

# Observability and SLIC Watch



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Conf42: Observability 2023



# Hi! I'm Diren



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 Get in touch

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 Diren Akkoc

 direnakkoc





Always re-imagining

We are a pioneering technology consultancy focused on **AWS** and **serverless**

We can help with:

*Cloud Migrations*

*Training & Cloud enablement*

*Building high-performance serverless applications*

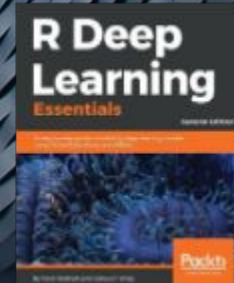
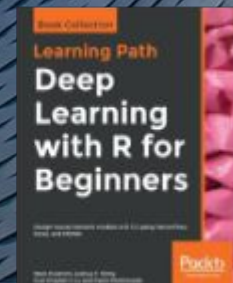
*Cutting cloud costs*



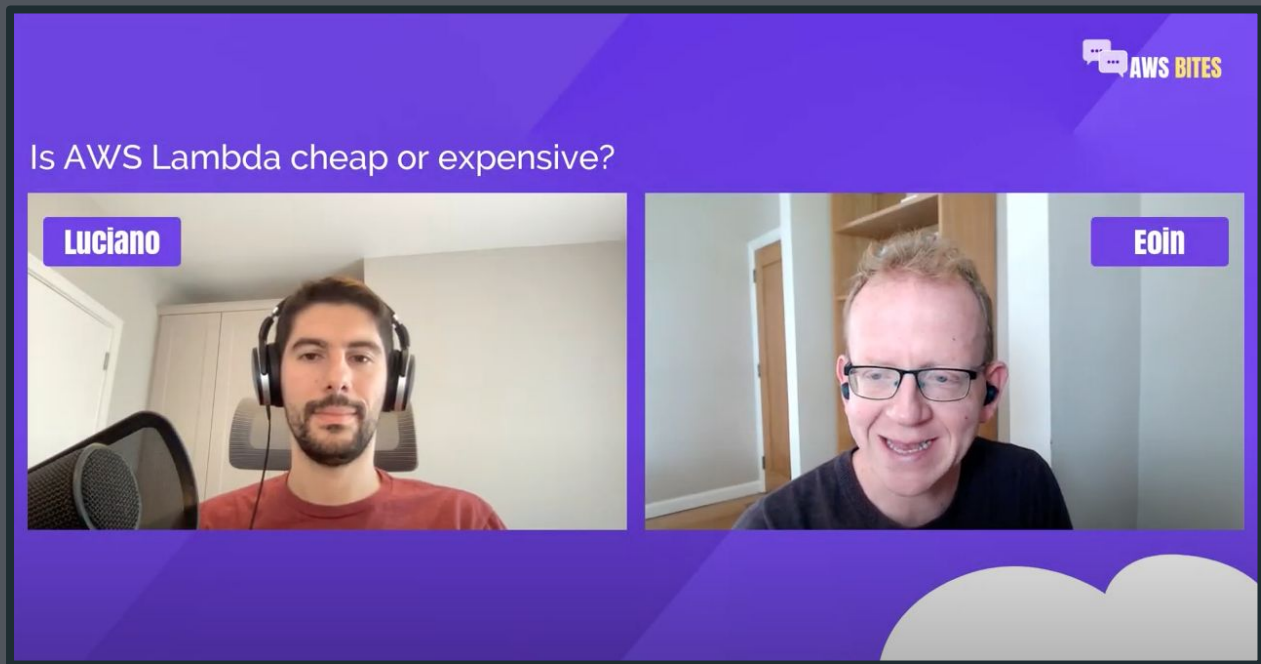
Advanced  
Consulting  
Partner

 Middy SLIC-Starter SLIC-Watch

 AWS BITES



# Check out our Podcast!



[awsbites.com](https://awsbites.com)

# Observability in the cloud

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“ *a measure of how well internal states of a system can be inferred from knowledge of its external outputs* ”



Logs



Metrics




Tracing


# Observability in the cloud

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## Logs

-  It is a log of what happened

## Metrics

-  Do I have a problem?

## Tracing

-  Where is the problem?

# AWS native o11y = CloudWatch

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Cloudwatch gives you:

- Logs with Insights
- Metrics
- Dashboards
- Alarms
- Canaries
- Distributed tracing (with X-Ray)



# CloudWatch out of the box

😍 A *toolkit* you can use to build observability

😄 Metrics are *automatically* generated for all services!

