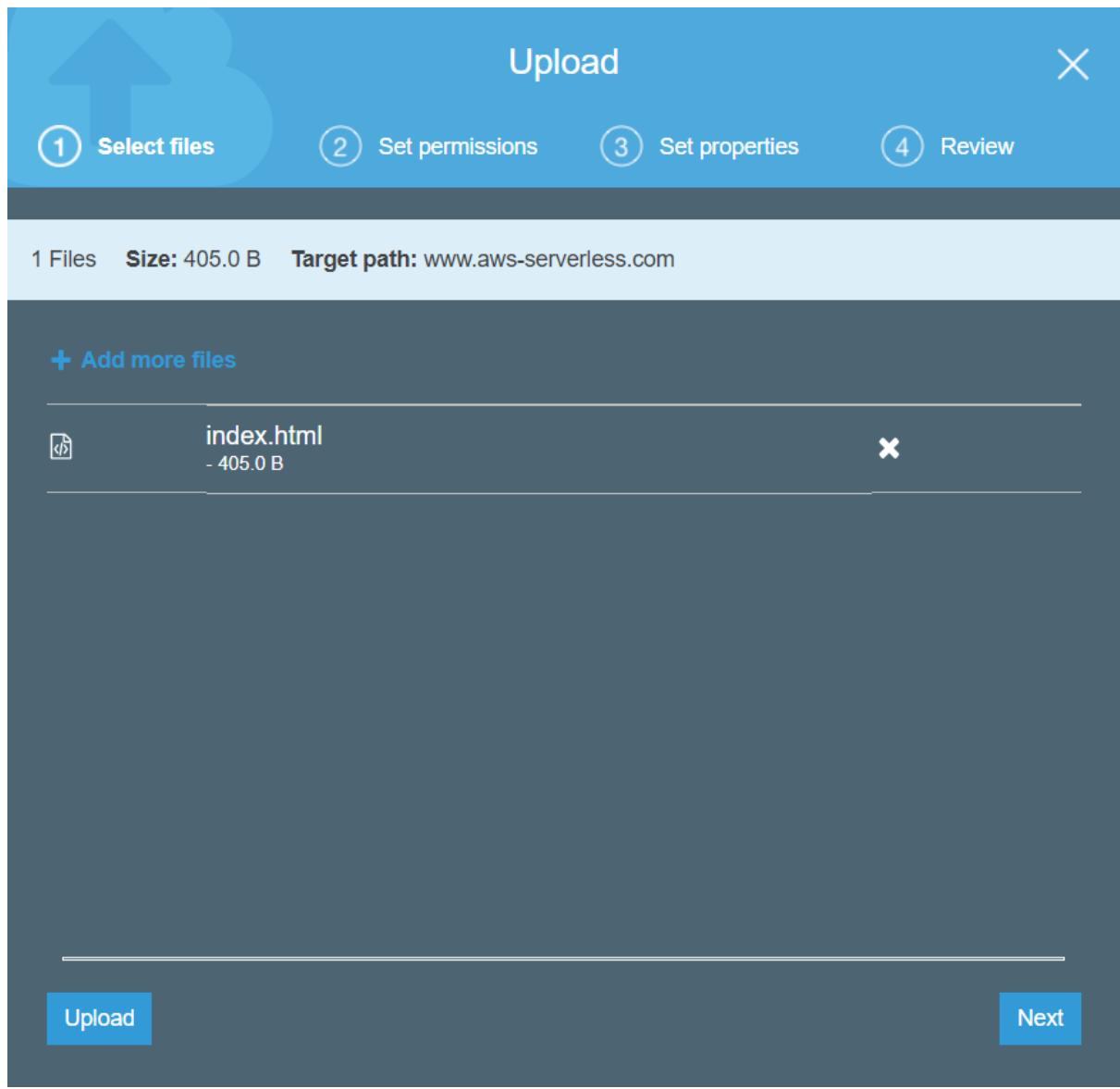
Redirection rules (optional)

Redirect requests Learn more

Disable website hosting

[Cancel](#)

Save



← → ⌂ Secure | <https://s3.amazonaws.com/www.aws-serverless.com/index.html>

Welcome to Class on "Serverless Architectures on AWS 2018"

We are deploying a static website with a serverless architecture here!!



S3 & Lambda Integration

Create bucket

① Name and region ② Set properties ③ Set permissions ④ Review

Name and region

Bucket name i

Region

Copy settings from an existing bucket

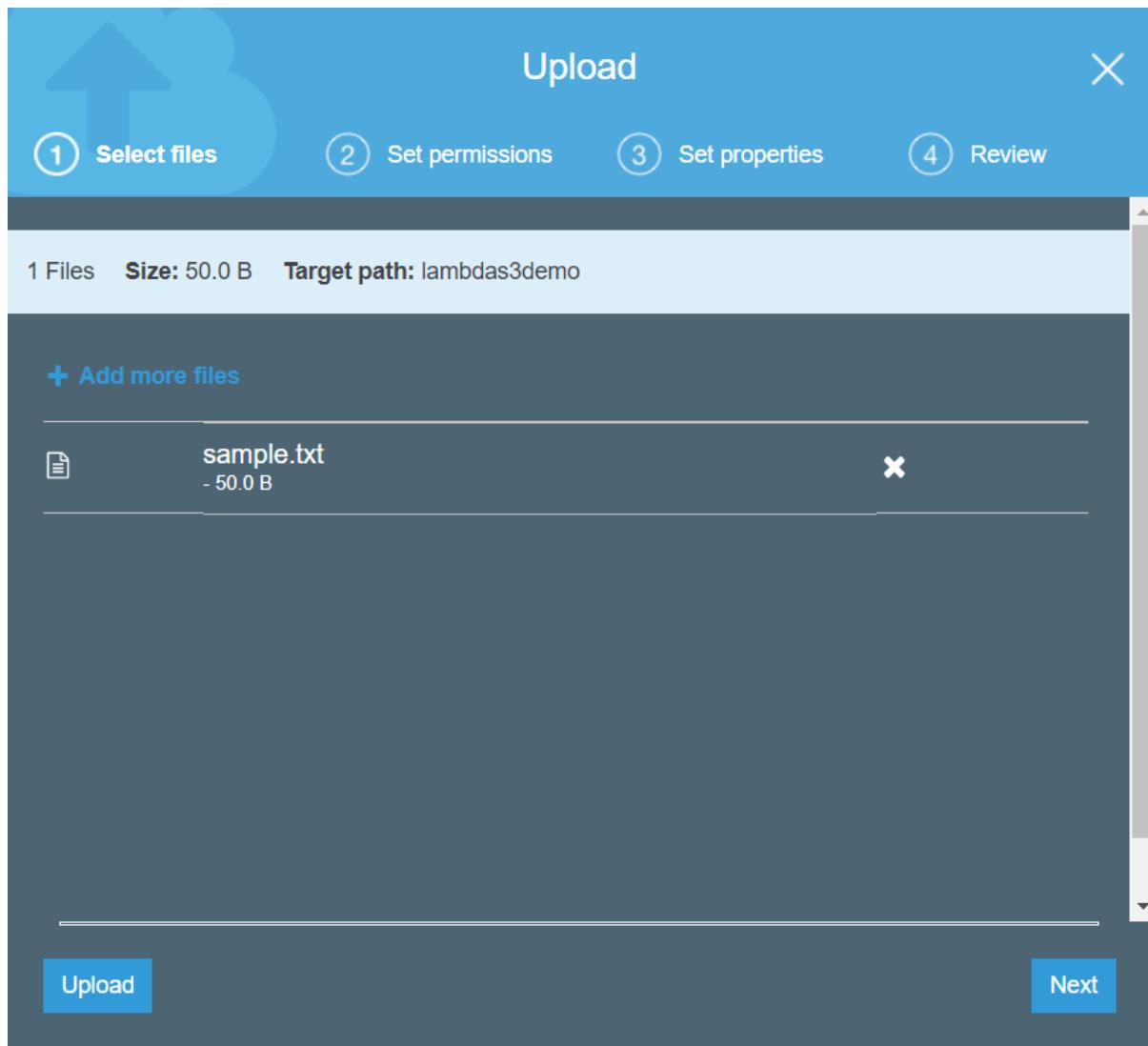
Select bucket (optional)

3 Buckets ▼

[Create](#)

[Cancel](#)

[Next](#)



The screenshot shows the AWS Lambda function editor. It displays a code editor window titled "index.js". The code is a JavaScript function that retrieves an object from an S3 bucket and logs its body to the console. The code is as follows:

```
index.js
6 //Create variables the bucket & key for the uploaded S3 object
7 var src_bkt = 'lambdas3demo';
8 var src_key = 'sample.txt';
9
10 // Retrieve the object
11 s3.getObject({
12   Bucket: src_bkt,
13   Key: src_key
14 }, function(err, data) {
15   if (err) {
16     console.log(err, err.stack);
17     callback(err);
18   } else {
19     console.log('\n\n' + data.Body.toString()+'\n');
20     callback(null, data.Body.toString());
21   }
22 })
```

At the bottom right of the code editor, there are status indicators: "6:4 JavaScript" and "Spaces: 4".

```

1 var AWS = require('aws-sdk');
2 var s3 = new AWS.S3();
3
4 exports.handler = function(event, context, callback) {
5     //Create variables the bucket & key for the uploaded S3 object
6     var src_bkt = 'lambda3demo';
7     var src_key = 'sample.txt';
8
9     // Retrieve the object
10    s3.getObject({
11        Bucket: src_bkt,
12        Key: src_key
13    }, function(err, data) {
14        if (err) {
15            console.log(err, err.stack);
16            callback(err);
17        } else {
18            callback(null, data);
19        }
20    });
21}

```

Execution Result

Response	Status	Max Memory Used	Time
null	Succeeded	39 MB	993.82 ms

Request ID: "4a162610-436a-11e8-8a17-claaff7c929a"

Function Logs:

START RequestId: 4a162610-436a-11e8-8a17-claaff7c929a Version: \$LATEST
2018-04-19T00:40:44.022Z 4a162610-436a-11e8-8a17-claaff7c929a

END RequestId: 4a162610-436a-11e8-8a17-claaff7c929a
REPORT RequestId: 4a162610-436a-11e8-8a17-claaff7c929a Duration: 993.82 ms Billed Duration: 1000 ms Memory Size: 128 MB Max Memory Used: 39 MB



Services ▾ Resource Groups ▾

API Gateway

Compute

- EC2
- Lightsail
- Elastic Container Service
- Lambda
- Batch
- Elastic Beanstalk

Developer Tools

- CodeStar
- CodeCommit
- CodeBuild
- CodeDeploy
- CodePipeline
- Cloud9
- X-Ray

Create new API

In Amazon API Gateway, an API refers to a collection of resources and methods that can be invoked through HTTPS endpoints.

New API Import from Swagger Example API

Settings

Choose a friendly name and description for your API.

API name*	MyFirstAPI
Description	Sample API
Endpoint Type	Regional

* Required

Create new API

In Amazon API Gateway, an API refers to a collection of resources and methods that can be invoked through HTTPS endpoints.

New API Clone from existing API Import from Swagger Example API

Settings

Choose a friendly name and description for your API.

API name*	read_from_S3_api
Description	sample API
Endpoint Type	Regional

* Required

Create API

Resources Actions ▾

New Child Resource

Use this page to create a new child resource for your resource. 

Configure as  proxy resource 

Resource Name*

read_file_from_s3

Resource Path*

/ read-file-from-s3

You can add path parameters using brackets. For example, the resource path {username} represents a path parameter called 'username'. Configuring /{proxy+} as a proxy resource catches all requests to its sub-resources. For example, it works for a GET request to /foo. To handle requests to /, add a new ANY method on the / resource.

Enable API Gateway CORS 

* Required

Cancel

Create Resource

Resources Actions ▾

/read-file-from-s3 Methods

No methods defined for the resource.

/read-file-from-s3

GET  

Resources Actions ▾

/ /read-file-from-s3 - GET - Setup

Choose the Integration point for your new method.

Integration type Lambda Function ⓘ

- HTTP ⓘ
- Mock ⓘ
- AWS Service ⓘ
- VPC Link ⓘ

Use Lambda Proxy integration ⓘ

Lambda Region us-east-1

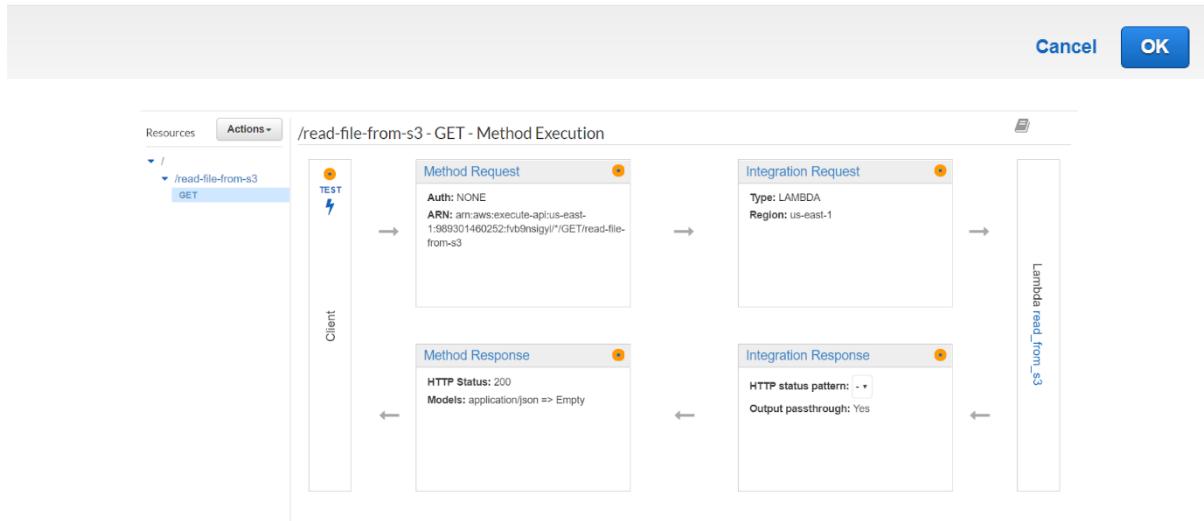
Lambda Function read_from_s3

Use Default Timeout ⓘ

Save

Add Permission to Lambda Function

You are about to give API Gateway permission to invoke your Lambda function:
 arn:aws:lambda:us-east-1:989301460252:function:read_from_s3



Deploy API ⊕

Choose a stage where your API will be deployed. For example, a test version of your API could be deployed to a stage named beta.

Deployment stage

▼

Deployment description

//

Cancel

Deploy

Deploy API

Choose a stage where your API will be deployed. For example, a test version of your API could be deployed to a stage named beta.

Deployment stage	[New Stage] <input type="button" value="▼"/>
Stage name*	prod
Stage description	<input type="text"/>
Deployment description	<input type="text"/>

[Cancel](#)

[Deploy](#)

Invoke URL: <https://ogrjhzdtzi.execute-api.us-east-1.amazonaws.com/prod>

[Settings](#)

[Logs](#)

[Stage Variables](#)

[SDK Generation](#)

[Export](#)

[Deployment History](#)

[Documentation History](#)

[Canary](#)

Configure the metering and caching settings for the **prod** stage.

Cache Settings

[Enable API cache](#)

Default Method Throttling

Choose the default throttling level for the methods in this stage. Each method in this stage will respect these rate and burst settings. Your current account level throttling rate is **10000** requests per second with a burst of **5000** requests. [Read more about API Gateway throttling](#)

[Enable throttling](#)

Rate requests per second

Burst requests

Client Certificate

prod
/ /read-file-from-s3
GET

Invoke URL: <https://fvb9nsigyl.execute-api.us-east-1.amazonaws.com/prod/read-file-from-s3>

Use this page to override the **prod** stage settings for the GET to **/read-file-from-s3** method.

Settings Inherit from stage

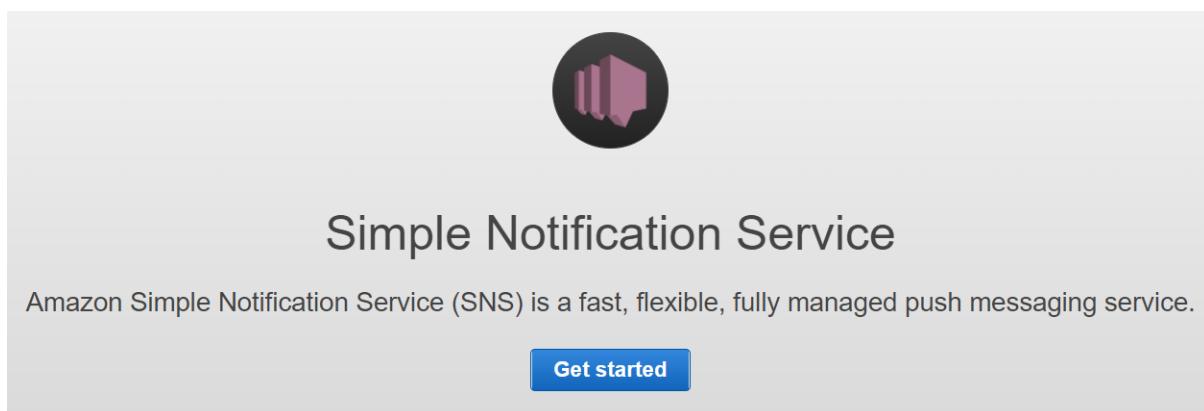
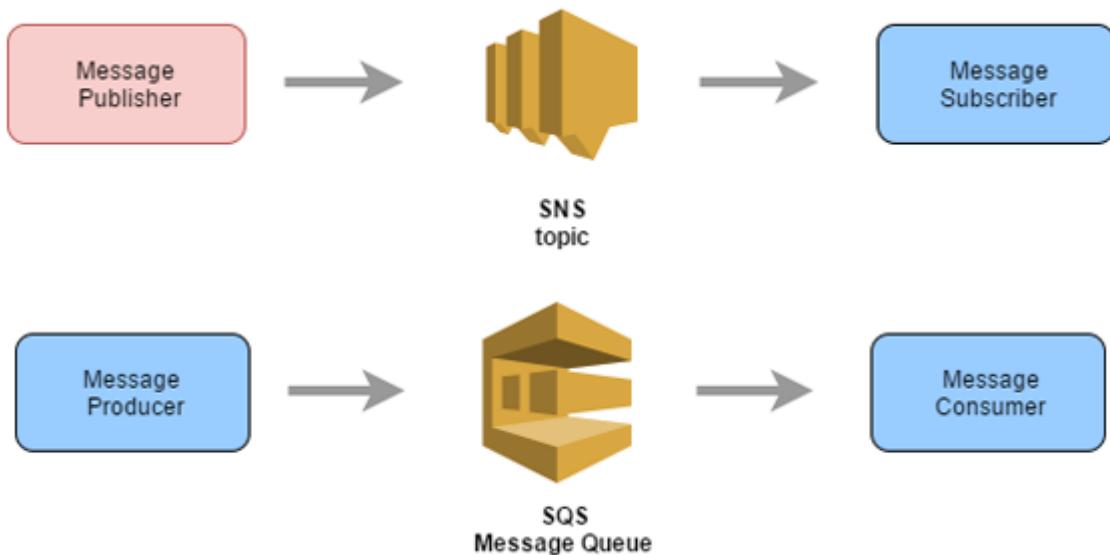
Override for this method

[Save Changes](#)

C Secure | https://ogrjhzdtzi.execute-api.us-east-1.amazonaws.com/prod/read-from-s3

// 20180419154045
// https://ogrjhzdtzi.execute-api.us-east-1.amazonaws.com/prod/read-from-s3

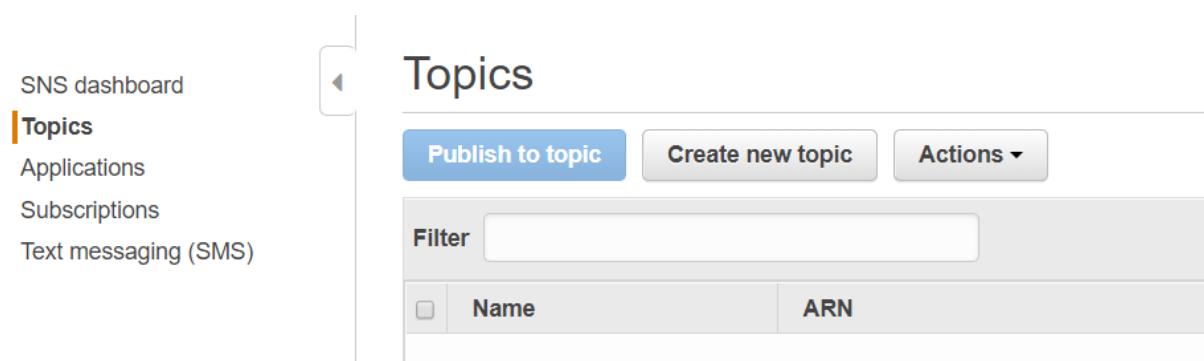
"Welcome to Lambda and S3 integration demo Class !!"



