
THE REST WORKS
SERVERLESS
use cases
with @DavidWells



Life Goals



Scaling servers is... hard

Wes Bos 🔥 ✔
@wesbos

Follow

Haha, well you folks totally crashed my server with all the demand. Back up and running. 1400 packs left at … ift.tt/2fxumbg



Dave Isaacs @dpisaacs · Jan 18
@Bluehost my site is down and @bluehostsupport confirms there is an
they are working on.

Why, then, does the status page for the **server** show "No known issue
OK"?

2 1 2

SBS Star @SBS_star · Jan 26
There is no way out once you're into Kang Daniel ❤️
#KangDaniel #WannaOne #강다니엘 #워너원



[SBS Star] Kang Daniel's Tremendous Popularity Knocks the Server …
K-pop boy group's Wanna One's member Kang Daniel has proven his continuing popularity once again by knocking the server down of a website
news.sbs.co.kr

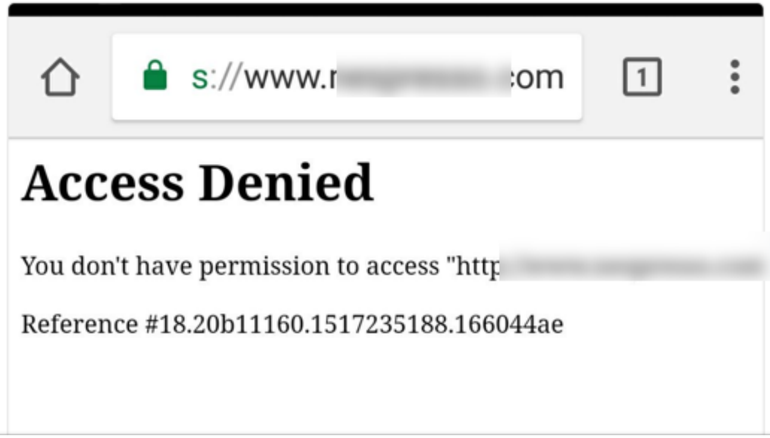
Wes Bos 🔥 ✔
@wesbos

Follow

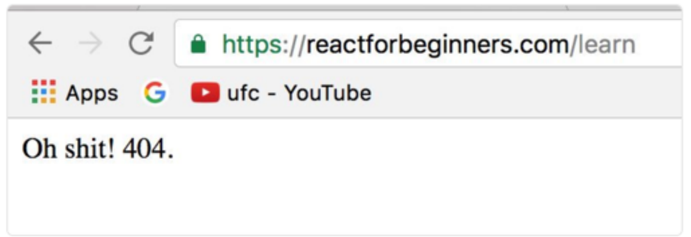
Had a but of server slowness the morning if
you were having issues buying or watching
course. All good now - sorry for any trouble
😘

9:00 AM - 11 Jul 2017

I have ever come across. I can't use the mobile app, they cannot explain why. This error they say is just me. Interesting they would think a permission denied on a **server is** just me. I wonder how much money is lost.. #fail



Jon Kuperman @jkup · 7 Dec 2016
and here I was thinking @wesbos was too polite to curse 😂



3 7

Wes Bos 🔥 ✔
@wesbos

Follow

Replying to @jkup

ahaha - the server cursed :)

12:51 PM - 7 Dec 2016

3 Likes

Love you Wes ❤️

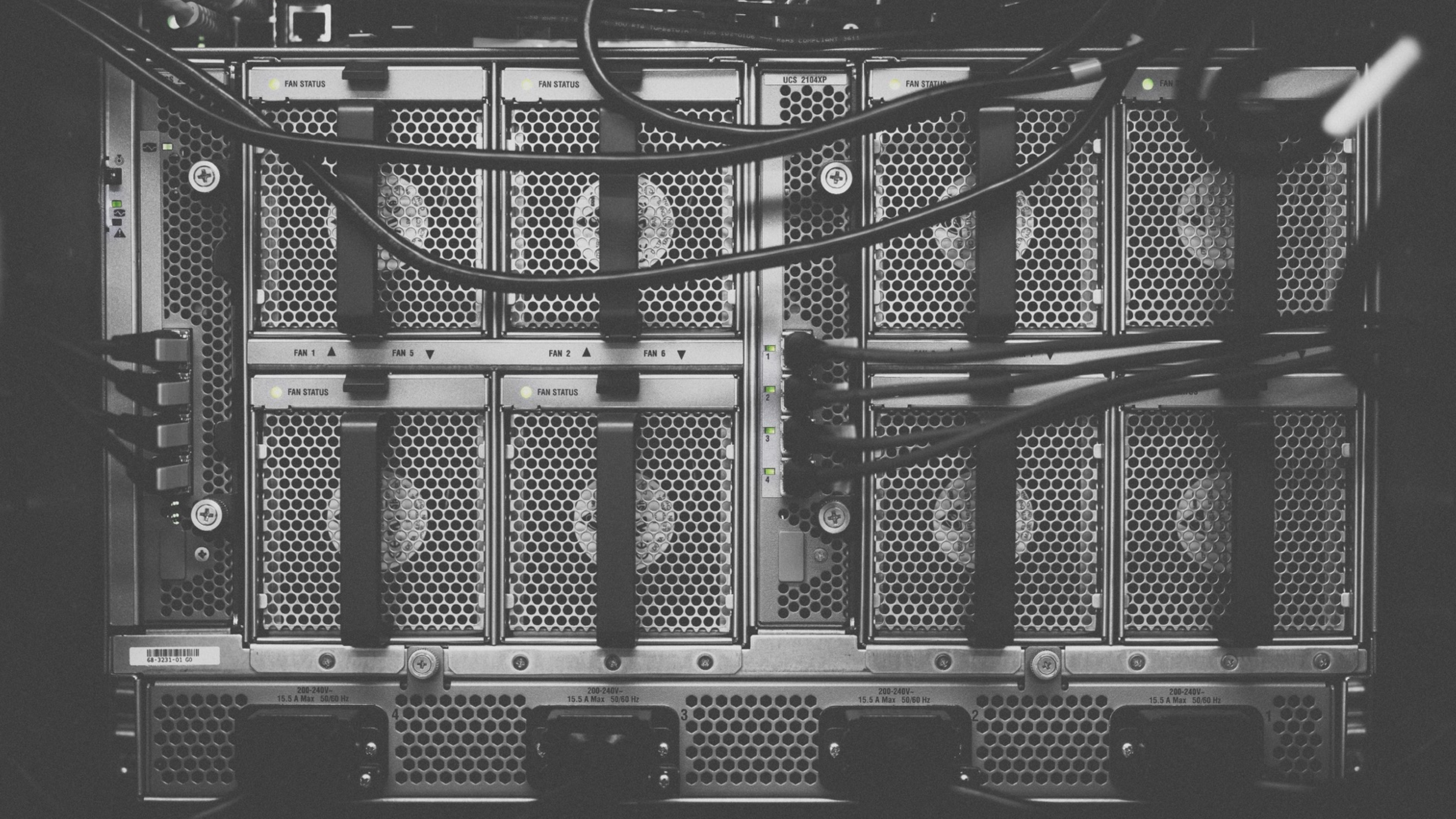
Check out all Wes's courses

wesbos.com/courses

- Load balancing
- Security concerns
- Monitoring
- Logging
- follower database instances
- costs...
- .....




AWS Lambda


FAN STATUS
FAN STATUS
UCS 2104XP
FAN STATUS
FAN 1
FAN 5
FAN 2
FAN 6
FAN STATUS
FAN STATUS
1
2
3
4
68-3231-01 G0
200-240V~
15.5 A Max 50/60 Hz
200-240V~
15.5 A Max 50/60 Hz
200-240V~
15.5 A Max 50/60 Hz
200-240V~
15.5 A Max 50/60 Hz
4
3
2
1


Serverless?


WTF!!!!! Serverless?

SERVERLESS

Code that runs on-demand
inside the cloud of your choice

- **Pay per execution pricing**
- **Never pay for idle servers**
- **Auto scales for you**
- **Event driven workflows**
- **Leverage third party services**

SERVERLESS

Code that runs on-demand
inside the cloud of your choice









and auth0 webtasks, oracle functions, kubernetes, & spotInst....






SPACEX




First 1 million requests
free per month
post free tier **$0.20 per 1 million requests** ($0.0000002 per request)


7:00 - 10:00
16:00 - 19:00




use cases

use cases

- **REST APIs,** Graph APIs: lambda -> API Gateway endpoint
- event-driven workflows, scheduled tasks, data transforms
- real-time/streaming, batch processing: kinesis -> lambda

- web, mobile & IoT backends
- form processing
- authentication
- devops automation
- chatbots

- file manipulation
- voice apps (Alexa)
- ETL workloads
- image resizing
- video transcoding
- security audits

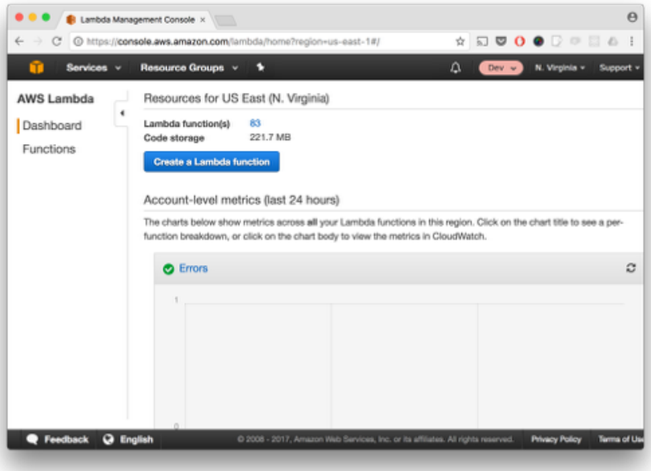
- dynamic websites
- web hook listeners
- CRON jobs
- CI/CD pipelines
- log analytics

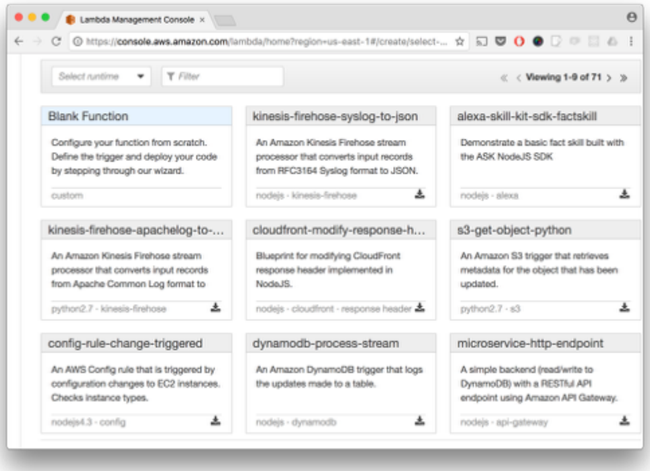
github.com/serverless/examples

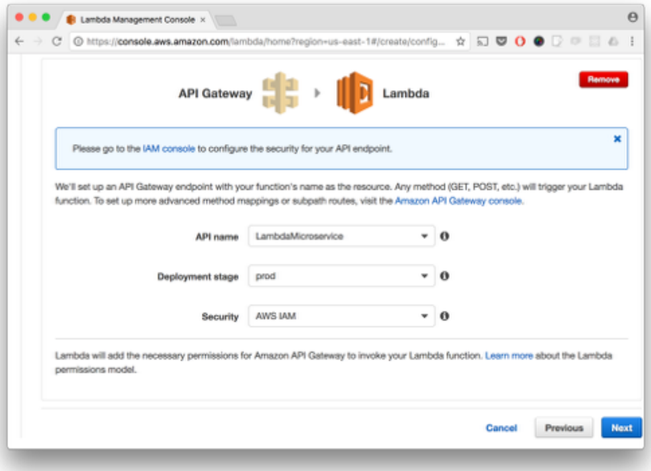


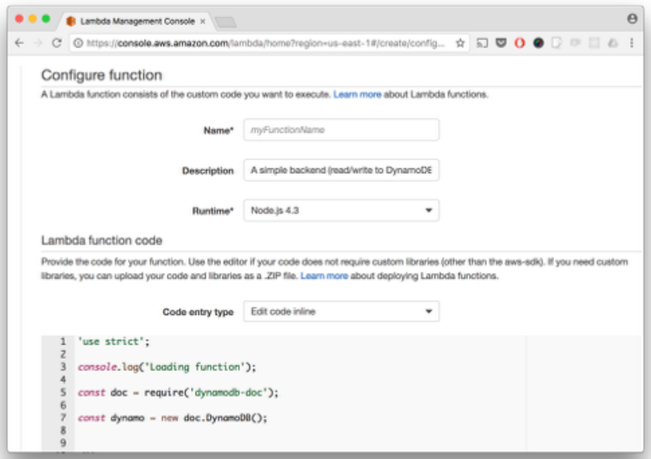


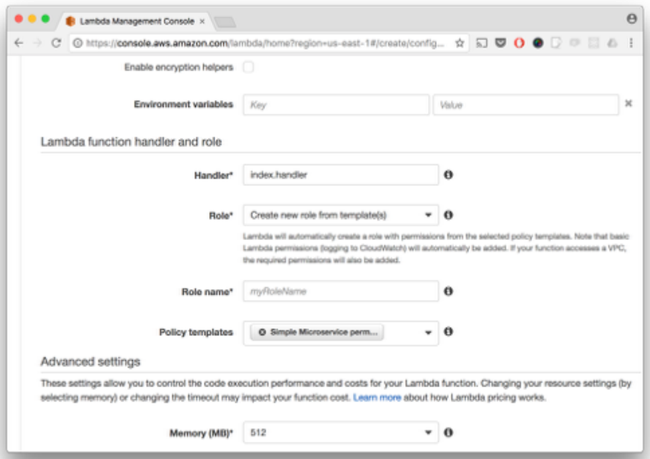
Deploy functions from Cloud UI...

