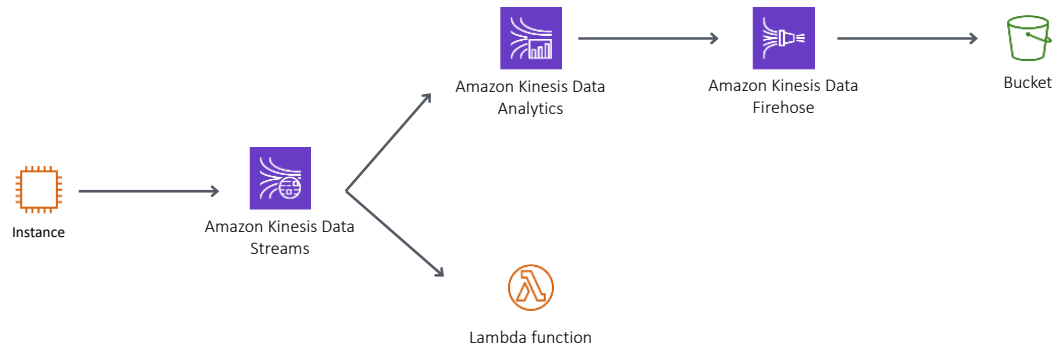


Section 1: Ingest data into a Kinesis Data Stream

In this section, we create an Amazon Kinesis Data Stream and populate the stream using a historic data set of taxi trips made in NYC.



1. Navigate to the Amazon Kinesis services and press **Get Started** when prompted (you may not need to complete this, if you have already used Amazon Kinesis). Select **Create data stream** to navigate to the Amazon Kinesis Data Stream service.

Amazon Kinesis Streams Manager


https://eu-west-1.console.aws.amazon.com/kinesis

Get started with Amazon Kinesis

To get started, choose an Amazon Kinesis resource to create.

Ingest and process streaming data with Kinesis streams


Process data with your own applications, or using AWS managed services like Amazon Kinesis Data Firehose, Amazon Kinesis Data Analytics, or AWS Lambda.



Create data stream

Deliver streaming data with Kinesis Firehose delivery streams


Continuously collect, transform, and load streaming data into destinations such as Amazon S3 and Amazon Redshift.



Create delivery stream

Analyze streaming data with Kinesis analytics applications


Run continuous analysis on streaming data from Kinesis data streams and Kinesis Firehose delivery streams.



Create analytics application

Ingest and process media streams with Kinesis video streams

Build applications to process or analyze streaming media.



Create video stream

Related CloudFormation templates

- When prompted, enter a unique name for the Kinesis data stream, eg, *initials-taxi-trips*, as **Kinesis stream name**. Enter 6 as the **Number of shards** and select **Create Kinesis**

stream at the bottom of the page.

The screenshot shows the 'Create Kinesis stream' page in the Amazon Kinesis Streams console. The page is titled 'Create Kinesis stream' and has a sidebar with navigation links: 'Dashboard', 'Data Streams', 'Data Firehose', 'Data Analytics', 'Video Streams', 'External resources', and 'What's new'. The main content area is divided into sections: 'Kinesis stream name*', 'Shards', and 'Total stream capacity'. The 'Kinesis stream name*' field is set to 'sthm-taxi-trips'. The 'Shards' section includes a diagram showing 'Producers' sending data to a 'Kinesis stream' (containing two 'Shard' units), which then sends data to 'Consumers'. Below the diagram, there is a link to 'Estimate the number of shards you'll need' and a 'Number of shards*' field set to '6'. The 'Total stream capacity' section shows values calculated based on the number of shards: 'Write' at 6 MB per second, 'Records per second' at 6000, and 'Read' at 12 MB per second. At the bottom, there are 'Cancel' and 'Create Kinesis stream' buttons. Orange arrows point to the 'Kinesis stream name*' field, the 'Number of shards*' field, and the 'Create Kinesis stream' button.