Simple Notification Service

Amazon Simple Notification Service (SNS) is a fast, flexible, fully managed push messaging service.

Get started



SNS dashboard

Topics

Applications
Subscriptions
Text messaging (SMS)

Topics

Publish to topic Create new topic Actions ▾

	Name	ARN
<input type="checkbox"/>		

Create new topic

A topic name will be used to create a permanent unique identifier called an Amazon Resource Name (ARN).

Topic name	TestSNS
Display name	TestSNS

[Cancel](#) [Create topic](#)

Topics

Publish to topic	Create new topic	Actions ▾
Filter <input type="text"/>		
<input type="checkbox"/> Name	ARN	
<input type="checkbox"/> TestSNS	arn:aws:sns:us-east-1:989301460252:TestSNS	

SNS dashboard
Topics
Applications
Subscriptions
Text messaging (SMS)

Subscriptions

Create subscription	Request confirmations	Actions ▾
Filter <input type="text"/>		
<input type="checkbox"/> Subscription ARN		

Create subscription

Topic ARN	arn:aws:sns:us-east-1:989301460252:TestSNS
Protocol	Email
Endpoint	user@example.com

[Cancel](#) [Create subscription](#)

Create subscription				Request confirmations	Actions ▾		
Filter							
<input type="checkbox"/>	Subscription ARN	Proto...	Endpoint	Topic ARN			
<input type="checkbox"/>	PendingConfirmation	email	[REDACTED]	arn:aws:sns:us-east-1:98930146025...			

AWS Notification - Subscription Confirmation Inbox x

FirstTopic <no-reply@sns.amazonaws.com>
to me ▾

You have chosen to subscribe to the topic:
arn:aws:sns:us-east-1:989301460252:FirstTopic

To confirm this subscription, click or visit the link below (If this was in error no action is necessary):
[Confirm subscription](#)

Please do not reply directly to this email. If you wish to remove yourself from receiving all future SNS subscription confirmation requests please send an email to [sns-opt-out](#)



Simple Notification Service

Subscription confirmed!

You have subscribed [REDACTED] to the topic:
TestSNS.

Your subscription's id is:

arn:aws:sns:us-east-1:989301460252:TestSNS:493d9dfd-bdf7-4419-b941-8032a8a16c03

If it was not your intention to subscribe, [click here to unsubscribe](#).

Subscriptions

Create subscription				Request confirmations	Actions ▾		
Filter							
<input type="checkbox"/>	Subscription ARN	Proto...	Endpoint	Topic ARN			
<input type="checkbox"/>	arn:aws:sns:us-east-1:989301460252:TestSNS:493d9dfd-bdf7-4419-b941-8032a8a16c03	email	[REDACTED]	arn:aws:sns:us-east-1:98930146025...			



Lambda SNS Integration

Create function

Author from scratch Info

Start with a simple "hello world" example.

Blueprints Info

Choose a preconfigured template as a starting point for your Lambda function.

Serverless Application Repository Info

Find and deploy serverless apps published by developers, companies, and partners on AWS.

Author from scratch Info

Name

Runtime

Role Defines the permissions of your function. Note that new roles may not be available for a few minutes after creation. [Learn more](#) about Lambda execution roles.

Lambda will automatically create a role with permissions from the selected policy templates. Note that basic Lambda permissions (logging to CloudWatch) will automatically be added. If your function accesses a VPC, the required permissions will also be added.

Role name Enter a name for your new role.

Policy templates Choose one or more policy templates. A role will be generated for you before your function is created. [Learn more](#) about the permissions that each policy template will add to your role.

Cancel

lambda_with sns Throttle Qualifiers Actions Select a test event... Test Save

Congratulations! Your Lambda function "lambda_with sns" has been successfully created. You can now change its code and configuration. Click on the "Test" button to input a test event when you are ready to test your function.

Configuration Monitoring

Designer

Add triggers Click on a trigger from the list below to add it to your function.

Add triggers from the list on the left Resources the function's role has access to will be shown here

index.js

```
1 var aws_sdk = require('aws-sdk');
2 aws_sdk.config.region = 'us-east-1';
3
4 exports.handler = function(event, context) {
5     var sns = new aws_sdk.SNS();
6
7     sns.publish({
8         Message: 'Publish Test Message to SNS from Lambda',
9         TopicArn: 'arn:aws:sns:us-east-1:989301460252:TestSNS'
10    }, function(err, data) {
11        if (err) {
12            console.log(err.stack);
13            return;
14        }
15        console.log('Message sent successfully');
16        console.log(data);
17    });
18}
```

16:27 JavaScript Spaces: 4

Configure test event

X

A function can have up to 10 test events. The events are persisted so you can switch to another computer or web browser and test your function with the same events.

Create new test event

Edit saved test events

Event template

Hello World



Event name

TestEvent

```
1 - [ ]
2   "key3": "value3",
3   "key2": "value2",
4   "key1": "value1"
5 }
```

lambda_with sns

Throttle Qualifiers Actions TestEvent Test Save

Congratulations! Your Lambda function "lambda_with sns" has been successfully created. You can now change its code and configuration. Click on the "Test" button to input a test event when you are ready to test your function. X

Execution result: succeeded (logs)

► Details

lambda_with sns

Throttle Qualifiers Actions TestEvent Test Save

Execution result: succeeded (logs)

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
null
```

Summary

Code SHA-256 Dh8tOAC3ekR45+QtFTXes0BzKmpS Unixs9TzwhA7Mc=

Duration 1410.47 ms

Resources configured 128 MB

Request ID df24b687-3f62-11e8-8657-ad317f64af6b

Billed duration 1500 ms

Max memory used 34 MB

Log output

The area below shows the logging calls in your code. These correspond to a single row within the CloudWatch log group corresponding to this Lambda function. [Click here](#) to view the CloudWatch log group.

```
START RequestId: df24b687-3f62-11e8-8657-ad317f64af6b Version: $LATEST
2018-04-13T21:37:32,877Z df24b687-3f62-11e8-8657-ad317f64af6b
MessageId: 9665f226-9e93-5442-b76a-a1fd1bc49fc5'
END RequestId: df24b687-3f62-11e8-8657-ad317f64af6b
REPORT RequestId: df24b687-3f62-11e8-8657-ad317f64af6b Duration: 1410.47 ms Billed: 1500 ms Memory Used: 34 MB
```

```

1 var AWS_SDK = require('aws-sdk');
2 AWS_SDK.config.region = 'us-east-1';
3
4 exports.handler = function(event, context) {
5   var sns = new AWS_SDK.SNS();
6
7   sns.publish({
8     Message: "Publish Test Message to SNS From Lambda",
9     TopicArn: "arn:aws:sns:us-east-1:989301460252:TestSNS"
10   }, function(err, data) {
11     if (err) {
12       console.log(err.stack);
13       return;
14     }
15     console.log('Message sent successfully');
16     console.log(data);
17   });
18 }

```

Execution Result

Status: Succeeded | Max Memory Used: 39 MB | Time: 1453.79 ms

Request ID: 7858804a-3f66-11e8-a00f-f7914a7abb59

Function logs:

```

START RequestId: 7858804a-3f66-11e8-a00f-f7914a7abb59 Version: $LATEST
2018-04-13T02:05:19.492Z 7858804a-3f66-11e8-a00f-f7914a7abb59 Message sent successfully
2018-04-13T02:05:19.513Z 7858804a-3f66-11e8-a00f-f7914a7abb59 { ResponseMetadata: { RequestId: '4bf9fc457-de31-554a-8e95-9c1cf55643fe' }, 
  MessageId: '0c5c6c3e-d9c1-547d-bc00-3f75f2a692c9' }
END RequestId: 7858804a-3f66-11e8-a00f-f7914a7abb59
REPORT RequestId: 7858804a-3f66-11e8-a00f-f7914a7abb59 Duration: 1453.79 ms Billed Duration: 1500 ms Memory Size: 128 MB Max Memory Used: 39 MB

```

AWS Notification Message Inbox

TestSNS <no-reply@sns.amazonaws.com>

to me

Publish Test Message to SNS from Lambda

--

If you wish to stop receiving notifications from this topic, please click or visit the link below to unsubscribe:
<https://sns.us-east-1.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:us-east-1:989301460252:TestSNS:493d9dfd-bd7-4419-b941-8032a8a16c03&Endpoint=mohit353@gmail.com>

Please do not reply directly to this email. If you have any questions or comments regarding this email, please contact us at <https://aws.amazon.com/support>

lambda_with_sns

Configuration | Monitoring

Designer

CloudWatch Logs
CodeCommit
Cognito Sync Trigger
DynamoDB
Kinesis
S3
SNS
SQS

lambda_with_sns

Add triggers from the list on the left

Amazon CloudWatch Logs
Amazon SNS

Resources that the function's role has access to appear here

Configure triggers

Bucket: kinesis-s3-0810

Event type: All object create events

Prefix: e.g. images/

Suffix: e.g. jpg

Lambda will add the necessary permissions for Amazon S3 to invoke your Lambda function from this trigger. [Learn more](#) about the Lambda permissions model.

Enable trigger

Enable the trigger now, or create it in a disabled state for testing (recommended).

Cancel Add

53

New trigger 1

Unsaved changes

Bucket: s3/kinesis-s3-0810 Event type: ObjectCreated

Delete

lambda_with sns

Configuration Monitoring

Throttle Qualifiers Actions TestEvent Test Save

Designer

CloudWatch Logs
CodeCommit
Cognito Sync Trigger
DynamoDB
Kinesis
S3
SNS
SQS

S3

kinesis-s3-0810 arawes3:kinesis-s3-0810 Bucket: s3/kinesis-s3-0810 Event type: ObjectCreated Notification name: 757ebf53-18fa-4cf1-aedb-f158373fed15 Enabled Delete

File Edit Find View Goto Tools Window

Environment lambda_with sns index.js