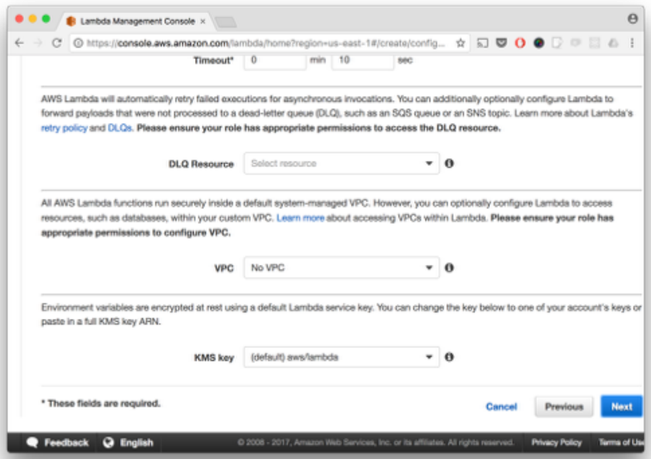


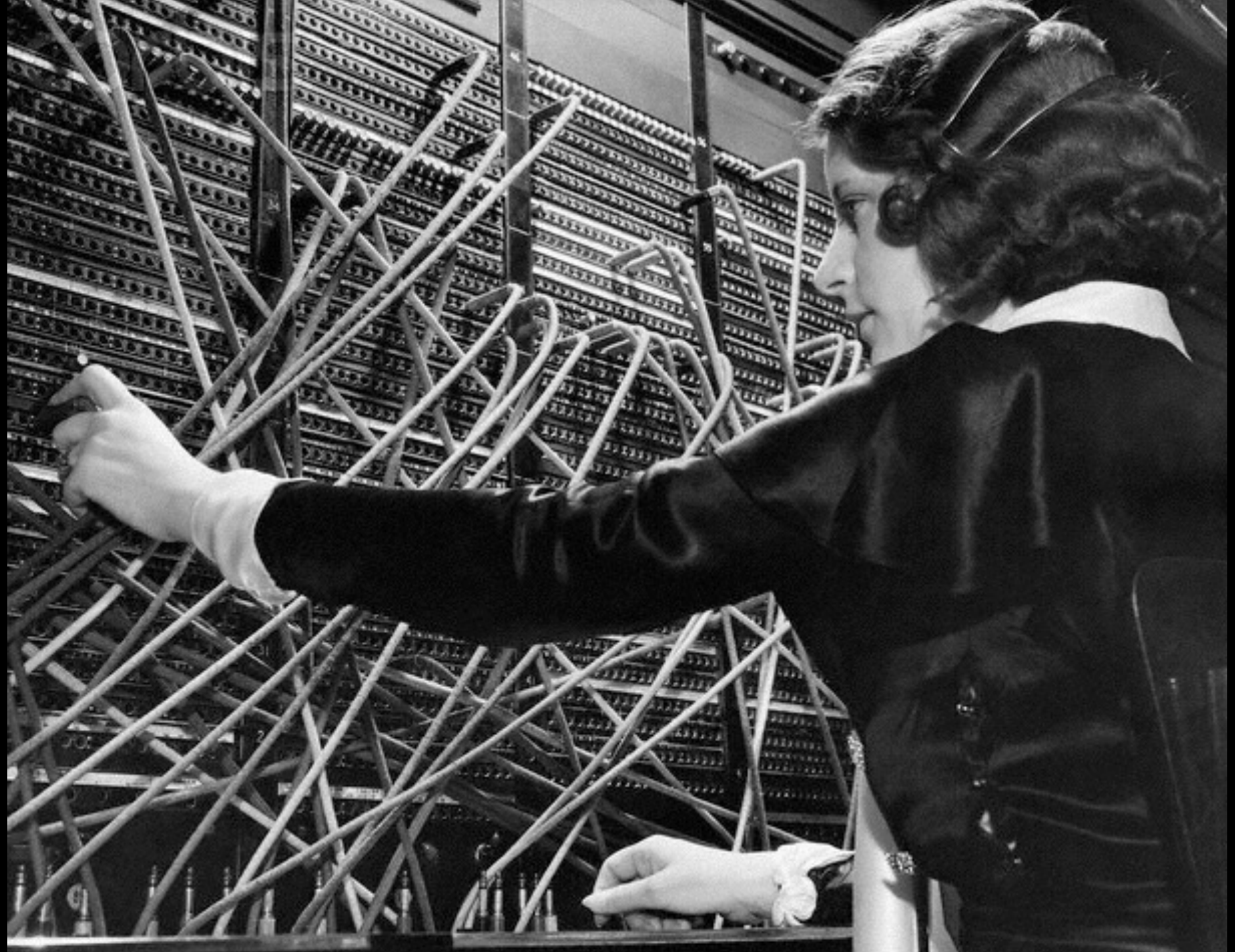












Apex

SAM

Claudia.js

Sparta

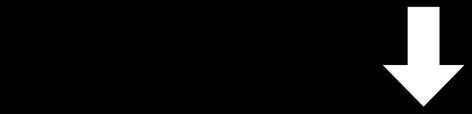
Chalice

Zappa

SERVERLESS Framework (CLI)

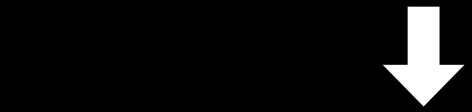


Write Your code



package and deploy via

SERVERLESS **Framework (CLI)**



to your cloud of choice

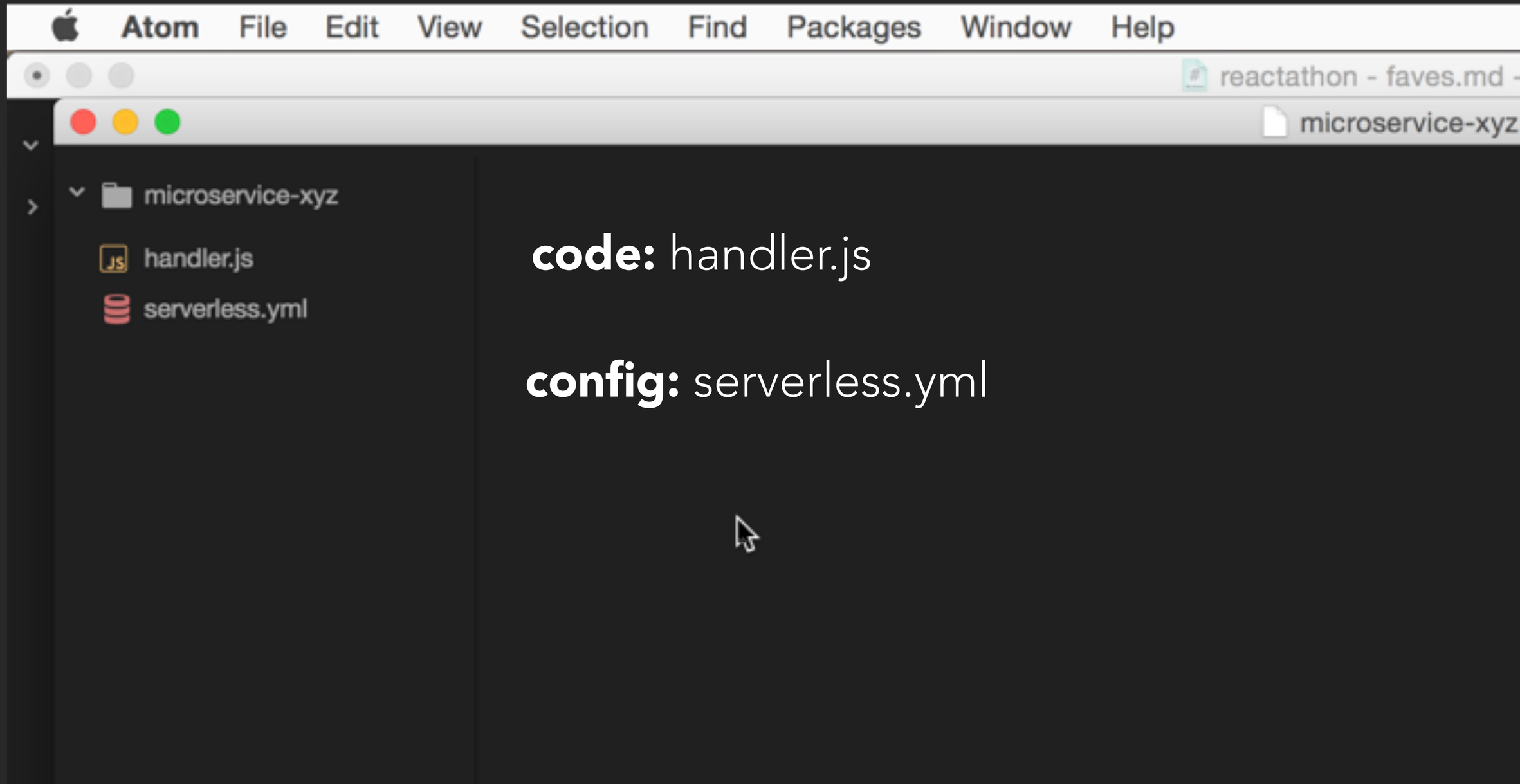
amazon web services™

Microsoft Azure

IBM OpenWhisk

Google Cloud Platform

SERVERLESS Framework Project Structure



code: handler.js

config: serverless.yml

serverless.yml config file

```yaml
service: user-service

provider:
  name: aws
  runtime: nodejs4.3

functions:
  saveUser:
    handler: handler.saveUser
    events:
      - http:
          path: save-user
          method: post
          cors: true
  makeProfileImageThumbnail:
    handler: handler.makeThumbnail
    events:
      - s3:
          bucket: user-thumbnail-bucket
          event: s3:ObjectCreated:*
```

serverless.yml config file

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Where to run

What to run

When to run

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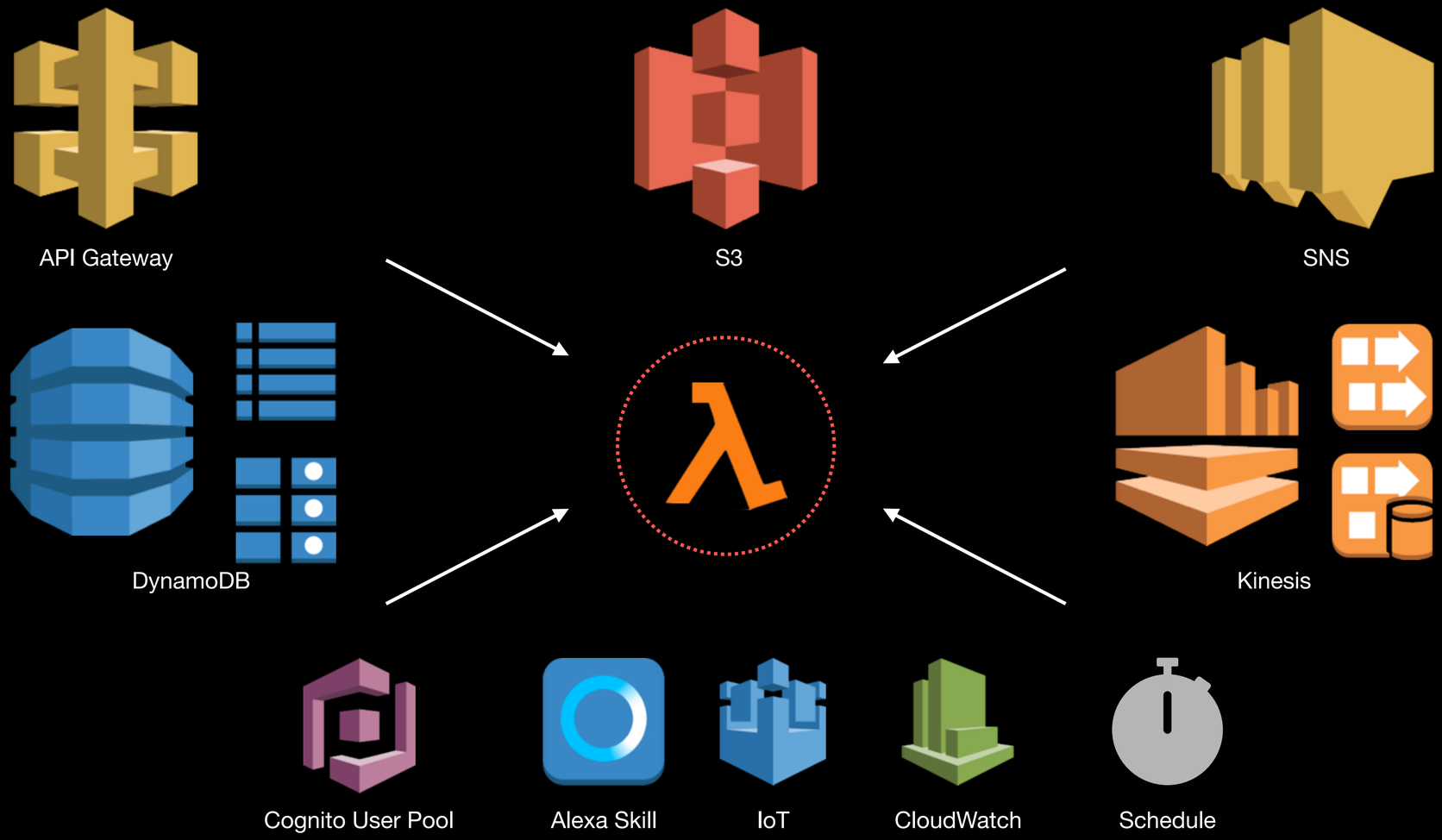
Where to run

What to run

When to run

event sources

that trigger your functions



handler.js file

```
const AWS = require('aws-sdk')
const dynamoDb = new AWS.DynamoDB.DocumentClient()

module.exports.saveUser = (event, context, callback) => {
  const params = {
    TableName: 'DoggieDatingAppUsers',
    Item: {
      id: uuid.v1(),
      email: JSON.parse(event.body).email
    },
  }
  // write the user to the database
  dynamoDb.put(params, (error, result) => {
    // create a response back to UI
    const response = {
      statusCode: 200,
      body: JSON.stringify(result.Item),
    }
    callback(null, response);
  })
}
```

named export **saveUser** function is referenced in serverless.yml

```
functions:
  saveUser:
    handler: handler.saveUser
    events:
      - http:
          path: save-user
          method: post
          cors: true
```