Kinesis stream name* sthm-taxi-trips

Acceptable characters are uppercase and lowercase letters, numbers, 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](#)

Producers → **Kinesis stream** (Shard, Shard) → **Consumers**

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

Number of shards* 6

You can provision up to 500 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 6 MB per second

6000 Records per second

Read 12 MB per second

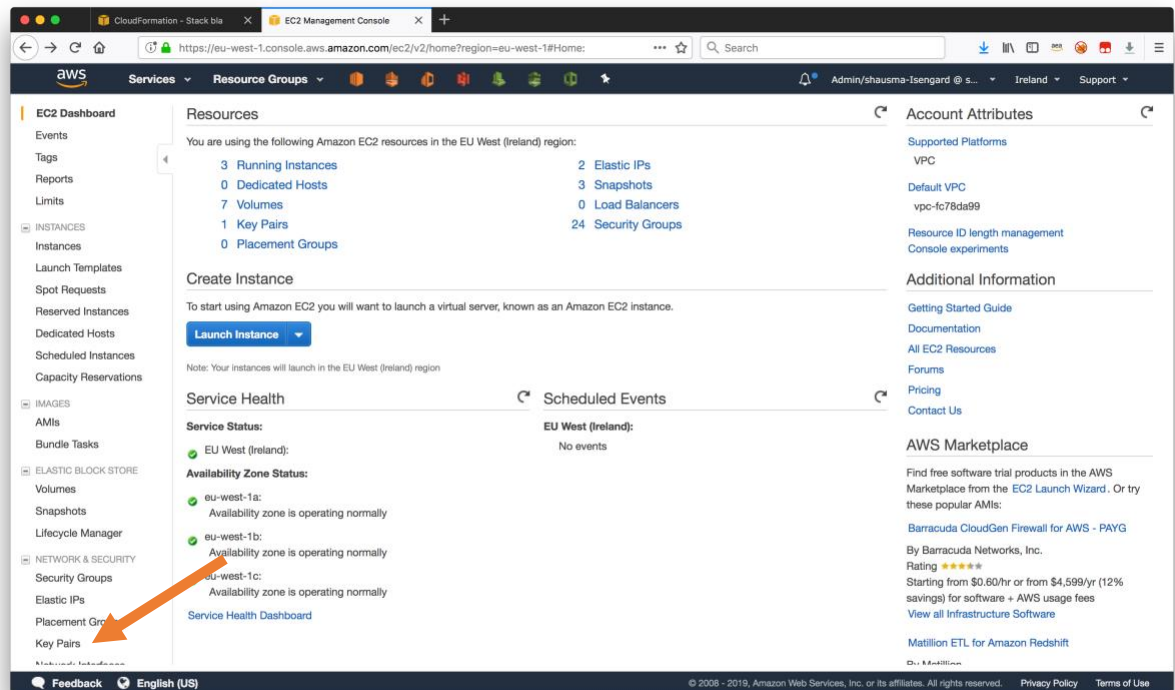
* Required

Cancel **Create Kinesis stream**

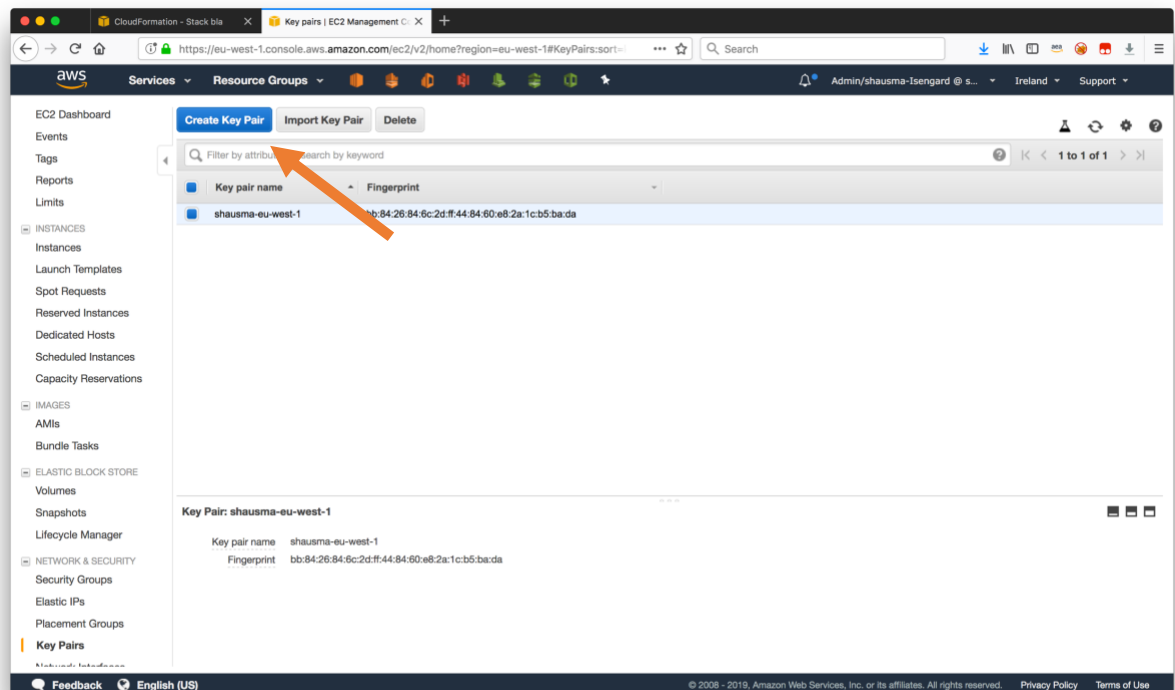
Now that the Kinesis data stream has been created, we want to ingest historic taxi trip events into the data stream. To this end, we compile the kinesis replay Java application and load it onto an EC2 instance.