```
index.js
1 var aws_sdk = require('aws-sdk');
2 aws_sdk.config.region = 'us-east-1';
3
4 exports.handler = function(event, context) {
5   var sns = new aws_sdk.SNS();
6
7   sns.publish({
8     Message: "A new object has been uploaded to the S3 bucket \"kinesis-s3-0810\"",
9     TopicArn: "arn:aws:sns:us-east-1:989301460252:TestSNS"
10   }, function(err, data) {
11     if (err) {
12       console.log(err.stack);
13       return;
14     }
15     console.log('Message sent successfully');
16     console.log(data);
17   });
18};
```

Amazon S3 > kinesis-s3-0810

Overview Properties Permissions Management

Type a prefix and press Enter to search. Press ESC to clear.

Upload Create folder Download Actions US East (N. Virginia)

Name	Last modified	Size	Storage class
Two-tier-retirement-cake-6-to-10-400-600x537.png	Dec 4, 2018 12:51:01 PM GMT+0530	520.1 KB	Standard

Viewing 1 to 1

TestSNS <no-reply@sns.amazonaws.com> to me

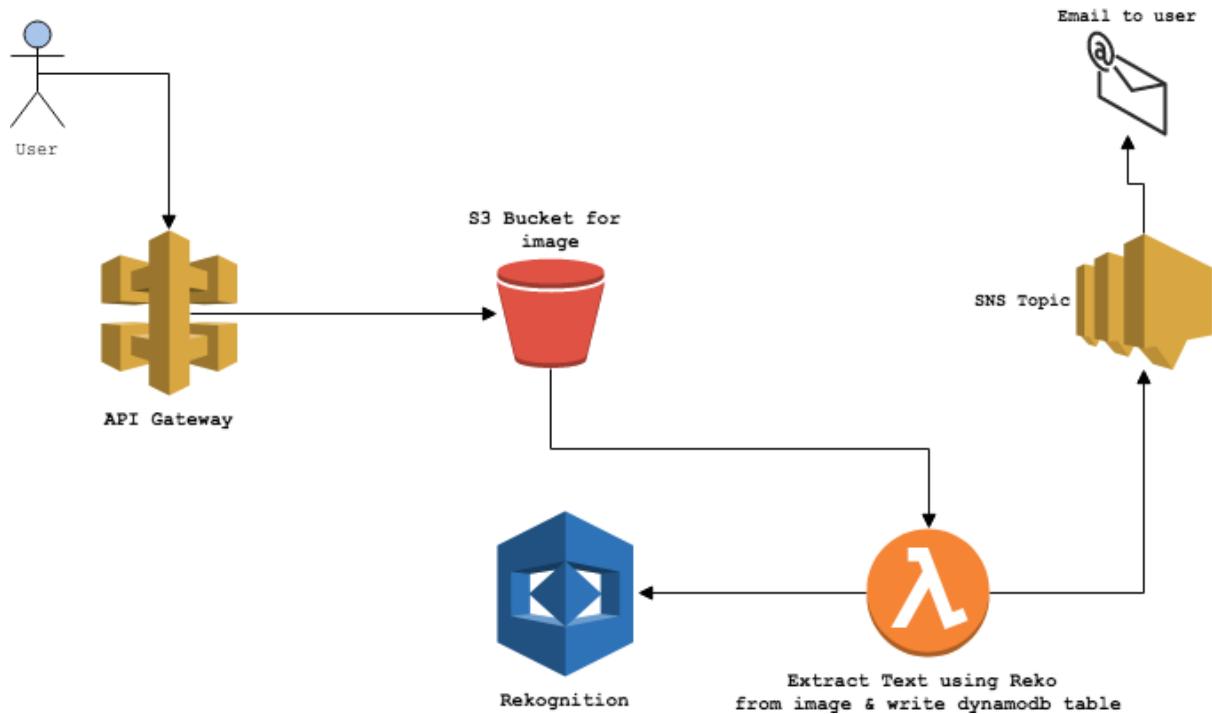
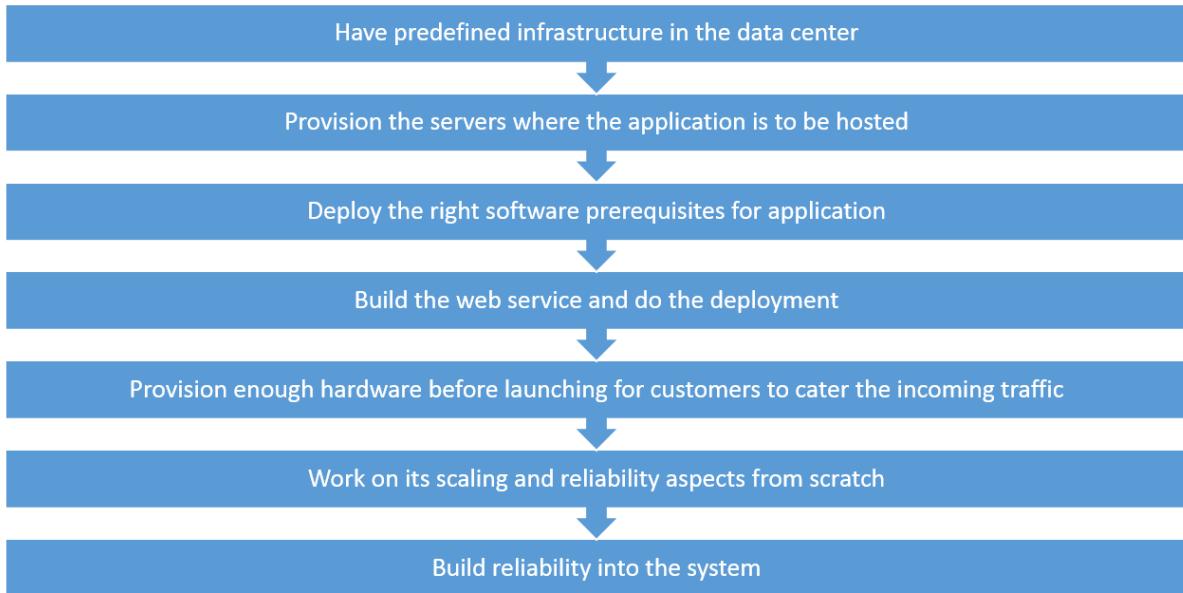
12:56 PM (0 minutes ago) ⭐ ↗ ⋮

A new object has been uploaded to the S3 bucket "kinesis-s3-0810"

If you wish to stop receiving notifications from this topic, please click or visit the link below to unsubscribe:
<https://sns.us-east-1.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:us-east-1:██:TestSNS:493d9fdf-bdf7-4419-b941-8032a8a16c03&EndpointType=topic>

Please do not reply directly to this email. If you have any questions or comments regarding this email, please contact us at <https://aws.amazon.com/support>

Lesson 03: Building and Deploying a Media Application



Create role

1 2 3

Select type of trusted entity

 AWS service EC2, Lambda and others	 Another AWS account Belonging to you or 3rd party	 Web identity Cognito or any OpenID provider	 SAML 2.0 federation Your corporate directory
---	--	--	---

Allows AWS services to perform actions on your behalf. [Learn more](#)

Choose the service that will use this role

EC2

Allows EC2 instances to call AWS services on your behalf.

Lambda

Allows Lambda functions to call AWS services on your behalf.

API Gateway	Config	Elastic Container Service	Lex	SWF
AppSync	DMS	Elastic Transcoder	Machine Learning	SageMaker
Application Auto Scaling	Data Pipeline	Elastic Load Balancing	MediaConvert	Service Catalog
Auto Scaling	DeepLens	Glue	OpsWorks	Step Functions
Batch	Directory Service	Greengrass	RDS	Storage Gateway
CloudFormation	DynamoDB	GuardDuty	Redshift	
CloudHSM	EC2	Inspector	Rekognition	
CloudWatch Events	EMR	IoT	S3	

* Required

Cancel

Next: Permissions

Create role

1 2 3

Review

Provide the required information below and review this role before you create it.

Role name*

api-s3-invoke-demo

Use alphanumeric and '+,-,@-_' characters. Maximum 64 characters.

Role description

Allows API Gateway to call other services on your behalf

Maximum 1000 characters. Use alphanumeric and '+,-,@-_' characters.

Trusted entities AWS service: apigateway.amazonaws.com

Policies



AmazonAPIGatewayPushToCloudWatchLogs

* Required

Cancel

Previous

Create role

Roles > api-s3-invoke-demo

Delete role

Summary

Role ARN arn:aws:iam::██████████:role/api-s3-invoke-demo [Edit](#)

Role description Allows API Gateway to call other services on your behalf | [Edit](#)

Instance Profile ARNs [Edit](#)

Path /

Creation time 2018-04-15 10:20 UTC+0530

Maximum CLI/API session duration 1 hour [Edit](#)

Permissions Trust relationships Access Advisor Revoke sessions

[Attach policy](#)

Attached policies: 1

Policy name ▾

Policy type ▾

▶ AmazonAPIGatewayPushToCloudWatchLogs

AWS managed policy

x

[Add inline policy](#)

Roles > api-s3-invoke-demo

Delete role

Summary

Role ARN arn:aws:iam::██████████:role/api-s3-invoke-demo [Edit](#)

Role description Allows API Gateway to call other services on your behalf | [Edit](#)

Instance Profile ARNs [Edit](#)

Path /

Creation time 2018-04-15 10:20 UTC+0530

Maximum CLI/API session duration 1 hour [Edit](#)

Permissions Trust relationships Access Advisor Revoke sessions

[Attach policy](#)

Attached policies: 3

Policy name ▾

Policy type ▾

▶ AmazonS3FullAccess

AWS managed policy

x

▶ AmazonAPIGatewayInvokeFullAccess

AWS managed policy

x

▶ AmazonAPIGatewayPushToCloudWatchLogs

AWS managed policy

x

[Add inline policy](#)

The screenshot shows the AWS Lambda function configuration page. At the top, there's a navigation bar with back, forward, refresh, and home icons, followed by a secure connection indicator and the URL https://console.aws.amazon.com/. Below the URL is the AWS logo and navigation links for Services and Resource Groups. The main content area has tabs for Functions and APIs. The APIs tab is selected, showing a list of APIs. A prominent blue button labeled '+ Create API' is located on the right side of the APIs list.

Create new API

In Amazon API Gateway, an API refers to a collection of resources and methods that can be invoked through HTTPS endpoints.

New API Clone from existing API Import from Swagger Example API

Settings

Choose a friendly name and description for your API.

API name*	<input type="text" value="image-demo"/>
Description	<input type="text" value="this is demo api for images"/>
Endpoint Type	Regional

* Required

Create API

Resources Actions **New Child Resource**

Use this page to create a new child resource for your resource. 

Configure as  proxy resource 

Resource Name*

Resource Path*

You can add path parameters using brackets. For example, the resource path **{username}** represents a path parameter called 'username'. Configuring **/{proxy+}** as a proxy resource catches all requests to its sub-resources. For example, it works for a GET request to **/foo**. To handle requests to **/**, add a new ANY method on the **/** resource.

Enable API Gateway CORS 

* Required Cancel **Create Resource**

Resources Actions **New Child Resource**

Use this page to create a new child resource for your resource. 

Configure as  proxy resource 

Resource Name*

Resource Path*

You can add path parameters using brackets. For example, the resource path **{username}** represents a path parameter called 'username'. Configuring **/{image}/ {proxy+}** as a proxy resource catches all requests to its sub-resources. For example, it works for a GET request to **/{image}/foo**. To handle requests to **/{image}**, add a new ANY method on the **/{image}** resource.

Enable API Gateway CORS 

* Required Cancel **Create Resource**

Resources / {image} Methods

Actions

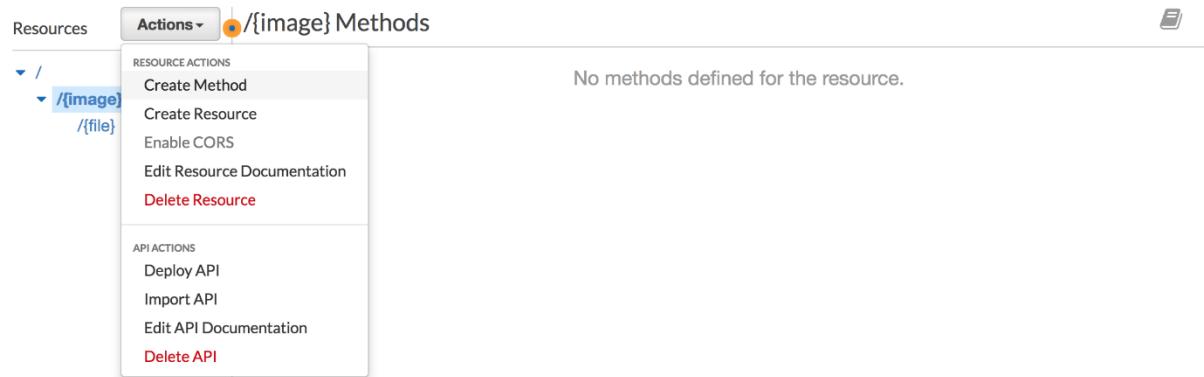
RESOURCE ACTIONS

- Create Method
- Create Resource
- Enable CORS
- Edit Resource Documentation
- Delete Resource

API ACTIONS

- Deploy API
- Import API
- Edit API Documentation
- Delete API

No methods defined for the resource.



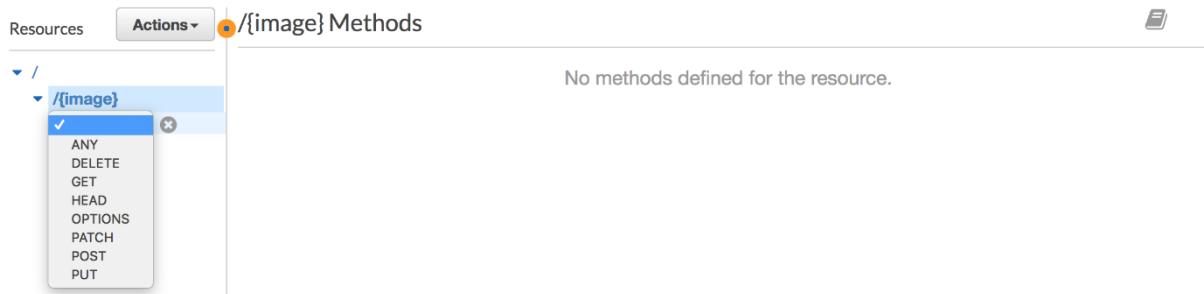
Resources / {image} Methods

Actions

Method dropdown menu:

- ANY
- DELETE
- GET
- HEAD
- OPTIONS
- PATCH
- POST
- PUT

No methods defined for the resource.



Resources / {image} Methods

Actions

Choose the integration point for your new method.

Integration type:

- Lambda Function
- HTTP
- Mock
- AWS Service (selected)
- VPC Link

AWS Region: us-east-1

AWS Service: Simple Storage Service (S3)

AWS Subdomain:

HTTP method: GET

Action Type:

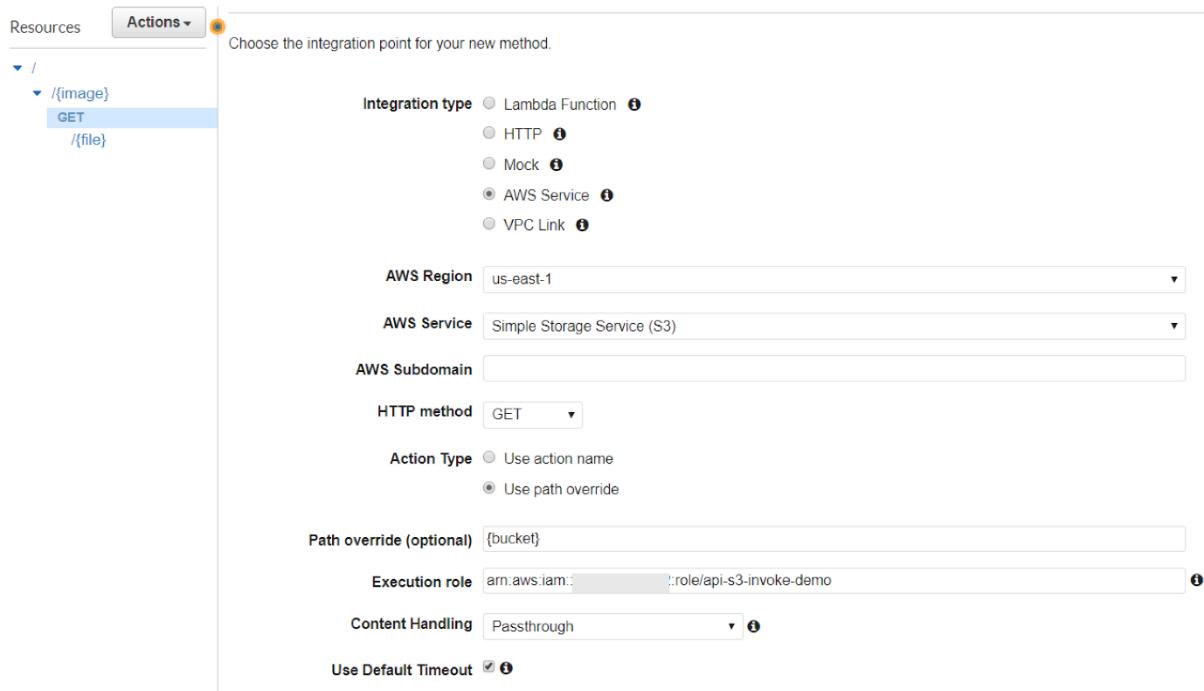
- Use action name
- Use path override (selected)

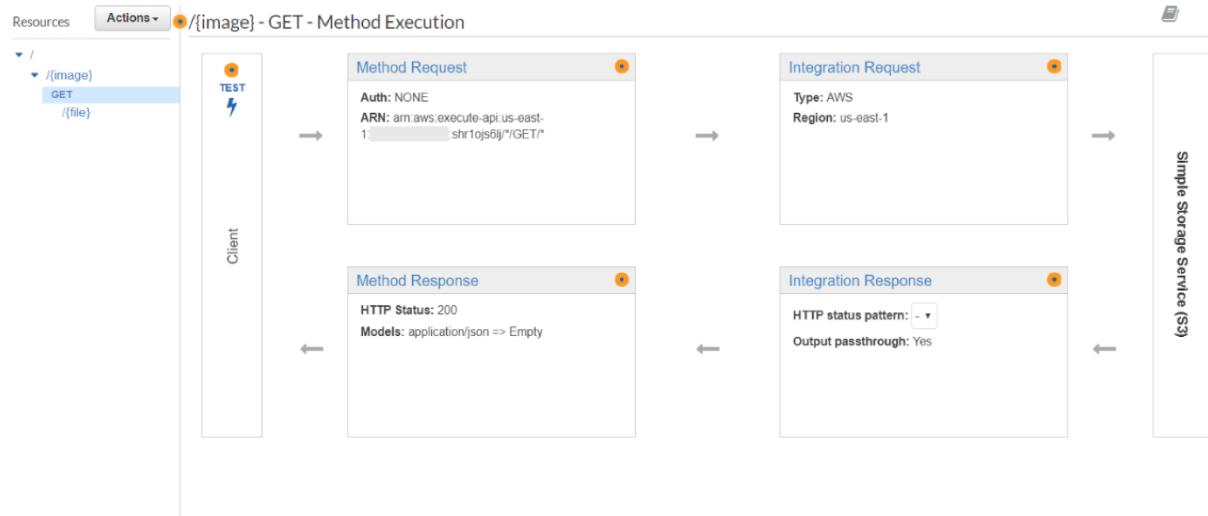
Path override (optional): {bucket}

Execution role: arn:aws:iam:::role/api-s3-invoke-demo

Content Handling: Passthrough

Use Default Timeout:





▼ HTTP Request Headers

Name	Required	Caching	
Content-Type	<input type="checkbox"/>	<input type="checkbox"/>	

[Add header](#)

▼ URL Path Parameters

Name	Mapped from	Caching	
bucket	method.request.path.image	<input type="checkbox"/>	

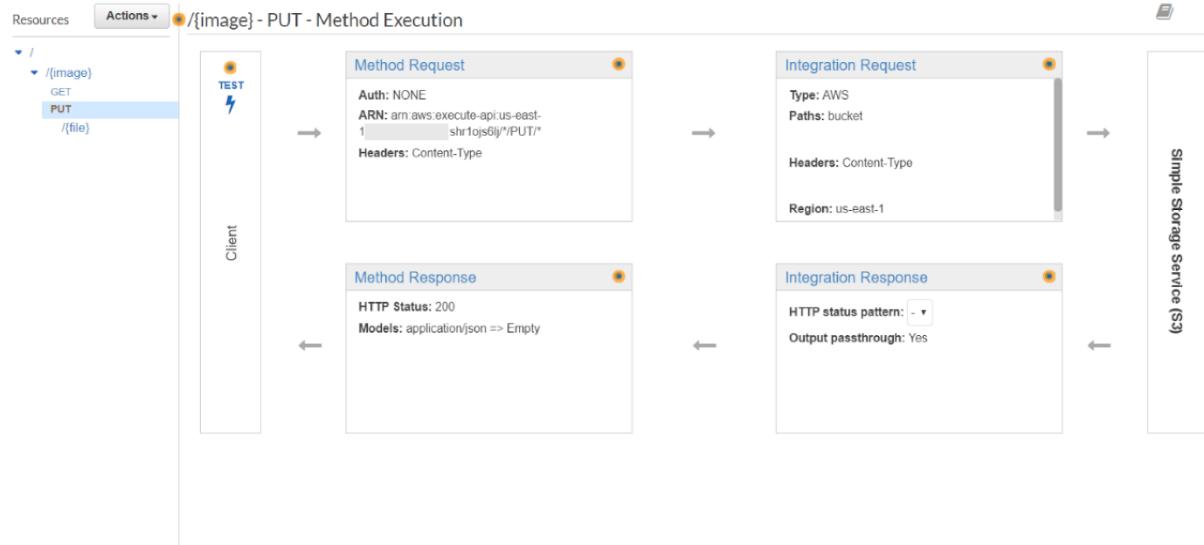
[Add path](#)

► URL Query String Parameters

▼ HTTP Headers

Name	Mapped from	Caching	
x-amz-acl	'authenticated-read'	<input type="checkbox"/>	
Content-Type	method.request.header.Content-Type	<input type="checkbox"/>	

[Add header](#)



Resources Actions ➔ Choose the integration point for your new method.

Integration type: Lambda Function ⓘ
 HTTP ⓘ
 Mock ⓘ
 AWS Service ⓘ
 VPC Link ⓘ

AWS Region: us-east-1

AWS Service: Simple Storage Service (S3)

AWS Subdomain:

HTTP method: PUT

Action Type: Use action name Use path override

Path override (optional): {bucket}/{object}

Execution role: arn:aws:iam::12345678901234567890:role/api-s3-invoke-demo

Content Handling: Passthrough

Use Default Timeout ⓘ

Save

Credentials cache: Do not add caller credentials to cache key ⓘ

Content Handling: Passthrough ⓘ

Use Default Timeout ⓘ

URL Path Parameters

Name	Mapped from ⓘ	Caching
bucket	method.request.path.image	<input type="checkbox"/>
object	method.request.path.file	<input type="checkbox"/>

Add path

URL Query String Parameters

HTTP Headers

Name	Mapped from ⓘ	Caching
Content-Type	method.request.header.Content-Type	<input type="checkbox"/>

Add header

Mapping Templates ⓘ

image-demo

Resources

Stages

Authorizers

Gateway Responses

Models

Resource Policy

Documentation

Settings

Settings

Configure settings for your API deployments

API Key Source

Choose the source of your API Keys from incoming requests. Configure deployments to receive API keys from the x-api-key header or from a Lambda Authorizer

API Key Source

Content Encoding

Allow compression of response bodies based on client's Accept-Encoding header. Compression is triggered when response body size is greater than or equal to your configured threshold. The maximum body size threshold is 10 MB (10,485,760 Bytes). The following compression types are supported: gzip, deflate, and identity.

Content Encoding enabled

Binary Media Types

You can configure binary support for your API by specifying which media types should be treated as binary types. API Gateway will look at the Content-Type and Accept HTTP headers to decide how to handle the body.

Resources