😞 Lots of dashboards, but by service and not by application!

😞 Zero alarms out of the box!

The screenshot displays the AWS CloudWatch Explorer interface. On the left is a sidebar with a navigation menu including: Dashboards, Alarms (with a notification icon showing 0), Logs, Metrics (with a notification icon showing 0), Events, ServiceLens, Container Insights, Lambda Insights, Synthetics, and Favorites. The 'Alarms' section shows 'In alarm' (0), 'Insufficient data' (0), and 'OK' (0). The 'Metrics' section shows 'Streams' with a 'New' badge. The 'Events' section shows 'Rules', 'Event Buses', and 'Resource Health' with a 'New' badge. The 'Container Insights' section shows 'Resources', 'Performance monitoring', and 'Performance monitoring'. The 'Lambda Insights' section shows 'Performance monitoring'. The 'Synthetics' section shows 'Canaries', 'Contributor Insights', and 'Settings'. The 'Favorites' section has a '+ Add a dashboard' button.

The main panel is titled 'CloudWatch Explorer' and shows configuration options for metrics. It includes a search bar for metrics, a 'From' section for selecting resources and tags, an 'Aggregate by' section for choosing a function and resource, a 'Split by' section for tag values, and 'Graph options' for period (5 Minutes), graphs (Line), legend (Bottom), and layout (2 columns, 50 rows). A dashed box on the right side of the main panel contains the text 'No charts' and 'To start, ch...'. The top right of the interface shows 'CloudWatch Explorer' and a dropdown menu set to 'Empty Explorer'.

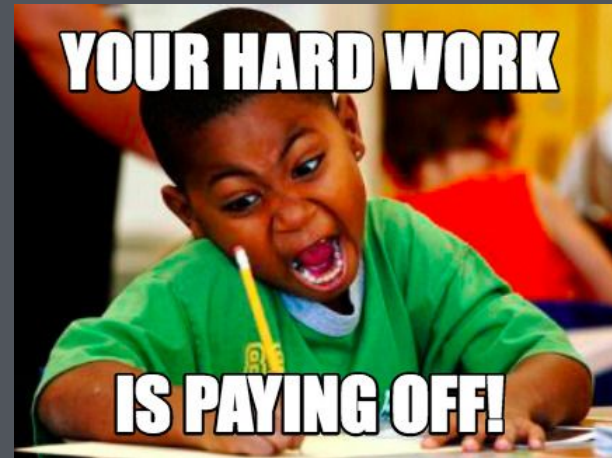


# Setting up dashboards and alarms in CloudWatch

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- 📁 **Research** and understand available metrics
- 📐 Decide **thresholds**
- 📊 Write IaC for application **dashboards**
- 🕒 Write IaC for service metric **alarms**
- 🔄 **Update** every time your application changes
- 📋 Copy and paste for **each stack** in your application

(a.k.a. *A LOT OF WORK!*)



# Best practices

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👤 AWS Well Architected Framework

🏛️ 6 Pillars

⚙️ Operational excellence pillar covers observability

🤖 Serverless lens applies these pillars

👍 Good guidance on metrics to observe

👎 More reading and research + you still have to pick thresholds



# 4 Golden signals

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Latency

- Response time



Traffic

- The amount of activity



Errors

- The rate of requests that fail



Saturation

- How "full" your service is.

