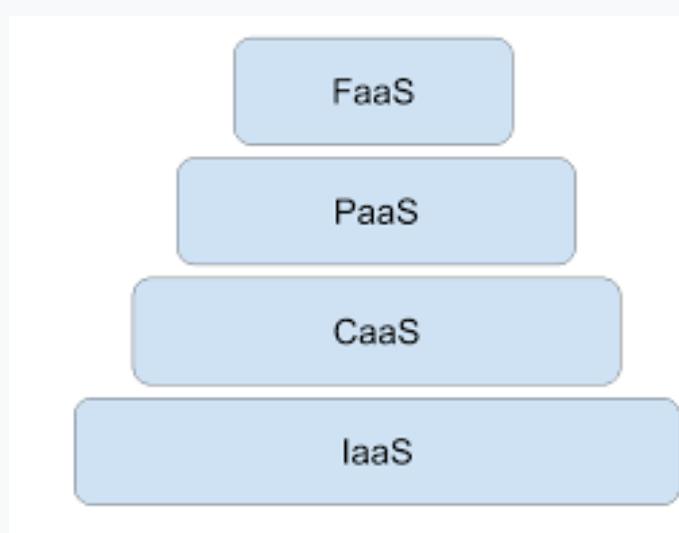


# Serverless: Is it for your organization?

Michael Bright, 24 October 2017,  
Open Source Summit Europe - Prague

These slides online at [https://mjbright.github.io/Talks/2017-Oct-OSS\\_Serverless](https://mjbright.github.io/Talks/2017-Oct-OSS_Serverless)



# Serverless Computing

## 1. What is Serverless?

- Your experiences?
- 

## 2. Review of Cloud Provider Offerings.

+CNCF Serverless WG

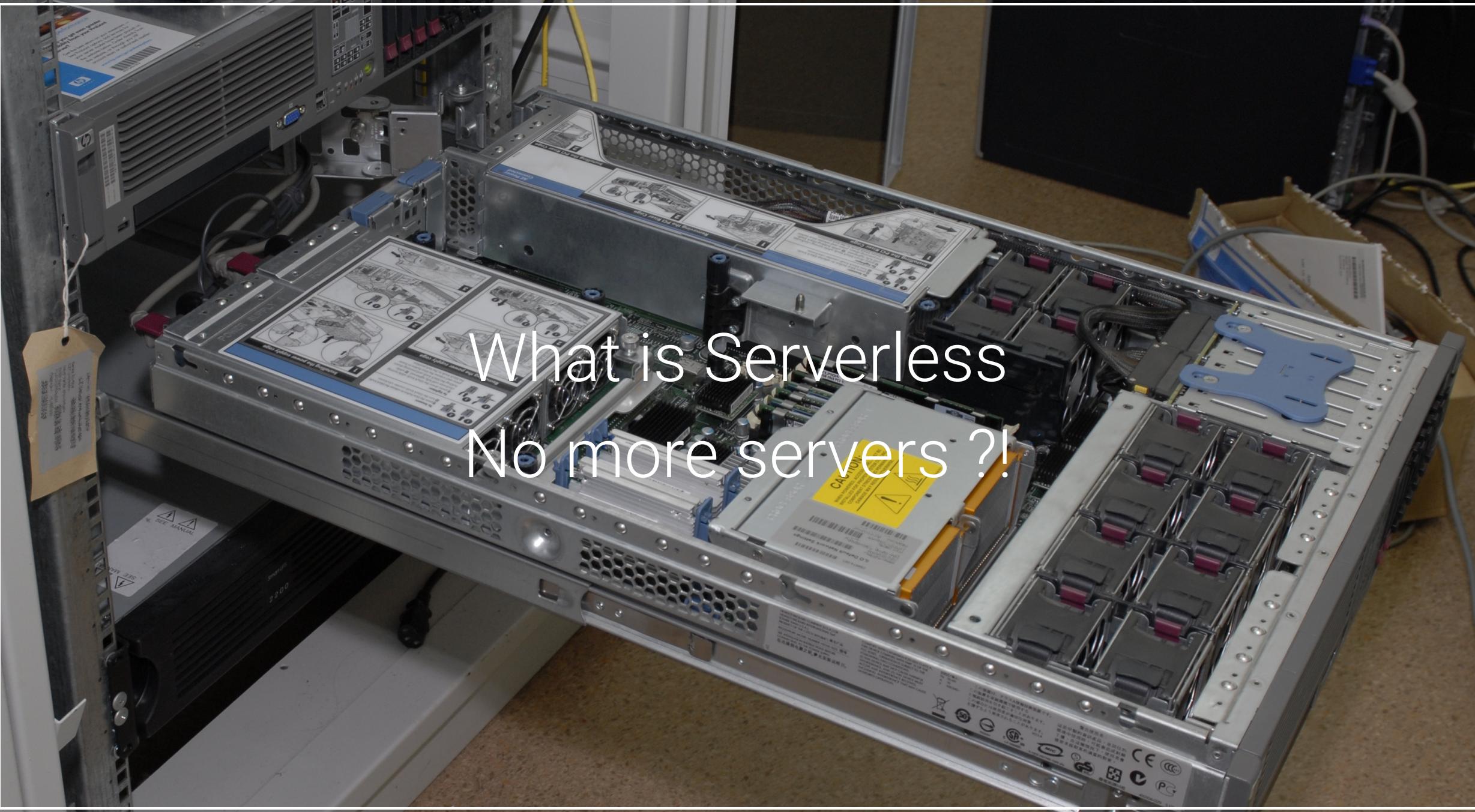
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## 3. Serverless Tools