```
▼ /  
  ▼/{image}  
    GET  
    PUT  
  ▼/{file}  
    PUT
```

Actions ▾

/ Methods

RESOURCE ACTIONS

- Create Method
- Create Resource
- Enable CORS
- Edit Resource Documentation

API ACTIONS

- Deploy API
- Import API
- Edit API Documentation
- Delete API**

Deploy API

Choose a stage where your API will be deployed. For example, a test version of your API could be deployed to a stage named beta.

Deployment stage [New Stage] ▾

Stage name* dev

Stage description this is first development stage

Deployment description this is the deployment description

Cancel **Deploy**

Stages Create Delete Stage

dev /

dev Stage Editor

Invoke URL: https://0c...execute-api.us-east-1.amazonaws.com/dev

Settings Logs Stage Variables SDK Generation Export Deployment History Documentation History Canary

Configure the metering and caching settings for the **dev** stage.

Cache Settings

Enable API cache

Default Method Throttling

Choose the default throttling level for the methods in this stage. Each method in this stage will respect these rate and burst settings. Your current account level throttling rate is **10000** requests per second with a burst of **5000** requests. [Read more about API Gateway throttling](#)

Enable throttling

Rate requests per second

Burst requests

New Project X

URL	Create a project from REST URL
API Definition	<input type="text" value="https://cjflozc4e8.execute-api.us-east-1.amazonaws.com/dev"/>
REST Discovery	<input type="text" value="http://example.com/rescue/patch/search?parameter=value"/>
Empty Project	<input style="width: 15%;" type="text" value="PUT"/>

[Learn about creating projects from REST URLs](#)

[Learn about creating projects](#)

OK

Cancel

Project Created X

What do you want to do next?

Continue to describe your API

Stay in **Projects** and edit resources, parameters and requests.
(You can create test cases by right-clicking the API.)

Create a test case

Select to create a test case in **SoapUI**, add response
Assertions, transfer values, create data-driven tests and more.

[Learn about API interfaces and test cases](#)

Remember my selection

OK

Cancel

ReadyAPI SMARTBEAR

File Edit View Project API Operation Method Request Tools Help

Send New Save Add to test Default environment WSS config Auth Manager Refactoring

Proxy Environments Events Databases JMS Preferences

Request 1

Method: PUT Endpoint: https://shr1oj5dij.execute-api.us-east-1.amazonaws.com /dev/mohit-1128-2099 Parameters:

Request

Request Raw Outline Form

View request parameters in a table [Add Parameter](#)

Advanced options

Media Type: application/xml Post QueryString

Auth Attachments (1) Representations (3) JMS Headers Headers (0)

Learn about the request editor

Request Properties Request Params

Property	Value
Name	Request 1
Description	
Encoding	
Endpoint	https://shr1oj5dij.execute-api.us-east-1.amazonaws.com
Timeout	
Bind Address	
Follow Redirects	true
Follow 302 Redirect with... false	
Username	
Password	
Domain	
Authentication Type	No Authorization
SSL KeyStores	
Strip Whitespace	false
Return Errors Content	false

Show Logs response time: 545ms (0 bytes)

1:1

ReadyAPI SMARTBEAR

File Edit View Project API Operation Method Request Tools Help

Send New Save Add to test Default environment WSS config Auth Manager Refactoring

Proxy Environments Events Databases JMS Preferences

Request 1

Method: PUT Endpoint: https://shr1oj5dij.execute-api.us-east-1.amazonaws.com /dev/mohit-1128-2099/firstimage.png Parameters:

Request

Request Raw Outline Form

View request parameters in a table [Add Parameter](#)

Advanced options

Media Type: image/png Post QueryString

+ [C:/Users/mo001... image/png](#)

Request Properties Request Params

Property	Value
Name	Request 1
Description	
Encoding	UTF-8
Endpoint	https://shr1oj5dij.execute-api.us-east-1.amazonaws.com
Timeout	
Bind Address	
Follow Redirects	true
Follow 302 Redirect with... false	
Username	

Response

XML JSON HTML Raw Outline Overview

HTTP/1.1 200 OK Date: Mon, 03 Dec 2018 09:54:01 GMT Content-Type: application/json Content-Length: 0 Connection: keep-alive x-amzn-RequestId: 5c9e1af1-f6e1-11e8-acb0-a31c9de11b57 x-amz-apigw-id: RUyjBArQbJMYfDw= X-Amzn-Trace-Id: Root=1-5c04fd1a-7a63677e2c8f2e14c2931fcfe

Roles > api-lambda-rekog-demo

Summary

Delete role

Role ARN: arn:aws:iam:::role/api-lambda-rekog-demo

Role description: Allows Lambda functions to call AWS services on your behalf. | [Edit](#)

Instance Profile ARNs: /

Path: /

Creation time: 2018-04-15 20:36 UTC+0530

Maximum CLI/API session duration: 1 hour [Edit](#)

Permissions Trust relationships Access Advisor Revoke sessions

Attached policies: 3

Policy name: AWSLambdaFullAccess, AmazonRekognitionFullAccess, AmazonSNSFullAccess

Policy type: AWS managed policy

Add inline policy

Create new topic

Building a mobile app? Try [AWS Mobile Hub](#).

A topic name will be used to create a permanent unique identifier called an Amazon Resource Name (ARN).

Topic name

extract-image-labels-sns

i

Display name

ext-image

i

Cancel

Create topic

Topic details: extract-image-labels-sns

[Publish to topic](#)

[Other topic actions ▾](#)

Topic ARN arn:aws:sns:us-east-1:111111111111:extract-image-labels-sns

Topic owner 989301460252

Region us-east-1

Display name ext-image

Encryption at rest Disabled [i](#)

Subscriptions

[Create subscription](#)

[Request confirmations](#)

[Confirm subscription](#)

[Other subscription actions ▾](#)

Filter

Create subscription

Topic ARN

arn:aws:sns:us-east-1:111111111111:extract-image-labels-sns

Protocol

Email

Endpoint

ext-image-test@outlook.com

Cancel

Create subscription

This function contains external libraries.

X

Basic information Info

Name

Role

Defines the permissions of your function. Note that new roles may not be available for a few minutes after creation. [Learn more](#) about Lambda execution roles.

Existing role

You may use an existing role with this function. Note that the role must be assumable by Lambda and must have Cloudwatch Logs permissions.

s3

Bucket

Please select the S3 bucket that serves as the event source. The bucket must be in the same region as the function.

Configure triggers

Bucket

Please select the S3 bucket that serves as the event source. The bucket must be in the same region as the function.

Event type

Select the events that you want to 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.

Prefix

Enter a single optional prefix to limit the notifications to objects with keys that start with matching characters.

Suffix

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

Lambda will add the necessary permissions for Amazon S3 to invoke your Lambda function from this trigger. [Learn more](#) about the Lambda permissions model.

Enable trigger

Enable the trigger now, or create it in a disabled state for testing (recommended).

s3

Enabled

mohit-1128-2099

arn:aws:s3::mohit-1128-2099

Bucket: s3/mohit-1128-2099 Event type: ObjectCreated Notification name: b74b945c-1ae7-4353-9b48-8dc9371b751b

ext-image <no-reply@sns.amazonaws.com>

5:09 PM (15 minutes ago)

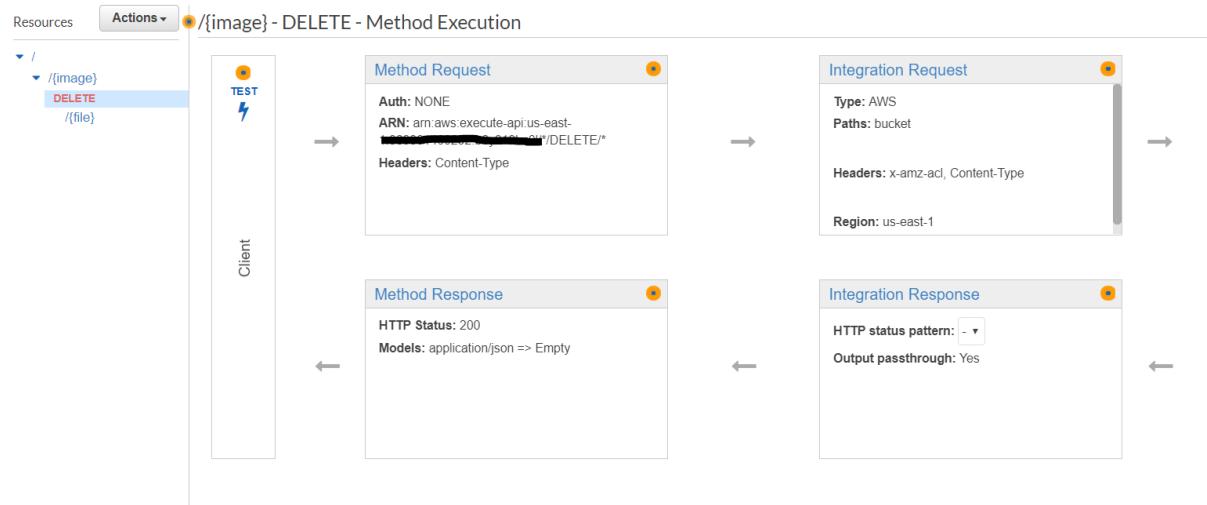
to me ▾

[{"Name": "Text", "Confidence": 99.11747741699219}, {"Name": "Page", "Confidence": 58.84266662597656}, {"Name": "File", "Confidence": 56.483497619628906}, {"Name": "Electronics", "Confidence": 55.50878143310547}]

--

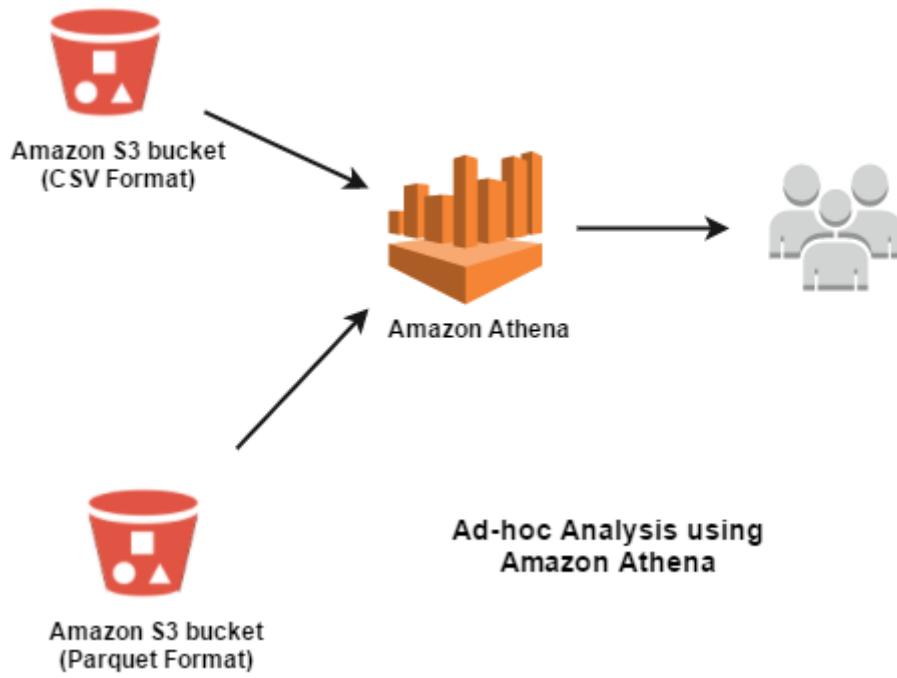
If you wish to stop receiving notifications from this topic, please click or visit the link below to unsubscribe:

<https://sns.us-east-1.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:us-east-1:mohit-1128-2099:extract-image-labels-sns-caf76256-4417-450f-ace3-25ebef12aec6&EndpointType=topic&Endpoint=mohit-1128-2099@amazonaws.com>



The screenshot shows the Postman application interface. At the top, there's a header bar with 'DELETE' (selected), the URL 'https://b8y019hz0l.execute-api.us-east-1.amazonaws.com/dev/mohit-s3-2911-east-30', 'Params' (disabled), 'Send' (disabled), and 'Save' (disabled). Below the header are tabs for 'Authorization', 'Headers (1)' (selected), 'Body', 'Pre-request Script', and 'Tests'. On the far right of the top bar are 'Cookies' and 'Code' buttons. The 'Headers' tab contains one entry: 'Content-Type' set to 'application/xml'. There are buttons for '...', 'Bulk Edit', and 'Presets'. Below the headers is a table with columns 'KEY', 'VALUE', and 'DESCRIPTION'. A checked checkbox next to 'Content-Type' is visible. The 'Body' tab is selected at the bottom left, showing 'Pretty', 'Raw', and 'Preview' options. To the right of the body tab, status information is displayed: 'Status: 200 OK', 'Time: 2002 ms', and 'Size: 280 B'. On the far right of the bottom bar is a clipboard icon.

Lesson 04: Serverless Amazon Athena and the AWS Glue Data Catalog



Athena **Query Editor** Saved Queries History AWS Glue Data Catalog

Database
sampledb
Filter tables and views...

Tables (2)
cloudtrail_logs
elb_logs

Views (0)
You have not created any views. To create a view, click "Create view from query"

Create table
from S3 bucket data
from AWS Glue Crawler

SQL templates
CREATE TABLE
CREATE TABLE AS SELECT

New query 1

```

1 -- Run an ANSI SQL or Hive Data Definition
2
3 -- ANSI SQL Example:
4
5 -- SELECT * FROM default.cloudfront_logs li
6
7 -- Hive DDL Example:
8
9 -- CREATE EXTERNAL TABLE IF NOT EXISTS clou
10 -- Date Date,
11 -- Time STRING,
12 -- Location STRING,
13 -- Bytes INT,
14 -- RequestIP STRING,
15 -- Method STRING,
16 -- Host STRING,
17 -- Uri STRING,
18 -- Status INT,
19 -- Referrer STRING,
20 -- OS String,
21

```

Run query Save as Create ▾

Use Ctrl + Enter to run query, Ctrl + Space to autocomplete

Databases > Add table

Step 1: Name & Location Step 2: Data Format Step 3: Columns Step 4: Partitions

Database: Choose an existing database or create a new one by selecting "Create new database".
athena_demo

Name of the new database: athena_demo

Table Name: flavours_of_cocoa
Name of the new table. Table names must be globally unique. Table names tend to correspond to the directory where the data will be stored.

Location of Input Data Set: s3://aws-athena-demo-0606/ Encrypted data set
Input the path to the data set you want to process on Amazon S3. For example if your data is stored at s3://input-data-set/logs/1.csv, please enter s3://input-data-set/logs/. If your data is already partitioned, e.g. s3://input-data-set/logs/year=2004/month=12/day=11/ just input the base path s3://input-data-set/logs/

External
Note: Amazon Athena only allows you to create tables with the EXTERNAL keyword. Dropping a table created with the External keyword does not delete the underlying data.

Next

Databases > Add table

Step 1: Name & Location

Step 2: Data Format

Step 3: Columns

Step 4: Partitions

Data Format

- Apache Web Logs
- CSV
- TSV
- Text File with Custom Delimiters
- JSON
- Parquet
- ORC

[Back](#)

[Next](#)

Bulk add columns

Define columns in name value pairs, using commas to separate definitions (col1_name data_type, col2_name data_type, ...). Certain advanced data types (namely, structs) are not supported in this interface, but are supported using DDL statements.

```
Company string,Bean_Origin string,REF int,Review_Date int,Cocoa_Percent  
string,Company_Location string,Rating decimal,Bean_Type string,Broad_Bean-Origin string
```

8

[Cancel](#)[Add](#)

Databases > Add table

Step 1: Name & Location Step 2: Data Format **Step 3: Columns** Step 4: Partitions

Column Name

Column name must be single words that start with a letter or a digit.

Column type

Type for this column. Certain advanced types (namely, structs) are not exposed in this interface.

Column Name

Column name must be single words that start with a letter or a digit.

Column type

Type for this column. Certain advanced types (namely, structs) are not exposed in this interface.

Column Name

Column name must be single words that start with a letter or a digit.

Column type

Type for this column. Certain advanced types (namely, structs) are not exposed in this interface.

Column Name

Column name must be single words that start with a letter or a digit.

Databases > Add table

Step 1: Name & Location Step 2: Data Format Step 3: Columns **Step 4: Partitions**

Configure Partitions (Optional)

Partitions are a way to group specific information together. Partition are virtual columns. In case of partitioned tables, subdirectories are created under the table's data directory for each unique value of a partition column. In case the table is partitioned on multiple columns, then nested subdirectories are created based on the order of partition columns in the table definition. [Learn more](#).

[Add a partition](#)

[Back](#) [Create table](#)

Database

athena_demo

Filter tables and views...

Tables (1) Create table

flavours_of_cocoa

Views (0) Create view

You have not created any views. To create a view, run a query and click "Create view from query".

New query 1 New query 2 +

```

1 CREATE EXTERNAL TABLE IF NOT EXISTS athena_demo.flavours_of_cocoa (
2   `company` string,
3   `bean_origin` string,
4   `ref` int,
5   `review_date` int,
6   `cocoa_percent` string,
7   `company_location` string,
8   `rating` decimal,
9   `bean_type` string,
10  `broad_beans_origin` string
11 )
12 ROW FORMAT SERDE 'org.apache.hadoop.hive.serde2.lazy.LazySimpleSerDe'
13 WITH SERDEPROPERTIES (
14   'serialization.format' = ',',
15   'field.delim' = ',',
16 ) LOCATION 's3://aws-athena-demo-0606/'
17 TBLPROPERTIES ('has_encrypted_data=false');

```

Run query Save as Create view from query (Run time: 0.72 seconds, Data scanned: 0KB)

Use Ctrl + Enter to run query, Ctrl + Space to autocomplete



Run query Save as Create view from query (Run time: 0.72 seconds, Data scanned: 0KB)

Use Ctrl + Enter to run query, Ctrl + Space to autocomplete

Database

athena_demo

Filter tables and views...

Tables (1) Create table

flavours_of_cocoa

Views (0) Create view

You have not created any views. To create a view, run a query and click "Create view from query".

New query 1 create_table_flav... +