# CloudFormation for CloudWatch Alarms



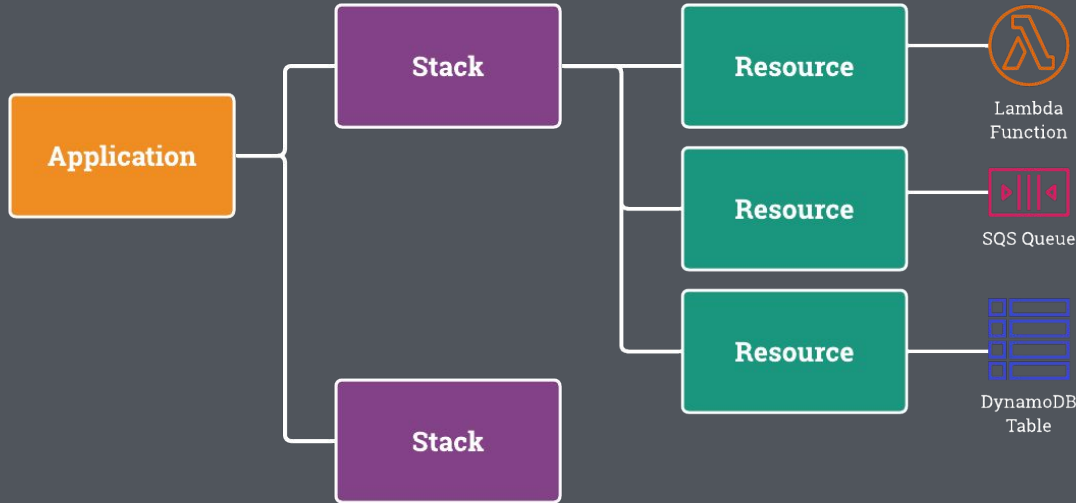
```
"Type": "AWS::CloudWatch::Alarm",
"Properties": {
  "ActionsEnabled": true,
  "AlarmActions": [
    "arn:aws:sns:eu-west-1:665863320777:FTSLICALarms"
  ],
  "AlarmName": "LambdaThrottles_serverless-test-project-dev-hello",
  "AlarmDescription": "Throttles % for serverless-test-project-dev-hello ..",
  "EvaluationPeriods": 1,
  "ComparisonOperator": "GreaterThanThreshold",
  "Threshold": 0,
  "TreatMissingData": "notBreaching",
  "Metrics": [
    {
      "Id": "throttles_pc",
      "Expression": "(throttles / throttles + invocations) * 100",
      "Label": "% Throttles",
      "ReturnData": true
    },
    {
      "Id": "throttles",
```

```
"MetricStat": {
  "Metric": {
    "Namespace": "AWS/Lambda",
    "MetricName": "Throttles",
    "Dimensions": [
      {
        "Name": "FunctionName",
        "Value": "serverless-test-project-dev-hello"
      }
    ]
  },
  "Period": 60,
  "Stat": "Sum"
},
"ReturnData": false
},
{
  "Id": "invocations",
  "MetricStat": {
    "Metric": {
      "Namespace": "AWS/Lambda",
      "MetricName": "Invocations",
```



# Can we automate this?

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*Magically  
generated alarms  
and dashboards for  
each application!*



# Introducing SLIC Watch

[fth.link/slic-watch](https://fth.link/slic-watch)

## slic-watch

serverless npm v2.1.2 Build coverage 100% standard

Automatic, best-practice CloudWatch **Dashboards** and **Alarms** for your SAM, CloudFormation, CDK and Serverless Framework applications.

SLIC Watch supports: *AWS Lambda, API Gateway, DynamoDB, Kinesis Data Streams, SQS Queues, Step Functions, ECS (Fargate or EC2), SNS, EventBridge and Application Load Balancer.*

Supported tools include:

- ⚡ **Serverless Framework** v2 and v3 via the *SLIC Watch Serverless Plugin*
- 📦 **AWS SAM**, 📦 **AWS CDK** and ☁️ **CloudFormation** using the *CloudFormation Macro*, published in the Serverless Application Repository (SAR).

## Contents

- [slic-watch](#)
  - [Contents](#)
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    - [Adding the SLIC Watch Transform to SAM or CloudFormation templates](#)
    - [Adding the SLIC Watch Transform to CDK Apps](#)
  - [Features](#)
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    - [API Gateway](#)
    - [DynamoDB](#)
    - [Kinesis Data Streams](#)
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    - [Step Functions](#)
    - [ECS / Fargate](#)
    - [SNS](#)
    - [EventBridge](#)
    - [Application Load Balancer](#)

Install

```
> npm i serverless-slic-watch-plugin
```

Repository

📁 [github.com/fourTheorem/slic-watch](https://github.com/fourTheorem/slic-watch)

Homepage

📄 [github.com/fourTheorem/slic-watch#re...](https://github.com/fourTheorem/slic-watch#re...)

