

OpenFaaS

Kshitij Yelpale | Safir Mohammad Shaikh
| Sohail Dua | Karishma

Agenda

Motivation

Serverless Architecture

OpenFaaS

Installation

A Simple Web Application - ML FaaS

Conclusion

References

Motivation

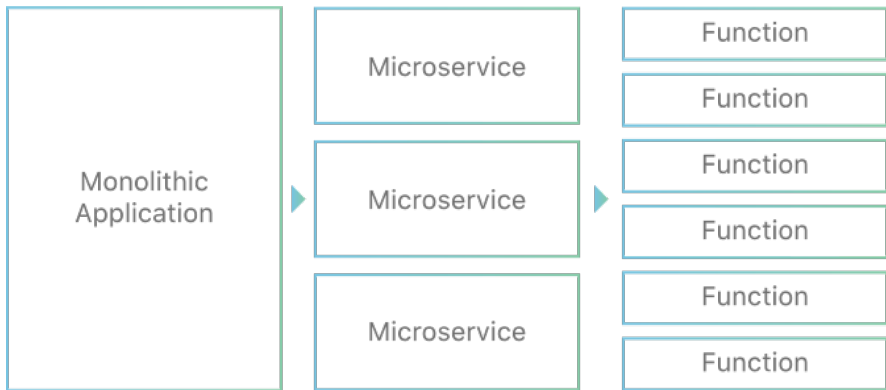
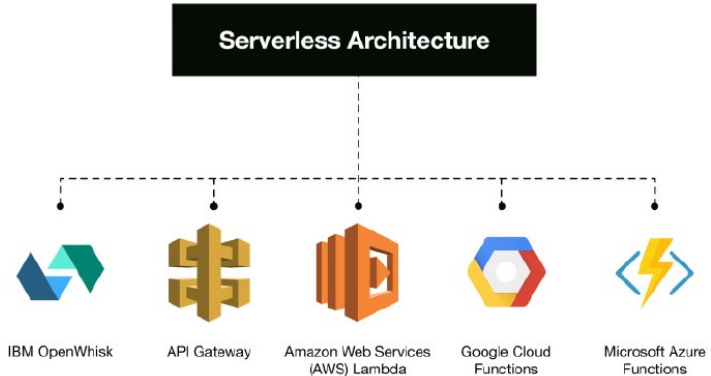


Figure: The Evolution [1]

Serverless Architecture

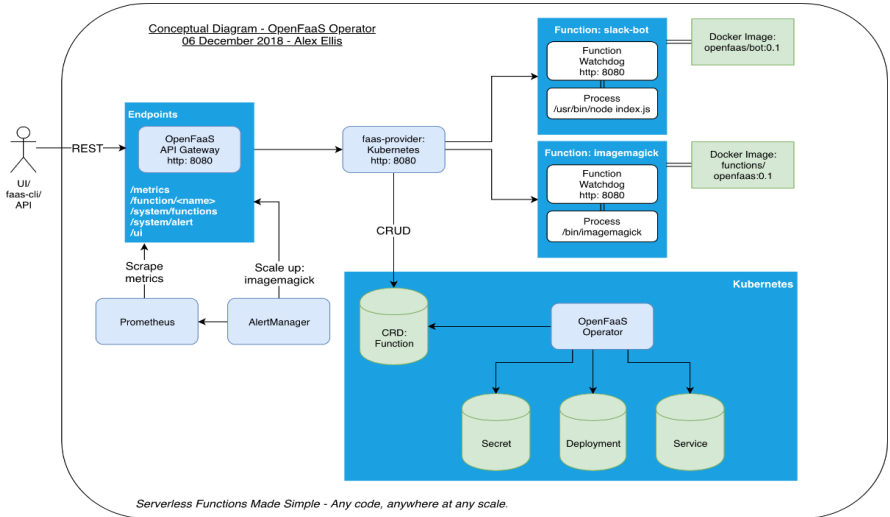
- What is Serverless Architecture?
- Purpose
- Serverless Providers [2]



What is OpenFaaS?