```

1 select * from flavours_of_cocoa limit 10;

```

Run query Save as Create view from query (Run time: 1.44 seconds, Data scanned: 124.58KB)

Format query Clear

Results

	company	bean_origin	ref	review_date	cocoa_percent	company_location	rating	bean_type	broad_beans_origin
1	A. Morin	Agua Grande	1876	2016	63%	France	4		Sao Tome
2	A. Morin	Kpime	1676	2015	70%	France	3		Togo
3	A. Morin	Alsane	1676	2015	70%	France	3		Togo
4	A. Morin	Akata	1680	2015	70%	France	4		Togo
5	A. Morin	Quilla	1704	2015	70%	France	4		Peru
6	A. Morin	Carenco	1315	2014	70%	France	3	Criollo	Venezuela
7	A. Morin	Cuba	1315	2014	70%	France	4	Criollo	Cuba
8	A. Morin	Sur del Lago	1315	2014	70%	France	4	Criollo	Venezuela
9	A. Morin	Puerto Cabello	1319	2014	70%	France	4	Criollo	Venezuela

New query 1 | create_table_flav... | +

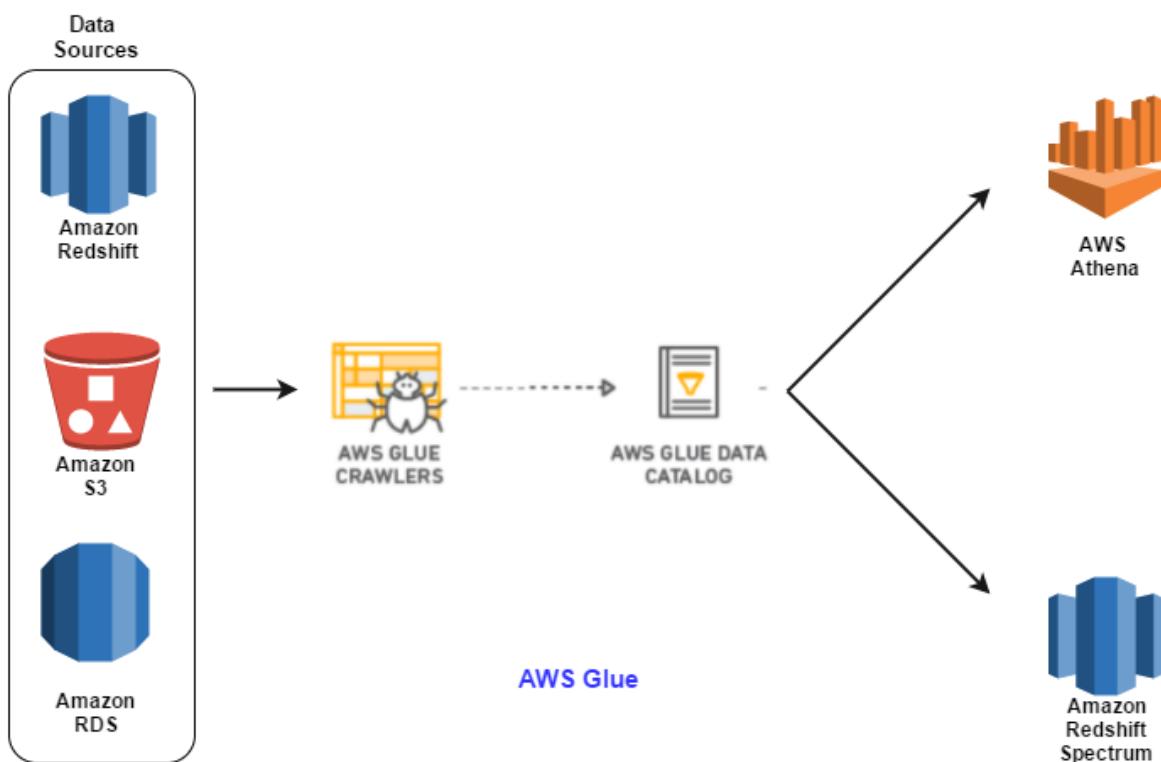
```
1 select company, count(*) cnt from flavours_of_cocoa
2 where rating > 4
3 group by company
4 order by cnt desc
5 limit 10;
```

Run query | Save as | Create view from query | (Run time: 1.63 seconds, Data scanned: 124.58KB) | Format query | Clear

Use Ctrl + Enter to run query, Ctrl + Space to autocomplete

Results

	company	cnt
1	Fresco	26
2	"Smooth Chocolat	5
3	Heirloom Cacao Preservation (Guitard)	3
4	Ritual	3
5	Idilio (Felchlin)	2
6	Amedei	2
7	Pitch Dark	2
8	Hotel Chocolat (Coppeneur)	2
9	Wm	2



Add crawler

Add information about your crawler

Crawler info

Crawler name: chocolate_ratings

- Description, security configuration, and classifiers (optional)
- Grouping behavior for S3 data (optional)

Next

Add a data store

Choose a data store
S3

Crawl data in
 Specified path in my account
 Specified path in another account

Include path
s3://aws-athena-demo-0606/
All folders and files contained in the include path are crawled. For example, type s3://MyBucket/MyFolder/ to crawl all objects in MyFolder within MyBucket.

▶ **Exclude patterns (optional)**

Back **Next**

Add crawler

Crawler info
chocolate_ratings

Data store
S3: s3://aws-athena...

IAM Role
Schedule
Output
Review all steps

Add another data store
 Yes
 No

Back **Next**

Choose an IAM role

The IAM role allows the crawler to run and access your Amazon S3 data stores. [Learn more](#)

Update a policy in an IAM role
 Choose an existing IAM role
 Create an IAM role

IAM role [AWSGlueServiceRole-glue-demo](#)

To create an IAM role, you must have **CreateRole**, **CreatePolicy**, and **AttachRolePolicy** permissions. Create an IAM role named "**AWSGlueServiceRole-rolename**" and attach the AWS managed policy, **AWSGlueServiceRole**, plus an inline policy that allows read access to:
• s3://aws-athena-demo-0606/
You can also create an IAM role on the [IAM console](#).

Back **Next**

Create a schedule for this crawler

Frequency
Run on demand

Back **Next**

Crawler info
chocolate_ratings

Data store
S3: s3://aws-athena...

IAM Role
arn:aws:iam::989301460252:role/service-role/AWSGlueServiceRole-glue-demo

Schedule
Output
Review all steps

Add crawler

Crawler info
chocolate_ratings

Data store
S3: s3://aws-athena...

IAM Role
arn:aws:iam::9893014
60252:role/service-
role/AWSGlueService
Role-glue-demo

Schedule
Run on demand

Output
glue-demo

Review all steps

Add database

Database name
glue-demo

Description and location (optional)

Create

Back Next

Configure the crawler's output

Database
glue-demo

Add database

Prefix added to tables (optional)
Type a prefix added to table names

▼ Configuration options (optional)

During the crawler run, all schema changes are logged.

When the crawler detects schema changes in the data store, how should AWS Glue handle table updates in the data catalog?

- Update the table definition in the data catalog.
- Add new columns only.
- Ignore the change and don't update the table in the data catalog. ⓘ

Update all new and existing partitions with metadata from the table. ⓘ

How should AWS Glue handle deleted objects in the data store?

- Delete tables and partitions from the data catalog.
- Ignore the change and don't update the table in the data catalog.
- Mark the table as deprecated in the data catalog. ⓘ

Crawler info
Name chocolate_ratings

Data stores
Data store S3
Include path s3://aws-athena-demo-0606/
Exclude patterns

IAM role
IAM role arn:aws:iam::██████████:role/service-role/AWSGlueServiceRole-glue-demo

Schedule
Schedule Run on demand

Output
Database glue-demo
Prefix added to tables (optional)
▼ Configuration options
Schema updates in the data store Update the table definition in the data catalog.
Object deletion in the data store Mark the table as deprecated in the data catalog.

Back Finish

Crawlers A crawler connects to a data store, progresses through a prioritized list of classifiers to determine the schema for your data, and then creates metadata tables in your data catalog.

The screenshot shows the AWS Glue Data Catalog interface. At the top, there are buttons for 'Add crawler', 'Run crawler', and 'Action'. To the right, it says 'Showing: 1 - 1 < >'. Below this is a table with one row for the crawler 'chocolate_ratings'. The columns are: Name, Schedule, Status, Logs, Last runtime, Median runtime, Tables updated, and Tables added. The crawler details are shown in a modal window: Name: aws_athena_demo_0606, Description: glue-demo, Database: glue-demo, Classification: csv, Location: s3://aws-athena-demo-0606/, Connection: No, Deprecated: No, Last updated: Sun Jun 17 02:51:41 GMT+530 2018, Input format: org.apache.hadoop.mapred.TextInputFormat, Output format: org.apache.hadoop.hive.ql.io.HiveIgnoreKeyTextOutputFormat, Serde serialization lib: org.apache.hadoop.hive.serde2.lazy.LazySimpleSerDe. Under 'Table properties', sizeKey is 127567, objectCount is 1, and the table name is chocolate_ratings. The schema table has three columns: col0 (string), col1 (string), and col2 (bigint).

The screenshot shows the Amazon S3 console. The path is 'Amazon S3 > inventory-sales-ratio'. There are tabs for 'Overview', 'Properties' (which is selected), 'Permissions', and 'Management'. Below the tabs is a search bar with placeholder text 'Type a prefix and press Enter to search. Press ESC to clear.' Underneath are buttons for 'Upload', '+ Create folder', 'Download', and 'Actions'. On the right, it says 'US East'. The main area lists a single file: 'total-business-inventories-to-sales-ratio.csv'. The file was last modified on Nov 22, 2018 at 12:08:04 AM GMT+0530, has a size of 4.8 KB, and is stored in the Standard storage class.

Name	inventory_sales_ratio
Description	
Database	sampledb
Classification	csv
Location	s3://inventory-sales-ratio/
Connection	
Deprecated	No
Last updated	Thu Nov 22 00:09:48 GMT+530 2018
Input format	org.apache.hadoop.mapred.TextInputFormat
Output format	org.apache.hadoop.hive.ql.io.HiveIgnoreKeyTextOutputFormat
Serde serialization lib	org.apache.hadoop.hive.serde2.lazy.LazySimpleSerDe
Serde parameters	field.delim ,

[New query 1](#)[New query 2](#)[New query 3](#)

```
1 select month(try(date_parse(observed_date, '%m/%d/%Y'))) a, count(*) from inventory_sales_ratio
2 where observed_value < 1.25
3 group by month(try(date_parse(observed_date, '%m/%d/%Y')))
4 order by a
5 ;
```

[Run query](#)[Save as](#)[Create](#) ▾

(Run time: 0.23 seconds, Data scanned: 4.76 KB)

Use Ctrl + Enter to run query, Ctrl + Space to autocomplete

Results

	a	_col1
1	3	7
2	4	1
3	5	7
4	6	7
5	7	1
6	8	7
7	9	1
8	12	9

Lesson 05: Real-Time Data Insights Using Amazon Kinesis

Schema

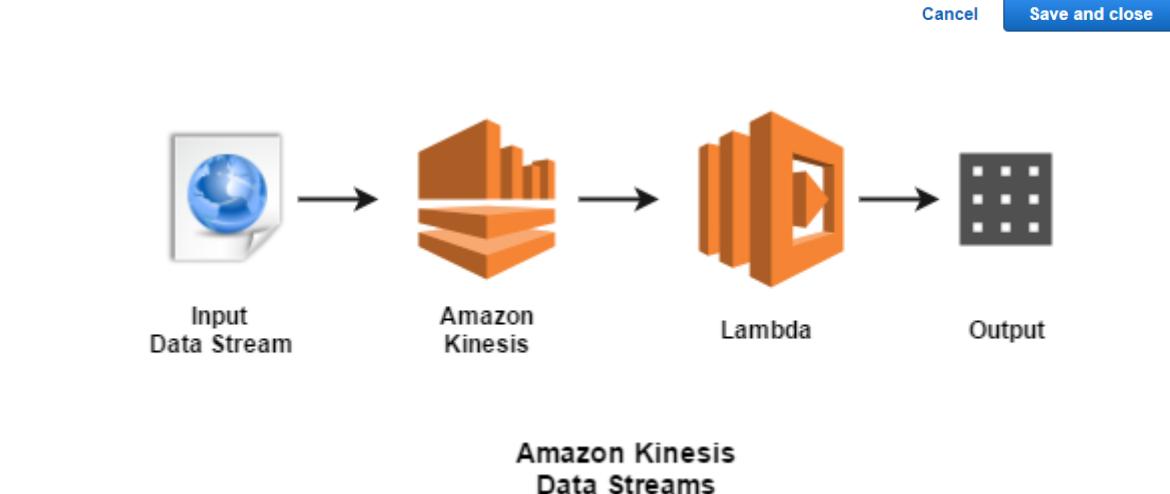
Schema discovery can generate a schema using records from the source. Schema column names are the same as in the source, unless they contain special characters, repeated column names, or reserved keywords. [Learn more](#)

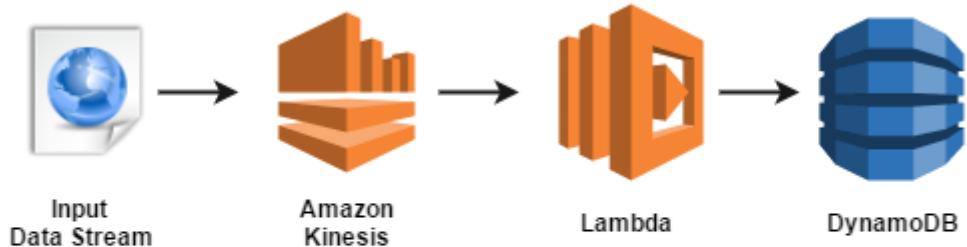
✓ Schema discovery successful
Detected JSON format and applied schema
• To capture a new sample from the chosen reference data source for discovery, choose **Retry schema discovery** below.

Edit schema Retry schema discovery

Raw Formatted

Filter by column name	
Ticker	Company
VARCHAR(4)	VARCHAR(16)
AMZN	TopCompany
PSD	CompanyA
ASD	CompanyB
BMB	CompanyC
MMB	CompanyD
WAS	CompanyE
SAW	CompanyF





Amazon Kinesis Data Streams

Amazon Kinesis dashboard

Amazon Kinesis makes it easy to collect, process, and analyze video and data streams in real time, so you can get timely insights and react quickly to new information. [What is streaming data?](#)

Kinesis data streams (1)		Kinesis Firehose delivery streams (2)	
Name	Status	Name	Status
[REDACTED]	Active	[REDACTED]	Active
[REDACTED]	Active	[REDACTED]	Active

[View all](#) [Create data stream](#)

Kinesis analytics applications		Kinesis video streams	
Run continuous SQL queries on streaming data from Kinesis data streams and Kinesis Firehose delivery streams. Learn more		Build applications to process or analyze streaming media. Learn more	
Create analytics application		Create video stream	

Kinesis streams

Kinesis data streams continuously capture and temporarily store real-time data. Configure producers [to put data records into a data stream](#).

Total shards in use: 1 Total shards remaining: 499 [i](#)

Create Kinesis stream		Connect Kinesis consumers	Actions ▾
<input type="text"/> Filter Kinesis streams			
<input type="checkbox"/>	Kinesis stream name	Number of shards	▼

Create Kinesis stream

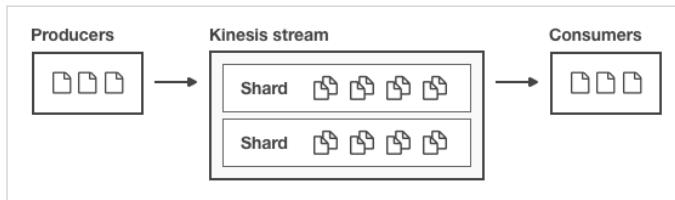
?

Kinesis stream name*

Acceptable characters are uppercase and lowercase letters, underscores, hyphens, and periods.

Shards

A shard is a unit of throughput capacity. Each shard ingests up to 1MB/sec and 1000 records/sec, and emits up to 2MB/sec. To accommodate for higher or lower throughput, the number of shards can be modified after the Kinesis stream is created using the API. [Learn more](#)



▶ [Estimate the number of shards you'll need](#)

Number of shards*

You can provision up to 499 more shards before hitting your account limit of 500.
[Learn more](#) or [request a shard limit increase for this account](#)

Total stream capacity Values are calculated based on the number of shards entered above.

Write MB per second

Records per second

Read MB per second

* Required

[Cancel](#)

[Create Kinesis stream](#)

Amazon Kinesis

Dashboard

| Data Streams

Data Firehose

Data Analytics

Video Streams

External resources

What's new

Kinesis streams

Kinesis data streams continuously capture and temporarily store real-time data. Configure producers [\(2\)](#) to put data records into a data stream. Configure consumers [\(2\)](#) to continuously process data stream records.

Total shards in use: 1 Total shards remaining: 499 [\(1\)](#)

i [Creating stream kinesis-to-dynamodb](#)

Creating a stream generally takes up to a minute.

[Create Kinesis stream](#)

[Connect Kinesis consumers](#)

[Actions ▾](#)

Filter Kinesis streams

[Kinesis stream name](#)

Number of shards

Status

Consumers using enhanced fan-out [\(1\)](#)

[Kinesis-to-dynamodb](#)

1

Active

0

Create DynamoDB table

[Tutorial](#) [?](#)

DynamoDB is a schema-less database that only requires a table name and primary key. The table's primary key is made up of one or two attributes that uniquely identify items, partition the data, and sort data within each partition.

Table name*	<input type="text" value="sample-table"/>	i
Primary key*	Partition key	
	<input type="text" value="createdate"/>	String ▼ i
<input type="checkbox"/> Add sort key		

Table settings

Default settings provide the fastest way to get started with your table. You can modify these default settings now or after your table has been created.

- Use default settings
- No secondary indexes.
 - Provisioned capacity set to 5 reads and 5 writes.
 - Basic alarms with 80% upper threshold using SNS topic "dynamodb".
 - On-Demand Backup and Restore Enabled [NEW!](#)

i You do not have the required role to enable Auto Scaling by default.
Please refer to [documentation](#).

Additional charges may apply if you exceed the AWS Free Tier levels for CloudWatch or Simple Notification Service. Advanced alarm settings are available in the CloudWatch management console.

[Cancel](#) [Create](#)

Lambda > Functions > Create function > Using blueprint kinesis-process-record

Basic information Info

Name

Role
Defines the permissions of your function. Note that new roles may not be available for a few minutes after creation. [Learn more](#) about Lambda execution roles.
▼
Lambda will automatically create a role with permissions from the selected policy templates. Note that basic Lambda permissions (logging to CloudWatch) will automatically be added. If your function accesses a VPC, the required permissions will also be added.

Role name
Enter a name for your new role.

ⓘ This new role will be scoped to the current function. To use it with other functions, you can modify it in the IAM console.

Policy templates
Choose one or more policy templates. A role will be generated for you before your function is created. [Learn more](#) about the permissions that each policy template will add to your role.
▼

Kinesis trigger

Kinesis stream
Select a Kinesis stream to listen for updates on.
▼

Batch size
The largest number of records that will be read from your stream at once.

Starting position
The position in the stream to start reading from. For more information, see [ShardIteratorType](#) in the Amazon Kinesis API Reference.
▼

In order to read from the Kinesis trigger, your execution role must have proper permissions.

Enable trigger
Enable the trigger now, or create it in a disabled state for testing (recommended).

Goto Tools Window