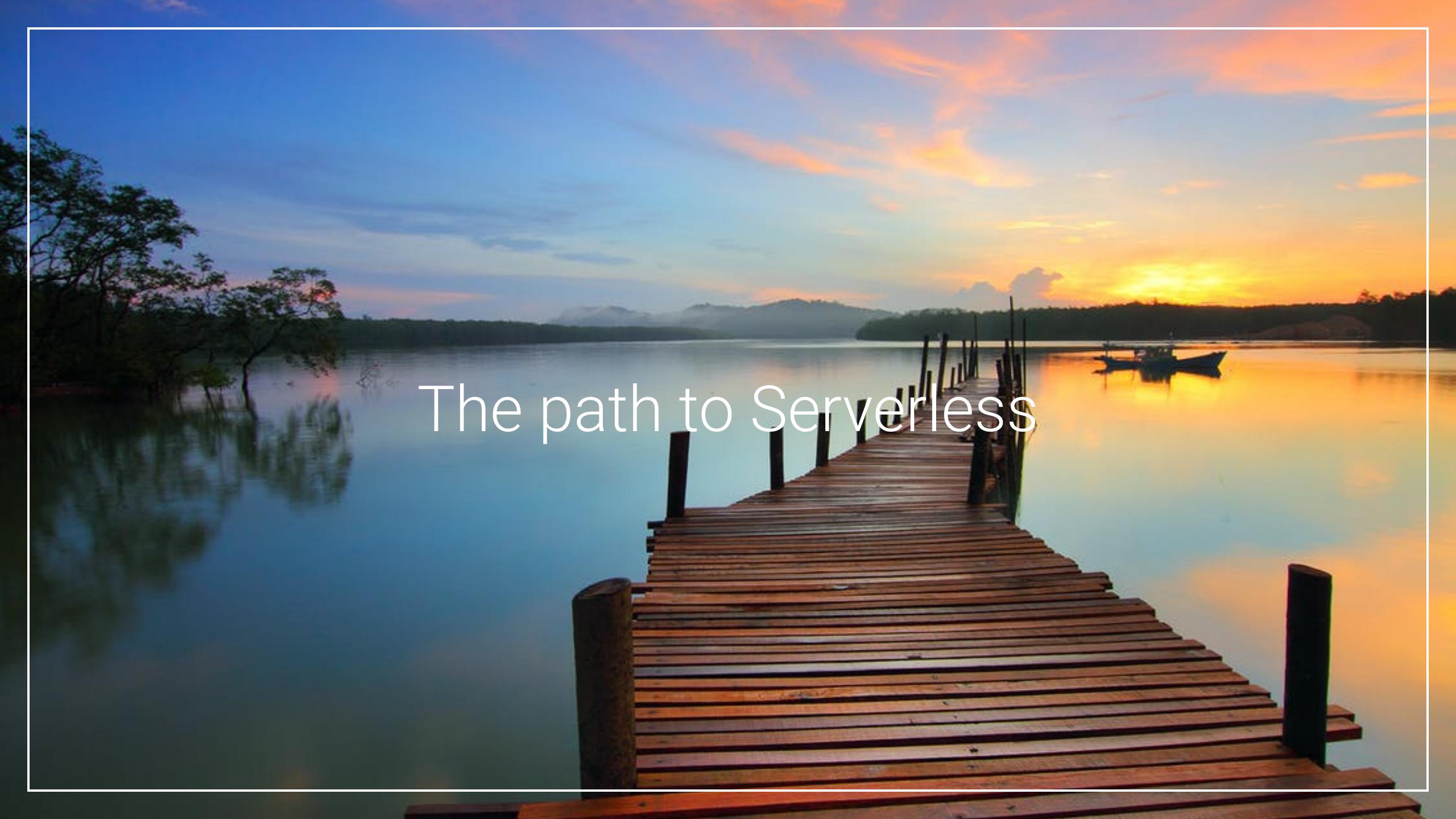
## 4. Serverless Platforms

Serverless In Action - demos

## 5.

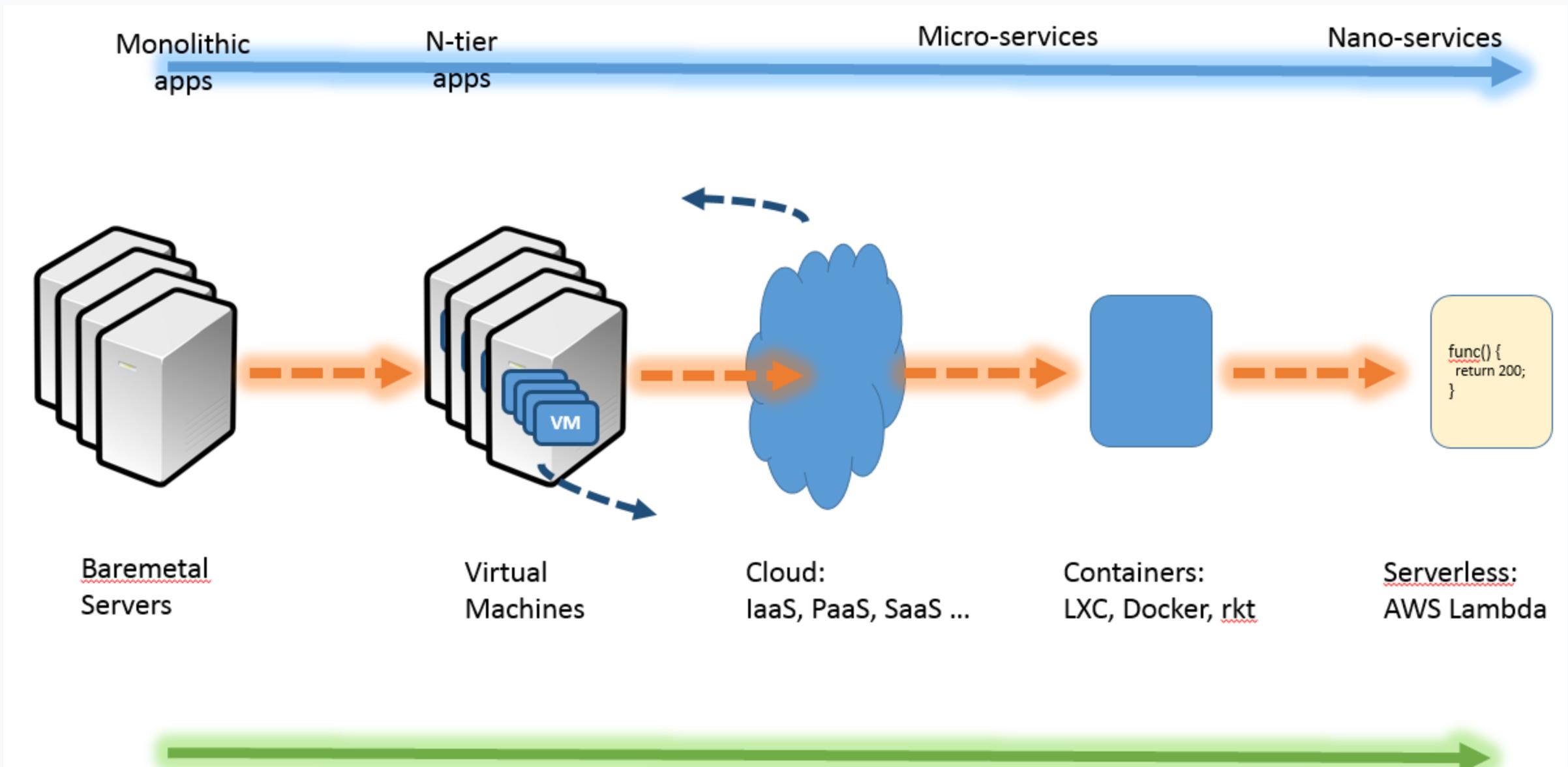


What is Serverless  
No more servers ?!

A photograph of a wooden pier extending from the bottom right towards the center of the frame, set against a backdrop of a calm lake or river. The sky is filled with warm, orange and yellow hues of a setting sun, with some darker clouds on the left. In the distance, a small boat is visible on the water. The overall atmosphere is peaceful and contemplative.

The path to Serverless

# Serverless - The making of ...



# Serverless - What is it? ...

At the peak of the Hype Cycle !!

## DON'T CARE ABOUT SERVERS

- Developers focus on apps
- Servers are auto-scaled
- No server provisioning

## BAAS

Back-end as a Service - e.g. DB,  
messaging

Applications accessing other cloud  
services ...