We start with creating an SSH key pair so that we can connect to the instance over SSH. You can skip to the next section if you have created an SSH key pair previously.

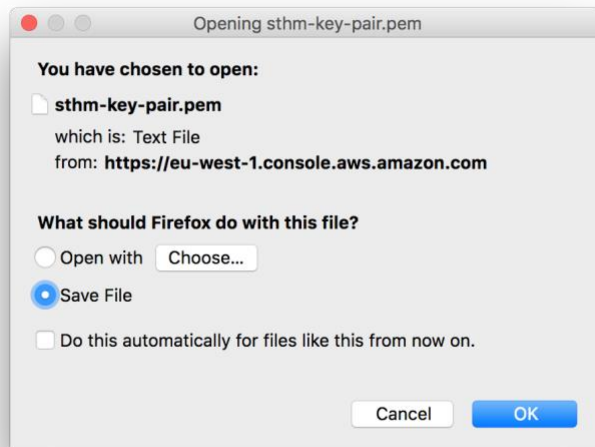
1. Navigate to the EC2 service and choose Key Pairs in the navigation bar on the left.



2. Click **Create Key Pair** and enter a name for the SSH key pair in the resulting dialog box, eg, initials-key-pair and select **Create**.



3. Confirm the download of the generated .pem file to your local machine.



Now that you have successfully created an SSH key pair, you can create the EC2 instance that you will use to ingest taxi trip events into the previously created Kinesis data stream.

1. Follow this link (<https://shausma-public.s3-eu-west-1.amazonaws.com/public/cfn-templates/streaming-workshop/streaming-workshop-infrastructure.yml>) to execute CloudFormation template that uses CodePipeline and CodeBuild to compile the kinesis replay Java application and to provision a EC2 instance. Select **Next** on the resulting

dialog.

The screenshot shows the AWS CloudFormation console in the 'Create stack' wizard, Step 1: Specify template. The interface includes a sidebar with steps: Step 1 (Specify template), Step 2 (Specify stack details), Step 3 (Configure stack options), and Step 4 (Review). The main content area is titled 'Create stack' and contains two sections: 'Prerequisite - Prepare template' and 'Specify template'.

Prerequisite - Prepare template

Prepare template
Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resources you want to include in the stack.

☒ Template is ready ☐ Use a sample template ☐ Create template in Designer

Specify template

A template is a JSON or YAML file that describes your stack's resources and properties.

Template source
Selecting a template generates an Amazon S3 URL where it will be stored.

☒ Amazon S3 URL ☐ Upload a template file

Amazon S3 URL

Amazon S3 template URL
S3 URL: https://s3.amazonaws.com/aws-bigdata-blog/artifacts/kinesis-analytics-taxi-consumer/cfn-templates/kinesis-replay-infrastructure.yml

[View in Designer](#)

2. On the next page of the dialog, specify an appropriate CIDR range to that is able to connect to the EC2 instance over SSH as the **ClientIpAddressRange** parameter. Moreover, select the previously created SSH key pair from the **SshKeyName** dropdown menu.

CloudFormation - Stack create

https://eu-west-1.console.aws.amazon.com/clo

aws Services Resource Groups Admin/shausma-Isengard @ s... Ireland Support

CloudFormation > Stacks > Create stack

Step 1
Specify template

Step 2
Specify stack details

Step 3
Configure stack options

Step 4
Review

Specify stack details

Stack name

Stack name

kinesis-replay-infrastructure

Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

Parameters

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

ClientIpAddressRange

IP address range that is able to connect to the EC2 instance over SSH

0.0.0.0/0

SshKeyName

Name of an existing EC2 KeyPair to enable SSH access to the EC2 instance for replaying events