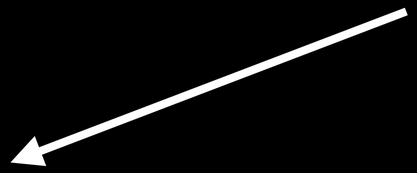
```
➜ user-service git:(master) ✗ sls deploy
Serverless: Packaging service...
Serverless: Uploading CloudFormation file to S3...
Serverless: Uploading artifacts...
Serverless: Uploading service .zip file to S3 (2.31 MB)...
Serverless: Validating template...
Serverless: Updating Stack...
Serverless: Checking Stack update progress...
.....................
Serverless: Stack update finished...
Service Information
service: growth-user-service
stage: prod
region: us-west-2
api keys:
  None
endpoints:
  POST - https://f5b6b6c9pa.execute-api.us-west-2.amazonaws.com/prod/users-by-email
functions:
  authenticate: growth-user-service-prod-authenticate
  getUserByEmail: growth-user-service-prod-getUserByEmail
Serverless: Removing old service versions...
```



serverless deploy in cwd



framework packages & deploys code



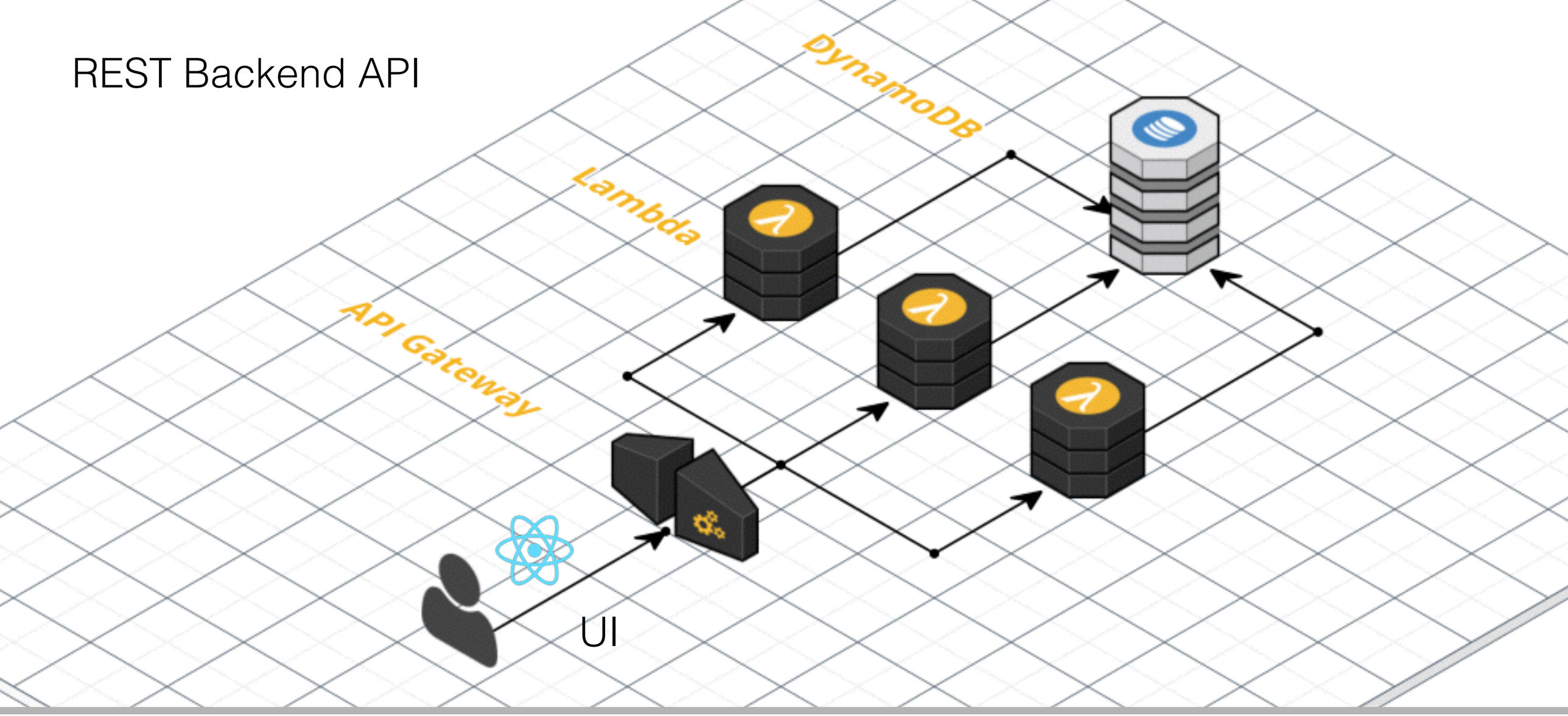
returns live API endpoints




serverless
architectures

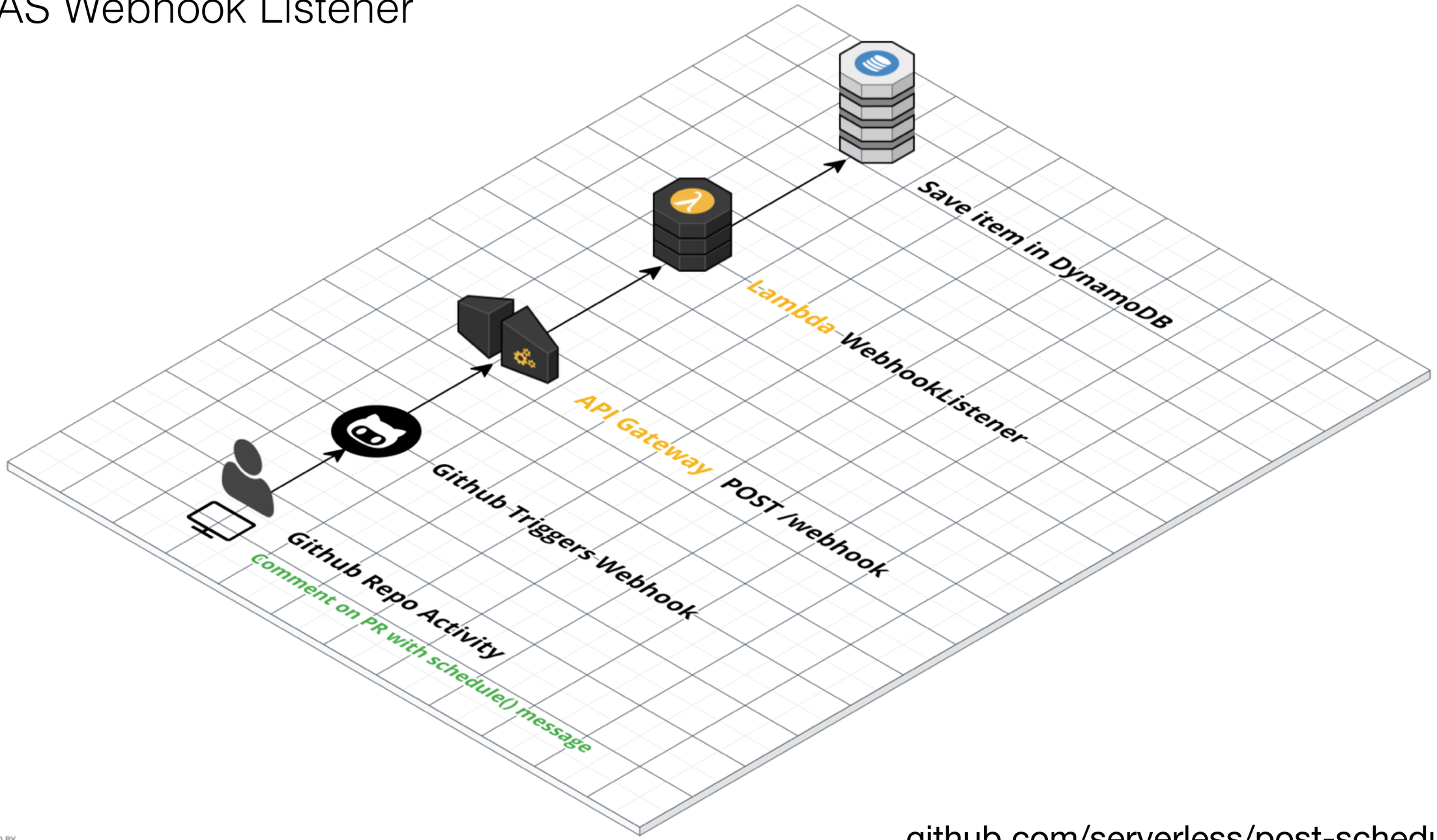
Serverless Backend APIs

REST Backend API



serverless.com/framework/status

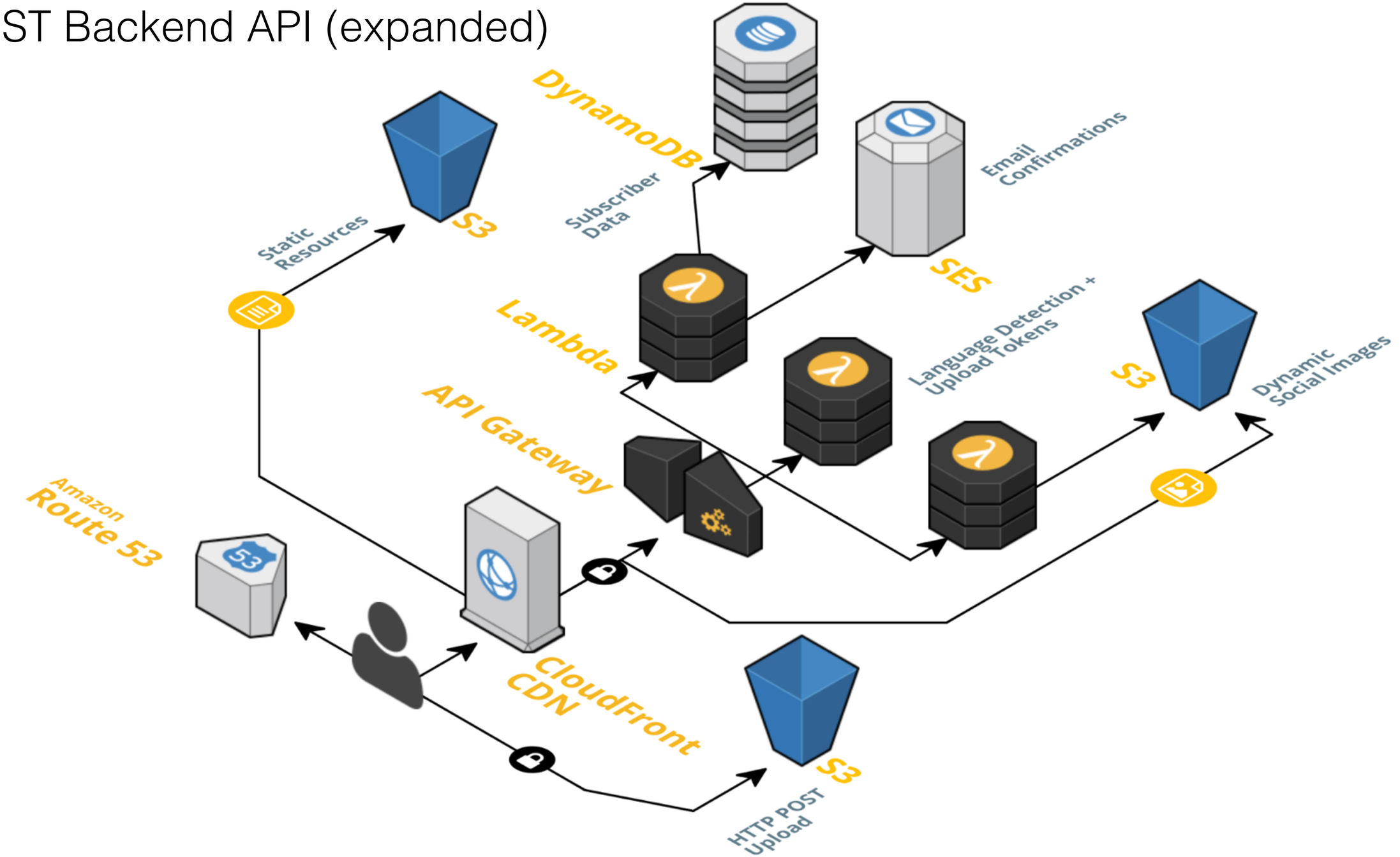
SAAS Webhook Listener



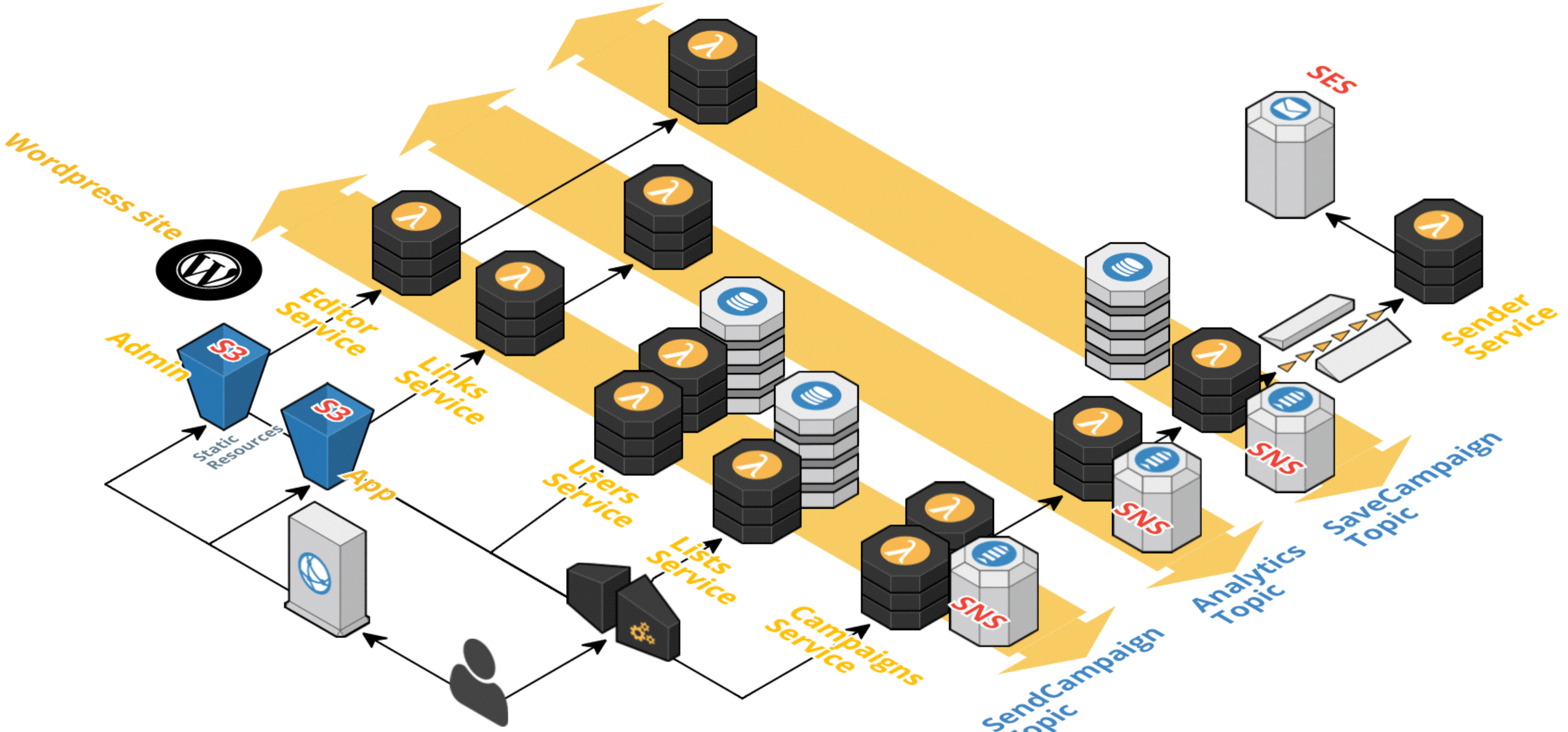
github.com/serverless/post-scheduler

POWERED BY CLOUDCRAFT.CO

REST Backend API (expanded)