± Weekly Downloads

482



Version

2.1.2

License

Apache

Unpacked Size

30.9 kB

Total Files

6

Issues

17

Pull Requests

3

Last publish

6 months ago

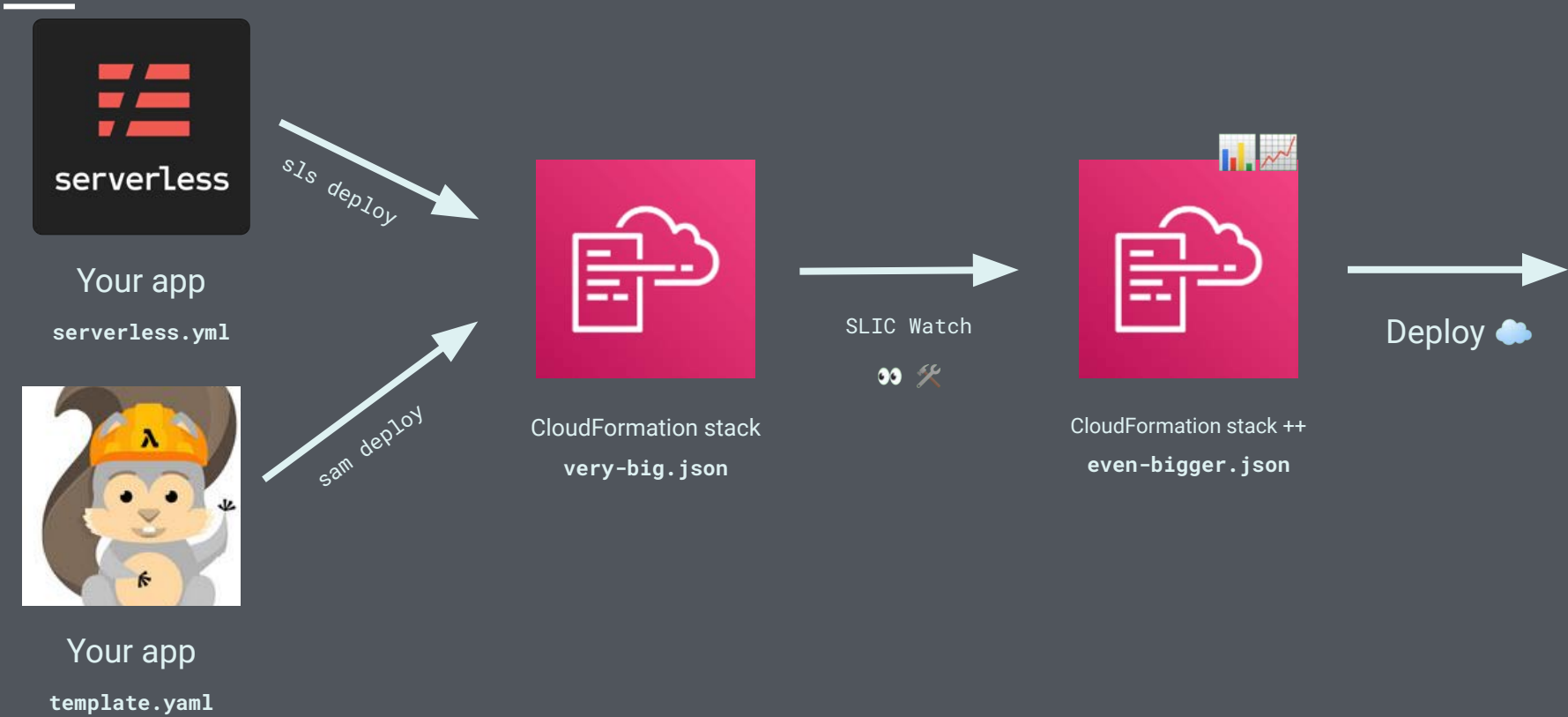
Collaborators



>-Try on RunKit

🚩Report malware

# How SLIC Watch works



# Configuration

🎀 SLIC Watch comes with **sane defaults**

📝 You can **configure** what you don't like

🔌 Or **disable** specific dashboards or alarms



[fth.link/slic-watch](https://fth.link/slic-watch)

```
custom:
  slicWatch:
    topic: SNS_TOPIC_ARN

  alarms:
    enabled: true
    Period: 60
    EvaluationPeriods: 1
    TreatMissingData: notBreaching
    ComparisonOperator: GreaterThanThreshold
    Lambda: # Lambda Functions
      Errors:
        Threshold: 0
        Statistic: Sum
      ThrottlesPc: # Throttles are evaluated as a percentage of invocations
        Threshold: 0
      DurationPc: # Duration is evaluated as a percentage of the function timeout
        Threshold: 95
        Statistic: Maximum
      Invocations: # No invocation alarms are created by default. Override threshold to
        enabled: false # Note: this one requires both `enabled: true` and `Threshold:
        Threshold: null
        Statistic: Sum
      IteratorAge:
        Threshold: 10000
        Statistic: Maximum
    ApiGateway: # API Gateway REST APIs
      5XXError:
        Statistic: Average
        Threshold: 0
      4XXError:
        Statistic: Average
        Threshold: 0.05
      Latency:
        ExtendedStatistic: p99
        Threshold: 5000
    States: # Step Functions
      Statistic: Sum
      ExecutionsThrottled:
        Threshold: 0
      ExecutionsFailed:
        Threshold: 0
      ExecutionsTimedOut:
```