## NOW FAAS + BAAS

Functions as a Service - your stateless  
logic

Functions accessing other cloud services  
...

## PAY AS YOU GO

- Pay for real usage
- No initial investment
- Great for startups

## AGILE

Short time to market  
Enables innovation

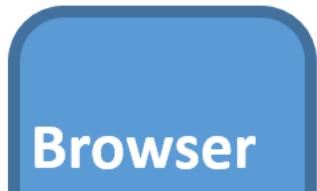
## ALSO A COMPANY!

Unfortunately!  
Serverless.com provide deployment tools



The future of fast-food is Serverless

# Serverless - Event Driven Architecture



# Serverless - What is it? ... Use Cases



# Serverless - What is it? ... Use Cases

Where it doesn't make sense to pay for always-on services

## PERIODIC

- quarterly analyses
- monthly payroll
- weekly news
- daily summaries
  
- Bank checks  
(with image recognition)

## DOMAINS

- IoT
- Banking
- Glue-logic

## CHARACTERISTICS

- latency tolerant
- event-driven
- short-lived
- periodic



# Serverless - Cloud Providers



# Serverless - Cloud Provider Offerings



AWS LAMBDA



AZURE / AZURE FUNCTIONS



GOOGLE / GOOGLE CLOUD FUNCTIONS



IBM CLOUD / OPENWHISK



ORACLE CLOUD / FN





## AWS Lambda

### Overview

- Introduced *Beta* in Nov 2014, stable version by end of 2015.  
*Leader* in developer uptake, back-end services and eco-system.

**Language choices:** Node.js (JS), Python, Java 8, C#, VB/F#?

(CSAR project)

**Cost:** Free tier: 1 mn req/mth, then \$0.00001667/GBy-sec [details](#)

**Strengths:** Created the space, enormous ecosystem, Cloud9 IDE?

**Weaknesses:** A little slow, limited languages, lock-in



## Azure Functions

### Overview

- *Introduced in May 2016*

**Many language choices:** JavaScript, C#, F#, Python, PHP, Bash, PowerShell ...

**Cost:** Free tier: 1 mn req/mth, then \$0.000016/GBy-sec [details](#)

**Strengths:** Win dev ecosystem, VStudio tools, Azure Stack

**Weaknesses:** still young, lock-in



## Google Cloud Functions

### Overview

- *Alpha release in Feb 2016.*

**Language support:** JavaScript only.

**Cost:** Free tier: 2mn req/mth, then \$0.0000004/GBy-sec [details](#)

**Strengths:** Google dev ecosystem, backend services

**Weaknesses:** Very young, Js only, commitment? Cost, lock-in



## IBM Cloud OpenWhisk

### Overview

- *Experimental release in Feb 2016*

*Open Sourced as Apache OpenWhisk*

**Language support:** Node.js, Swift or BYoC

**Cost:** Free tier: 2mn req/mth, then \$0.0000004/GBy-sec [details](#)

**Strengths:** Open source community, RedHat/Adobe backing, Fast growth

**Weaknesses:** lock-in

# AWS Lambda: in more detail

# AWS Lambda: Use Case - Smart News



# AWS Lambda: Demo - GUI

The screenshot shows the AWS Lambda Functions page. At the top, there's a dark header bar with the AWS logo, navigation links for 'Services' and 'Resource Groups', and user information for 'Michael Bright' (Oregon, Support). Below the header, the main content area has a light gray background. On the left, there's a sidebar with the 'AWS Lambda' title and a close button ('X'). The main content area displays a breadcrumb navigation path: 'Lambda > Functions'. There are no other visible elements or data.

A black and white photograph showing a group of people working in a field. In the foreground, four individuals are bent over, seemingly harvesting or weeding. Behind them, more people are visible, including one carrying a tray. The background features a dense line of trees and a range of hills under a sky filled with large, billowing clouds.

