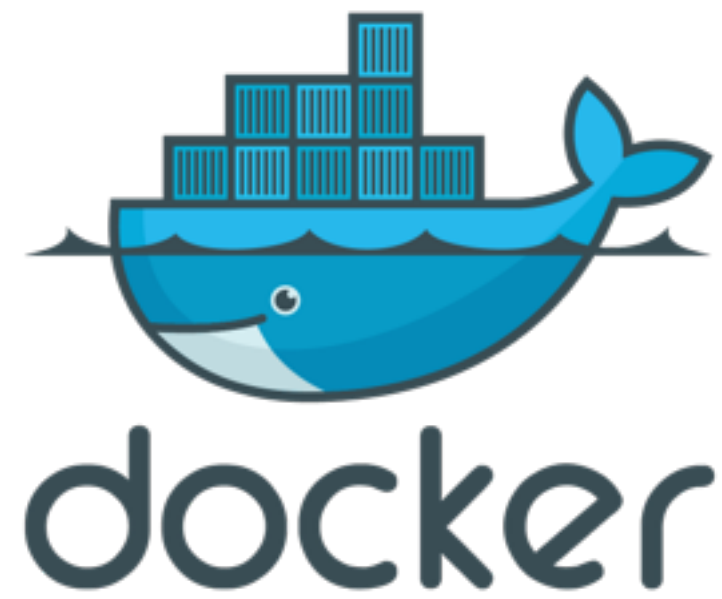


fabric8

Java developer tools for Kubernetes and OpenShift

Dr. Roland Huß, Red Hat

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O

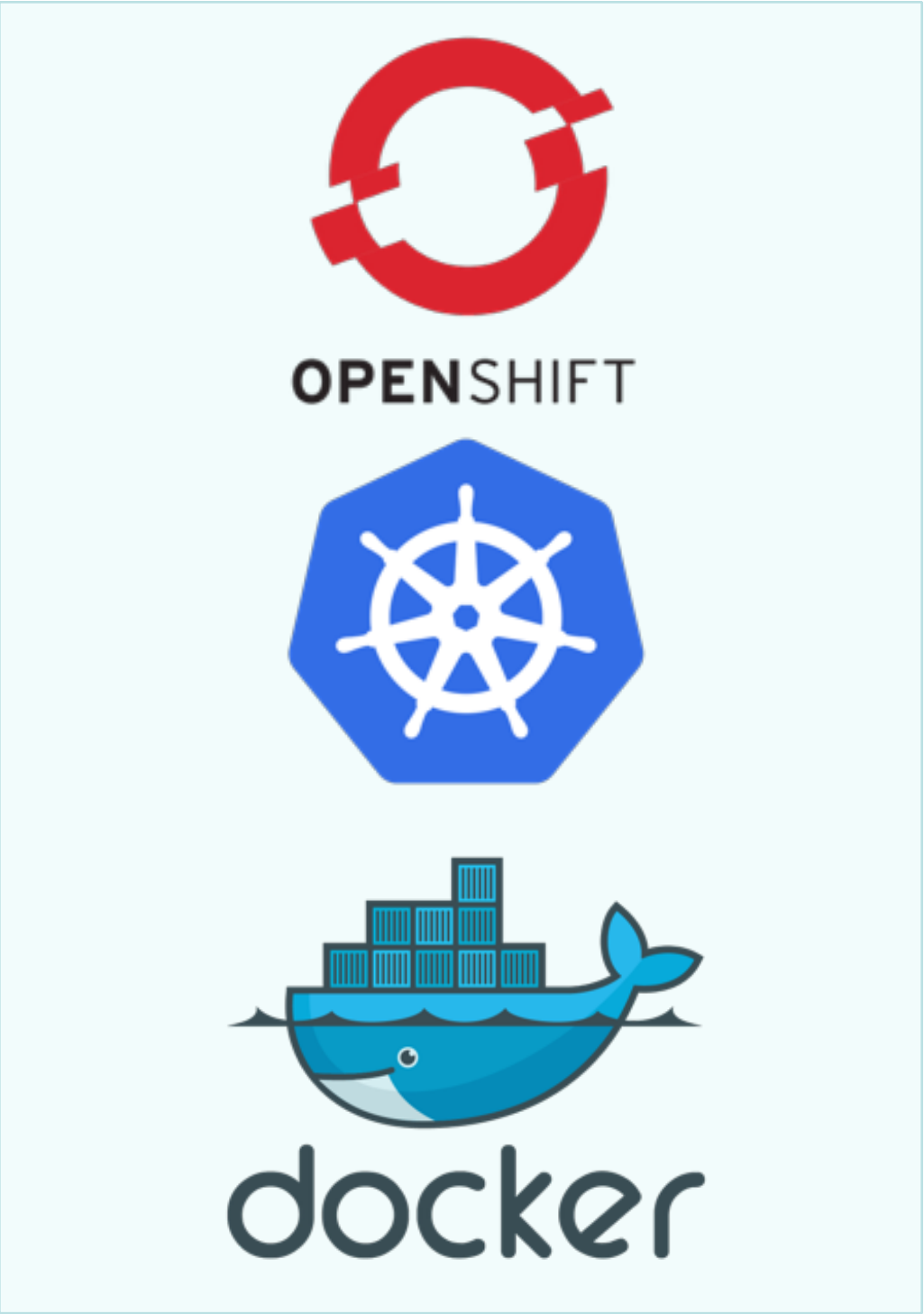


DEVONX™



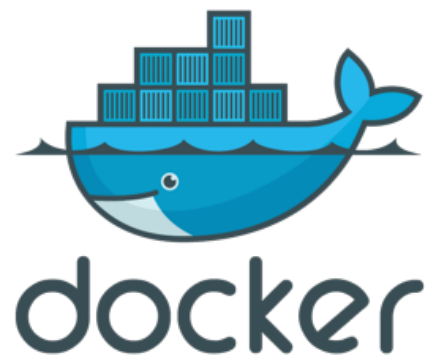
docker











OS Level Virtualisation



Docker Orchestration



**PaaS Platform on top
of Kubernetes**



**Services and Tools for
Kubernetes and OpenShift**



Roland Huß

- Software Engineer @ Red Hat
- Open Source
 - ▶ Jolokia - JMX-HTTP Bridge
 - ▶ docker-maven-plugin
- Contact:
 - ▶ Blog: <https://rol4nd.de>
 - ▶ Twitter: @rol4nd

