

# Creating a Simple Monitored Queue with SQS

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**Thomas Compagno**

VP OF TECHNOLOGY

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# Module Overview



What is SQS

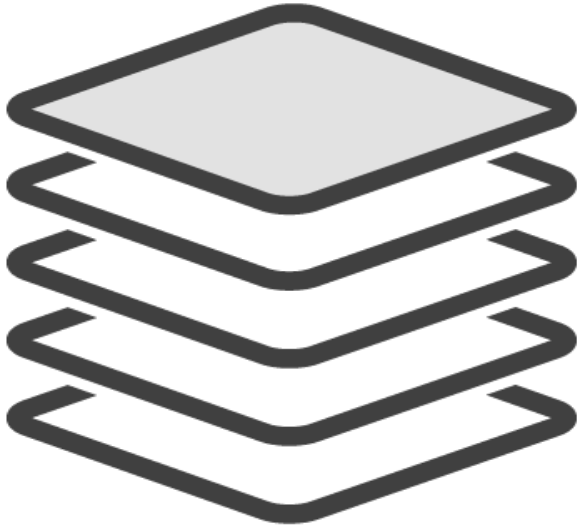
How can we leverage Cloudwatch

Demonstration

Summary

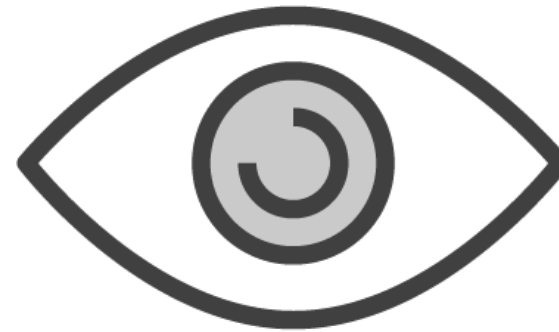


# This Module's Supporting Amazon Service



## **Simple Queue Service**

Push, Pop and Remove messages  
from a named queue



## **Cloudwatch**

Monitor, Measure, Execute



# Demo



Build a queue using the console tools

Setup a cloud watch event

Finish our workflow Lambda configuration

Test and validate





Services ▾

Resource Groups ▾



Tom Compagno ▾

Oregon ▾

Support ▾

## AWS services



### Recently visited services



IAM



Lambda



SQS



CloudWatch



Elastic Beanstalk

[All services](#)

## Featured next steps



### Manage your costs

Get real-time billing alerts based on your cost and usage budgets. [Start now](#)



### Get best practices

Use AWS Trusted Advisor for security, performance, cost and availability best practices. [Start now](#)

## Build a solution

Get started with simple wizards and automated workflows.



### Launch a virtual machine

With EC2  
~1 minute



### Build a web app

With Elastic Beanstalk  
~6 minutes



### Deploy a serverless microservice

With Lambda, API Gateway  
~2 minutes



### Host a static website

With S3, CloudFront, Route 53  
~5 minutes



### Create a backend for your mobile app

With Mobile Hub  
~5 minutes



### Register a domain

With Route 53  
~3 minutes

## What's new?

### Announcing AWS Batch

Now generally available, AWS Batch enables developers, scientists, and engineers to process large-scale batch jobs with ease. [Learn more](#)

### Announcing Amazon Lightsail

See how this new service allows you to launch and manage your VPS with AWS for a low, predictable price. [Learn more](#)

[See all](#)



