

REMOVING APPLICATION BOTTLENECKS WITH SERVERLESS

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HTTPS://JOIND.IN/TALK/A6CC7

TALK AS A POST (T_{AA}P)*

[HTTPS://WWW.AWSADVENT.COM/2018/12/05/SCALING-UP-AN-EXISTING-APPLICATION-WITH-LAMBDA-FUNCTIONS/](https://www.awsadvent.com/2018/12/05/scaling-up-an-existing-application-with-lambda-functions/)

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SERVERLESS IS A BIT OF A MISNOMER

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▲ smb06 on Aug 24, 2016 | parent | favorite | on: OpenLambda, a system for serverless computing

I think i heard this at DockerCon earlier this year: "There is no such thing as 'serverless'. It's just someone else's problem"

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I Am Developer

@iamdeveloper

Following



Serverless = "someone else is responsible for these servers going down"

8:41 AM - 10 Mar 2017

797 Retweets 1,580 Likes



13

797

1.6K



THE 30,000 FT VIEW

YOU DON'T HAVE TO WORRY ABOUT THE SERVER

YOU DON'T HAVE TO WORRY ABOUT SCALING

YOU ONLY PAY FOR THE TIME THE CODE IS RUNNING (100MS INCREMENTS)

MOST PROVIDERS HAVE A GENEROUS FREE PLAN

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THE 30,000 FT VIEW (CONT'D)

AWS LAMBDA

- JAVA, GO, POWERSHELL, NODE.JS, C#, PYTHON, AND RUBY (BUT NOW ALSO ANYTHING*)

GOOGLE CLOUD FUNCTIONS

- NODE.JS, PYTHON [BETA] AND GO [BETA]

AZURE FUNCTIONS

- C#, NODE.JS, F#, JAVA, PYTHON [EXPERIMENTAL]

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WHAT MAKES A GOOD CANDIDATE FOR SERVERLESS?

FUNCTION AS A SERVICE (FaaS)

CAN RUN WITHOUT MUCH RELIANCE ON STATE

TRIGGER -> ACTION -> RESULT

INVOKER DOESN'T CARE ABOUT THE RESULT

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SERVERLESS TRIGGERS

API ENDPOINT

FILESYSTEM CHANGES (S3, ETC...)

ALEXA/GOOGLE HOME (API ENDPOINT IN DISGUISE)

MOST OF A CLOUD PROVIDER'S OTHER SERVICES....

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COMMON SERVERLESS USE CASES

IMAGE PROCESSING (FILESYSTEM TRIGGER)

LOG PROCESSING

CI/CD TASKS

IoT

VOICE SKILLS, CHAT BOTS, ETC...

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PART 1 | WHAT'S THE PROBLEM?

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SNAPSURE

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Create New Alert








Alert Nickname

Where are you taking this photo?

What conditions do you want for this photo?

 SUN AND LIGHT	 NIGHT AND TWILIGHT	 DAY OF WEEK	 PRECIPITATION TYPE	 PRECIPITATION AMOUNT
---	--	--	--	---

Sun and Light Details

 NOON	 SUNRISE	 SUNSET	 MORNING GOLDEN HOUR
 MORNING BLUE HOUR	 EVENING GOLDEN HOUR	 EVENING BLUE HOUR	

Precipitation Type Details

 RAIN	 SNOW	 SLEET
---	--	---

[Create Alert](#) [Clear all Conditions](#)

SNAPSURE

EACH POTENTIAL ALERT CONTAINS (POTENTIALLY) MORE THAN A FEW API CALLS

ALERTS CAN START TO STACK UP AND EAT UP SERVER RESOURCES

SCALE HORIZONTALLY OR...SERVERLESS?

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SNAPSURE (CONT'D)

API TRIGGER

ALERT PARAMS ARE PASSED AS JSON

**PARAMS ARE EVALUATED AGAINST DIFFERENT APIS TO
DETERMINE WHETHER ALERT NEEDS TO BE SENT**

INFINITE SCALE AND CONCURRENCY*

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PART 2 | SLACKBOT

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SLACKBOT

CONSTANT REQUESTS FOR MEMBERSHIP DATA (LOG IN,
PHPMYADMIN, MYSQL QUERY)

SET UP API ENDPOINT IN LARAVEL TO EXPOSE SOME DB VALUES

CREATE A STATS SLACKBOT THAT CAN HIT THIS API ENDPOINT

SERVERLESS SITS IN THE MIDDLE TO ADD ABILITY TO EXPAND
IN THE FUTURE

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Keanan 4:30 PM

/stats members



Snowball Stats APP 4:30 PM

There are currently [REDACTED] users on snowballproject.org.