- An open-source Framework
- Serverless Functions, Made Simple!
- Anywhere | Any Code | Any Scale
- Start the Journey | Premium Subscription | OpenFaaS Pro [3]

OpenFaaS Architecture [4]

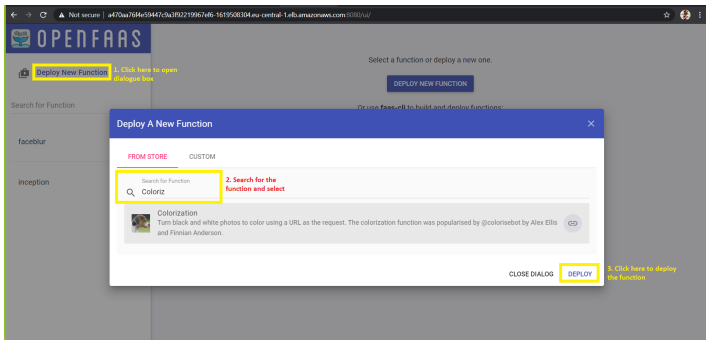


Installation

- Single-Node Kubernetes Cluster - Minikube
- Multi-Node Kubernetes Cluster
 - Custom Based - AWS
 - Using Managed Service - AWS EKS

Functions

- Life Cycle of Functions
 - Create
 - Build
 - Push
 - Deploy
 - Invoke
- OpenFaaS Store



A Simple Web Application - ML FaaS

OPENFAAS Serveless Machine Learning Models

Inception Model

This model of inception has been trained on millions of images and uses the "ImageNet" dataset to classify objects. Simply input a URL for a particular image, and the model will identify the top 10 different possibilities for the subject of the image along with its confidence percentage for each.

GitHub Repository: <https://github.com/faas-and-funtoua/inception-function>

[Launch Inception](#)

Pigo Blur Model

The Pigo model identifies and blurs faces in images using facial recognition techniques in machine learning. It takes in a URL of an image and returns the photo but blurred for any faces that it is able to detect. Note that the photo must clearly show a face or multiple faces, or else it may fail.

GitHub Repository: <https://github.com/esimov/pigo-openfaas-faceblur>

[Launch Pigo](#)

Colidr Model

The Colidr model recreates an image with black lines to give the appearance of a hand-drawn sketch. It is best to use sharp images with clearly defined edges and features to accurately sketch a copy of it.

GitHub Repository: <https://github.com/esimov/openfaas-coherent-line-drawing>

[Launch Colidr](#)

Colorization Model

The Colorization function can turn any black-and-white photo into a fully colored image. The black-and-white input must be as a URL for the request, and the model may not work as intended for already colored images.

GitHub Repository: <https://github.com/alexellis/repaint-the-past>

[Launch Colorize](#)

OPENFAAS Face Detect Image Dashboard

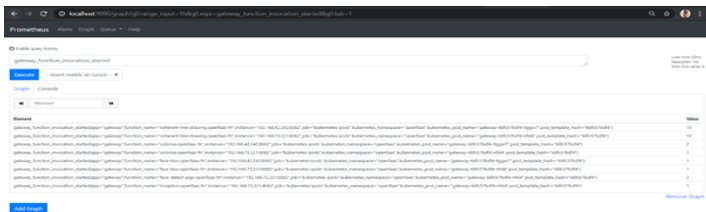
Image URL: [Clear Image](#)

Your Image

Face Detected Image

Monitoring of Functions

■ Prometheus



■ Grafana



Conclusion

- Cutting-edge Framework for Serverless functions
- OpenFaaS can be integrated with any cloud-orchestration tool
- Productionized solutions with Kubernetes
- Communication through Gateway can be encrypted with Ingress component of Kubernetes
- Experiment before Use

References

-  CLOUDFLARE, “What does Function-as-a-Service (FaaS) ”mean?” [Online]. Available: <https://www.cloudflare.com/de-de/learning/serverless/glossary/function-as-a-service-faas/>
-  S. Gaunt, “What you need to know about building Serverless Architectures.” [Online]. Available: <https://maxkelsen.com/blog/building-serverless-architectures>
-  A. Ellis, “Home | OpenFaaS - Serverless Functions Made Simple.” [Online]. Available: <https://www.openfaas.com/>
-  “OpenFaaS Cloud Architecture.” [Online]. Available: <https://docs.openfaas.com/openfaas-cloud/architecture/>