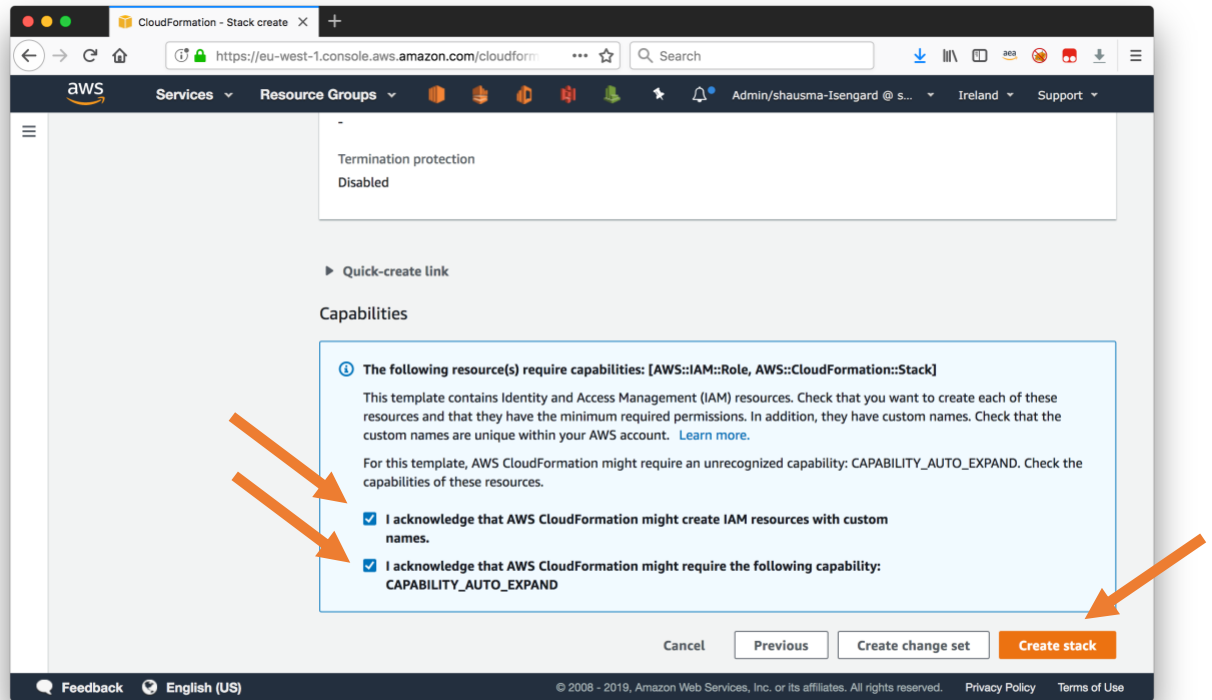
sthm-key-pair

Cancel Previous Next

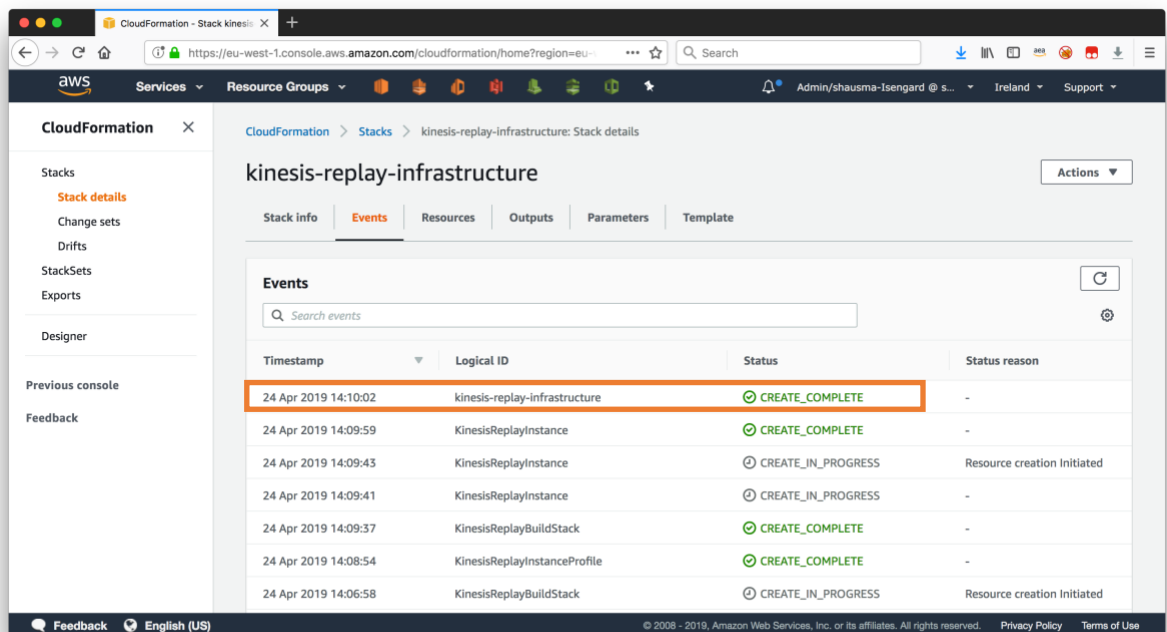
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3. On the next dialog for **Step 3**, leave all parameters set to their default and select **Next**.
4. On the last page of the dialog, confirm that CloudFormation may create IAM resource and create nested CloudFormation stacks by selecting the checkbox **I acknowledge that AWS CloudFormation might create IAM resources and I acknowledge that AWS CloudFormation might require the following capability: CAPABILITY_AUTO_EXPAND**.