[REDACTED] of these members were invited by a mentor.

The most recent member is [REDACTED] and they joined on **March 4th, 2019**.

DEMO

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PART 3 | DEVELOPMENT WORKFLOW

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Throttle

Qualifiers ▼

Actions ▼

Select a test event.. ▼

Test

Save

Function code [Info](#)

Code entry type

Edit code inline ▼

Runtime

Python 3.7 ▼

Handler [Info](#)

lambda_function.lambda_handler

File Edit Find View Goto Tools Window

Environment

snowballStats

lambda_function.py

lambda_function ×

```
1 import json
2 from botocore.vendored import requests
3 import os
4 import hashlib
5 import hmac
6 import logging
7 import boto3
8
9 def lambda_handler(event, context):
10     ''' Capture the necessary data. '''
11     slack_signature = event['headers']['X-Slack-Signature']
12     slack_request_timestamp = event['headers']['X-Slack-Request-Timestamp']
13
14     ''' Verify the request. '''
15     if not verify_slack_request(slack_signature, slack_request_timestamp, event['body']):
16         logger.info('Bad request.')
17         response = {
18             "statusCode": 400,
```




TWO THUMBS SIDeways

IN-BROWSER DEVELOPMENT

SUPER EASY TO GET UP AND RUNNING, BUT...

SIZE LIMITATIONS

HARD TO BUNDLE DEPENDENCIES

REALLY NOT A GREAT IDE

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ACTUAL LOCAL DEVELOPMENT

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ACTUAL LOCAL DEVELOPMENT

AWS LAMBDA

- SAM LOCAL CLI (DOCKER-BASED ENVIRONMENT FOR LOCAL DEVELOPMENT)

GOOGLE CLOUD FUNCTIONS

- NODE.JS LOCAL EMULATOR

AZURE FUNCTIONS

- VERY TIGHT INTEGRATION WITH VS CODE, ENTIRE ENVIRONMENT EXISTS THERE

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SOME OTHER “ISSUES”

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DEPLOYMENT

IN BROWSER == NO PROBLEM

FOR LOCAL DEVELOPMENT == ZIP FILE WITH ALL DEPENDENCIES

DEPLOYED USING THE CLI FOR CLOUD PROVIDER OF YOUR CHOICE

CAN BE HOOKED INTO VCS AND CI/CD AS WELL

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MONITORING

CLOUD PROVIDER OF CHOICE PROBABLY HAS A MONITORING TOOL

DEBUGGING ERRORS IN THE BROWSER IS HARD (SO TEST LOCALLY)

SET UP ANY CUSTOM METRICS YOU WANT TO TRACK

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PART 4 | WHAT'S COMING NEXT?

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PHP (!!)

[HTTPS://AWS.AMAZON.COM/BLOGS/APN/AWS-LAMBDA-CUSTOM-RUNTIME-FOR-PHP-A-PRACTICAL-EXAMPLE/](https://aws.amazon.com/blogs/apn/aws-lambda-custom-runtime-for-php-a-practical-example/)

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RUNTIME API

**CAN RUN ANY LANGUAGE THE UNDERLYING LINUX ENVIRONMENT
CAN RUN**

USUALLY PACKAGED IN A LAYER (SEE NEXT SLIDE)

**BOOTSTRAP SCRIPT - GIVE PHP ACCESS TO ANYTHING IT NEEDS AND
SET UP EVENT LOOP**

GETNEXTREQUEST() AND SENDRESPONSE()

LAMBDA CAN NOW RUN PHP!

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LAYERS

**ZIP ARCHIVE THAT CONTAINS LIBRARIES, CUSTOM RUNTIME
OR OTHER DEPENDENCIES**

**(THEY DON'T HAVE TO GO IN YOUR DEPLOYMENT PACKAGE
ANYMORE!)**

**A FEW MORE USE-CASES ARE NOW ABLE TO USE THE IN-
BROWSER EDITOR**

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SERVERLESS WILL CONTINUE TO EVOLVE

IF YOU DON'T NEED CONTROL OVER SERVERS, IT CAN
PROVIDE SIMPLICITY

SOME DEPLOYMENT/WORKFLOW CONCERNS BUT TOOLING
IS GETTING BETTER

VERY INEXPENSIVE FOR MOST USE CASES

FIRE AND FORGET

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QUESTIONS?

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HTTPS://JOIND.IN/TALK/A6CC7