But all that clicking around is hard work !!  
- let's use a CLI or API

# AWS Lambda: Demo - CLI (az)

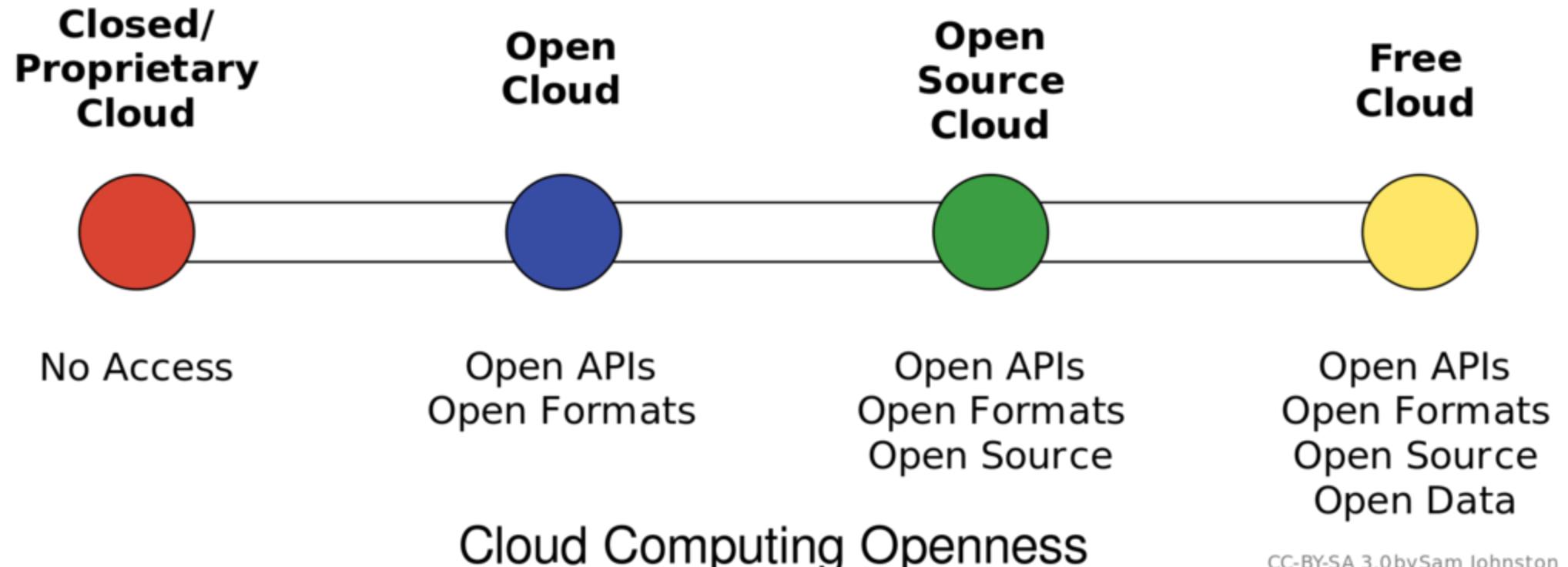




Serverless Python !!

# AWS Lambda: Demo - Chalice Python Wrapper

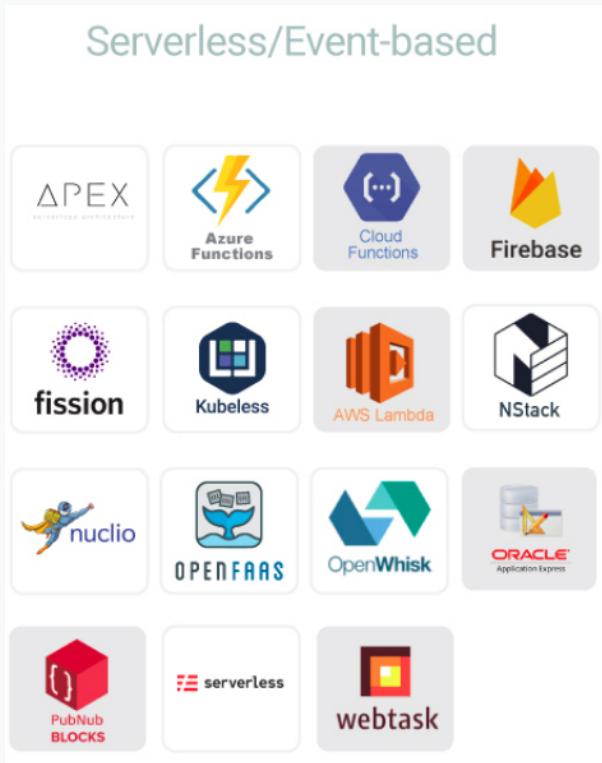




CC-BY-SA 3.0 by Sam Johnston

But we need open Serverless for open Cloud

# The CNCF has a setup a Serverless WG



# CNCF Serverless WG to

## **Provide clarity on the topic:**

- \* Define common terminology
- \* Define the scope of the space
- \* Identify common use cases and patterns
- \* Identify relation to PaaS and container orchestration

## **Identify potential next steps for the community:**

- \* Identify areas for harmonization or interop work

**Create a whitepaper on Serverless.**

# CNCF Serverless WG Resources

\* Github repo

 @cncf:wg-serverless

\* Google Group

 cncf-wg-serverless

\* Meetings

 Video playlist

Minutes

\* Whitepaper

 in Google Drive

\* Slack Channel

 #WP



# Serverless - Tools

# Serverless - Open Source tooling ...



SERVERLESS(.COM)



APEX(.COM)