Services ^

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## History

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### Compute

EC2

EC2 Container Service

Lightsail 

Elastic Beanstalk

Lambda

Batch



### Migration

Application Discovery Service

DMS

Server Migration

Snowball



### Developer Tools

CodeCommit

CodeBuild

CodeDeploy

CodePipeline

X-Ray



### Management Tools

CloudWatch

CloudFormation

CloudTrail

Config

OpsWorks

Service Catalog



### Security, Identity & Compliance

IAM

Inspector

Certificate Manager

Directory Service

WAF & Shield

Compliance Reports



### Mobile Services

Mobile Hub

Cognito

Device Farm

Mobile Analytics

Pinpoint



### Application Services

Step Functions

SWF

API Gateway

Elastic Transcoder



### Messaging

SQS

SNS

SES



### Analytics

Athena

EMR

CloudSearch

Elasticsearch Service

Kinesis

Data Pipeline

QuickSight 



### Artificial Intelligence

Lex

Polly



### Business Productivity

WorkDocs



### Storage

S3

EFS

Glacier

Storage Gateway



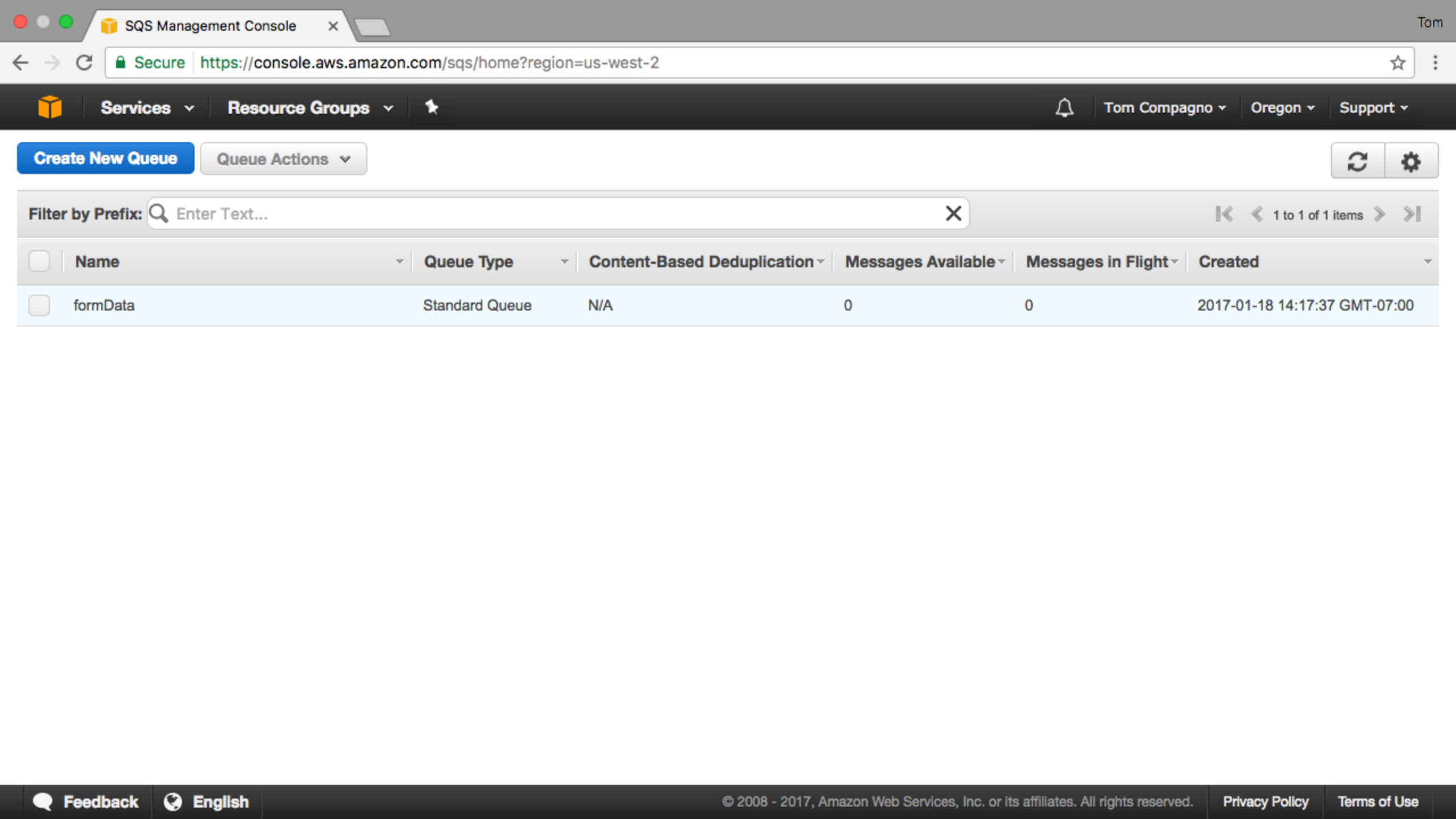
### Database

RDS

DynamoDB

ElastiCache

Redshift



Create New Queue

Queue Actions



Filter by Prefix: Enter Text...



1 to 1 of 1 items

<input type="checkbox"/>	Name	Queue Type	Content-Based Deduplication	Messages Available	Messages in Flight	Created
<input type="checkbox"/>	formData	Standard Queue	N/A	0	0	2017-01-18 14:17:37 GMT-07:00

# Create New Queue

## What do you want to name your queue?

Queue Name ⓘ

Type the queue name.