REST Backend API (production)



microapps.com/blog/serverless-framework

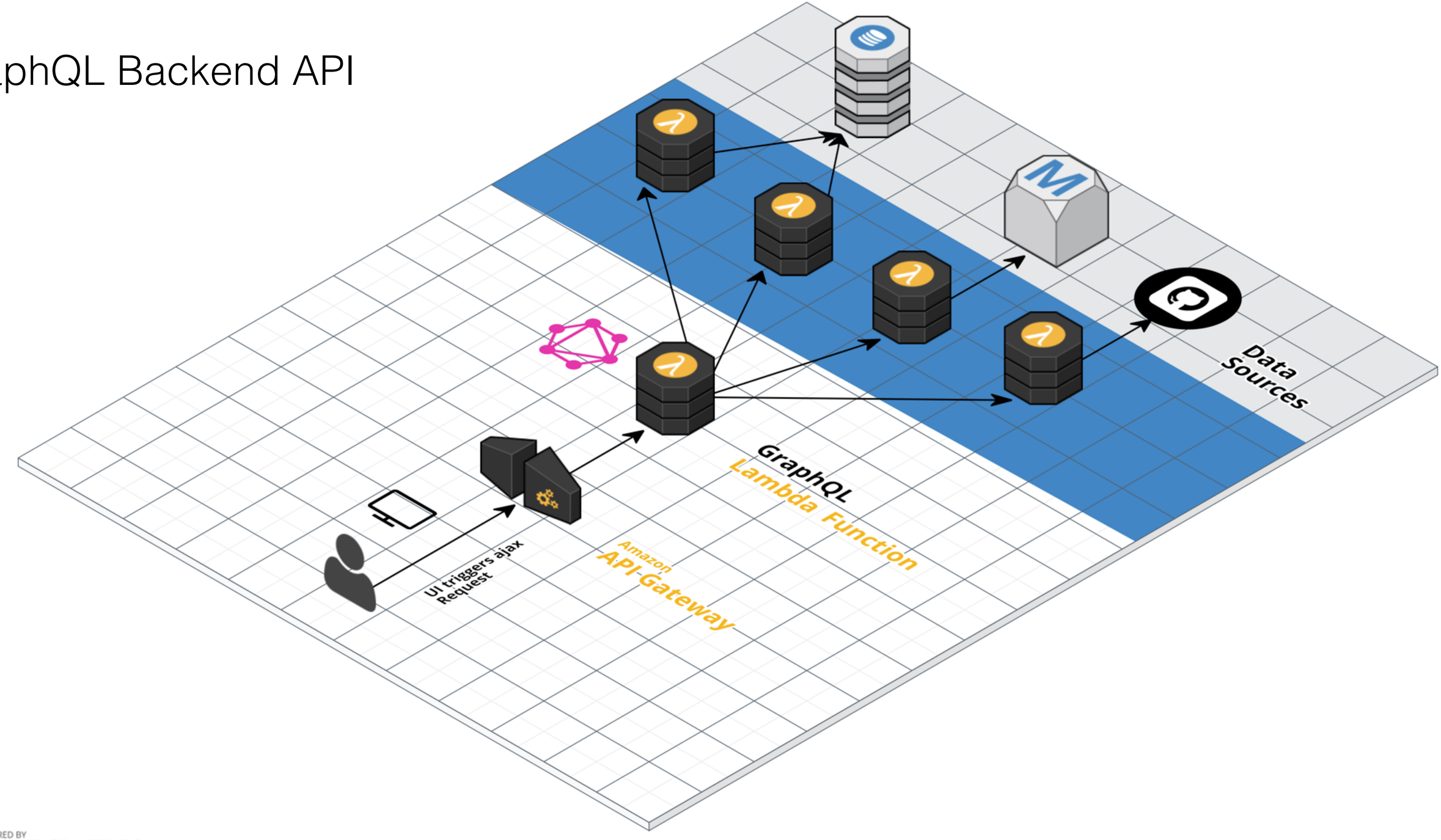
Building a Serverless Social Network (Yubl)

by Yan Cui

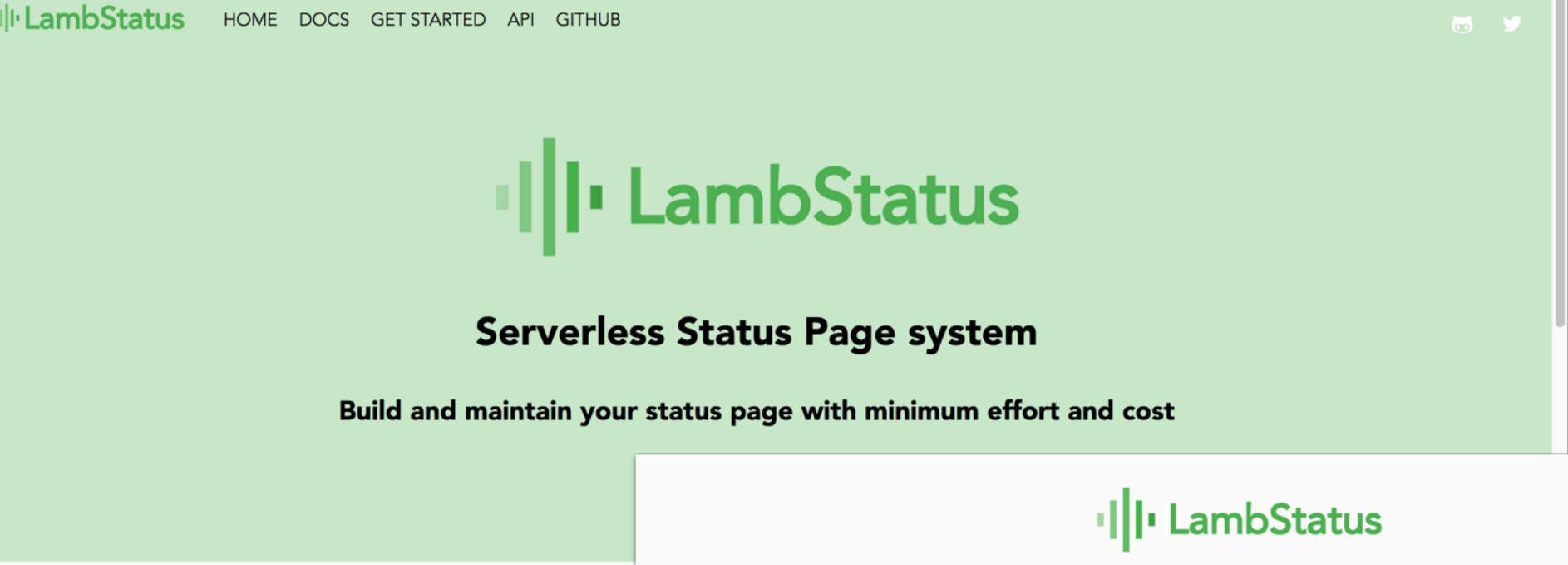


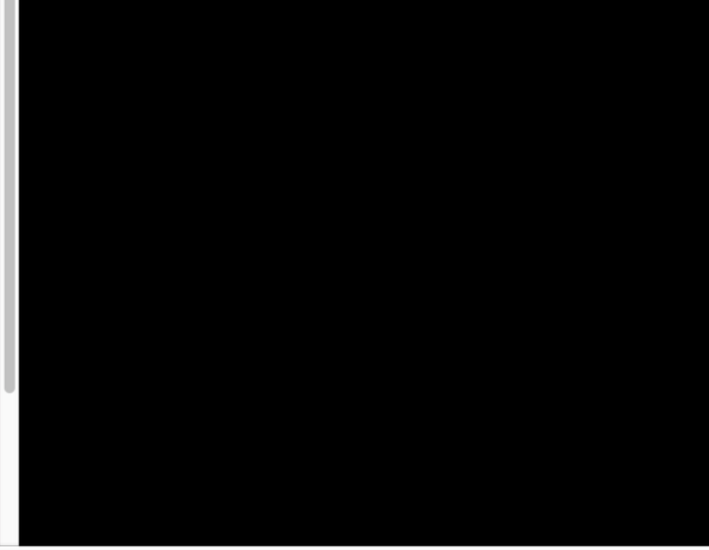
bit.ly/2Br7w1w

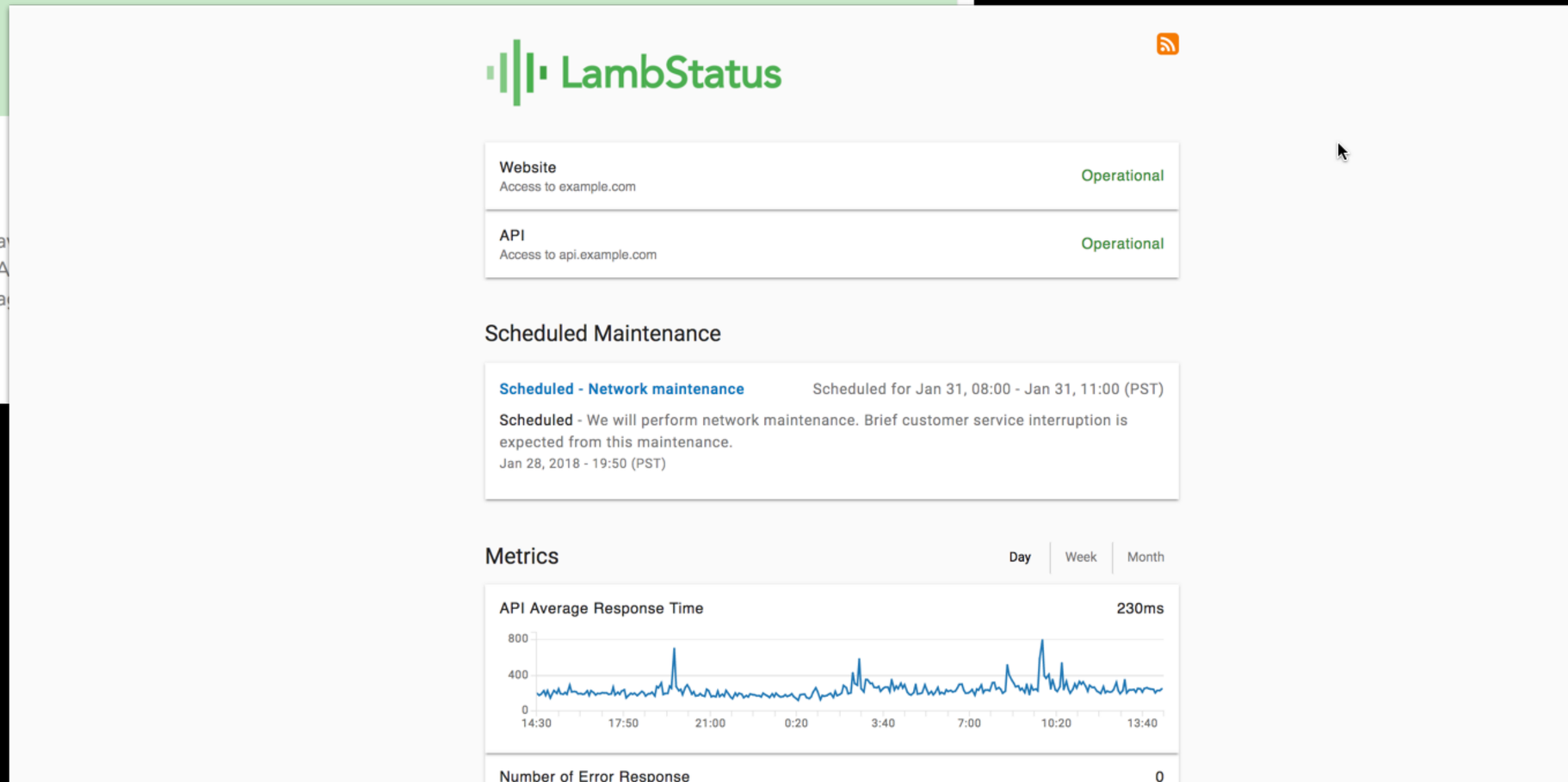
GraphQL Backend API



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CLOUDCRAFT.CO



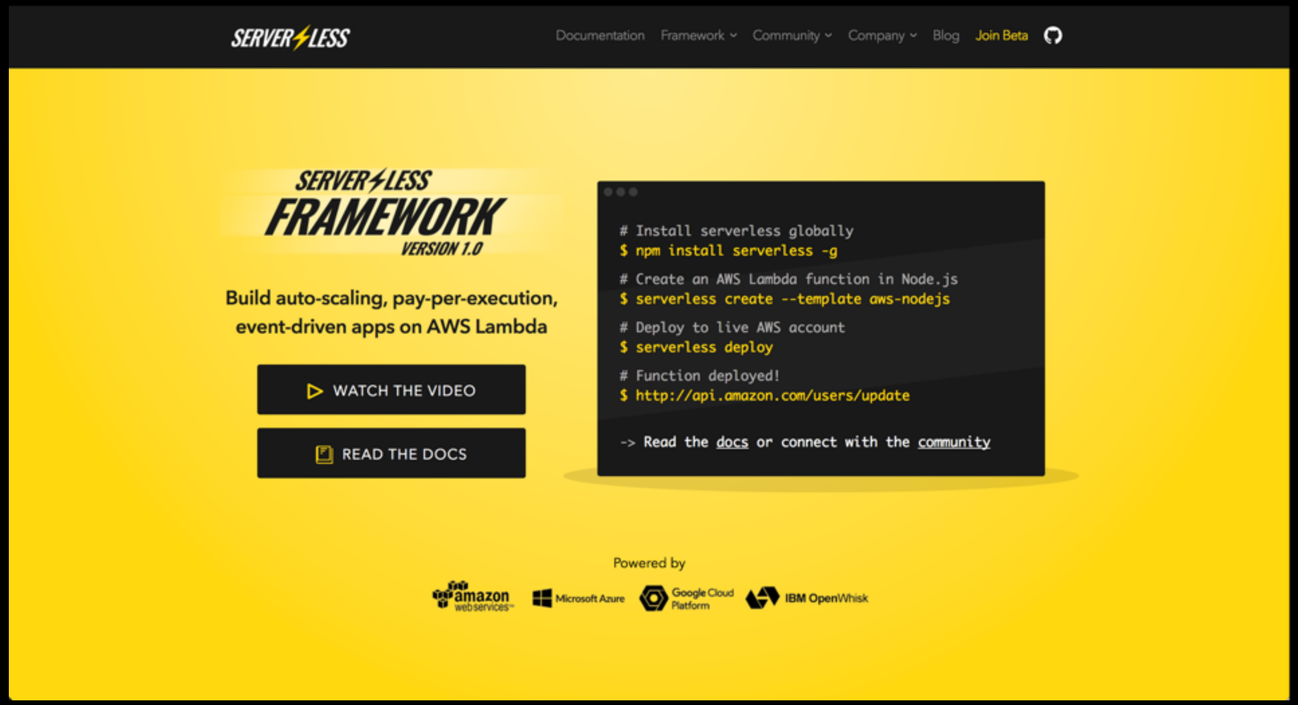




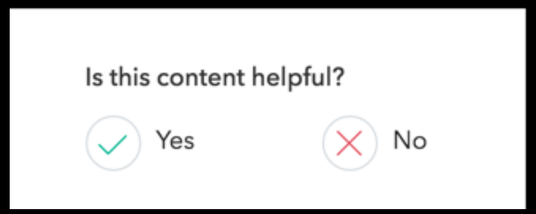
lambstatus.github.io

Serverless Use Cases for serverless.com

- Web forms
- Custom APIs
- Automatic thumbnail generation
- New user welcome emails
- Lead revisit notifications
- Showing related content on blog
- Site search (Algolia)
- Content A/B testing
- Doc feedback