– Open Source project

*Deploy to various Cloud  
Providers:*

- - AWS Lambda
- - Azure
- - Google
- - OpenWhisk
- - Kubeless
- - SpotInst

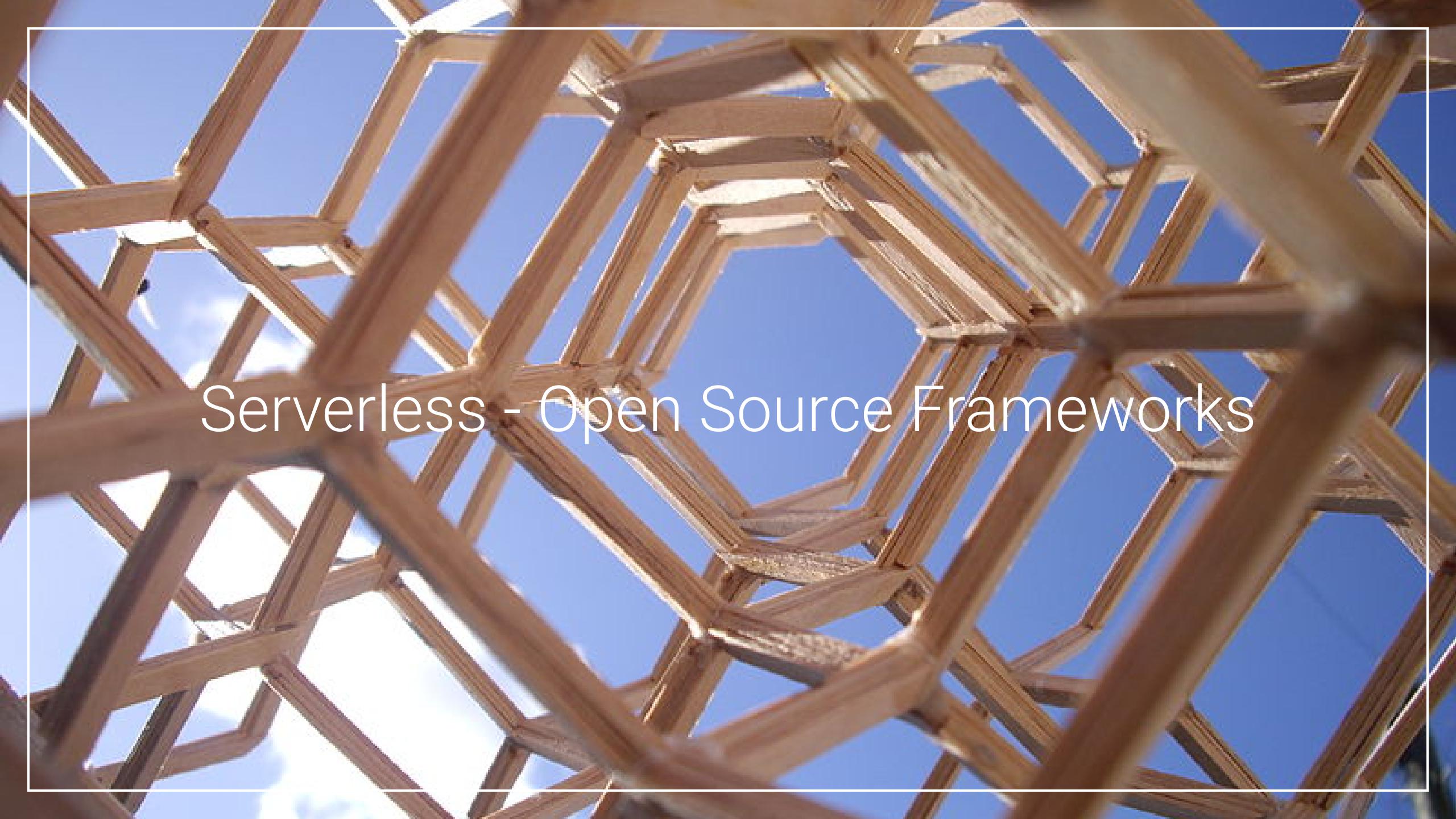
# APEX

- *Up is platform-agnostic, supporting AWS Lambda and API Gateway as the first targets.*

*Extends beyond Lambda's natively supported languages by supporting Golang*

*Up focuses on deploying "vanilla" HTTP servers, using existing frameworks such as*

*Express, Koa, Django, Golang net/http or others.*

A photograph of a wooden lattice structure, likely a roof or porch, against a clear blue sky. The perspective is looking up through the gaps in the lattice, creating a pattern of hexagonal shapes.