Region ⓘ US West (Oregon)

## What type of queue do you need?

Standard Queue

FIFO Queue

High Throughput: Standard queues have nearly-unlimited transactions per second (TPS).

At-Least-Once Delivery: A message is delivered at least once, but occasionally more than one copy or a message is delivered.

First-In-First-out Delivery: The order in which messages are sent and received is strictly preserved.

Exactly-Once Processing: A message is guaranteed to be delivered at least once, but all duplicates of the message are removed.





Services ▾

Resource Groups ▾



Tom Compagno ▾

Oregon ▾

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## Create New Queue

### What do you want to name your queue?

Queue Name ⓘ

Region ⓘ US West (Oregon)

### What type of queue do you need?

**Standard Queue**

High Throughput: Standard queues have nearly-unlimited transactions per second (TPS).

At-Least-Once Delivery: A message is delivered at least once, but occasionally more than one copy or a message is delivered.

**FIFO Queue**

First-In-First-out Delivery: The order in which messages are sent and received is strictly preserved.

Exactly-Once Processing: A message is guaranteed to be delivered at least once, but all duplicates of the message are removed.



Feedback



English



Services ▾

Resource Groups ▾

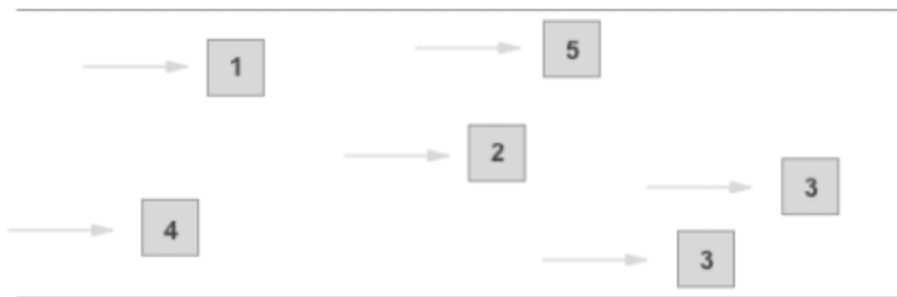


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Oregon ▾

Support ▾

Best-Effort Ordering: Occasionally, messages are delivered in an order different from which they were sent.



Send data between applications when the throughput is important, for example:

- Decouple live user requests from intensive background work: let users upload media while resizing or encoding it.
- Allocate tasks to multiple worker nodes: process a high number of credit card validation requests.
- Batch messages for future processing: schedule multiple entries to be added to a database.

Limited Throughput: 300 transactions per second (TPS).



Send data between applications when the order of events is important, for example:

- Ensure that user-entered commands are executed in the right order.
- Display the correct product price by sending price modifications in the right order.
- Prevent a student from enrolling in a course before registering for an account.

For more information, see the [Amazon SQS FAQs](#) and the [Amazon SQS Developer Guide](#).

You are now ready to create your new queue. You can also configure parameters by clicking on the configure queue button.

[Cancel](#)[Configure Queue](#)[Quick>Create Queue](#)

SQS Management Console

Tom

Secure

https://console.aws.amazon.com/sqs/home?region=us-west-2#queue-browser:selected=https://sqs.us-west-2.amazonaws.com/854337666006/leadData;pr...

☆

Services

Resource Groups

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Support

Create New Queue

Queue Actions

Filter by Prefix:

Enter Text...

X

1 to 2 of 2 items

	Name	Queue Type	Content-Based Deduplication	Messages Available	Messages in Flight	Created
<input type="checkbox"/>	formData	Standard Queue	N/A	0	0	2017-01-18 14:17:37 GMT-07:00
<input checked="" type="checkbox"/>	leadData	Standard Queue	N/A	0	0	2017-03-12 10:53:01 GMT-06:00

1 SQS Queue selected

Details

Permissions

Redrive Policy

Monitoring

Name: leadData

URL: https://sqs.us-west-2.amazonaws.com/854337666006/leadData

ARN: arn:aws:sqs:us-west-2:854337666006:leadData

Created: 2017-03-12 10:53:01 GMT-06:00

Last Updated: 2017-03-12 10:53:01 GMT-06:00

Delivery Delay 0 seconds

Queue Type: Standard

Content-Based Deduplication: N/A

Default Visibility Timeout 30 seconds

Message Retention Period 4 days

Maximum Message Size 256 KB

Receive Message Wait Time 0 seconds

Messages Available (Visible): 0

Messages in Flight (Not Visible): 0

Messages Delayed: 0

Feedback

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Tom

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https://console.aws.amazon.com/sqs/home?region=us-west-2#queue-browser:selected=https://sqs.us-west-2.amazonaws.com/854337666006/leadData;pr...