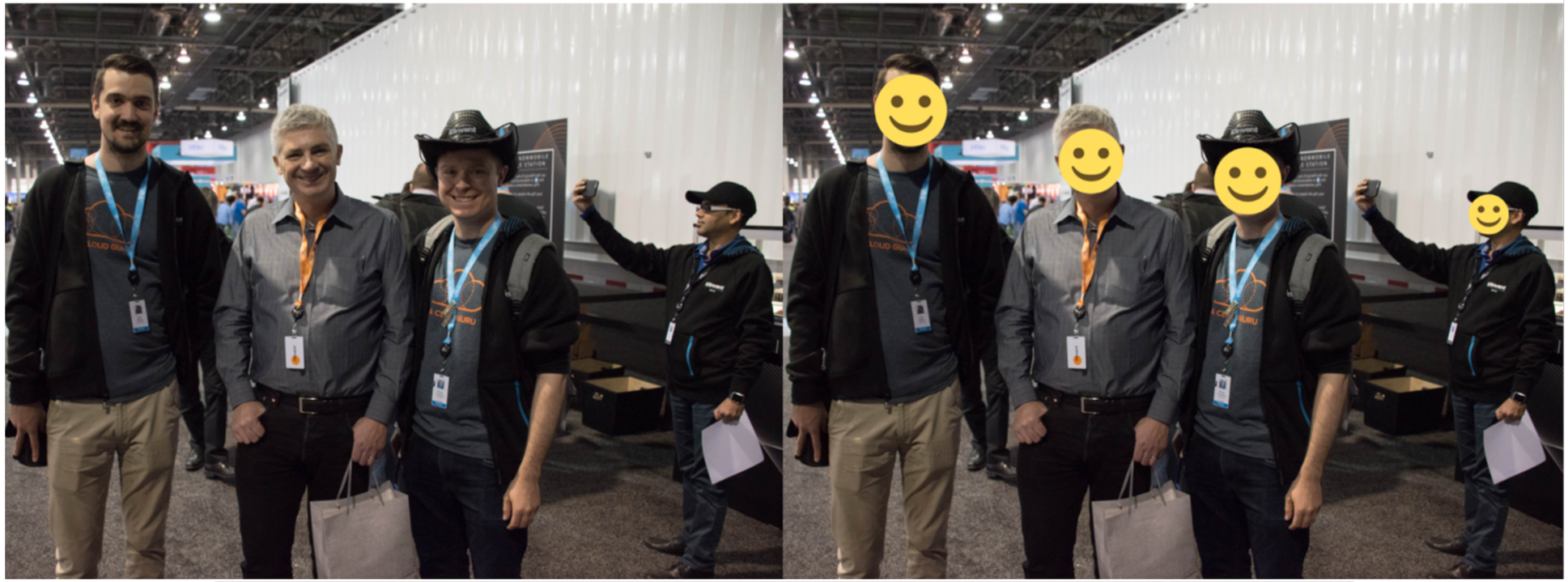
github.com/serverless/site

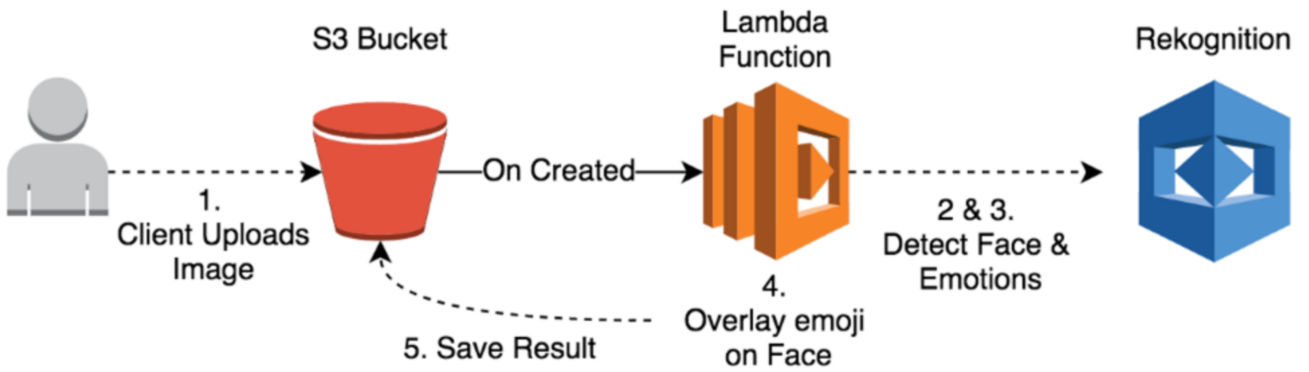


Infrastructure Events

How to build powerful back-ends easily with Serverless

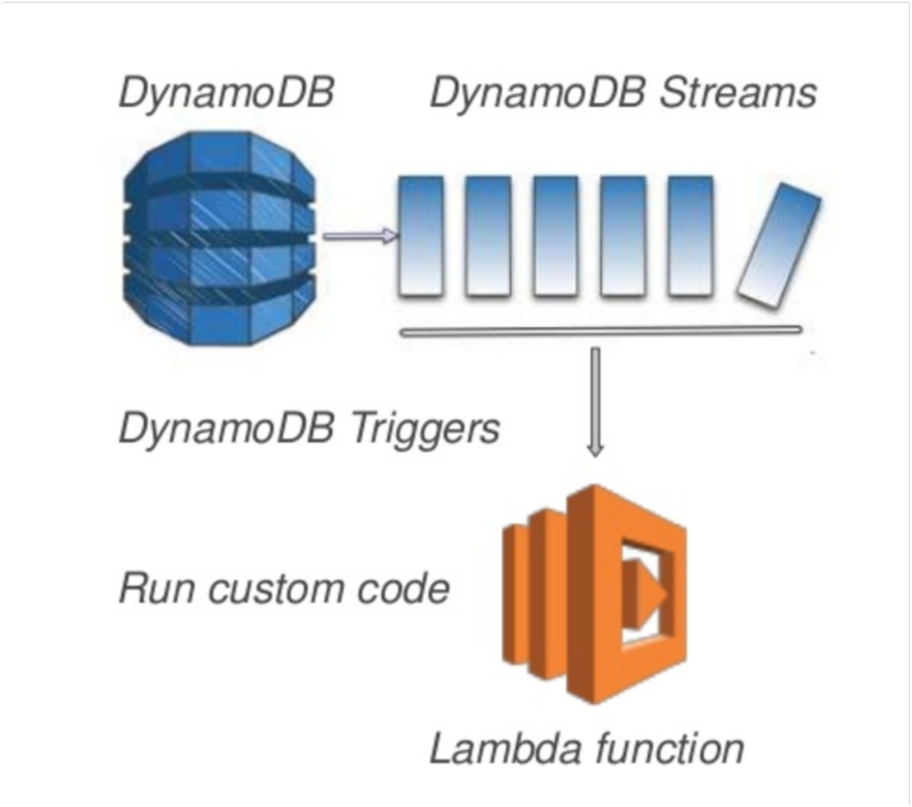
Building an image processor on AWS Lambda





A Serverless Architecture

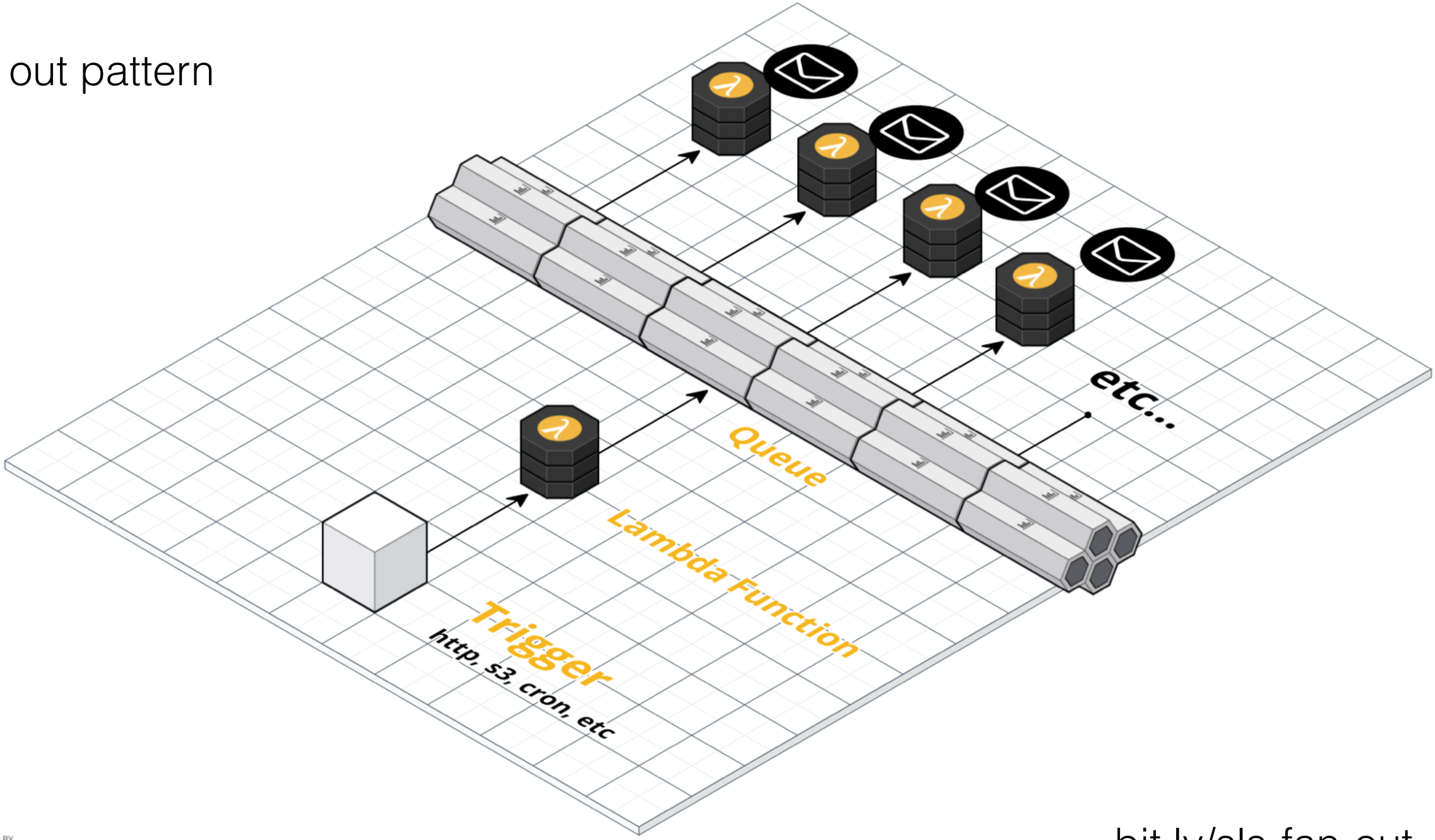
Trigger functions in response to **insert**, **update**, **delete**



http://bit.ly/2FxqUsq

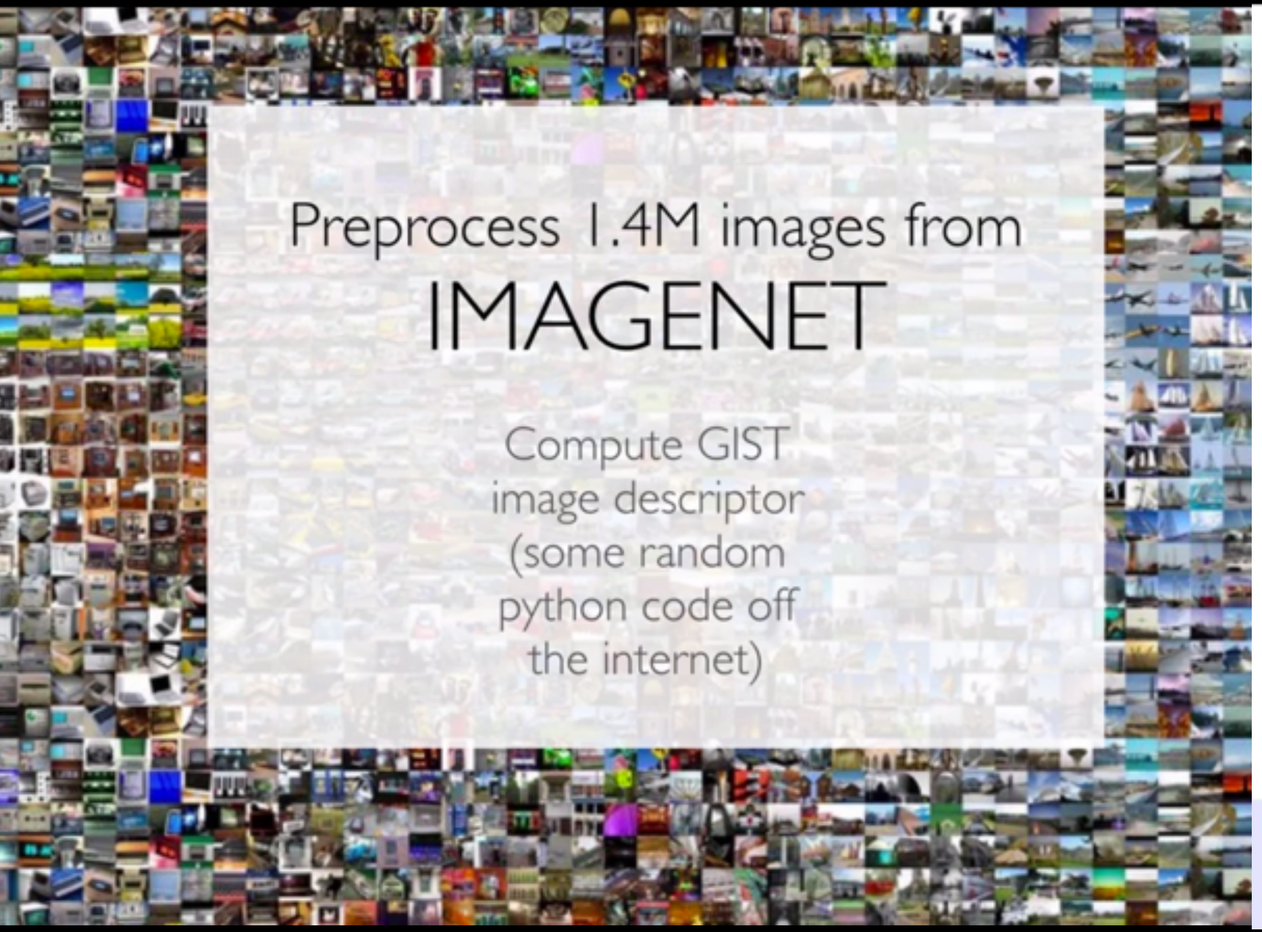
Serverless Fan Out

Fan out pattern



bit.ly/sls-fan-out

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Effortlessly Scaling Data Science with PyWren by Eric Jonas