```

index.js
...
3
4
5 exports.handler = (event, context, callback) => {
6
7   event.Records.forEach((record) => {
8     var params = {
9       Item: {
10         createdate: Date.now().toString(),
11         raidata: record.Kinesis.data,
12         message: new Buffer(record.Kinesis.data, 'base64').toString('ascii')
13       },
14       TableName: 'sample-table'
15     };
16
17     doc.put(params, function(err, data) {
18       if (err) {
19         callback(err, null);
20       } else {
21         callback(null, data);
22       }
23     });
24   });
25 });
26

```



Amazon Kinesis

Firehose delivery streams

Kinesis Firehose delivery streams continuously collect, transform, and load streaming data into the destinations that you specify.

Create delivery stream **Test with demo data** **Delete**

	Name	Status	Created	Source

Kinesis Firehose - Create delivery stream

Step 1: Name and source

Step 2: Process records

Step 3: Choose destination

Step 4: Configure settings

Step 5: Review

New delivery stream



Delivery streams load data, automatically and continuously, to the destinations that you specify. Kinesis Firehose resources are not covered under the [AWS Free Tier](#), and [usage-based charges apply](#). For more information, see [Kinesis Firehose pricing](#).

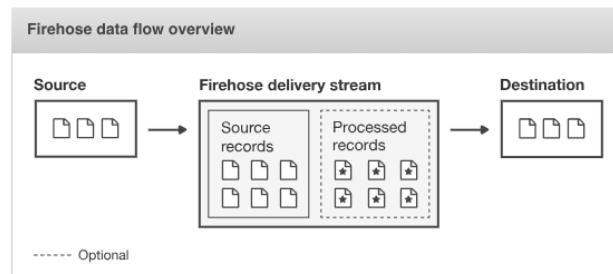
Delivery stream name* kinesis-firehose to s3

kinesis-firehose to s3

Acceptable characters are uppercase and lowercase letters, numbers, underscores, hyphens, and periods.

Choose source

Choose how you would prefer to send records to the delivery stream.



Source* Direct PUT or other sources

Choose this option to send records directly to the delivery stream, or to send records from AWS IoT, CloudWatch Logs, or CloudWatch Events.

Kinesis stream

Step 1: Name and source

Step 2: Process records

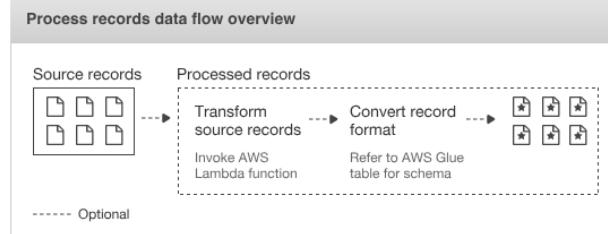
Step 3: Choose destination

Step 4: Configure settings

Step 5: Review

Process records

Kinesis Firehose can transform records or convert record format before delivery.



Transform source records with AWS Lambda

To return records from AWS Lambda to Kinesis Firehose after transformation, the Lambda function you invoke must be compliant with the required record transformation output model. [Learn more](#)

Record transformation*

Disabled
 Enabled

Convert record format

Data in Apache parquet or Apache ORC format is typically more efficient to query than JSON. Kinesis Data Firehose can convert your JSON-formatted source records using a schema from a table defined in [AWS Glue](#). For records that aren't in JSON format, create a Lambda function that converts them to JSON in the **Transform source records with AWS Lambda** section above. [Learn more](#)

Record format conversion*

Disabled
 Enabled

If record format conversion is enabled, Firehose can deliver data to Amazon S3 only. Record format conversion will be configured using the OpenX JSON SerDe. For other options use the [AWS CLI](#).

* Required

[Cancel](#)

[Previous](#)

[Next](#)

Kinesis Firehose - Create delivery stream

Step 1: Name and source

Step 2: Process records

Step 3: Choose destination

Step 4: Configure settings

Step 5: Review

Select destination



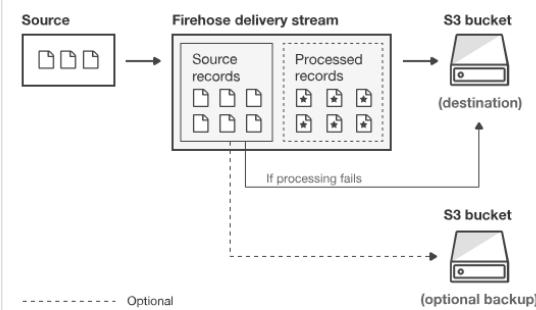
Destination* Amazon S3

Amazon Redshift

Amazon Elasticsearch Service

Splunk

Firehose to S3 data flow overview



S3 destination

S3 bucket* [Create new](#)

[View kinesis-s3-0810 in S3 console](#)

Prefix

* Required

[Cancel](#)

[Previous](#)

[Next](#)

Kinesis Firehose - Create delivery stream

Step 1: Name and source

Step 2: Process records

Step 3: Choose destination

Step 4: Configure settings

Step 5: Review

Configure settings



Configure buffer, compression, logging, and IAM role settings for your delivery stream.

S3 buffer conditions

Firehose buffers incoming records before delivering them to your S3 bucket. Record delivery will be triggered once either of these conditions has been satisfied. [Learn more](#)

Buffer size* MB

Specify a buffer size between 1-128 MB

Buffer interval* seconds

Specify a buffer interval between 60-900 seconds

S3 compression and encryption

Firehose can compress records before delivering them to your S3 bucket. Compressed records can also be encrypted in the S3 bucket using a KMS master key. [Learn more](#)

S3 compression* Disabled

GZIP

Snappy

Zip

S3 encryption* Disabled

Enabled

Error logging

Firehose can log record delivery errors to CloudWatch Logs. If enabled, a CloudWatch log group and corresponding log streams are created on your behalf. [Learn more](#)

Error logging* Disabled

Enabled

IAM role

Firehose uses an IAM role to access your specified resources, such as the S3 bucket and KMS key. [Learn more](#)

IAM role*

[Create new or choose](#)

* Required

[Cancel](#)

[Previous](#)

[Next](#)

Search IAM

- Dashboard
- Groups
- Users
- Roles**
- Policies
- Identity providers
- Account settings
- Credential report

- Encryption keys

Roles

What are IAM roles?

IAM roles are a secure way to grant permissions to entities that you trust. Examples of entities include the following:

- IAM user in another account
- Application code running on an EC2 instance that needs to perform actions on AWS resources
- An AWS service that needs to act on resources in your account to provide its features
- Users from a corporate directory who use identity federation with SAML

IAM roles issue keys that are valid for short durations, making them a more secure way to grant access.

Additional resources:

- [IAM Roles FAQ](#)
- [IAM Roles Documentation](#)
- [Tutorial: Setting Up Cross Account Access](#)
- [Common Scenarios for Roles](#)

[Create role](#)
[Delete role](#)

Create role

1 2 3

Select type of trusted entity

 AWS service EC2, Lambda and others	 Another AWS account Belonging to you or 3rd party	 Web identity Cognito or any OpenID provider	 SAML 2.0 federation Your corporate directory
--	---	---	--

Allows AWS services to perform actions on your behalf. [Learn more](#)

Choose the service that will use this role

EC2

Allows EC2 instances to call AWS services on your behalf.

Lambda

Allows Lambda functions to call AWS services on your behalf.

API Gateway	Config	EMR	IoT	Rekognition
AWS Support	DMS	ElastiCache	Kinesis	S3
AppSync	Data Lifecycle Manager	Elastic Beanstalk	Lambda	SMS
Application Auto Scaling	Data Pipeline	Elastic Container Service	Lex	SNS
Auto Scaling	DeepLens	Elastic Transcoder	Machine Learning	SWF
Batch	Directory Service	Elastic Load Balancing	Macie	SageMaker
CloudFormation	DynamoDB	Glue	MediaConvert	Service Catalog
CloudHSM	EC2	Greengrass	OpsWorks	Step Functions
CloudWatch Events	EC2 - Fleet	GuardDuty	RDS	Storage Gateway
CodeBuild	EKS	Inspector	Redshift	Trusted Advisor
CodeDeploy				

Select your use case

Kinesis Firehose

Allows Kinesis Firehose to transform and deliver data to your destinations using CloudWatch Logs, Lambda, and S3 on your behalf.

* Required

Cancel

Next: Permissions

Create role

1 2 3

▼ Attach permissions policies

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

[Create policy](#)



Filter policies ▾		Q s3	Showing 6 results
	Policy name ▾	Used as	Description
<input type="checkbox"/>	AmazonDMSRedshiftS3Role	None	Provides access to manage S3 settings f...
<input checked="" type="checkbox"/>	AmazonS3FullAccess	Permissions policy (2)	Provides full access to all buckets via the...
<input type="checkbox"/>	AmazonS3ReadOnlyAccess	None	Provides read only access to all buckets ...
<input type="checkbox"/>	AWSLambdaS3ExecutionRole-ae2a4675-ceb...	Permissions policy (1)	
<input type="checkbox"/>	AWSLambdaS3ExecutionRole-f82c9fa8-4824-...	Permissions policy (1)	
<input type="checkbox"/>	QuickSightAccessForS3StorageManagementA...	None	Policy used by QuickSight team to acces...

► Set permissions boundary

* Required

[Cancel](#)

[Previous](#)

[Next: Review](#)

Create role

1 2 3

Review

Provide the required information below and review this role before you create it.

Role name*

Use alphanumeric and '+=_@-' characters. Maximum 64 characters.

Role description

Allows Kinesis Firehose to transform and deliver data to your destinations using CloudWatch Logs, Lambda, and S3 on your behalf.

Maximum 1000 characters. Use alphanumeric and '+=_@-' characters.

Trusted entities AWS service: firehose.amazonaws.com

Policies [AmazonS3FullAccess](#)

Permissions boundary Permissions boundary is not set

Amazon Kinesis Firehose is requesting permission to use resources in your account

Click Allow to give Amazon Kinesis Firehose Read and Write access to resources in your account.

▼ Hide Details

Role Summary

Role Description	Provides access to AWS Services and Resources
IAM Role	<input type="text" value="firehose_delivery_role_0815"/> ▾
Policy Name	<input type="text" value="Create a new Role Policy"/> ▾
▶ View Policy Document	

[Step 1: Name and source](#)

[Step 2: Process records](#)

[Step 3: Choose destination](#)

[Step 4: Configure settings](#)

Step 5: Review

Review

Review your configuration details before creating your delivery stream.

Name and source

[Edit](#)

Delivery stream name

Source Direct PUT or other sources

After creating the delivery stream, send records directly to the delivery stream, or send records from AWS IoT, CloudWatch Logs, or CloudWatch Events.

Process records

[Edit](#)

Source record transformation Disabled

Record format conversion Disabled

Destination

[Edit](#)

Destination Amazon S3

S3 bucket [kinesis-s3-0810](#) 

S3 bucket Prefix None

Settings

[Edit](#)

S3 buffer conditions 1 MB or 60 seconds

Compression Disabled

Encryption Disabled

Error logging Enabled

IAM role [firehose_delivery_role_0815](#) 

[Cancel](#)

[Previous](#)

Create delivery stream

Amazon Kinesis

Firehose delivery streams

Kinesis Firehose delivery streams continuously collect, transform, and load streaming data into the destinations that you specify.

Successfully created delivery stream kinesis-firehose_to_s3

Next, send records directly to the delivery stream using the Amazon Kinesis Agent or the Firehose API using the AWS SDK, or send records from AWS IoT, CloudWatch Logs, or CloudWatch Events. Learn more

Create delivery stream Test with demo data Delete

Filter or search by name

Name	Status	Created	Source	Record transformation	Destination
kinesis-firehose_to_s3	Active	2018-08-14T03:56+0539	Direct PUT and...	Disabled	Amazon S3 kinesis-s3-0810

Viewing 1 - 3 of 3 delivery streams

Kinesis Firehose delivery streams > kinesis-firehose_to_s3

kinesis-firehose_to_s3

▼ Test with demo data

This test runs a script in your browser to put demo data in your Firehose delivery stream, which sends to your S3 destination. The format of the demo data is {"ticker_symbol":"QXZ", "sector":"HEALTHCARE", "change":-0.05, "price":84.51}

Step 1

Start sending demo data to your delivery stream. If you already have data streaming to this destination, demo data is sent along with your source records.

Start sending demo data

Step 2

Stop sending demo data to your delivery stream after you've concluded your test.

Stop sending demo data

Kinesis Firehose delivery streams > kinesis-firehose_to_s3

kinesis-firehose_to_s3

▼ Test with demo data

This test runs a script in your browser to put demo data in your Firehose delivery stream, which sends to your S3 destination. The format of the demo data is {"ticker_symbol":"QXZ", "sector":"HEALTHCARE", "change":-0.05, "price":84.51}

Step 1

Start sending demo data to your delivery stream. If you already have data streaming to this destination, demo data is sent along with your source records.

✓ Demo data is being sent to your delivery stream
If the test is successful, you will see demo records in this destination kinesis-s3-0810

Sending demo data

Step 2

Stop sending demo data to your delivery stream after you've concluded your test.

Stop sending demo data

Amazon S3 > kinesis-s3-0810 / 2018 / 08 / 13 / 22

Overview

Type a prefix and press Enter to search. Press ESC to clear.

Upload **+ Create folder**

More

US East (N. Virginia)

Viewing 1 to 1

<input type="checkbox"/>	Name	Last modified	Size	Storage class
<input type="checkbox"/>	kinesis-firehose_to_s3-1-2018-08-13-22-27-42-7f6a4428-9c6a-4db8-8be2-39ccc8e937d5	Aug 14, 2018 3:58:43 AM GMT+0530	2.8 KB	Standard

Viewing 1 to 1

▼ Test with demo data

This test runs a script in your browser to put demo data in your Firehose delivery stream, which sends to your S3 destination. The format of the demo data is {"ticker_symbol":"QXZ", "sector":"HEALTHCARE", "change":-0.05, "price":84.91}

Step 1

Start sending demo data to your delivery stream. If you already have data streaming to this destination, demo data is sent along with your source records.

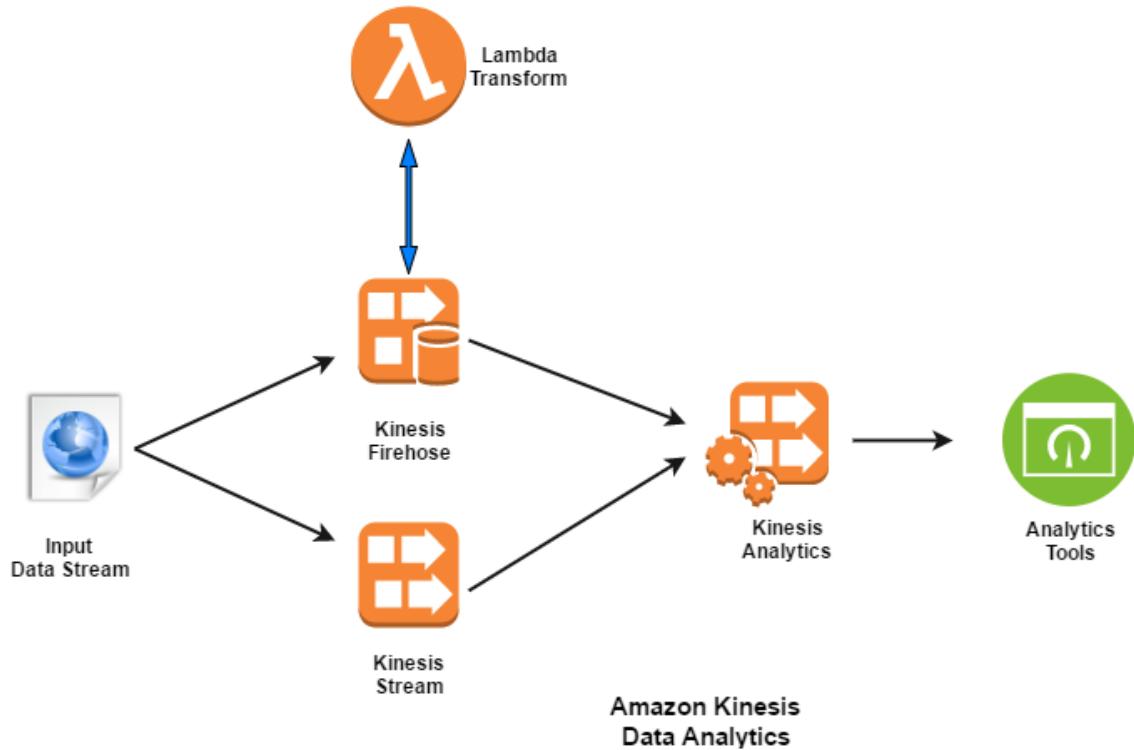
[Start sending demo data](#)

Step 2

Stop sending demo data to your delivery stream after you've concluded your test.

[Stop sending demo data](#)

TBV, HEALTHCARE, -9.54, 181.46
BFH, RETAIL, 0.58, 17.63
IOP, TECHNOLOGY, 0.43, 119.19
NFLX, TECHNOLOGY, -1.23, 97.77
PPL, HEALTHCARE, -0.26, 30.02
WFC, FINANCIAL, -0.19, 46.6
SAC, ENERGY, 3.4, 58.97
CVB, TECHNOLOGY, -0.65, 52.17
DFG, TECHNOLOGY, 1.56, 137.77
WSB, FINANCIAL, -3.14, 107.39
ABC, RETAIL, -0.78, 24
KIN, ENERGY, -0.01, 5.04
WFC, FINANCIAL, -1.36, 45.24
PPL, HEALTHCARE, -1.1, 28.92
WMT, RETAIL, -1.16, 69.35
XTC, HEALTHCARE, -0.55, 112.49
SAC, ENERGY, -2.71, 56.26
JYB, HEALTHCARE, -1.77, 43.45
ABC, RETAIL, 0.8, 24.8
IOP, TECHNOLOGY, -1.1, 118.09
DFG, TECHNOLOGY, -0.36, 137.41



Amazon Kinesis

- Dashboard
- Data Streams
- Data Firehose
- Data Analytics**
- Video Streams
- External resources
- What's new

Kinesis Analytics - Create application

Kinesis Analytics applications continuously read and analyze data from a connected streaming source in real-time. To enable interactivity with your data during configuration you will be prompted to run your application. Kinesis Analytics resources are not covered under the [AWS Free Tier](#), and [usage-based charges apply](#). For more information, see [Kinesis Analytics pricing](#).

Application name*

Description

* Required

[Cancel](#) [Create application](#)

kinesis-data-analytics

Application ARN: arn:aws:kinesisanalytics:us-east-1: application/kinesis-data-analytics
Application version ID: 1

Successfully created Application **kinesis-data-analytics**
Next, choose Connect streaming data.



Source

Streaming data

Connect to an existing Kinesis stream or Firehose delivery stream, or easily create and connect to a new demo Kinesis stream. Each application can connect to one streaming data source. [Learn more](#)

Connect streaming data

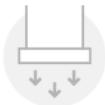
Reference data (optional)

Enrich data from your streaming data source with JSON or CSV data stored as an object in Amazon S3. Each application can connect to one reference data source.



Real time analytics

Author your own SQL queries or add SQL from templates to easily analyze your source data.



Destination

(Optional) Connect an in-application stream to a Kinesis stream, or to a Firehose delivery stream, to continuously deliver SQL results to AWS destinations. The limit is three destinations for each application. [Learn more](#)

Connect streaming data source

Choose from your Kinesis streams and Firehose delivery streams, or quickly configure a demo Kinesis stream that can be used to explore Kinesis Analytics.

Choose source

Configure a new stream

Source* Kinesis stream [?](#)
 Kinesis Firehose delivery stream [?](#)

Kinesis stream*

In-application stream name In your SQL queries, refer to this source as:
SOURCE_SQL_STREAM_001

Record pre-processing with AWS Lambda

Kinesis Analytics can invoke your Lambda function to pre-process records before they are used in this application. To pre-process records, your Lambda function must be compliant with the required record transformation output model. [Learn more](#)

Record pre-processing* Disabled
 Enabled

Connect streaming data source

Choose from your Kinesis streams and Firehose delivery streams, or quickly configure a demo Kinesis stream that can be used to explore Kinesis Analytics.

Choose source

Configure a new stream

Create a demo stream that you can use to explore Kinesis Analytics. This stream will be populated with sample stock ticker data. See [Kinesis Streams pricing](#).

[Create a demo stream](#)

Configure a Firehose delivery stream to continuously deliver source data (to Amazon S3, Redshift, or Elasticsearch) and make source data available to applications.

[Go to Kinesis Firehose](#)

Configure a Kinesis stream to continuously collect and temporarily store source data, which can be consumed by an application.

[Go to Kinesis Streams](#)

[Cancel](#) [Save and continue](#)

Connect streaming data source

Choose from your Kinesis streams and Firehose delivery streams, or quickly configure a demo Kinesis stream that can be used to explore Kinesis Analytics.

[Choose source](#)[Configure a new stream](#)

Create a demo stream that you can use to explore Kinesis Analytics. This stream will be populated with sample stock ticker data. See [Kinesis Streams pricing](#).

[Create a demo stream](#)

- Create/update IAM role **kinesis-analytics-kinesis-data-analytics-us-east-1**
- Create Kinesis stream **kinesis-analytics-demo-stream** (takes on average 30-40 seconds)
- Begin populating stream **kinesis-analytics-demo-stream** with sample stock ticker data
- Discover schema: capture a stream sample, identify data format, apply schema
- Select stream **kinesis-analytics-demo-stream** from your streams

Configure a Firehose delivery stream to continuously deliver source data (to Amazon S3, Redshift, or Elasticsearch) and make source data available to applications.

[Go to Kinesis Firehose](#)

Configure a Kinesis stream to continuously collect and temporarily store source data, which can be consumed by an application.

[Go to Kinesis Streams](#)[Cancel](#)[Save and continue](#)

Connect streaming data source

Choose from your Kinesis streams and Firehose delivery streams, or quickly configure a demo Kinesis stream that can be used to explore Kinesis Analytics.

[Choose source](#)

[Configure a new stream](#)

Source* Kinesis stream
 Kinesis Firehose delivery stream

Kinesis stream* [View kinesis-analytics-demo-stream in Kinesis Streams](#)

In-application stream name [In your SQL queries, refer to this source as:](#)
SOURCE_SQL_STREAM_001

Record pre-processing* Disabled
 Enabled

Access to chosen resources

Create or choose IAM role with the required permissions. [Learn more](#)

Access to chosen resources* Create / update IAM role **kinesis-analytics-kinesis-data-analytics-us-east-1**
 Choose from IAM roles that Kinesis Analytics can assume

Schema

Schema discovery can generate a schema using recent records from the source. Schema column names are the same as in the source, unless they contain special characters, repeated column names, or reserved keywords. [Learn more](#)

Schema discovery successful

Detected JSON format and applied schema

- To define a custom schema, choose "Edit schema" in the stream sample below.
- To capture a new stream sample from the selected source for discovery, choose **Retry schema discovery** below.

(Optional) Send AWS a sample of your data to help improve schema discovery in Amazon Kinesis Analytics

[Help improve schema discovery](#)

[Edit schema](#)

[Retry schema discovery](#)

[Raw](#)

[Lambda output](#)

[Formatted](#)

Filter by column name or column type

TICKER_SYMBOL VARCHAR(4)	SECTOR VARCHAR(16)	CHANGE REAL	PRICE REAL
IOP	TECHNOLOGY	-0.31	118.45
NFS	ENERGY	-0.33	100.62
ALY	ENERGY	1.4000000000000001	83.06
BAC	FINANCIAL	-0.11	14.74
PPL	HEALTHCARE	-0.3000000000000004	29.98
TBV	HEALTHCARE	0.38	191.38
AMZN	TECHNOLOGY	12.68	748.19
ASD	FINANCIAL	0.9400000000000001	66.74
AZL	HEALTHCARE	-0.3000000000000004	17.37
RFV	FINANCIAL	0.04	50.89

kinesis-data-analytics

Application status: READY

Application ARN: arn:aws:kinesisanalytics:us-east-1:/kinesis-data-analytics
Application version ID: 2



Source

Streaming data

Connect to an existing Kinesis stream or Firehose delivery stream, or easily create and connect to a new demo Kinesis stream. Each application can connect to one streaming data source. [Learn more](#)

	Source	In-application stream name	ID	Record pre-processing
	Kinesis stream kinesis-analytics-demo-stream	SOURCE_SQL_STREAM_001	2.1	Disabled

Reference data (optional)

Enrich data from your streaming data source with JSON or CSV data stored as an object in Amazon S3. Each application can connect to one reference data source. [Learn more](#)

[Connect reference data](#)



Real time analytics

Author your own SQL queries or add SQL from templates to easily analyze your source data. [Learn more](#)

[Go to SQL editor](#)



Destination

(Optional) Connect an in-application stream to a Kinesis stream, or to a Firehose delivery stream, to continuously deliver SQL results to AWS destinations. The limit is three destinations for each application. [Learn more](#)

Kinesis Analytics applications > kinesis-data-analytics > SQL editor

Real-time analytics

Save and run SQL Add SQL from templates Download SQL