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Mobile Analytics

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API Gateway

Elastic Transcoder

Messaging

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SNS

SES

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WorkDocs



- CloudWatch
- Dashboards
- Alarms
- ALARM 0
- INSUFFICIENT 0
- OK 0
- Billing
- Events
- Rules
- Logs
- Metrics NEW

# Rules

Rules route events from your AWS resources for processing by selected targets. You can create, edit, and delete rules.

Create rule

Actions

Status

All

Name

<< < Viewing 1 to 1 of 1 Rules > >>

	Status	Name	Description
		watch-message-queue	

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Metrics **NEW**

✕

## Rules

Rules route events from your AWS resources for processing by selected targets. You can create, edit, and delete rules.

**Actions** ▾





### Status

All



Name

« < Viewing 1 to 2 of 2 Rules > »

	Status	Name	Description
<input type="radio"/>		<a href="#">poll-for-leads</a>	scheduled event to kick off lambda message checker
<input type="radio"/>		<a href="#">watch-message-queue</a>	

### Elastic Beanstalk

## Search services

A-Z



## Batch



## Redshift



### X-Ray



## Service Catalog



## Compliance Reports



QuickSight 



Polly



## Pinpoint



## Elastic Transcoder



## SES



## Business Productivity

Create New Queue

Queue Actions ⌵

🔄⚙️

Filter by Prefix: 🔍 Enter Text... ⌵

⏪ ⏩ 1 to 2 of 2 items ⏪ ⏩

<input type="checkbox"/>	Name ⌵	Queue Type ⌵	Content-Based Deduplication ⌵	Messages Available ⌵	Messages in Flight ⌵	Created ⌵
<input type="checkbox"/>	formData	Standard Queue	N/A	0	0	2017-01-18 14:17:37 GMT-07:00
<input type="checkbox"/>	leadData	Standard Queue	N/A	0	0	2017-03-12 10:53:01 GMT-06:00



SQS Management Console

Tom

Secure

https://console.aws.amazon.com/sqs/home?region=us-west-2

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Services

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Support

Create New Queue

Queue Actions

↺

⚙

Filter by Prefix:

⏪

⏩

1 to 2 of 2 items

⏪

⏩

☐

Name

☐

formData

☒

leadData

Send a Message

View/Delete Messages

Configure Queue

Add a Permission

Purge Queue

Delete Queue

Subscribe Queue to SNS Topic

Queue Type

Content-Based Deduplication

Messages Available

Messages in Flight

Created

Standard Queue

N/A

0

0

2017-01-18 14:17:37 GMT-07:00

Standard Queue

N/A

0

0

2017-03-12 10:53:01 GMT-06:00

1 SQS Queue selected

☰

☰

☰

Details

Permissions

Redrive Policy

Monitoring

**Name:** leadData

**URL:** https://sqs.us-west-2.amazonaws.com/854337666006/leadData

**ARN:** arn:aws:sqs:us-west-2:854337666006:leadData

**Created:** 2017-03-12 10:53:01 GMT-06:00

**Last Updated:** 2017-03-12 10:53:01 GMT-06:00

**Delivery Delay** 0 seconds

**Queue Type:** Standard

**Content-Based Deduplication:** N/A

**Default Visibility Timeout** 30 seconds

**Message Retention Period** 4 days

**Maximum Message Size** 256 KB

**Receive Message Wait Time** 0 seconds

**Messages Available (Visible):** 0

**Messages in Flight (Not Visible):** 0

**Messages Delayed:** 0

Feedback

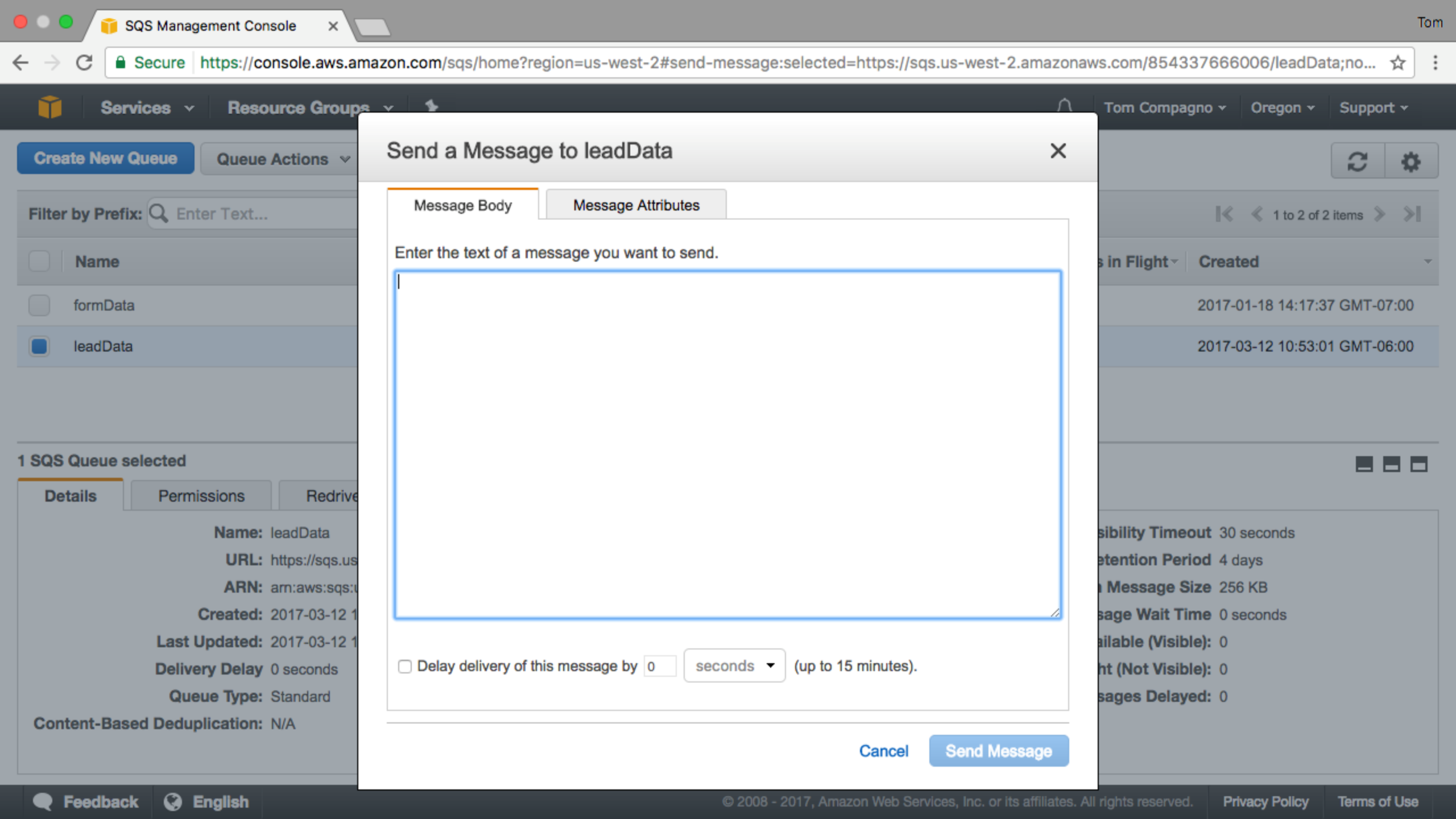
English

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SQS Management Console

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https://console.aws.amazon.com/sqs/home?region=us-west-2#send-message:selected=https://sqs.us-west-2.amazonaws.com/854337666006/leadData;no...

☆

Services

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Create New Queue

Queue Actions

Filter by Prefix:

Enter Text...

☐ Name

☐ formData

☒ leadData

1 SQS Queue selected

Details

Permissions

Redrive

Name:

leadData

URL:

https://sqs.us-west-2.amazonaws.com/854337666006/leadData

ARN:

arn:aws:sqs:us-west-2:854337666006:leadData

Created:

2017-03-12 10:53:01 GMT-06:00

Last Updated:

2017-03-12 10:53:01 GMT-06:00

Delivery Delay

0 seconds

Queue Type:

Standard

Content-Based Deduplication:

N/A

Send a Message to leadData

×

Message Body

Message Attributes

Enter the text of a message you want to send.

```
{
  "first_name": "Tommy",
  "last_name": "Compagno",
  "company": "QueuedCompany",
  "phone": "80155558392",
  "email": "tom.compagno@gmail.com"
}
```

☐ Delay delivery of this message by

0

seconds

(up to 15 minutes).