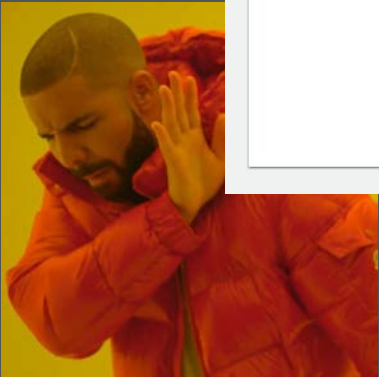
# Before SLIC Watch

CloudWatch > Alarms

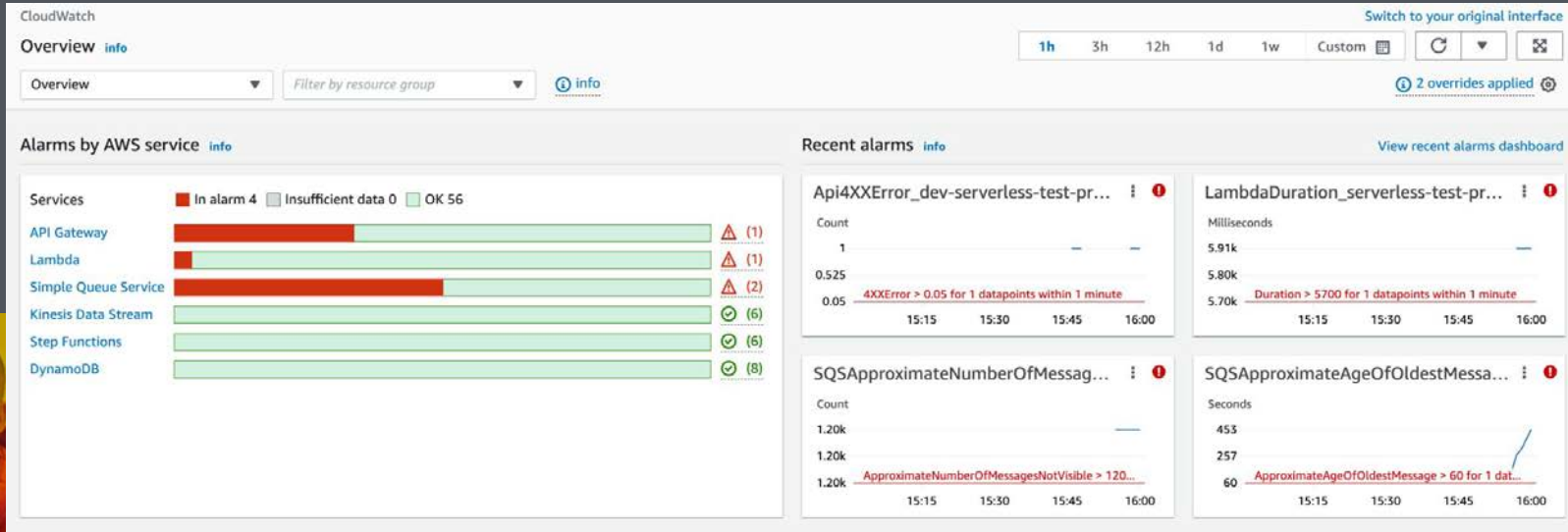
**Alarms (0)**  Hide Auto Scaling alarms [Clear selection](#) [Refresh](#) [Create composite alarm](#) [Actions](#) [Create alarm](#)

[Any state](#) [Any type](#) [< 1 >](#) [Settings](#)

<input type="checkbox"/>	Name	State	Last state update
<p><b>No alarms</b> No alarms to display</p> <a href="#">Create alarm</a>			