Serverless - Open Source Frameworks

# Serverless - Open Source Frameworks



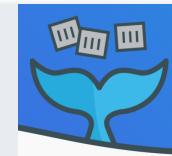
KUBELESS



FISSION



APACHE OPENWHISK



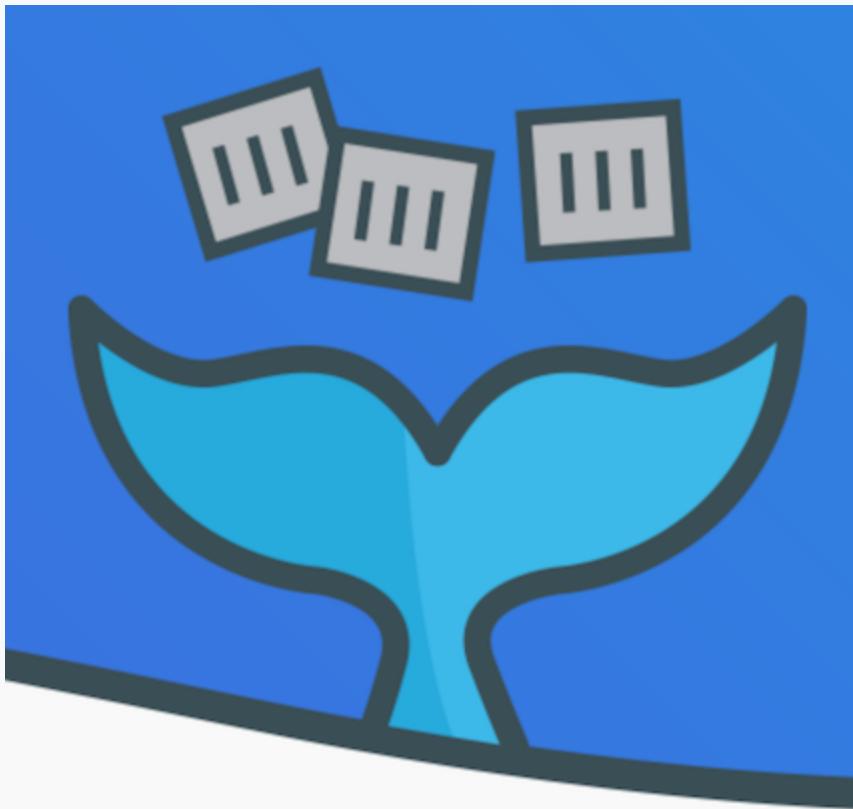
OPENFAAS



FN PROJECT



SPRING CLOUD FUNCTIONS



## OpenFaaS

- - OpenFaaS runs on Docker-Swarm or Kubernetes
  - - FaaS-Netes runs on Kubernetes
  - - faas-cli: command-line tool
  - - A young project with a vibrant community of volunteers
- *Alex Ellis, Docker Captain*