bit.ly/2skOZj9

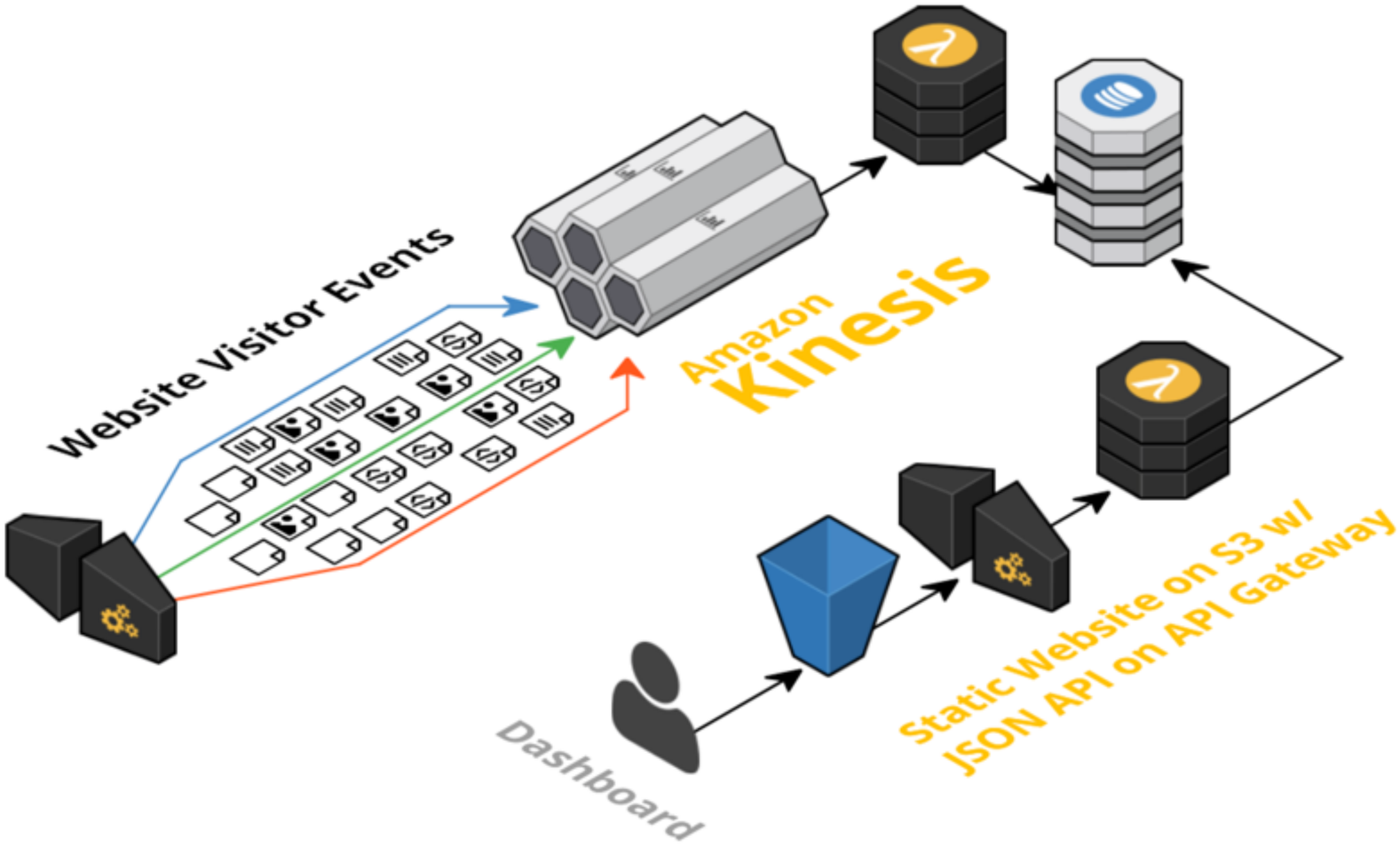
	EMR approach	Lambda approach
Time for processing	66 seconds with 17 Map jobs and 6 reduce jobs	Max: 2200ms (2 seconds)

AWS Lambda Invasion in Big Data

bit.ly/2reLdD5

Analytics processing

Serverless Analytics with Amazon Kinesis and AWS Lambda

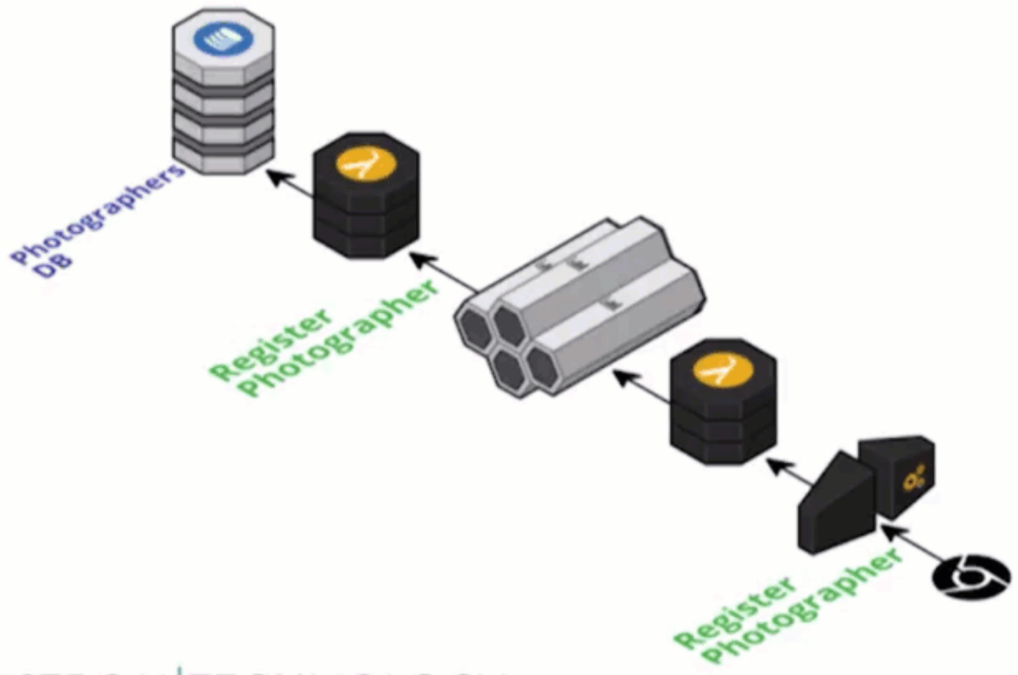


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bit.ly/2iKVIPV

event-driven
serverless architectures

Hello, Retail!