Cancel

Send Message

1 to 2 of 2 items

Created

2017-01-18 14:17:37 GMT-07:00

2017-03-12 10:53:01 GMT-06:00

Visibility Timeout

30 seconds

Retention Period

4 days

Message Size

256 KB

Message Wait Time

0 seconds

Available (Visible):

0

Not Visible (Not Visible):

0

Messages Delayed:

0

Feedback

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SQS Management Console

Tom

Secure

https://console.aws.amazon.com/sqs/home?region=us-west-2#send-message:selected=https://sqs.us-west-2.amazonaws.com/854337666006/leadData;no...

☆

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Create New Queue

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Filter by Prefix:

Enter Text...

☐

Name

☐

formData

☒

leadData

1 SQS Queue selected

Details

Permissions

Redrive

Name: leadData

URL: https://sqs.us-west-2.amazonaws.com/854337666006/leadData

ARN: arn:aws:sqs:us-west-2:854337666006:leadData

Created: 2017-03-12 10:53:01 GMT-06:00

Last Updated: 2017-03-12 10:53:01 GMT-06:00

Delivery Delay 0 seconds

Queue Type: Standard

Content-Based Deduplication: N/A

Visibility Timeout 30 seconds

Retention Period 4 days

Message Size 256 KB

Message Wait Time 0 seconds

Messages Available (Visible): 0

Messages Not Visible: 0

Messages Delayed: 0

Close

Send Another Message

SQS Management Console

Tom

Secure

https://console.aws.amazon.com/sqs/home?region=us-west-2#queue-browser:selected=https://sqs.us-west-2.amazonaws.com/854337666006/leadData;pr...

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Create New Queue

Queue Actions

Filter by Prefix:

Enter Text...

X

1 to 2 of 2 items

	Name	Queue Type	Content-Based Deduplication	Messages Available	Messages in Flight	Created
<input type="checkbox"/>	formData	Standard Queue	N/A	0	0	2017-01-18 14:17:37 GMT-07:00
<input checked="" type="checkbox"/>	leadData	Standard Queue	N/A	1	0	2017-03-12 10:53:01 GMT-06:00

1 SQS Queue selected

Details

Permissions

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Monitoring

Name: leadData

URL: https://sqs.us-west-2.amazonaws.com/854337666006/leadData

ARN: arn:aws:sqs:us-west-2:854337666006:leadData

Created: 2017-03-12 10:53:01 GMT-06:00

Last Updated: 2017-03-12 10:53:01 GMT-06:00

Delivery Delay 0 seconds

Queue Type: Standard

Content-Based Deduplication: N/A

Default Visibility Timeout 30 seconds

Message Retention Period 4 days

Maximum Message Size 256 KB

Receive Message Wait Time 0 seconds

Messages Available (Visible): 1

Messages in Flight (Not Visible): 0

Messages Delayed: 0

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https://console.aws.amazon.com/sqs/home?region=us-west-2#queue-browser:selected=https://sqs.us-west-2.amazonaws.com/854337666006/leadData;pr...