```
1 /**
2  * Welcome to the SQL editor
3  * =====
4  *
5  * The SQL code you write here will continuously transform your stream
6  * when your application is running.
7  *
8  * Get started by clicking "Add SQL from templates" or pull up the
9  * documentation and start writing your own custom queries.
10 */
11
12
13
```

Would you like to start running "kinesis-data-analytics"?

The SQL editor is much more powerful when your application is running.

- See samples from your source data stream
- Get feedback on any errors in your configuration or SQL
- Watch as your data is processed in real-time by your SQL code

No, I'll do this later Yes, start application

Source data Real-time analytics Destination Application status: Not running

Streaming data SOURCE_SQL_STREAM_001

Reference data (optional) [?](#)

Connect reference data

Actions [▼ Filter by column name](#)

TICKER_SYMBOL	SECTOR	CHANGE	PRICE
VARCHAR(4)	VARCHAR(16)	REAL	REAL

Choose Start application if you would like to see a sample for this source.

Start application Close

Real-time analytics

[Save and run SQL](#) [Add SQL from templates](#) [Download SQL](#) [SQL reference guide](#) [Kinesis data generator tool](#)

```
1  /*
2  * Welcome to the SQL editor
3  * =====
4  *
5  * The SQL code you write here will continuously transform your streaming data
6  * when your application is running.
7  *
8  * Get started by clicking "Add SQL from templates" or pull up the
9  * documentation and start writing your own custom queries.
10 */
11
12
13
```

Source data [Real-time analytics](#) Destination Application status: RUNNING

Streaming data [SOURCE_SQL_STREAM_001](#)

Reference data (optional) [i](#)

[Connect reference data](#)

The streaming data below is a sample from Kinesis data stream [kinesis-analytics-demo-stream](#)

[Actions](#)

[Filter by column name](#)

ROWTIME TIMESTAMP	TICKER_SYMBOL VARCHAR(4)	SECTOR VARCHAR(16)	CHANGE REAL	PRICE REAL	PARTITION_ VARCHAR(5)
2018-08-15 19:47:52.493	MMB	ENERGY	1.32	16.87	PartitionKey
2018-08-15 19:47:52.493	WMT	RETAIL	2.21	74.81	PartitionKey
2018-08-15 19:47:52.493	QWE	TECHNOLOGY	-4.02	218.61	PartitionKey
2018-08-15 19:47:52.493	AZL	HEALTHCARE	0.45	14.15	PartitionKey
2018-08-15 19:47:52.493	ABC	RETAIL	0.9	24.14	PartitionKey
2018-08-15 19:47:52.493	WFC	FINANCIAL	0.72	50.87	PartitionKey
2018-08-15 19:47:52.493	DFT	RETAIL	2.27	86.24	PartitionKey
2018-08-15 19:47:52.493	QXZ	FINANCIAL	-0.59	222.41	PartitionKey
2018-08-15 19:47:52.493	CVB	TECHNOLOGY	-0.14	53.1	PartitionKey
2018-08-15 19:47:52.493	TBV	HEALTHCARE	18.87	337.78	PartitionKey
2018-08-15 19:47:52.493	DFT	RETAIL	0.46	86.7	PartitionKey
2018-08-15 19:47:52.493	QWE	TECHNOLOGY	0.0	220.61	PartitionKey

Continuous filter

Aggregate function in a tumbling time window

Aggregate function in a sliding time window

Aggregate function in a sliding row window

Multi-step application

Anomaly detection

Approximate top-K items

Approximate distinct count

Data enrichment (join)

Aggregate using two time windows

```
-- ** Aggregate (COUNT, AVG, etc.) + Tumbling Time Window **
-- Performs function on the aggregate rows over a 10 second tumbling window for a specified column
--          |-----|      |-----|      |-----|
--          | SOURCE |      | INSERT |      | DESTIN. |
-- Source-->| STREAM | ->| & SELECT | -->| STREAM | ->Destination
--          |          |      | (PUMP) |      |          |
--          |-----|      |-----|      |-----|
-- STREAM (in-application): a continuously updated entity that you can SELECT from and INSERT in
-- PUMP: an entity used to continuously 'SELECT ... FROM' a source STREAM, and INSERT SQL result
-- Create output stream, which can be used to send to a destination
CREATE OR REPLACE STREAM "DESTINATION_SQL_STREAM" (ticker_symbol VARCHAR(4), ticker_symbol_count
-- Create a pump which continuously selects from a source stream (SOURCE_SQL_STREAM_001)
-- performs an aggregate count that is grouped by columns ticker over a 10-second tumbling window
-- and inserts into output stream (DESTINATION_SQL_STREAM)
CREATE OR REPLACE PUMP "STREAM_PUMP" AS INSERT INTO "DESTINATION_SQL_STREAM"
-- Aggregate function COUNT|AVG|MAX|MIN|SUM|STDEV_POP|STDEV_SAMP|VAR_POP|VAR_SAMP|
SELECT STREAM ticker_symbol, COUNT(*) AS ticker_symbol_count
FROM "SOURCE_SQL_STREAM_001"
-- Uses a 10-second tumbling time window
GROUP BY ticker_symbol, FLOOR(("SOURCE_SQL_STREAM_001".ROWTIME - TIMESTAMP '1970-01-01 00:00:00'"
```

[Cancel \(return to editor\)](#)[Add this SQL to the editor](#)

Source data Real-time analytics Destination Application status: RUNNING

Streaming data SOURCE_SQL_STREAM_001

Reference data (optional)

[Connect reference data](#)

The streaming data below is a sample from Kinesis data stream kinesis-analytics-demo-stream

Actions

- [Edit connection details](#)
- [Edit schema](#)
- [Download sample as CSV](#)
- [Refresh sample](#)

	TICKER_SYMBOL	SECTOR	CHANGE	PRICE	PARTITION
	VARCHAR(4)	VARCHAR(16)	REAL	REAL	VARCHAR(5)
2018-08-15 19:48:42.478	VVY	HEALTHCARE	1.42	31.49	PartitionKey
2018-08-15 19:48:42.478	BAC	FINANCIAL	0.4	14.32	PartitionKey
2018-08-15 19:48:42.478	BAC	FINANCIAL	0.14	14.46	PartitionKey
2018-08-15 19:48:42.478	WAS	RETAIL	-0.19	11.23	PartitionKey
2018-08-15 19:48:42.478	CRM	HEALTHCARE	-1.59	25.53	PartitionKey
2018-08-15 19:48:42.478	TGH	FINANCIAL	-0.34	62.69	PartitionKey
2018-08-15 19:48:42.478	SAC	ENERGY	-0.96	43.7	PartitionKey
2018-08-15 19:48:42.478	SLW	ENERGY	-7.6	79.81	PartitionKey
2018-08-15 19:48:42.478	KIN	ENERGY	0.02	2.01	PartitionKey
2018-08-15 19:48:42.478	TGH	FINANCIAL	-1.72	60.97	PartitionKey
2018-08-15 19:48:42.478	SED	HEALTHCARE	-0.15	2.02	PartitionKey
2018-08-15 19:48:42.478	MMV	HEALTHCARE	-1.71	22.22	PartitionKey

Real-time analytics

Save and run SQL Add SQL from templates Download SQL SQL reference guide Kinesis data generator tool

```

1
2
3  -- ** Aggregate (COUNT, AVG, etc.) + Tumbling Time Window **
4  -- Performs function on the aggregate rows over a 10 second tumbling window for a specified column.
5  --
6  --      | SOURCE   |     | INSERT  |     | DESTIN. |
7  -- Source-->| STREAM  | -->| & SELECT | -->| STREAM   | -->Destination
8  --          | (PUMP)  |           |           |           |
9  --
10 -- STREAM (in-application): a continuously updated entity that you can SELECT from and INSERT into like a TABLE
11 -- PUMP: an entity used to continuously 'SELECT ... FROM' a source STREAM, and INSERT SQL results into an output STREAM
12 -- Create output stream, which can be used to send to a destination
13 CREATE OR REPLACE STREAM "DESTINATION_SQL_STREAM" (ticker_symbol VARCHAR(4), ticker_symbol_count INTEGER);
14 -- Create a pump which continuously selects from a source stream (SOURCE_SQL_STREAM_001)

```

• • •

Saving SQL
 Running SQL

[Close](#)

Real-time analytics

Save and run SQL Add SQL from templates Download SQL SQL reference guide Kinesis data generator tool

```

9  -----
10 -- STREAM (in-application): a continuously updated entity that you can SELECT from and INSERT into like a TABLE
11 -- PUMP: an entity used to continuously 'SELECT ... FROM' a source STREAM, and INSERT SQL results into an output STREAM
12 -- Create output stream, which can be used to send to a destination
13 CREATE OR REPLACE STREAM "DESTINATION_SQL_STREAM" (ticker_symbol VARCHAR(4), ticker_symbol_count INTEGER);
14 -- Create a pump which continuously selects from a source stream (SOURCE_SQL_STREAM_001)
15 -- performs an aggregate count that is grouped by columns ticker over a 10-second tumbling window
16 -- and inserts into output stream (DESTINATION_SQL_STREAM)
17 CREATE OR REPLACE PUMP "STREAM_PUMP" AS INSERT INTO "DESTINATION_SQL_STREAM"
18 -- Aggregate function COUNT|AVG|MAX|MIN|SUM|STDDEV_POP|STDDEV_SAMP|VAR_POP|VAR_SAMP|
19 SELECT STREAM ticker_symbol, COUNT(*) AS ticker_symbol_count
20 FROM "SOURCE_SQL_STREAM_001"
21 -- Uses 10-second tumbling time window
22 GROUP BY ticker_symbol, FLOOR(("SOURCE_SQL_STREAM_001".ROWTIME - TIMESTAMP '1970-01-01 00:00:00') SECOND / 10 TO SECOND);

```

Source data	Real-time analytics	Destination	Application status: RUNNING						
In-application streams:	<input checked="" type="checkbox"/> Pause results New results are added every 2-10 seconds. The results below are sampled. <input type="checkbox"/> Scroll to bottom when new results arrive.								
DESTINATION_SQL_STREAM	<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <input style="width: 100%; height: 1em; border: none; border-bottom: 1px solid #ccc; padding-bottom: 2px; font-size: inherit; margin-bottom: 2px;" type="text"/> Filter by column name </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">ROWTIME</th> <th style="padding: 2px;">TICKER_SYMBOL</th> <th style="padding: 2px;">TICKER_SYMBOL_COUNT</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">2018-08-15 19:54:20.0</td> <td style="padding: 2px;">AMZN</td> <td style="padding: 2px;">2</td> </tr> </tbody> </table>			ROWTIME	TICKER_SYMBOL	TICKER_SYMBOL_COUNT	2018-08-15 19:54:20.0	AMZN	2
ROWTIME	TICKER_SYMBOL	TICKER_SYMBOL_COUNT							
2018-08-15 19:54:20.0	AMZN	2							
error_stream									

Save and run SQL Add SQL from templates Download SQL SQL reference guide Kinesis data generator tool