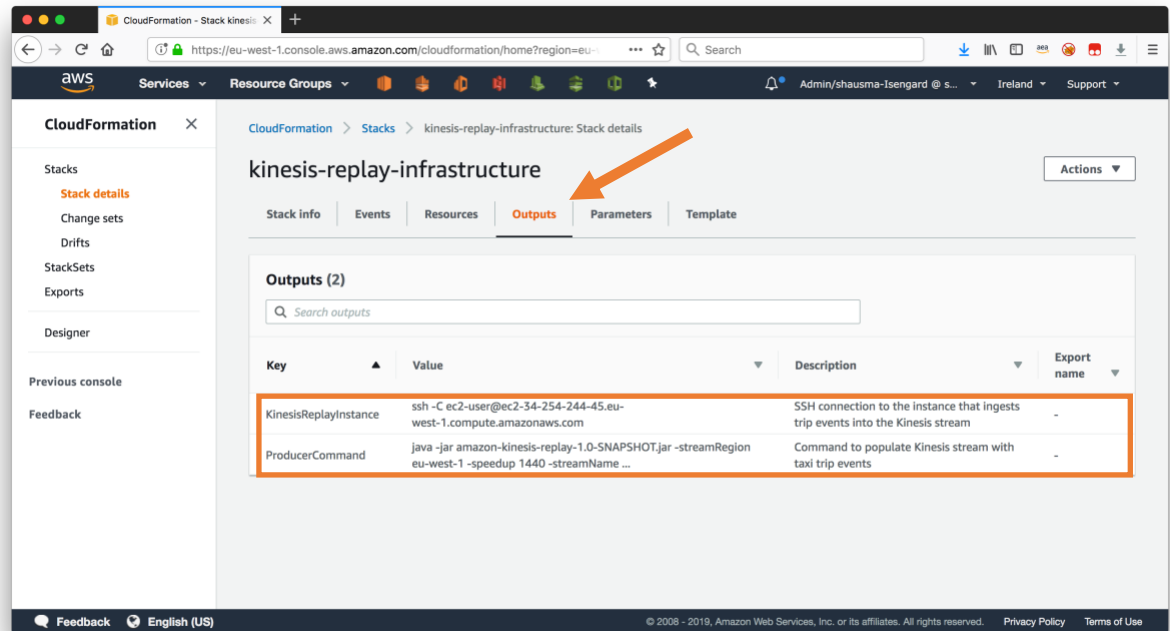
Finally select **Create stack** at the bottom of the page.



5. Wait until the CloudFormation template has been successfully been created. This may take around 5 minutes.



6. Navigate to the **Outputs** section of the CloudFormation template and take a note of the outputs for **KinesisReplayInstance** and **ProducerCommand**.



The CloudFormation template has created and configured an EC2 instance so that we can now start to ingest taxi trip events into the Kinesis data stream.

1. Connect to the EC2 instance via SSH. You can obtain the command including the correct parameters from the **Outputs** section of the CloudFormation template.

```
$ ssh -C ec2-user@ec2-34-254-244-45.us-east-1.compute.amazonaws.com
```

2. Once the connection has been established, start ingesting events into the Kinesis data stream by executing the jar file that has already been downloaded to the EC2 instance.

```
$ java -jar amazon-kinesis-replay-1.0-SNAPSHOT.jar -streamRegion us-east-1 -speedup 1440 -streamName initials-taxi-trips
```

The correct command is again available from the **Outputs** section of the CloudFormation template, but this time you need to fill in the name of Kinesis data stream you have created earlier as the `streamName` parameter.