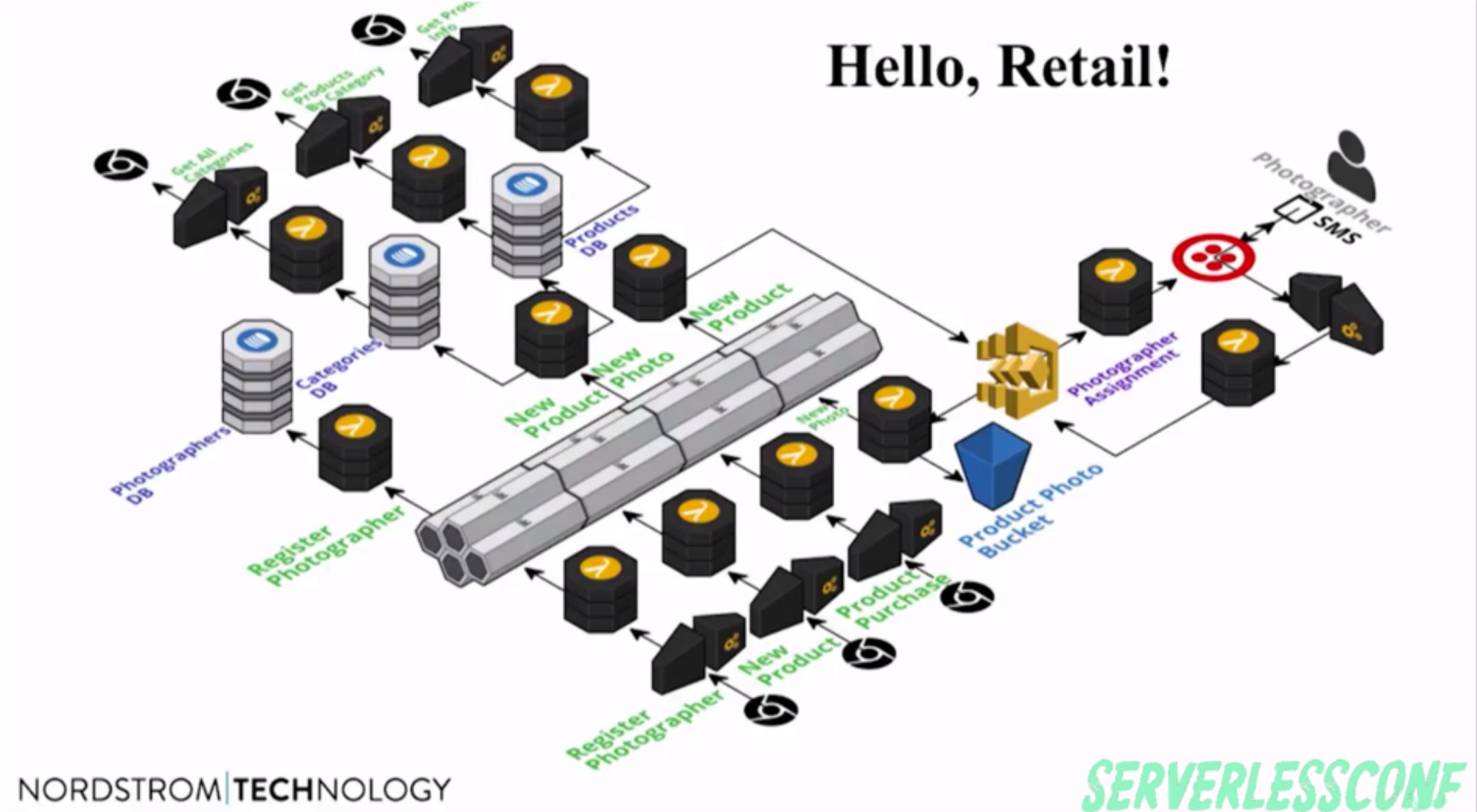


NORDSTROM | TECHNOLOGY

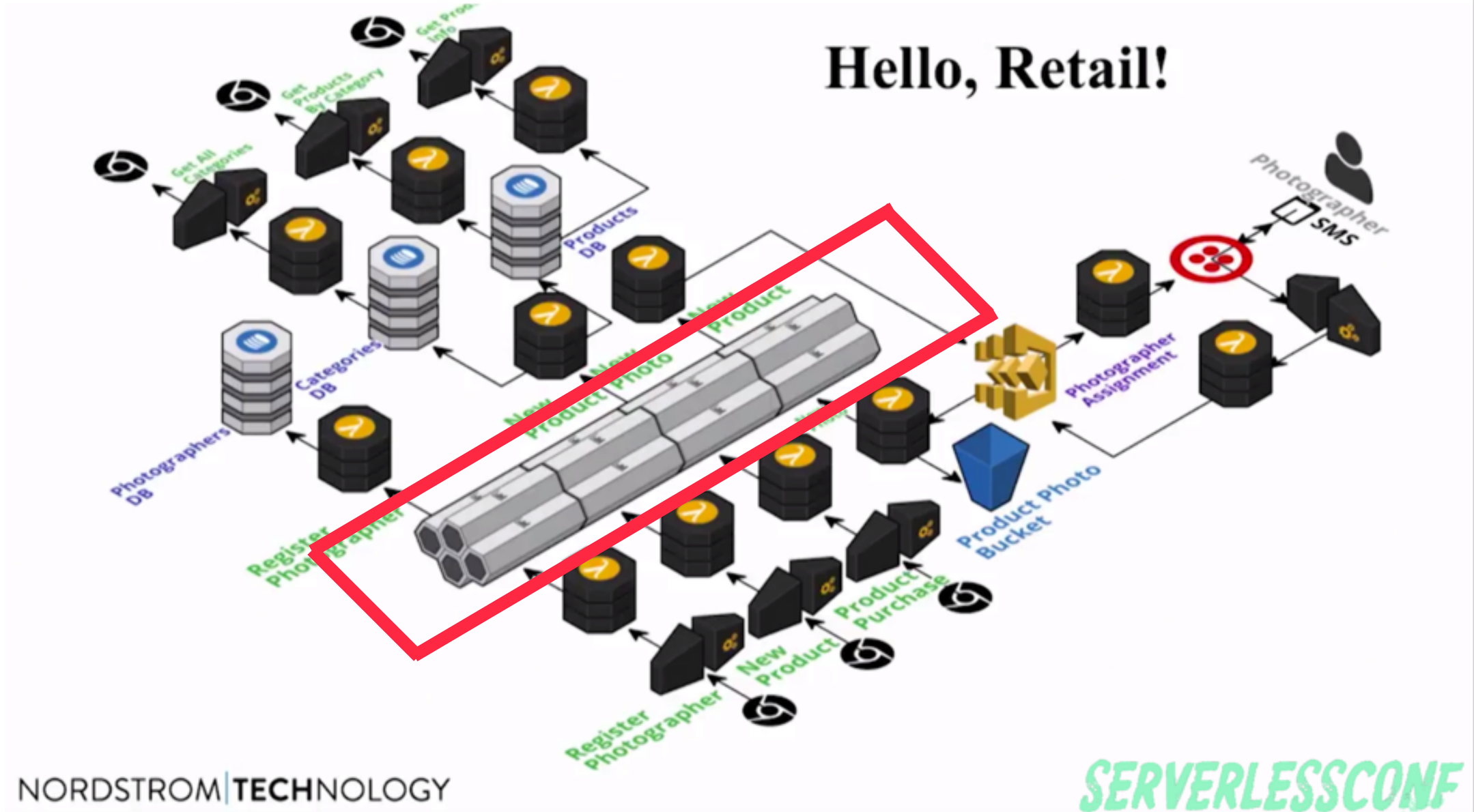
SERVERLESSCONF

github.com/Nordstrom/hello-retail

Highly recommend watching 👉**bit.ly/hello-retail-video**

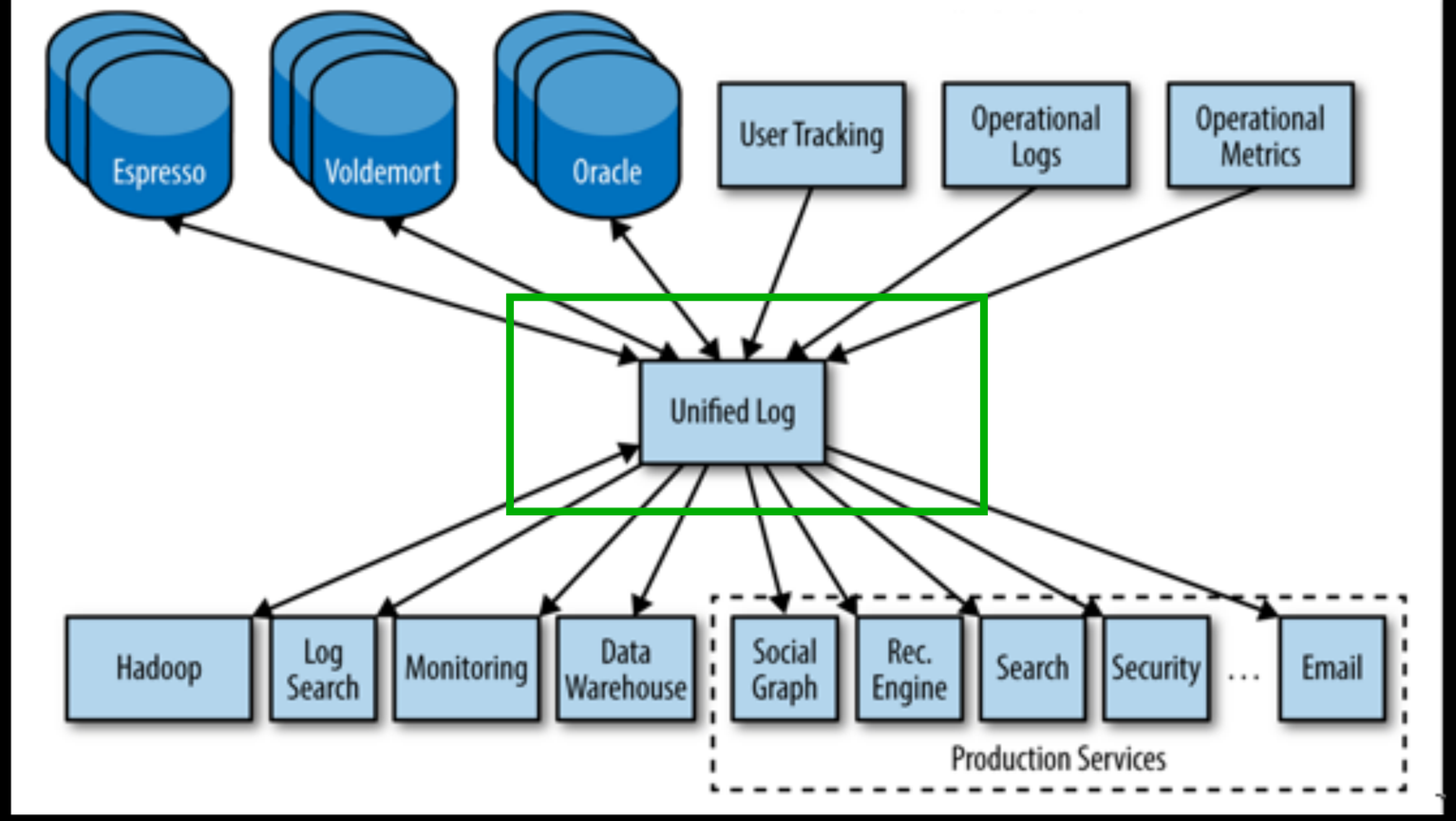


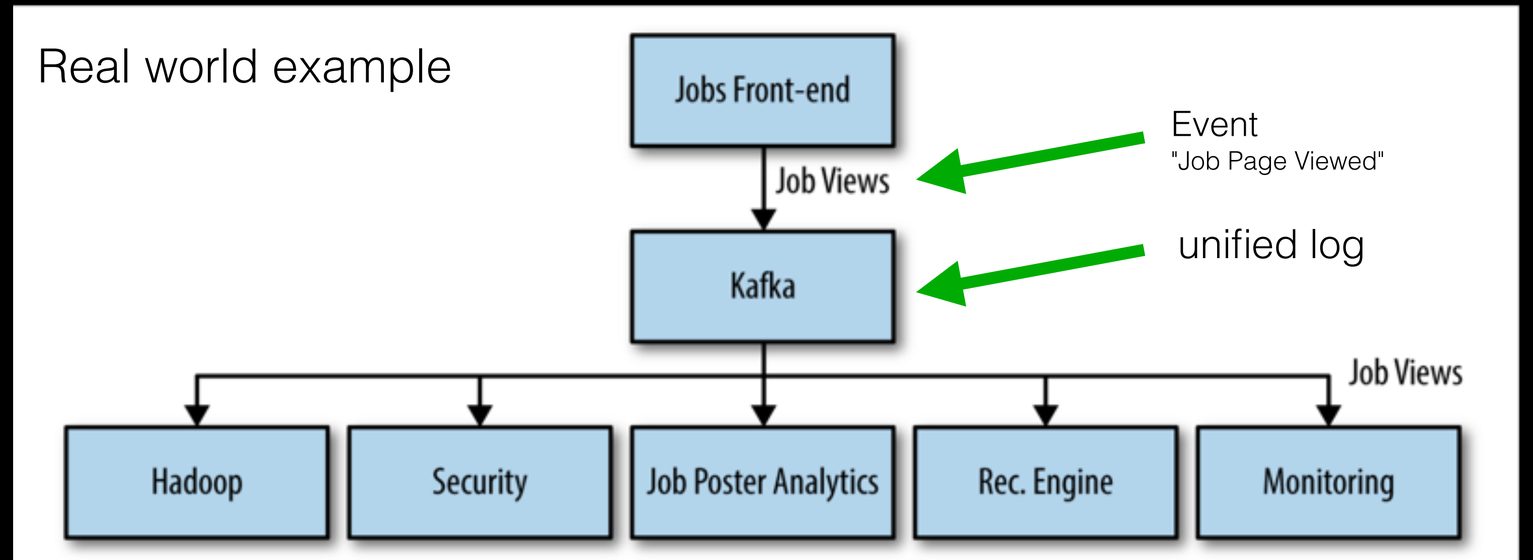
Highly recommend watching 👉**bit.ly/hello-retail-video**





bit.ly/i-heart-logs

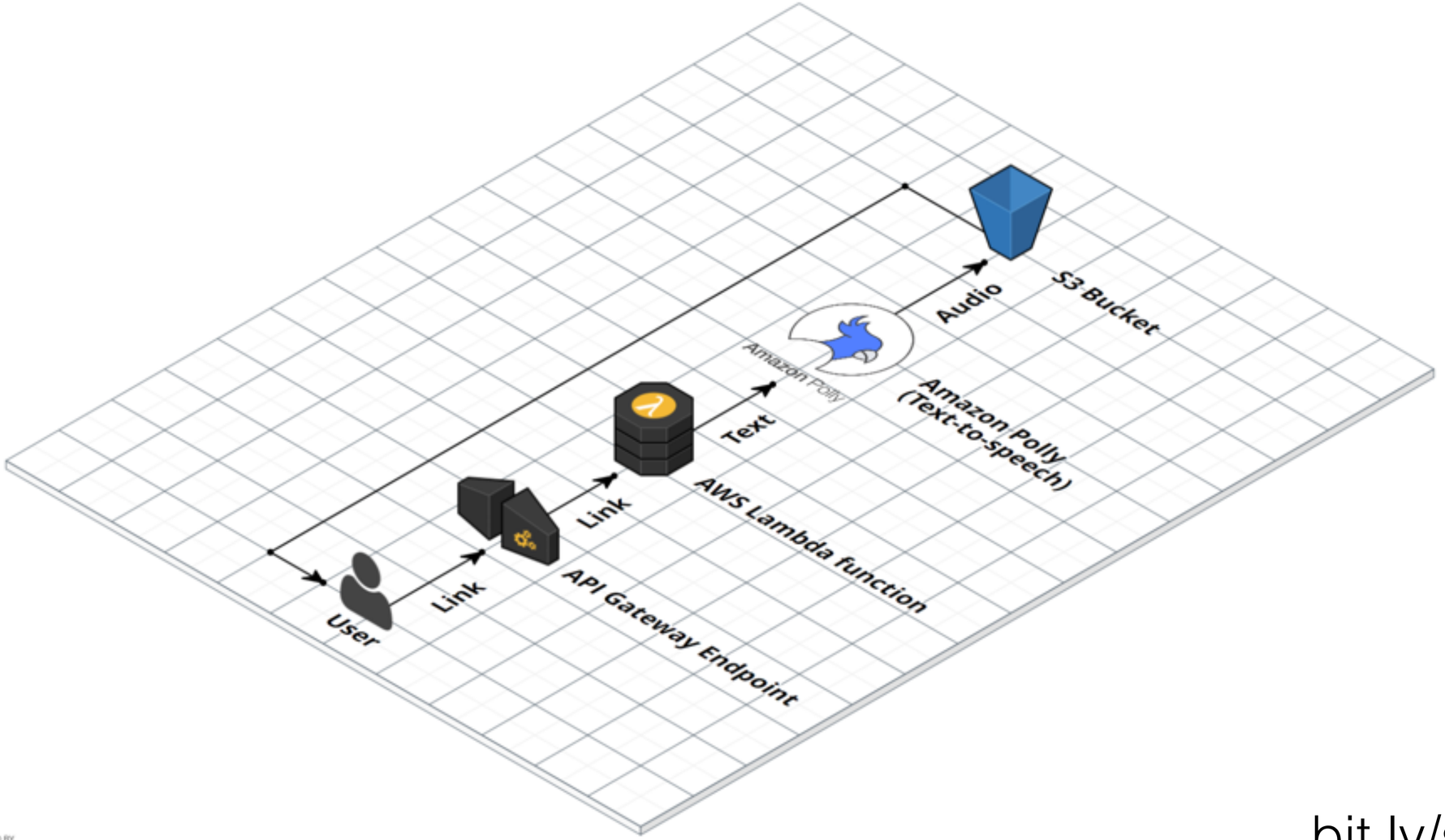





US Department of Defense
serverless.com/blog/dept-of-defense-doc-bot

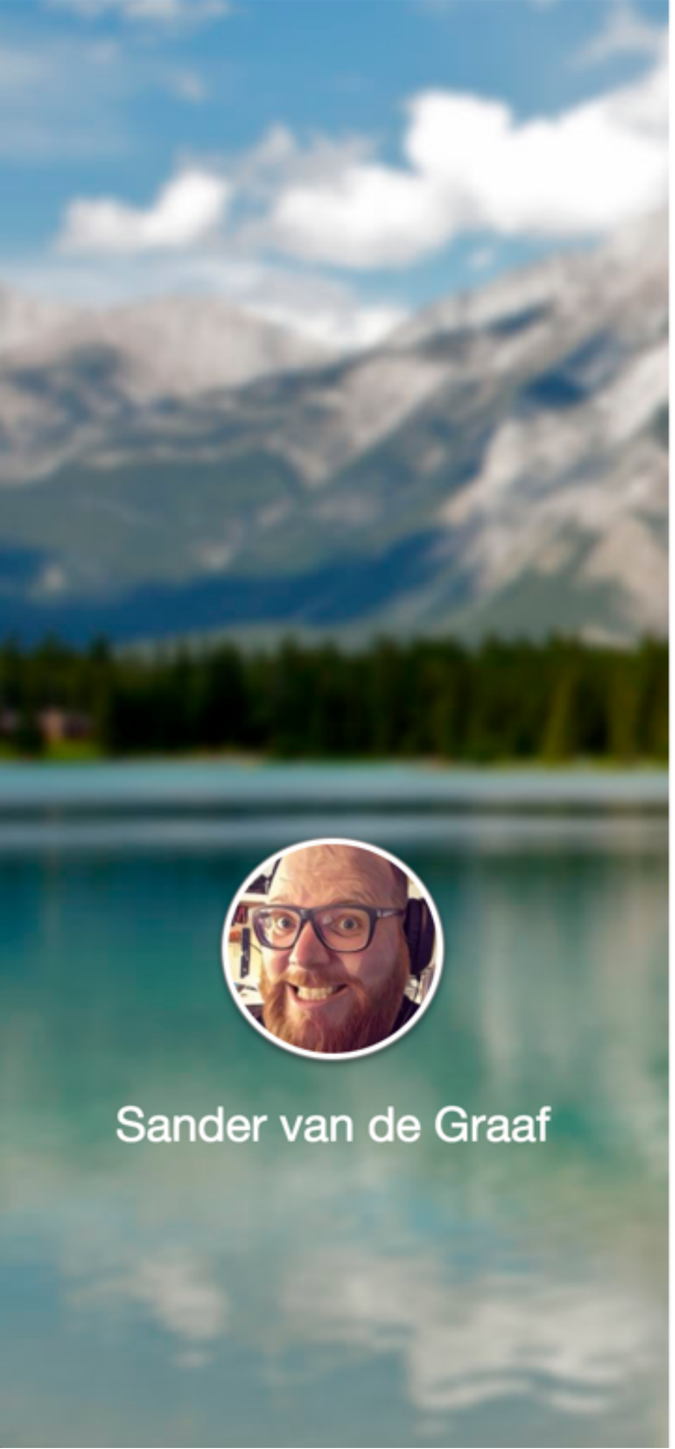
serverless-medium-text-to-speech

Serverless-based, text-to-speech service for Medium articles.



POWERED BY CLOUDCRAFT.CO

bit.ly/sls-txt-to-speech



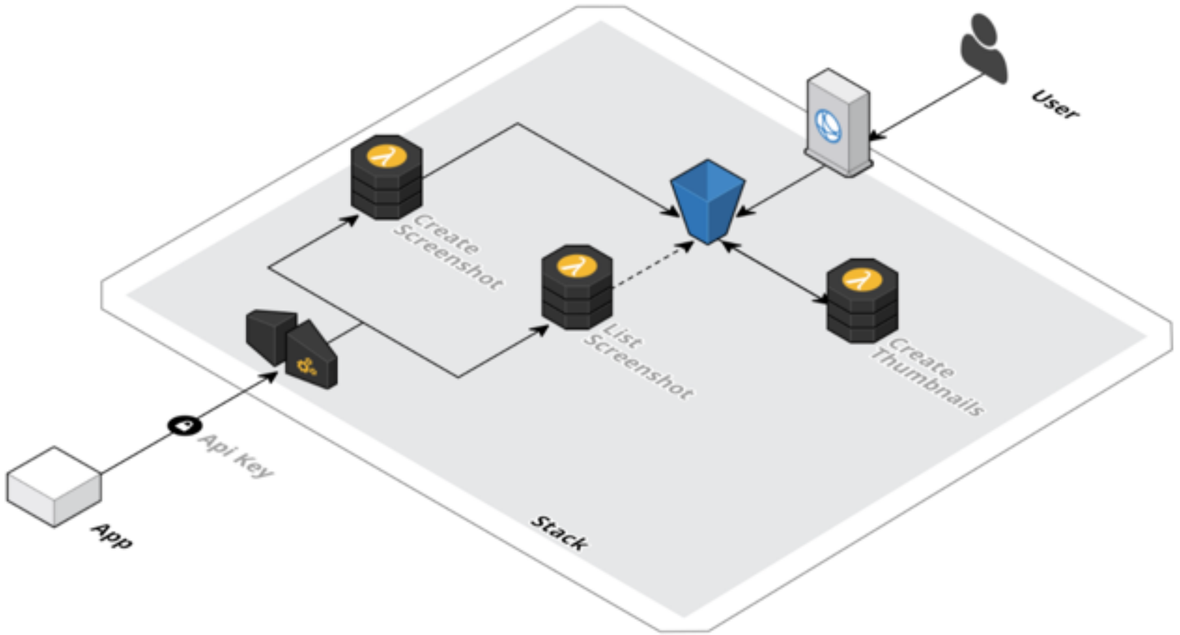
Serverless Screenshot service with Lambda