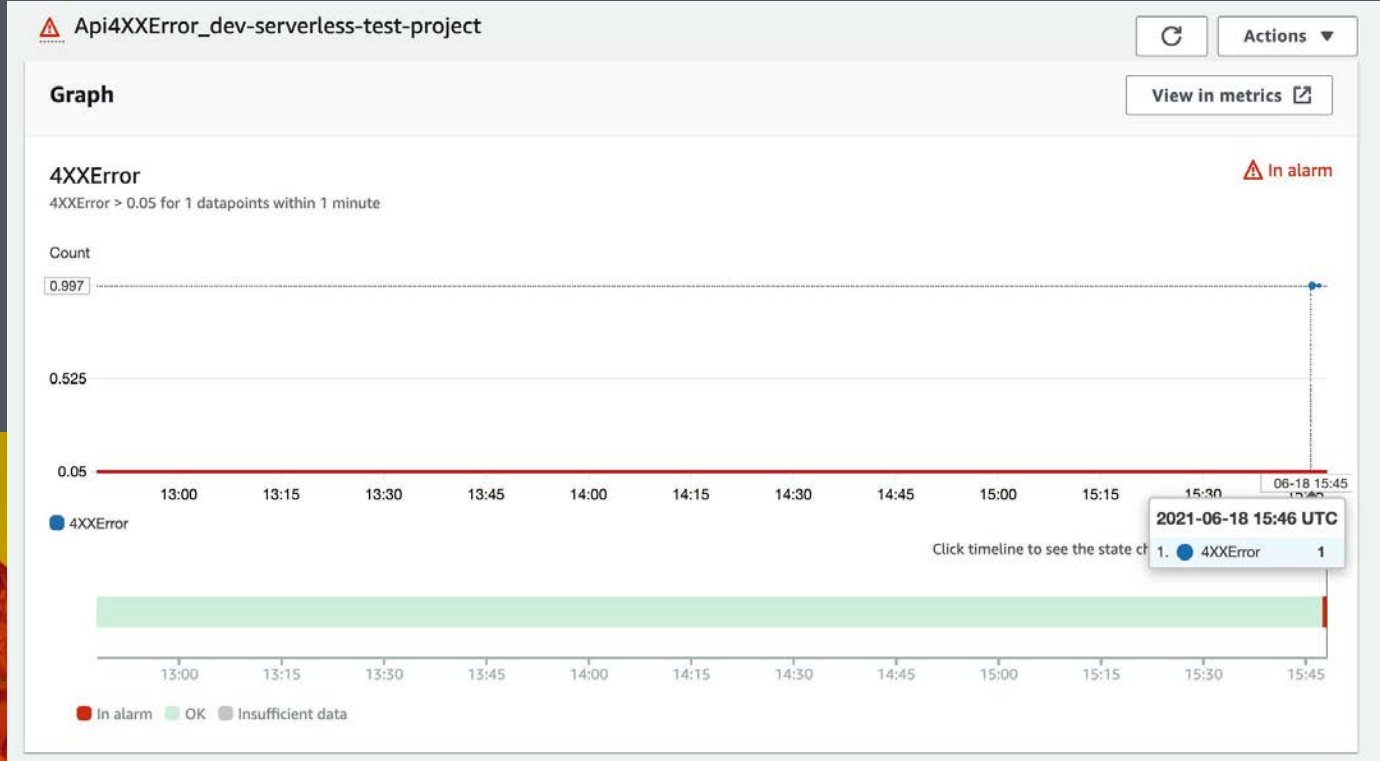


# After SLIC Watch



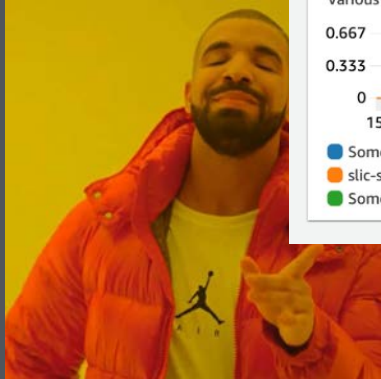
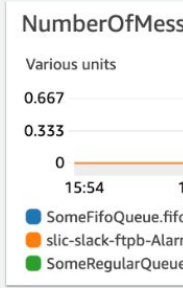
