CloudAcademy

"On-premises" FaaS on Kubernetes

clda.co/faas-kubernetes

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About Me

- Bachelor in Computer Science
- Master in Sound & Music Engineering
- Software Engineer & Web Developer
- Cloud Evangelist @ Cloud Academy

@alex_casalboni

Agenda

- What does FaaS mean?
- FaaS in the Open-source World
- FaaS frameworks for Kubernetes
- Pros & Cons of “On-premises” FaaS

What does FaaS mean?

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Function as a Service

- Core component of Serverless
- No infrastructure management
- Microservices approach
- Function as the unit of delivery
- Multi-language support (BYOC)
- Transparent scaling (PAYG)

https://en.wikipedia.org/wiki/Function_as_a_Service

How do you FaaS?

- Independent Functions
- Versioning & Staging
- Cross-team Collaboration
- Automated Workflow
- Triggers/Events
- Local unit testing
- Integration tests
- CI/CD

FaaS in the Open-source World

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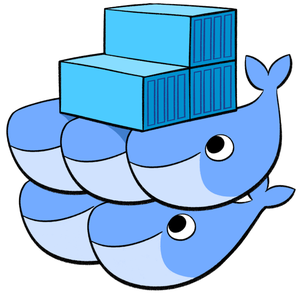
Open-source FaaS

Apache OpenWhisk

openwhisk.org

Funker



github.com/bfirsh/funker

IronFunctions

open.iron.io

Open-source FaaS - OpenWhisk

Apache OpenWhisk

openwhisk.org

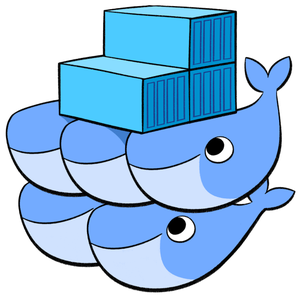
- Initially developed by IBM
- FaaS component of IBM Bluemix
- Doesn’t run on Kubernetes yet (open issue)

github.com/openwhisk/openwhisk/issues/1402

cloudacademy.com/blog/ibm-bluemix

Open-source FaaS - Funker

Funker



github.com/bfirsh/funker

- Developed by @bfirsh
- Based on Docker Swarm
- Support for Node, Python and Go

cloudacademy.com/blog/docker

Open-source FaaS - IronFunctions

IronFunctions

open.iron.io

- FaaS component of Iron.io
- Runs on Docker
  git.io/ironfunctions-docker
- Runs on Kubernetes
  git.io/ironfunctions-kubernetes

FaaS frameworks for Kubernetes

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FaaS on Kubernetes

- Kubeless by Skippbox
- Funktion by Fabric8
- Fission by Platform9

Kubeless

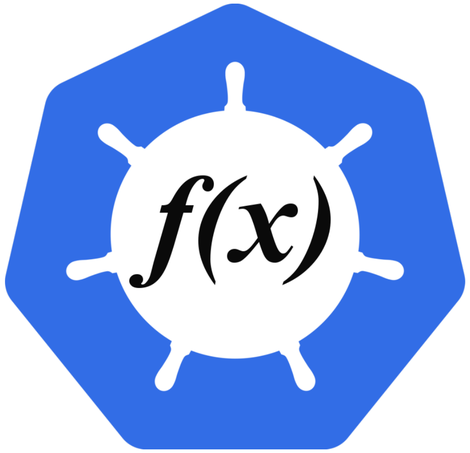
- “Only” a POC (written in Go)
- Both HTTP and PubSub
- Based on Zookeeper and Kafka

Kubeless Example

```
def foobar(context):
    """ Foobar function """
    print context.json
    return context.json
```

```
kubeless function create test \
    --runtime python27 \
    --handler test.foobar \
    --from-file test.py \
    --trigger-http
```

Funktion



funktion.fabric8.io

@funktionio

- Backed by Red Hat (written in Go)
- Integrated with fabric8's Developer Platform
- Only Python is supported
- Based on connectors (200+)

camel.apache.org/components

Funktion Example

```
module.exports = function(context, callback) {
    callback(200, "Hello, world!");
}
```

```
funktion install platform
funktion install runtime
funktion install connector timer
```

```
funktion create fn \
    -f example/hello.js
funktion create flow \
    timer://bar?period=5000 \
    http://hello/
```

Fission

fission.io

@fissionio

- Extensible and Fast by design (written in Go)
- Reduced cold starts (warm pool)
- Only HTTP triggers for now, but…
- Only Node and Python for now, but…

Fission Example

```
module.exports = function(context, callback) {
    callback(200, "Hello, world!");
}
```

```
fission env create \
    --name nodejs \
    --image fission/node-env
```

```
fission function create \
    --name hello \
    --env nodejs \
    --code hello.js
```

```
fission route create \
    --method GET \
    --url /hello \
    --function hello
```

Pros & Cons of “On-premises” FaaS

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Pros of “On-premises” FaaS

- Kubernetes abstraction for devs
- Open-source solution
- Fewer non-functional limitations
- More control over infrastructure
- Might be cheaper overall
- Might be faster (dedicated cluster)

Cons of “On-premises” FaaS

Many missing features

- Versioning, staging, env. vars, timeouts
- Testing, monitoring, logging
- Permissions & auth, orchestration
- More native triggers (storage, db, streams)

Responsibility & Ownership

- Provisioning & configuration
- Uptime & monitoring
- Operational complexity

Additional Resources

Webinar: Hands on Kubernetes (Part 1)

cloudacademy.com/webinars/kubernetes-38

Webinar: Ecosystem & Production Operations (Kubernetes Part 2)

cloudacademy.com/webinars/kubernetes-41

Webinar: Docker - From Dev to Production

cloudacademy.com/webinars/docker-31

Webinar: Docker - Production & Beyond

cloudacademy.com/webinars/docker-34

by Adam Hawkins
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Thank you!

Q & A

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