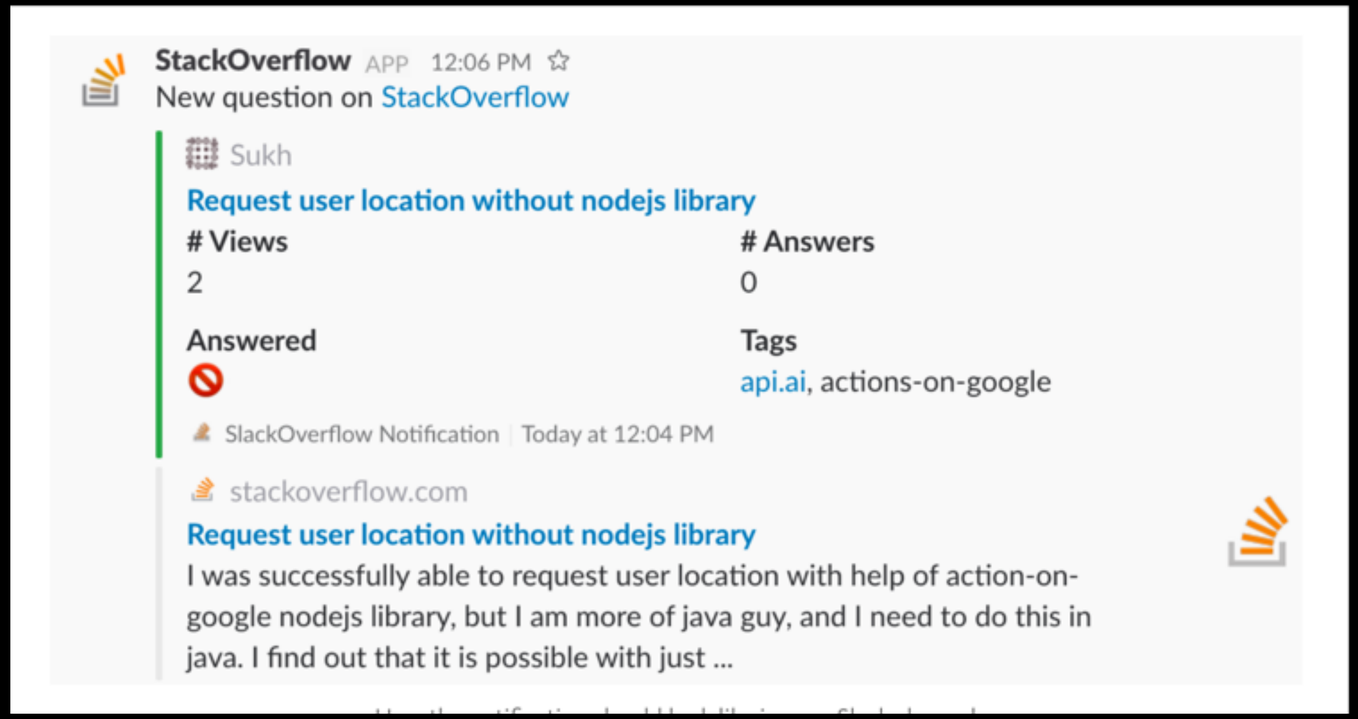






serverless.com/blog/building-a-serverless-screenshot-service-with-lambda

Monitor Stack Overflow questions and post them in a Slack channel.



bit.ly/so-slack

repo: github.com/picsoung/stackoverflowmonitor

Enterprise Users

Nordstrom - is a framework contributor and user. They have 200 Lambda functions in production and do 100 million invocations daily. Use-Cases: Web back-ends, DevOps automation & streaming data processing.

Coca Cola - is a framework contributor and user. Has a mission to do all of its 200+ marketing projects a year as “serverless” projects with the Framework. Use-Cases: Web and mobile back-ends.

“The Serverless Framework is a core component of The Coca-Cola Company's initiative to reduce IT operational costs and deploy services faster.” - Patrick Brandt, Solutions Architect, Coca-Cola

- Nordstrom
- Coca-Cola
- Autodesk
- Angie’s List
- Vevo
- Booz Allen Hamilton
- NY Life Insurance
- Australian Government
- LendingTree
- Amazon
- Vice
- Accenture
- And more



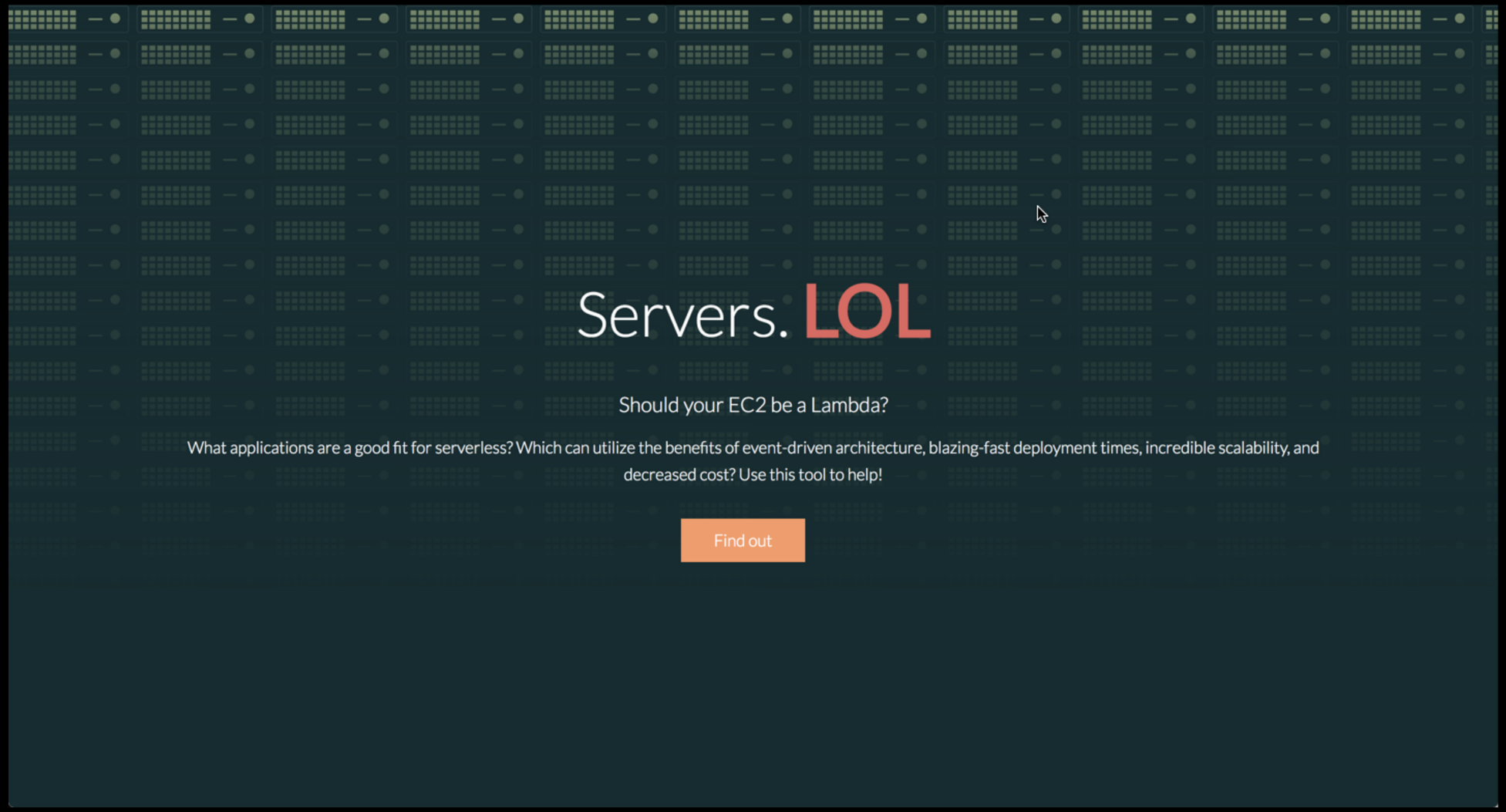
Serverless State of the union re:Invent 2016
https://www.youtube.com/watch?v=AcGv3qUrRC4

Finra

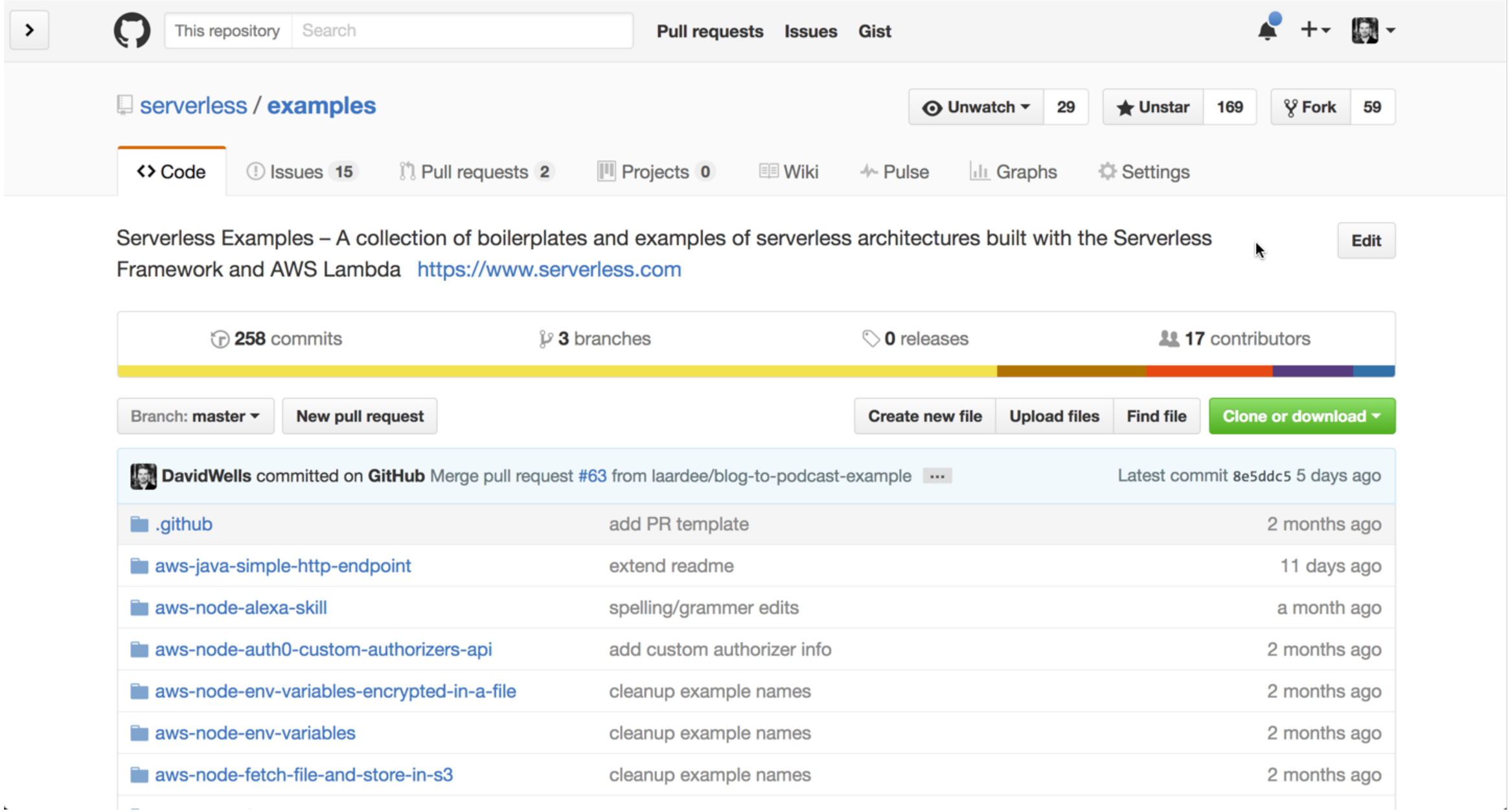


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Additional Resources

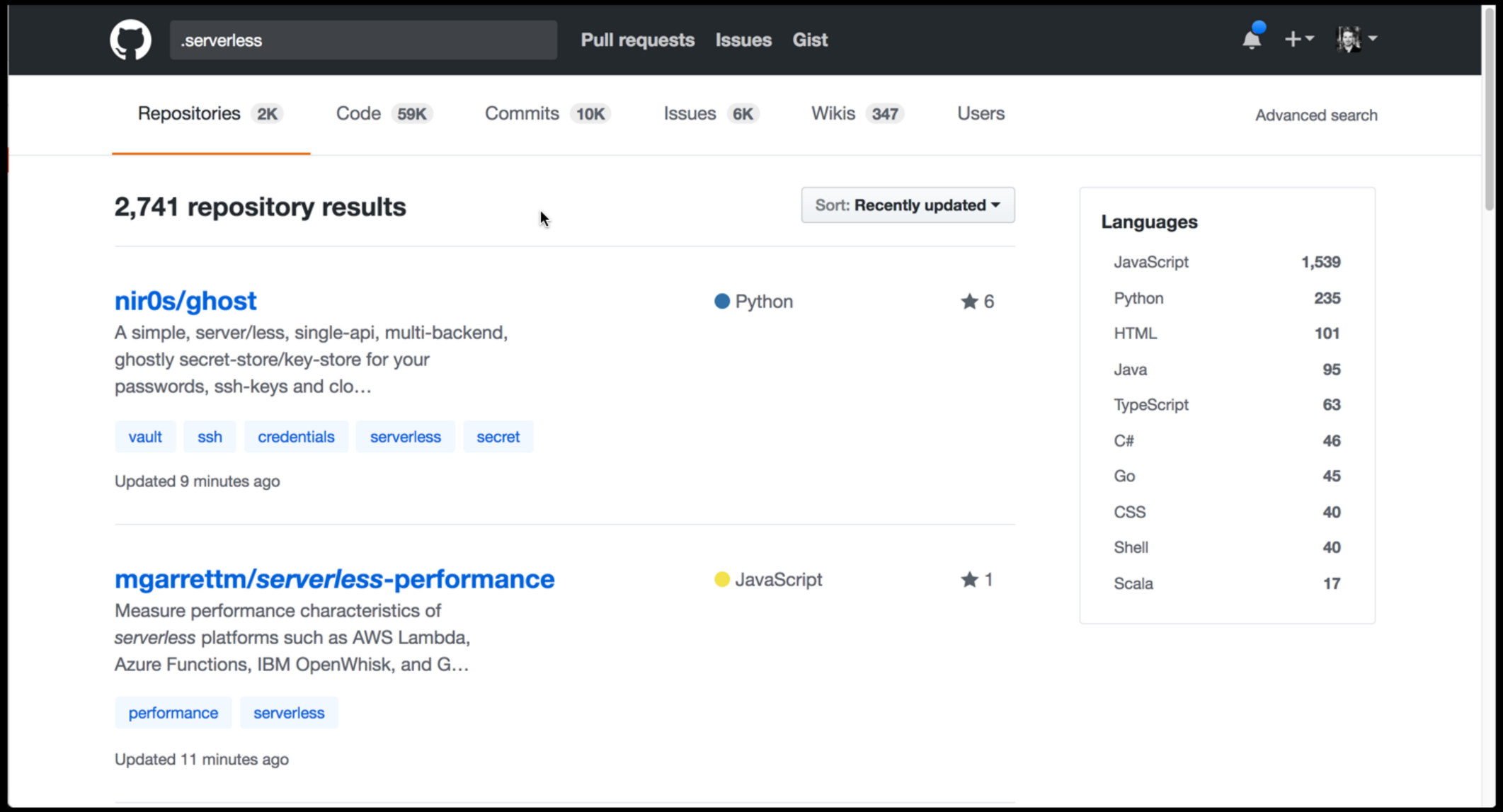


https://servers.lol/



github.com/serverless/examples

Search .serverless globally on github



Thanks for listening!

Questions?

Tweet @goServerless or @DavidWells