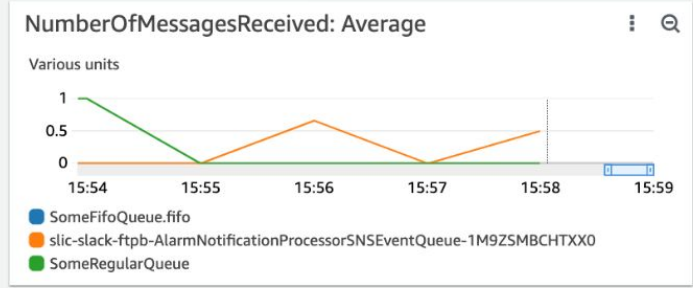
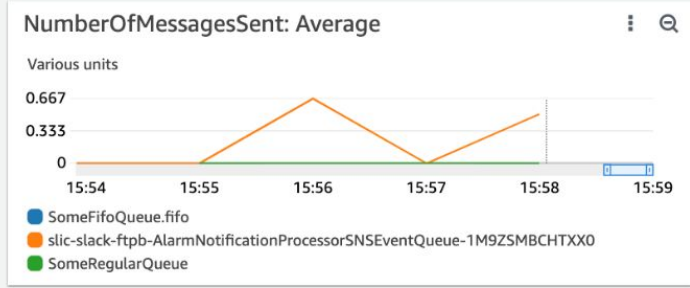
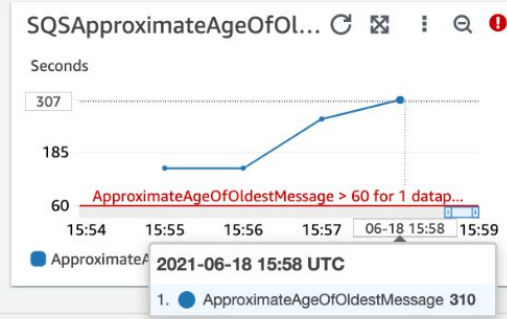
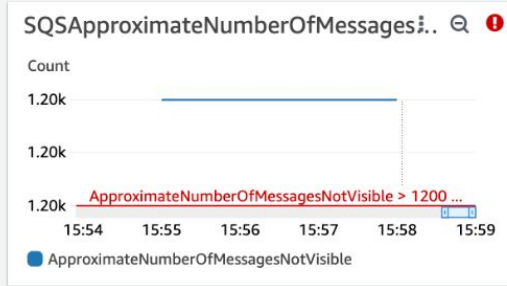