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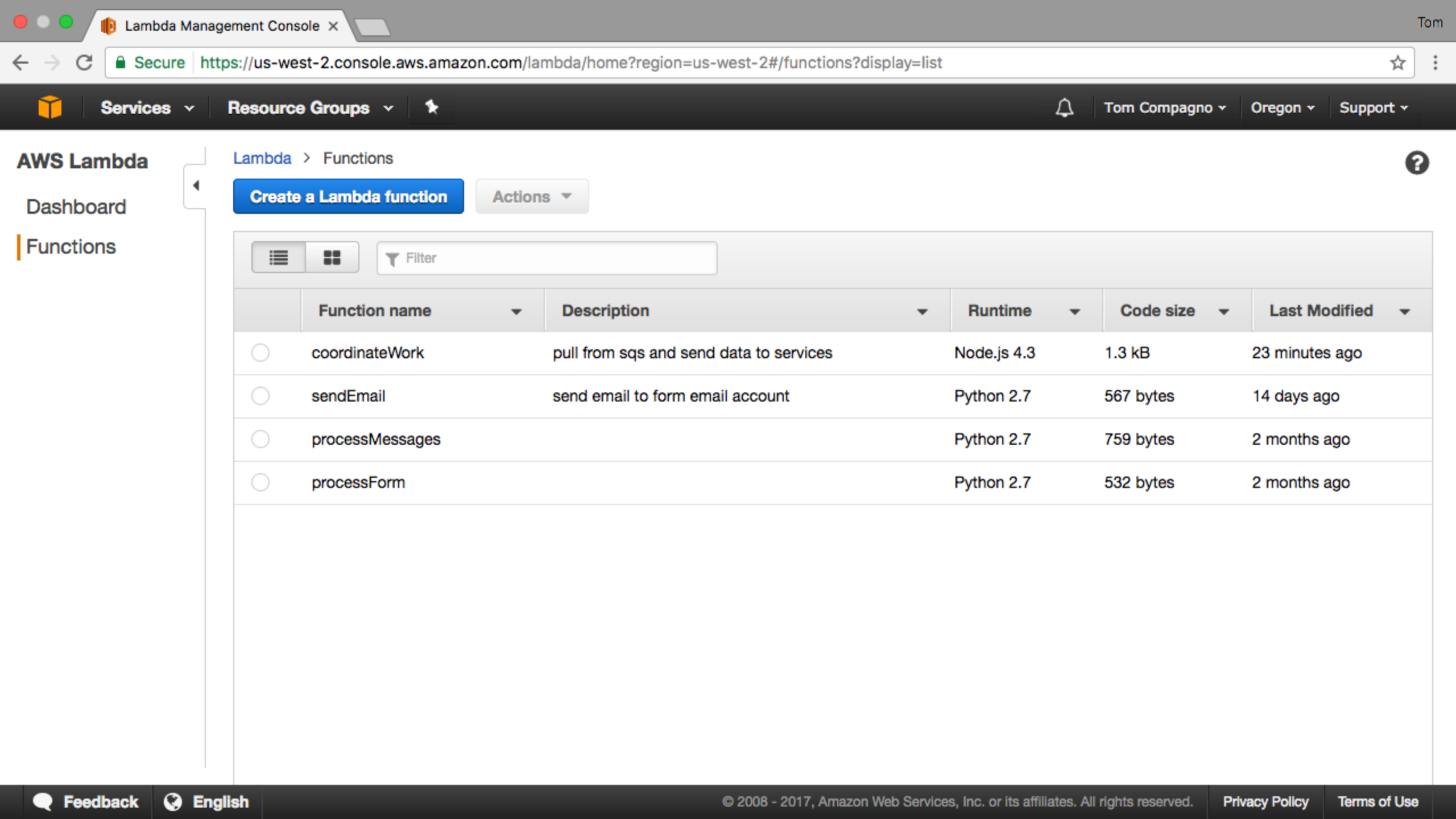
SNS

SES

🏢

Business Productivity

WorkDocs



## AWS Lambda

Lambda &gt; Functions



Dashboard

Functions

Create a Lambda function

Actions ▾



Filter

	Function name ▾	Description ▾	Runtime ▾	Code size ▾	Last Modified ▾
<input type="radio"/>	coordinateWork	pull from sqs and send data to services	Node.js 4.3	1.3 kB	23 minutes ago
<input type="radio"/>	sendEmail	send email to form email account	Python 2.7	567 bytes	14 days ago
<input type="radio"/>	processMessages		Python 2.7	759 bytes	2 months ago
<input type="radio"/>	processForm		Python 2.7	532 bytes	2 months ago



# AWS Lambda

Dashboard  
Functions

Lambda > Functions > coordinateWork

ARN - arn:aws:lambda:us-west-2:123456789012:function:coordinateWork

Qualifiers Test Actions

Code Configuration Triggers Monitoring

Code entry type Edit code inline

```
1 'use strict';
2
3 const https = require('https');
4 const AWS = require('aws-sdk');
5
6 const SQS = new AWS.SQS({ apiVersion: '2012-11-05' });
7 const QUEUE_URL = process.env.queue_url;
8
9 const requests = [
10   {
11     "name": "sfdc",
12     "options": {
13       hostname: process.env.gateway_url,
14       port: 443,
15       path: '/dev/sfdc-lead',
16       method: 'POST'
17     }
18   },
19   {
```



AWS Lambda

Dashboard

Functions

```
16         method: 'POST'
17     },
18 },
19 {
20     "name": "email",
21     "options": {
22         hostname: process.env.gateway_url,
23         port: 443,
24         path: '/dev/send-email',
25         method: 'POST'
26     }
27 }
```

You can define Environment Variables as key-value pairs that are accessible from your function code. These are useful to store configuration settings without the need to change function code. [Learn more](#). For storing sensitive information, we recommend encrypting values using KMS and the console's encryption helpers.