```

9  -- -----
10 -- STREAM (in-application): a continuously updated entity that you can SELECT from and INSERT into like a TABLE
11 -- PUMP: an entity used to continuously 'SELECT ... FROM' a source STREAM, and INSERT SQL results into an output STREAM
12 -- Create output stream, which can be used to send to a destination
13 CREATE OR REPLACE STREAM "DESTINATION_SQL_STREAM" (ticker_symbol VARCHAR(4), ticker_symbol_count INTEGER);
14 -- Create a pump which continuously selects from a source stream (SOURCE_SQL_STREAM_001)
15 -- performs an aggregate count that is grouped by columns ticker over a 10-second tumbling window
16 -- and inserts into output stream (DESTINATION_SQL_STREAM)
17 CREATE OR REPLACE PUMP "STREAM_PUMP" AS INSERT INTO "DESTINATION_SQL_STREAM"
18 -- Aggregate function COUNT|AVG|MAX|MIN|SUM|STDDEV_POP|STDDEV_SAMP|VAR_POP|VAR_SAMP)
19 SELECT STREAM ticker_symbol, COUNT(*) AS ticker_symbol_count
20 FROM "SOURCE_SQL_STREAM_001"
21 -- Uses a 10-second tumbling time window
22 GROUP BY ticker_symbol, FLOOR(("SOURCE_SQL_STREAM_001".ROWTIME - TIMESTAMP '1970-01-01 00:00:00') SECOND / 10 TO SECOND);

```

Source data Real-time analytics Destination Application status: RUNNING

In-application streams: Pause results New results are added every 2-10 seconds. The results below are sampled. [?](#)

Scroll to bottom when new results arrive.

DESTINATION_SQL_STREAM

Filter by column name		
ROWTIME	TICKER_SYMBOL	TICKER_SYMBOL_COUNT
2018-08-15 19:54:20.0	AMZN	2
2018-08-15 19:54:40.0	XTC	4
2018-08-15 19:54:40.0	DFT	2
2018-08-15 19:54:40.0	BFH	2
2018-08-15 19:54:40.0	CRM	1
2018-08-15 19:54:40.0	AMZN	1
2018-08-15 19:54:40.0	QXZ	2
2018-08-15 19:54:40.0	SLW	1
2018-08-15 19:54:40.0	JYB	1
2018-08-15 19:54:40.0	WSB	2
2018-08-15 19:54:40.0	ABC	2
2018-08-15 19:54:40.0	RFV	1
2018-08-15 19:54:40.0	KFU	2

[Close](#)

Application status: RUNNING

Source data Real-time analytics Destination

(Optional) Connect an in-application stream to a Kinesis stream, or to a Firehose delivery stream, to continuously deliver SQL results to AWS destinations. The limit is three destinations for each application.

[Connect to a destination](#)

[Close](#)

Connect to destination

- Destination* Kinesis stream [i](#)
 Kinesis Firehose delivery stream [i](#)
 AWS Lambda function [i](#)

Kinesis stream*

kinesis-to-dynamodb



Create new [↗](#)

[View kinesis-to-dynamodb in Kinesis Streams ↗](#)

In-application stream

In-application streams are continuous flows of data records. You create in-application streams in SQL to contain the data you want to persist to the specified destination. [Learn more](#).

Connect in-application stream

- Choose an existing in-application stream
 Specify a new in-application stream name

Use this option for in-application streams that you haven't created yet, but plan to create at a later time. Specifying a stream name ensures that you don't lose output data.

In-application stream name*

DESTINATION_SQL_STREAM



Output format

- JSON
 CSV

Access to chosen resources

Create or choose IAM role with the required permissions. [Learn more](#)

Access to chosen resources*

- Create / update IAM role kinesis-analytics-kinesis-data-analytics-us-east-1
 Choose from IAM roles that Kinesis Analytics can assume

[Cancel](#)

[Save and continue](#)

kinesis-data-analytics

Application status: RUNNING

Application ARN: [arn:aws:lambda:us-east-1:123456789012:function:my-first-lambda-function](#) **Application version ID:** 4 ⓘ

Application metrics: View in

Application metrics: View in CloudWatch Metrics ↗



Source

Streaming data

Connect to an existing Kinesis stream or Firehose delivery stream, or easily create and connect to a new demo Kinesis stream. Each application can connect to one streaming data source. [Learn more](#)

	Source	In-application stream name	ID	Record pre-processing
	Kinesis stream kinesis-analytics-demo-stream	SOURCE_SQL_STREAM_001	2.1	Disabled

Reference data (optional)

Enrich data from your streaming data source with JSON or CSV data stored as an object in Amazon S3. Each application can connect to one reference data source. [Learn more](#)

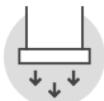
Connect reference data



Real time analytics

Continuously analyzing your source data with SQL. [Learn more](#)

[Go to SQL results](#)



Destination

(Optional) Connect an in-application stream to a Kinesis stream, or to a Firehose delivery stream, to continuously deliver SQL results to AWS destinations. The limit is three destinations for each application.

Connect new destination

Disconnect destination

	Destination	In-application stream name	ID
 	Kinesis stream kinesis-to-dynamodb 	DESTINATION_SQL_STREAM	4.1

Kinesis Analytics applications

Kinesis Analytics applications continuously read and process data from streaming sources in real-time. Learn more

Create application

?

Application name

kinesis-data-analytics

Input

Source ARN: arn:aws:kinesis:us-east-1:█████████████████████:stream/kinesis-analytics-demo-stream
Role ARN: arn:aws:iam::█████████████████████:role/service-role/kinesis-analytics-kinesis-data-analytics-us-east-1
Format: JSON

Output

Destination ARN:	arn:aws:kinesis:us-east-1: XXXXXXXXXX /stream/kinesis-to-dynamodb
Role ARN:	arn:aws:iam: XXXXXXXXXX /role/service-role/kinesis-analytics-kinesis-data-analytics-us-east-1
Format:	JSON

Created: Aug 16, 2018 1:08:19 AM
Last Updated: Aug 16, 2018 1:27:08 AM

Kinesis Analytics applications

Kinesis Analytics applications continuously read and process data from streaming sources in real-time. Learn more

[Create application](#) [Actions](#)

Application name		State
kinesis-data-analytics		Running

Input

Source ARN: arn:aws:kinesis:us-east-1:██ stream/kinesis-analytics-demo-stream
Role ARN: arn:aws:iam:██ role/service-role/kinesis-analytics-kinesis-data-analytics-us-east-1
Format: JSON

Output

Destination ARN: arn:aws:kinesis:us-east-1:██ stream/kinesis-to-dynamodb
Role ARN: arn:aws:iam:██ role/service-role/kinesis-analytics-kinesis-data-analytics-us-east-1
Format: JSON

[Application details](#)

Transform source records with AWS Lambda

Kinesis Firehose can transform source records before delivery. To return transformed source records to Kinesis Firehose, the Lambda function you invoke must be compliant with the required record transformation output model. [Learn more](#)

Source record transformation Disabled Enabled

Lambda function* [View json2csv_transform in Lambda](#) [Create new](#)

Lambda function version* [View SLATEST in Lambda](#)

Description An Amazon Kinesis Firehose stream processor that accesses the records in the input and returns them with a processing status.

Runtime nodejs6.10

Choose Lambda blueprint

Choose the blueprint you want to use to configure your function in Lambda. Then return here, close this dialog box, and choose the newly created Lambda function.

[Filter Lambda blueprints](#)

Lambda blueprint	Description
General Firehose Processing	An Amazon Kinesis Firehose stream processor that accesses the records in the input and returns them with a processing status. Use this processor for any custom transformation logic.
Apache Log to JSON	An Amazon Kinesis Firehose stream processor that converts input records from Apache Common Log format to JSON.
Apache Log to CSV	An Amazon Kinesis Firehose stream processor that converts input records from Apache Common Log format to CSV.
Syslog to JSON	An Amazon Kinesis Firehose stream processor that converts input records from RFC3164 Syslog format to JSON.
Syslog to CSV	An Amazon Kinesis Firehose stream processor that converts input records from RFC3164 Syslog format to CSV.

[Close](#)

Basic information [Info](#)

Name

Role

Defines the permissions of your function. Note that new roles may not be available for a few minutes after creation. [Learn more](#) about Lambda execution roles.

Existing role

You can use an existing role with this function. Lambda must be able to assume this role, and the role must have Amazon CloudWatch Logs permissions.

Lambda function code

Code is pre-configured by the chosen blueprint. You can configure it after you create the function. [Learn more](#) about deploying Lambda functions.

Runtime

Node.js 6.10

Code entry type Runtime Handler [Info](#)

The screenshot shows the AWS Lambda code editor interface. On the left, there's a sidebar with 'Environment' and two files listed: 'json2csv_transform' and 'index.js'. The 'index.js' file is open and contains the following code:

```
'use strict';
console.log('Loading function');

exports.handler = (event, context, callback) => {
  /* Process the list of records */
  const output = event.records.map(record => {
    const entry = (Buffer.from(record.data, 'base64')).toString('utf8');
    let parsed_entry = JSON.parse(entry);

    /* Transform the parsed results */
    const result = `${parsed_entry.ticker_symbol},${parsed_entry.sector},${parsed_entry.change},${parsed_entry.price} \n`;
    const payload = (Buffer.from(result, 'utf8')).toString('base64');

    return {
      recordId: record.recordId,
      result: 'ok',
      data: payload,
    };
  });
  callback(null, {
    records: output
  });
};
```

Convert record format

Data in Apache parquet or Apache ORC format is typically more efficient to query than JSON. Kinesis Data Firehose can convert your JSON-formatted source records using a schema from a table defined in [AWS Glue](#). For records that aren't in JSON format, create a Lambda function that converts them to JSON in the [Transform source records with AWS Lambda](#) section above. [Learn more](#)

Record format conversion Disabled

Source record S3 backup

Source record S3 backup Disabled

Amazon S3 destination

S3 bucket

Prefix

Buffer conditions

Compression Disabled

Encryption Disabled

- ▶ Test with demo data

▼ Test with demo data

This test runs a script in your browser to put demo data in your Firehose delivery stream, which sends to your S3 destination. The format of the demo data is {"ticker_symbol":"QXZ", "sector":"HEALTHCARE", "change":-0.05, "price":84.51}

Step 1

Start sending demo data to your delivery stream. If you already have data streaming to this destination, demo data is sent along with your source records.

Start sending demo data

Step 2

Stop sending demo data to your delivery stream after you've concluded your test.

[Stop sending demo data](#)

Amazon S3 > aws-athena-demo-0606 / json2csv2018 / 12 / 10 / 11

Overview

 Type a prefix and press Enter to search. Press ESC to clear.

	Name	Actions
<input type="checkbox"/>	KF-9-2018-12-10-11-37-59-6459c927-96fd-4a77-b855-d2f5c955ea8f	View Edit Delete

TBV, HEALTHCARE, -9.54, 181.46
BFH, RETAIL, 0.58, 17.63
IOP, TECHNOLOGY, 0.43, 119.19
NFLX, TECHNOLOGY, -1.23, 97.77
PPL, HEALTHCARE, -0.26, 30.02
WFC, FINANCIAL, -0.19, 46.6
SAC, ENERGY, 3.4, 58.97
CVB, TECHNOLOGY, -0.65, 52.17
DFG, TECHNOLOGY, 1.56, 137.77
WSB, FINANCIAL, -3.14, 107.39
ABC, RETAIL, -0.78, 24
KIN, ENERGY, -0.01, 5.04
WFC, FINANCIAL, -1.36, 45.24
PPL, HEALTHCARE, -1.1, 28.92
WMT, RETAIL, -1.16, 69.35
XTC, HEALTHCARE, -0.55, 112.49
SAC, ENERGY, -2.71, 56.26
JYB, HEALTHCARE, -1.77, 43.45
ABC, RETAIL, 0.8, 24.8
IOP, TECHNOLOGY, -1.1, 118.09
DFG, TECHNOLOGY, -0.36, 137.41

kinesis-data-analytics

Application status: RUNNING

Application ARN: arn:aws:kinesisanalytics:us-east-1:000000000000:application/kinesis-data-analytics

Application version ID: 2 ⓘ

Application metrics: [View in CloudWatch Metrics](#) ↗



Source

Streaming data

Connect to an existing Kinesis stream or Firehose delivery stream, or easily create and connect to a new demo Kinesis stream. Each application can connect to one streaming data source. [Learn more](#)

	Source	In-application stream name	ID ⓘ	Record pre-processing ⓘ
	Kinesis stream kinesis-analytics-demo-stream ↗	SOURCE_SQL_STREAM_001	2.1	Disabled

Reference data (optional)

Enrich data from your streaming data source with JSON or CSV data stored as an object in Amazon S3. Each application can connect to one reference data source. [Learn more](#)

[Connect reference data](#)

Overview **Properties** **Permissions** Public

Type a prefix and press Enter to search. Press ESC to clear.

Actions Upload Create folder Download

<input type="checkbox"/>	Name
<input type="checkbox"/>	ka-reference-data.json

Connect reference data source

Application status: Running

Enrich data from your streaming data source by connecting to JSON or CSV data, up to 1GB in size, that is stored as an object in Amazon S3. Each application can connect to one reference data source. [Learn more](#)

Amazon S3 bucket* aws-athena-demo-0613 ▼ ⟳ Create new

[View aws-athena-demo-0613 in Amazon S3](#)

Path to Amazon S3 object* ka-reference-data.json

To lookup an object's path, go to [Amazon S3](#), navigate to the JSON or CSV object you want to use for reference data, and then choose **Copy path** from the object's details.

[View specified object in Amazon S3](#)

In-application reference table name

Specify a name for your reference data table when authoring SQL queries. Names with lowercase characters will need to be wrapped in quotes in SQL queries. [Learn more](#)

In-application reference table name* ka_reference_data

Up to 32 characters. Must begin with a letter, and may only contain letters, numbers, and underscores.

Access permissions

Create or choose IAM role with the required permissions. [Learn more](#)

Access permissions* Create / update IAM role **kinesis-analytics-kinesis-data-analytics-us-east-1**
 Choose from IAM roles that Kinesis Analytics can assume

Schema

Schema discovery can generate a schema using records from the source. Schema column names are the same as in the source, unless they contain special characters, repeated column names, or reserved keywords. [Learn more](#)



Schema discovery successful

Detected JSON format and applied schema

- To capture a new sample from the chosen reference data source for discovery, choose **Retry schema discovery** below.

[Edit schema](#)[Retry schema discovery](#)[Raw](#)[Formatted](#) Filter by column name

Ticker	Company
VARCHAR(4)	VARCHAR(16)
AMZN	TopCompany
PSD	CompanyA
ASD	CompanyB
BMB	CompanyC
MMB	CompanyD
WAS	CompanyE
SAW	CompanyF

[Cancel](#)[Save and close](#)

Streaming data

Connect to an existing Kinesis stream or Firehose delivery stream, or easily create and connect to a new demo Kinesis stream. Each application can connect to one streaming data source. [Learn more](#)

	Source	In-application stream name	ID	Record pre-processing
	Kinesis stream kinesis-analytics-demo-stream	SOURCE_SQL_STREAM_001	2.1	Disabled

Reference data (optional)

Enrich data from your streaming data source with JSON or CSV data stored as an object in Amazon S3. Each application can connect to one reference data source. [Learn more](#)

[Connect reference data](#)[Disconnect](#)

	Source	In-application reference table name	ID
	Amazon S3 object	ka_reference_data	21.1



Real time analytics

Author your own SQL queries or add SQL from templates to easily analyze your source data. [Learn more](#)

[Go to SQL editor](#)

Real-time analytics

Save and run SQL Add SQL from templates Download SQL SQL reference guide Kinesis data generator tool

```
1 /**
2  * Welcome to the SQL editor
3  * =====
4  *
5  * The SQL code you write here will continuously transform your streaming data
6  * when your application is running.
7  *
8  * Get started by clicking "Add SQL from templates" or pull up the
9  * documentation and start writing your own custom queries.
10 */
11
12
13
```

Application status: RUNNING

Source data Real-time analytics Destination

Streaming data

SOURCE_SQL_STREAM_001

The streaming data below is a sample from Kinesis data stream [kinesis-analytics-demo-stream](#)

Reference data (optional) i

ka_reference_data

Actions ▾

Filter by column name

ROWTIME TIMESTAMP	TICKER_SYMBOL VARCHAR(4)	SECTOR VARCHAR(16)	CHANGE REAL	PRICE REAL	PARTITION_KEY VARCHAR(512)
2018-12-07 11:41:51.547	ALY	ENERGY	1.87	90.97	PartitionKey
2018-12-07 11:41:51.547	TGH	FINANCIAL	0.29	66.32	PartitionKey
2018-12-07 11:41:51.547	KIN	ENERGY	0.14	5.19	PartitionKey

Application status: RUNNING

Source data Real-time analytics Destination

Streaming data

SOURCE_SQL_STREAM_001

The reference data below represents the first 100 rows from the [connected Amazon S3 object](#), and is current as of the last application or service update. If it appears out of date, choose **Synchronize reference data table** from the Actions options to reload. [Learn more](#)

Reference data (optional) i

ka_reference_data

Actions ▾

Filter by column name

Ticker VARCHAR(4)	Company VARCHAR(16)
AMZN	TopCompany
PSD	CompanyA
ASD	CompanyB
BMB	CompanyC
MMB	CompanyD
WAS	CompanyE
SAW	CompanyF

Save and run SQL Add SQL from templates Download SQL SQL reference guide Kinesis data generator tool

```

1 CREATE STREAM "KINESIS_SQL_STREAM" (ticker_symbol VARCHAR(14), "Company_Name" varchar(30), sector VARCHAR(22), change DOUBLE, price DOUBLE);
2
3 CREATE PUMP "STREAM_PUMP" AS INSERT INTO "KINESIS_SQL_STREAM"
4   SELECT STREAM ticker_symbol, "kar"."Company", sector, change, price
5   FROM "SOURCE_SQL_STREAM_001" LEFT JOIN "ka_reference_data" as "kar"
6   ON "SOURCE_SQL_STREAM_001".ticker_symbol = "kar"."Ticker"
7   where "kar"."Company" is not null;

```

Application status: RUNNING

Source data **Real-time analytics** Destination

In-application streams:

- KINESIS_SQL_STREAM
- error_stream

Pause results New results are added every 2-10 seconds. The results below are sampled. [i](#)

Scroll to bottom when new results arrive.

Filter by column name				
ROWTIME	TICKER_SYMBOL	Company_Name	SECTOR	CHANGE
2018-12-07 11:54:01.627	AMZN	TopCompany	TECHNOLOGY	-13.72999954223632
2018-12-07 11:54:01.627	MMB	CompanyD	ENERGY	0.709999785423279
2018-12-07 11:54:06.623	ASD	CompanyB	FINANCIAL	-0.28999991655349
2018-12-07 11:54:16.615	ASD	CompanyB	FINANCIAL	0.9700000286102295
2018-12-07 11:54:16.615	AMZN	TopCompany	TECHNOLOGY	-5.429999828338623
2018-12-07 11:54:16.615	MMB	CompanyD	ENERGY	0.9399999976158142
2018-12-07 11:54:26.61	MMB	CompanyD	ENERGY	1.1799999475479126

Source data **Real-time analytics** Destination

In-application streams:

- KINESIS_SQL_STREAM
- error_stream

Pause results New results are added every 2-10 seconds. The results below are sampled. [i](#)

Scroll to bottom when new results arrive.

Filter by column name				
2018-12-07 11:54:06.623	ASD	CompanyB	FINANCIAL	-0.28999991655349
2018-12-07 11:54:16.615	ASD	CompanyB	FINANCIAL	0.9700000286102295
2018-12-07 11:54:16.615	AMZN	TopCompany	TECHNOLOGY	-5.429999828338623
2018-12-07 11:54:16.615	MMB	CompanyD	ENERGY	0.9399999976158142
2018-12-07 11:54:26.61	MMB	CompanyD	ENERGY	1.1799999475479126
2018-12-07 11:54:31.626	MMB	CompanyD	ENERGY	1.1799999475479126
2018-12-07 11:54:36.622	WAS	CompanyE	RETAIL	0.159999964237213
2018-12-07 11:54:36.622	MMB	CompanyD	ENERGY	1.799999523162842
2018-12-07 11:54:46.636	MMB	CompanyD	ENERGY	-0.740000009536743
2018-12-07 11:54:46.636	ASD	CompanyB	FINANCIAL	0.9599999785423279
2018-12-07 11:54:46.636	AMZN	TopCompany	TECHNOLOGY	9.229999542236328
2018-12-07 11:54:56.632	ASD	CompanyB	FINANCIAL	-0.200000002980232
2018-12-07 11:55:01.63	WAS	CompanyE	RETAIL	0.259999904632568
2018-12-07 11:55:01.63	MMB	CompanyD	ENERGY	-2.0