# After SLIC Watch

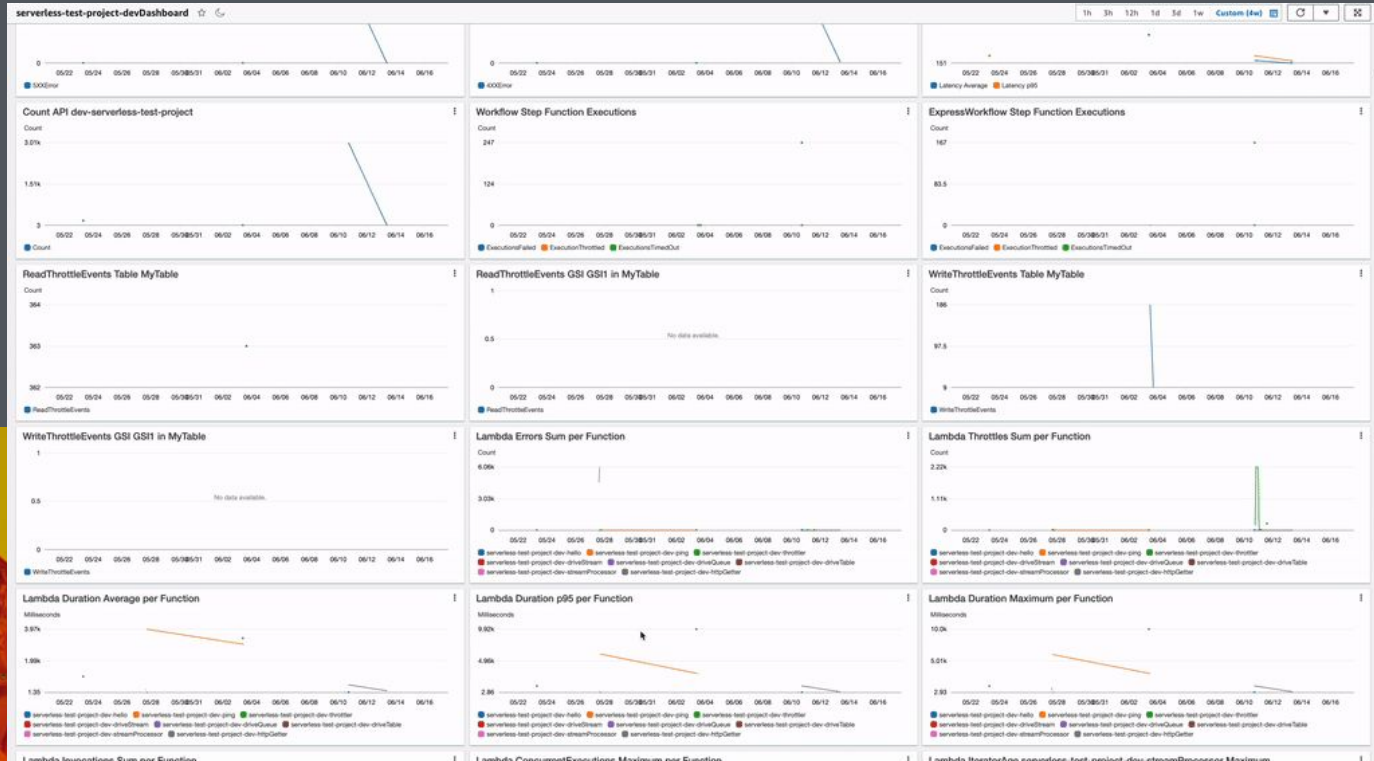


# After SLIC Watch

## Alarms



# After SLIC Watch



# After SLIC Watch: AWS Chatbot, Opsgenie, PagerDuty...

fourTheorem #slic-alarms

Account Region  
dev-throttler EU (Ireland)

Saturday, June 12th

ALARM: "StreamGetRecordsSuccess\_awesome-savage-stream" in EU (Ireland)  
ALARM (was OK)

**ALARM StreamGetRecordsSuccess\_awesome-savage-stream**  
Threshold Crossed: 1 datapoint [0.9583333333333334 (13/06/21 05:41:00)] was less than the threshold (1.0).

Metric	Namespace
GetRecords.Success	AWS/Kinesis
Time	Alarm
2021-06-13T05:42:07.148Z	StreamGetRecordsSuccess_awesome-savage-stream
Account	Region
	EU (Ireland)

Monday, June 14th

ALARM: "Api4XXError\_dev-serverless-test-project" in EU (Ireland)  
ALARM (was OK)

**ALARM Api4XXError\_dev-serverless-test-project**  
Threshold Crossed: 1 datapoint [1.0 (14/06/21 08:46:00)] was greater than the threshold (0.05).

Metric	Namespace
4XXError	AWS/ApiGateway
Time	Alarm
2021-06-14T08:47:30.704Z	Api4XXError_dev-serverless-test-project
Account	Region
	EU (Ireland)

OMG Everything is on fire 🧯

**ALARM WriteThrottleEvents\_stgChecklists**  
Threshold Crossed: 1 out of the last 1 datapoints [10.0 (09/11/21 22:44:00)] was greater than or equal to the threshold (0.0) (minimum 1 datapoint for OK -> ALA transition).

Metric	Namespace
WriteThrottleEvents	AWS/DynamoDB
Time	Alarm
2021-11-09T22:48:01.228Z	WriteThrottleEvents_stgChecklists

**ALARM LambdaDuration\_checklist-service-stg-addEntry**  
Threshold Crossed: 1 datapoint [5817.86 (09/11/21 22:55:00)] was greater than the threshold (5700.0).

Metric	Namespace
Duration	AWS/Lambda
Time	Alarm
2021-11-09T22:56:30.376Z	LambdaDuration_checklist-service-stg-addEntry

**ALARM LambdaErrors\_checklist-service-stg-create**  
Threshold Crossed: 1 datapoint [1.0 (09/11/21 22:54:00)] was greater than the threshold (0.0).

Metric	Namespace
Errors	AWS/Lambda
Time	Alarm
2021-11-09T22:55:09.185Z	LambdaErrors_checklist-ser...



## Wrapping up 🎁

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- ★ Observability is your friend from day one!
- ★ CloudWatch is very valuable if you configure it right!
- ★ Automation takes away the pain
- ★ SLIC Watch gives you this automation



Try it out!



Give feedback!



Let's make it better!



[fth.link/slic-watch](https://fth.link/slic-watch)



# Thank you!