Enable encryption helpers ☐

Environment variables

gateway_url	snwyloac5.execute-api.us-west-2.amazo	×
queue_url	placeholder	×
Key	Value	×



Lambda Management Console

SQS Management Console

Tom

Secure

https://us-west-2.console.aws.amazon.com/lambda/home?region=us-west-2#/functions/coordinateWork?tab=code

☆

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AWS Lambda

Dashboard

Functions

16method: 'POST'

17}

18},

19{

20"name": "email",

21"options": {

22hostname: process.env.gateway\_url,

23port: 443,

24path: '/dev/send-email',

25method: 'POST'

26}

27

⚙

✕

You can define Environment Variables as key-value pairs that are accessible from your function code. These are useful to store configuration settings without the need to change function code. [Learn more](#). For storing sensitive information, we recommend encrypting values using KMS and the console's encryption helpers.

Enable encryption helpers

☐

Environment variables

gateway\_url

████████████████████pi.us-west-2.amazo

✕

queue\_url

nazonaws.com████████████████████hData

✕

Key

Value

✕

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Lambda Management Console

SQS Management Console

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https://us-west-2.console.aws.amazon.com/lambda/home?region=us-west-2#/functions/coordinateWork?tab=code

☆

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AWS Lambda

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Functions

✓ Execution result: succeeded (logs)

✕

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

```
{  "messages": "sent message."}
```

Summary

Code SHA-256

FZ4cBQ44JD4nOAT+FaAU3zAtXp  
qzqkUPrF2yHUaQRVg=

Request ID

74734b0a-0745-11e7-adb2-0f6c195e40e5

Duration

1117.69 ms

Billed duration

1200 ms

Resources configured

128 MB

Max memory used

21 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: 74734b0a-0745-11e7-adb2-0f6c195e40e5 Version: $LATEST
2017-03-12T17:00:56.062Z      74734b0a-0745-11e7-adb2-0f6c195e40e5      null
END RequestId: 74734b0a-0745-11e7-adb2-0f6c195e40e5
REPORT RequestId: 74734b0a-0745-11e7-adb2-0f6c195e40e5  Duration: 1117.69 ms   Billed Duration:
```

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Lambda Management Console

SQS Management Console

# customer-contact | tomplgroup

Leads: Home ~ Salesforce - De

Tom

Secure

https://tomplgroup.slack.com/messages/customer-contact/

☆

⋮

tomplgroup

pluralsighttom

All Threads

CHANNELS (3)

customer-contact

# general

# random

DIRECT MESSAGES

slackbot

pluralsighttom (you)

+ Invite people

customer-contact

☆ | 1 | Add a topic

📞

⚙️

📄

🔍 Search

@

☆

⋮

customer-contact

You created this private channel on February 5th. This is the very beginning of the customer-contact private channel.

🔗 Set a purpose

+ Add an app or custom integration

👤 Invite others to this private channel

February 5th

pluralsighttom

10:30 AM

joined customer-contact

pluralsighttom

10:31 AM

added an integration to this channel: incoming-webhook

incoming-webhook

APP

10:47 AM

This is a line of text.

And this is another one.

Today

incoming-webhook

APP

11:08 AM

8015553892 Tommy Compagno

+ Message customer-contact

😊

new messages

Chat

Recent Items

Tommy Compagno

tom compagno

tom compagno

Tom Compagno

Recycle Bin

Quick Create

First Name

Last Name

Company

Phone

Email

Campaign

View: My Unread Leads ▾

Go!

Edit | Create New View

Recent Leads

New

Recently Viewed ▾

Name	Company	Phone
<a href="#">Compagno, Tommy</a>	<a href="#">QueuedCompany</a>	8015553892
<a href="#">compagno, tom</a>	<a href="#">yesyes</a>	801383892
<a href="#">compagno, tom</a>	<a href="#">yesyes</a>	801383892
<a href="#">Compagno, Tom</a>	<a href="#">Myself</a>	8015554432

Reports

[Lead Lifetime](#)

[Leads By Source](#)

[Bounced Leads](#)

Go to Reports »

Summary

Interval: From: 3/5/2017 [ 3/12/2017 ]

To: [ 3/12/2017 ]

View: My leads ▾

Run Report

Tools

Import Leads

Chat

# Test Email Message to Tommy

Today



Thank you - Tommy



**me** to me ↕

11:08 AM ⋮

Here is some valuable marketing information!



Reply



Thank you!

This is great, thank you!

Thanks for sharing!



# Summary



**Built our first queue in SQS**

**Created a Cloudwatch event rule to call our lambda every five minutes**

**Updated our Lambda function with our new queue URL**

**Validated a test message correctly passed to all three of our services**

- Slack
- Email
- Salesforce

