OpenFaaS Installation
Cloud Computing SS19

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Agenda

Introduction

Architecture & Components

Production-like environment (Part1)

Local development environment

Test environment

Production-like environment (Part2)

Wrap Up

Introduction
What is Serverless Computing?

- Concept of developing and running applications without having to worry about servers.
- Also known as Function as a Service (FaaS).
- Promises virtually infinite scaling with zero configuration.
- Layer of abstraction for developers.
- Layer of abstraction for operations.
- There are still servers behind that layer.

Introduction
What is OpenFaaS

- Framework for running your own serverless computing plattform.
- Free and open-source (MIT license).
- Runs through Docker Swarm or Kubernetes.
- Supports any programming language that can run in a container.
- Comes with container templates for many popular programming languages.

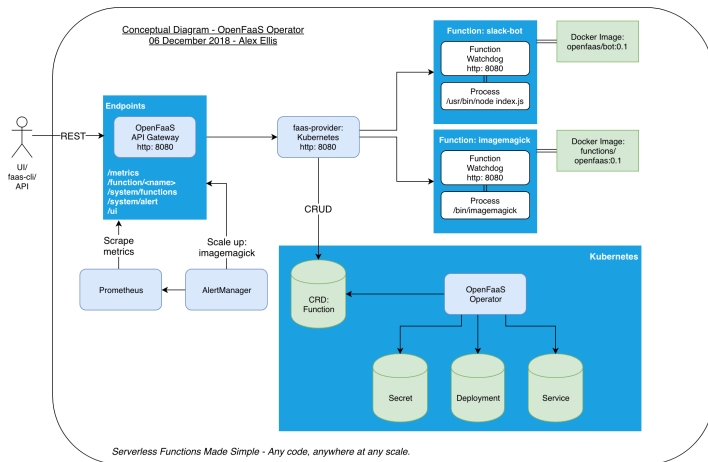OPENFAAS

Architecture & Components

Figure: OpenFaaS Architecture

Source: https://docs.openfaas.com/architecture/gateway/

Production-like environment
Kubernetes

- Leading container orchestration software.
- Free and open-source (Apache 2.0 license).
- Comes with vertical scaling capabilities by default.
- Optional horizontal scaling (cluster auto scaling).
- Can be set up for high availability.

Production-like environment
Our technology and tool stack

- Terraform (infrastructure as code)
- Microsoft Azure (cloud provider)
- Azure Kubernetes Service (managed Kubernetes cluster)
- Helm (Kubernetes package manager)
- OpenFaaS

« Live Demo »

Local development environment
Docker-Swarm

Idea: Run OpenFaaS on your development machine inside Docker Swarm to develop and test functions

Advantages of that:

- No additional hardware required
- Simple and fast setup
- Single user

Local development environment
What we will do

- Create a Docker Swarm
- Download and start OpenFaaS
- Deploy a function from the store
- Write, build and deploy a new function
- Deploy a function from Docker Hub
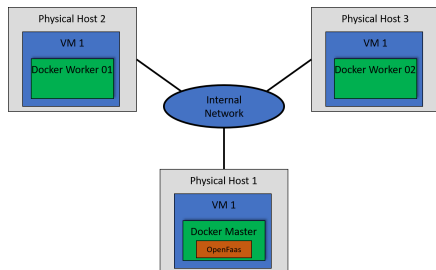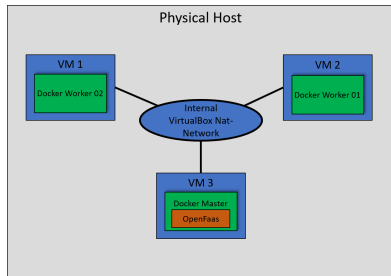
« Live Demo »

Test environment
Bare metal & virtual machines

- Test environment created with virtual machines
- easy exportation and running on different hosts
- simple troubleshooting in case of malfunction
- Docker swarm as orchestration software
- Possible Setups: All VMs on one Physical host, all VMs on different Physical hosts
- simulation of an own physical cluster

Test environment
VM setups

Production-like environment
Kubernetes

« Continuation Live Demo »

Production-like environment
Kubernetes

- OpenFaaS running in the cloud.
- Highly scalable.
- SSL ready.
- Lacks monitoring, alerting, backups, disaster recovery.

Wrap Up

Thanks for your attention!
Questions?