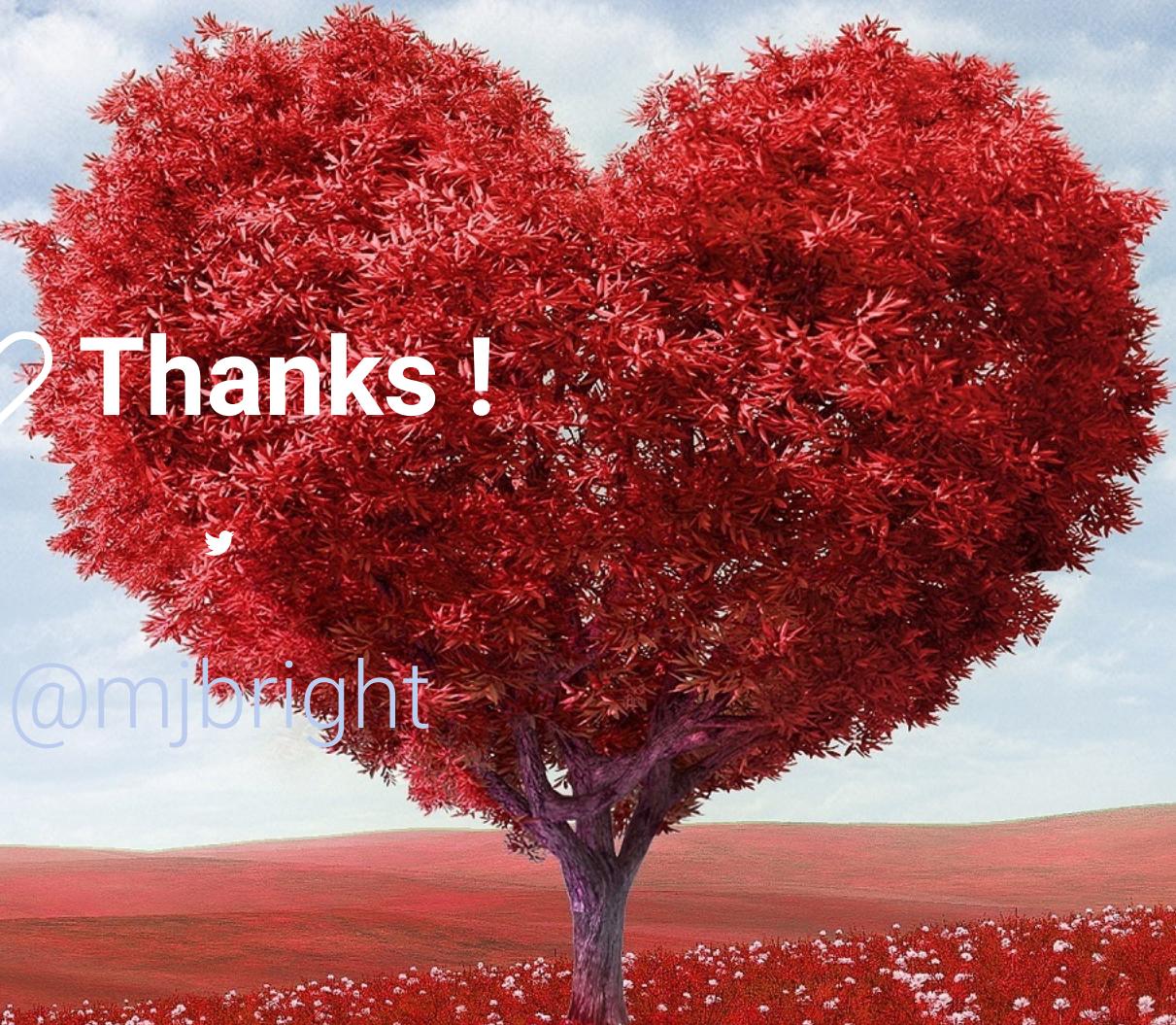
# To summarize

- - Serverless is a new technology
  - - It has a lot of promise for many workloads
  - - All major Cloud players on investing in the technology
  - - **But we need an Open Cloud**
  - - "The ultimate Cloud Native"
  - - There are many deployment choices today
  - - As platforms mature we can expect more stable performance
-



Thanks !

@mjbright



# Resources - 1

RESOURCE	DESCRIPTION	URL
Lists		
awesome-serverless	Curated list of awesome services, solutions and resources for serverless / nobackend applications.	[github] <a href="#">anaibol/awesome-serverless</a>
awesome-Serverless(.com)	Curated list of resources related to serverless architectures and the <b>Serverless Framework</b>	[github] <a href="#">JustServerless/awesome-serverless</a>
Tools		
Serverless	Tools for deploying to several Cloud Providers	[github] <a href="#">serverless/serverless</a>
Apex	Tools for deploying to AWS Lambda	[github] <a href="#">apex/apex</a>

# Resources - 2

RESOURCE	DESCRIPTION	URL
Cloud Providers		
AWS Lambda	Amazon's Serverless Platform	<a href="https://aws.amazon.com/fr/lambda/">https://aws.amazon.com/fr/lambda/</a>
Azure Functions	Microsoft's Serverless Platform	<a href="https://azure.microsoft.com/en-us/services/functions/">https://azure.microsoft.com/en-us/services/functions/</a>
Google Cloud Functions	Google's Serverless Platform	<a href="https://cloud.google.com/functions/">https://cloud.google.com/functions/</a>
IBM BlueMix OpenWhisk	IBM's Serverless Platform	<a href="https://www.ibm.com/cloud-computing/bluemix/openwhisk">https://www.ibm.com/cloud-computing/bluemix/openwhisk</a>

# Resources - 3

RESOURCE	DESCRIPTION	URL
Open Source Serverless Platforms		
Kubeless	Serverless platform from Bitnami	<a href="#">url</a>
Fission.io	Serverless platform from Platform9	<a href="#">url</a>
Apache OpenWhisk	Serverless platform from IBM	<a href="#">url</a>
OpenFaaS	Serverless platform from Alex Ellis, Docker Captain	<a href="#">url</a>
Serverless Python Frameworks		
Apex	Serverless framework supporting Python and other languages	<a href="#">url</a>
Chalice	Serverless framework supporting Python / Flask	<a href="#">url</a>
Lambdify	Serverless framework supporting Python	<a href="#">url</a>
Zappa	Serverless framework supporting Python / WSGI	<a href="#">url</a>



Thanks !

@mjbright



# Chalice

Chalice

- Open sourced by AWS - Python/AWS  $\lambda$

*pip installable module, command-line tool*

# λambdify

Lambdify

---

—



Zappa.io

- Open sourced by Gun.io - Python/AWS  $\lambda$

*pip installable module, command-line tool*

*Can run Django ... serverless (?)*