TM

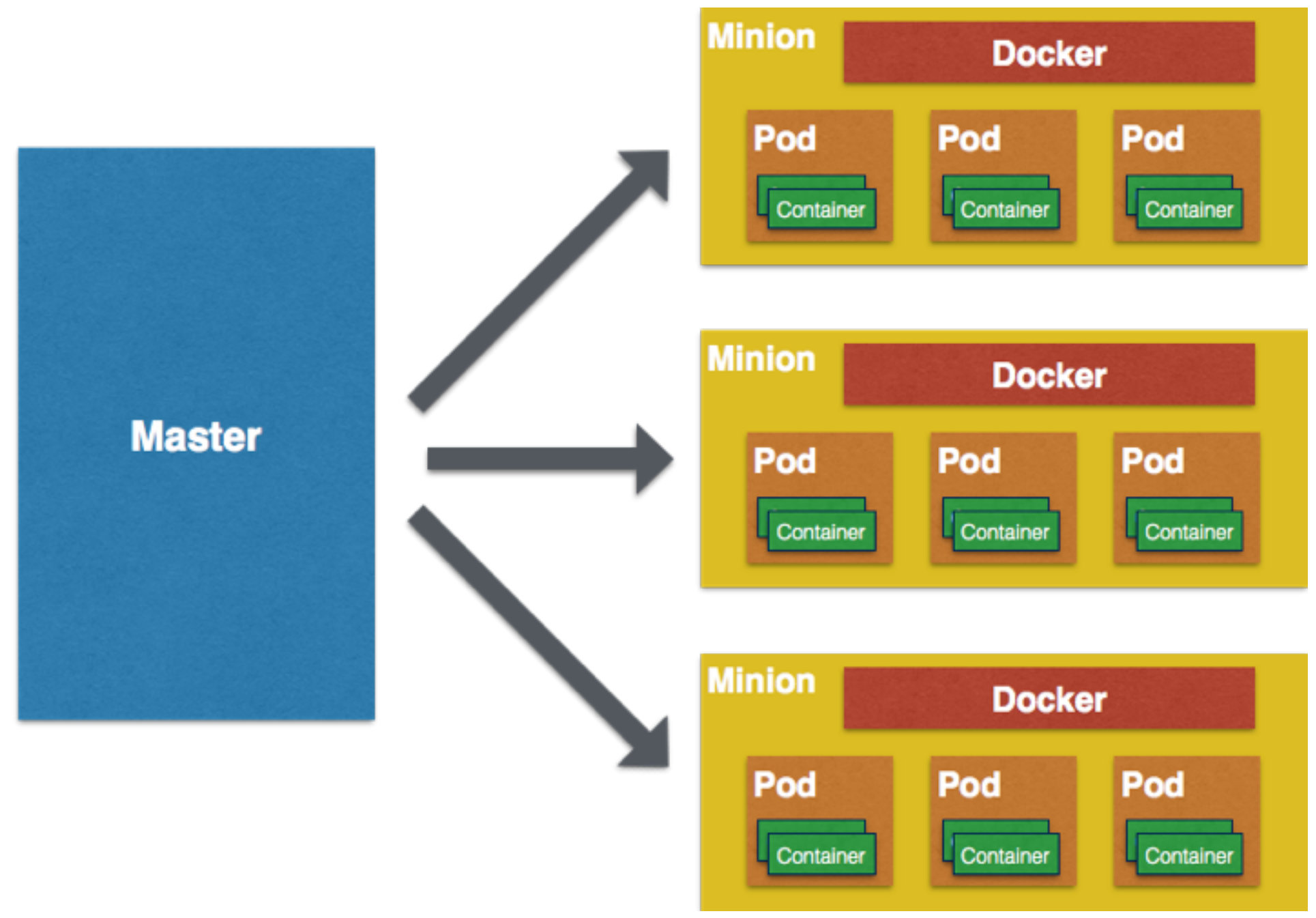


Kubernetes





Architecture





Concepts

- **Pods**
 - ▶ Collection of one or more Docker containers
- **Replication Controller**
 - ▶ Creates and takes care of Pods
- **Services**
 - ▶ Proxy for a collection of Pods
- **Labels**
 - ▶ Grouping and organisation of Objects

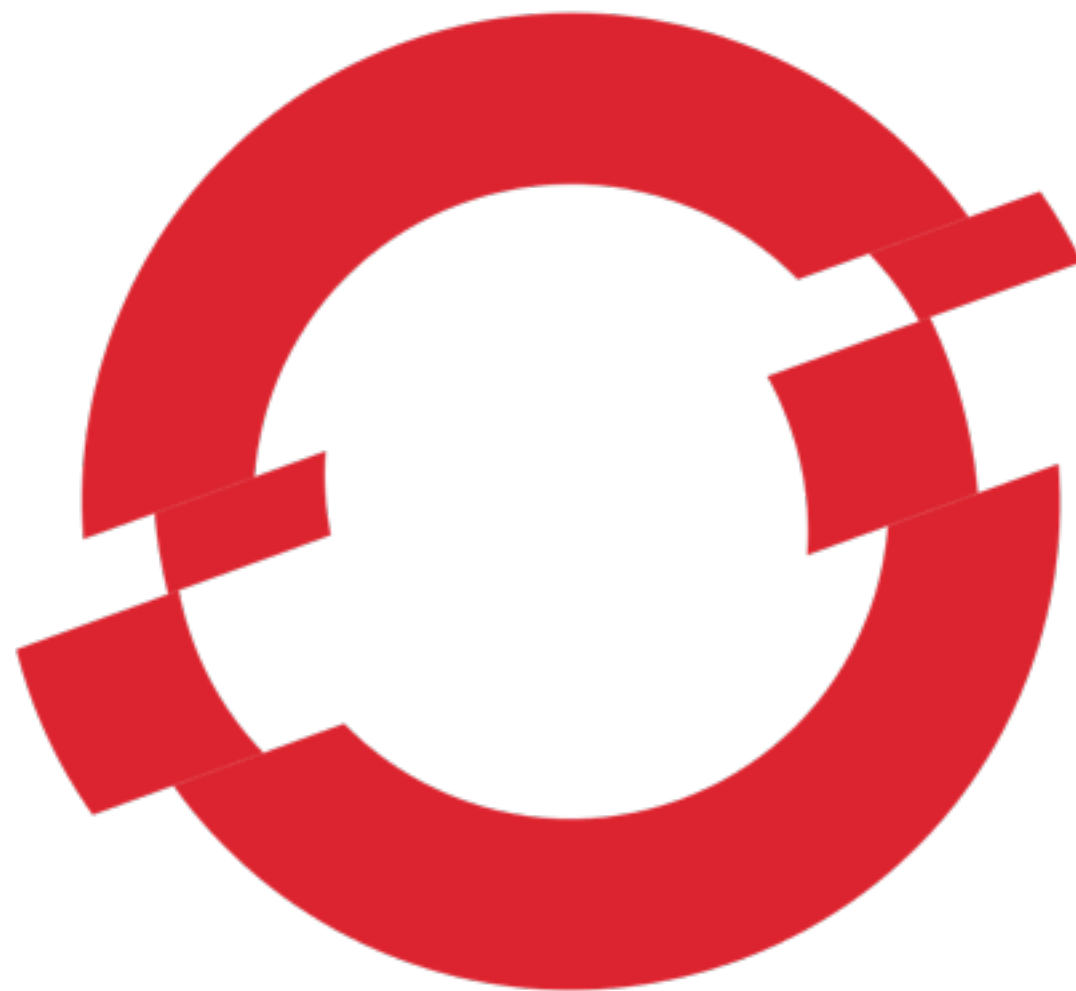


```
{
  "kind": "ReplicationController",
  "apiVersion": "v1beta3",
  "metadata": {
    "name": "redis-master",
    "labels": {
      "name": "redis-master"
    }
  },
  "spec": {
    "replicas": 1,
    "selector": {
      "name": "redis-master"
    },
    "template": ...
  }
}
```

```
"template": {
  "metadata": {
    "labels": {
      "name": "redis-master"
    }
  },
  "spec": {
    "containers": [{
      "name": "master",
      "image": "redis",
      "ports": [{
        "containerPort": 6379,
        "protocol": "TCP"
      }]
    }]
  }
}
```



OpenShift V3



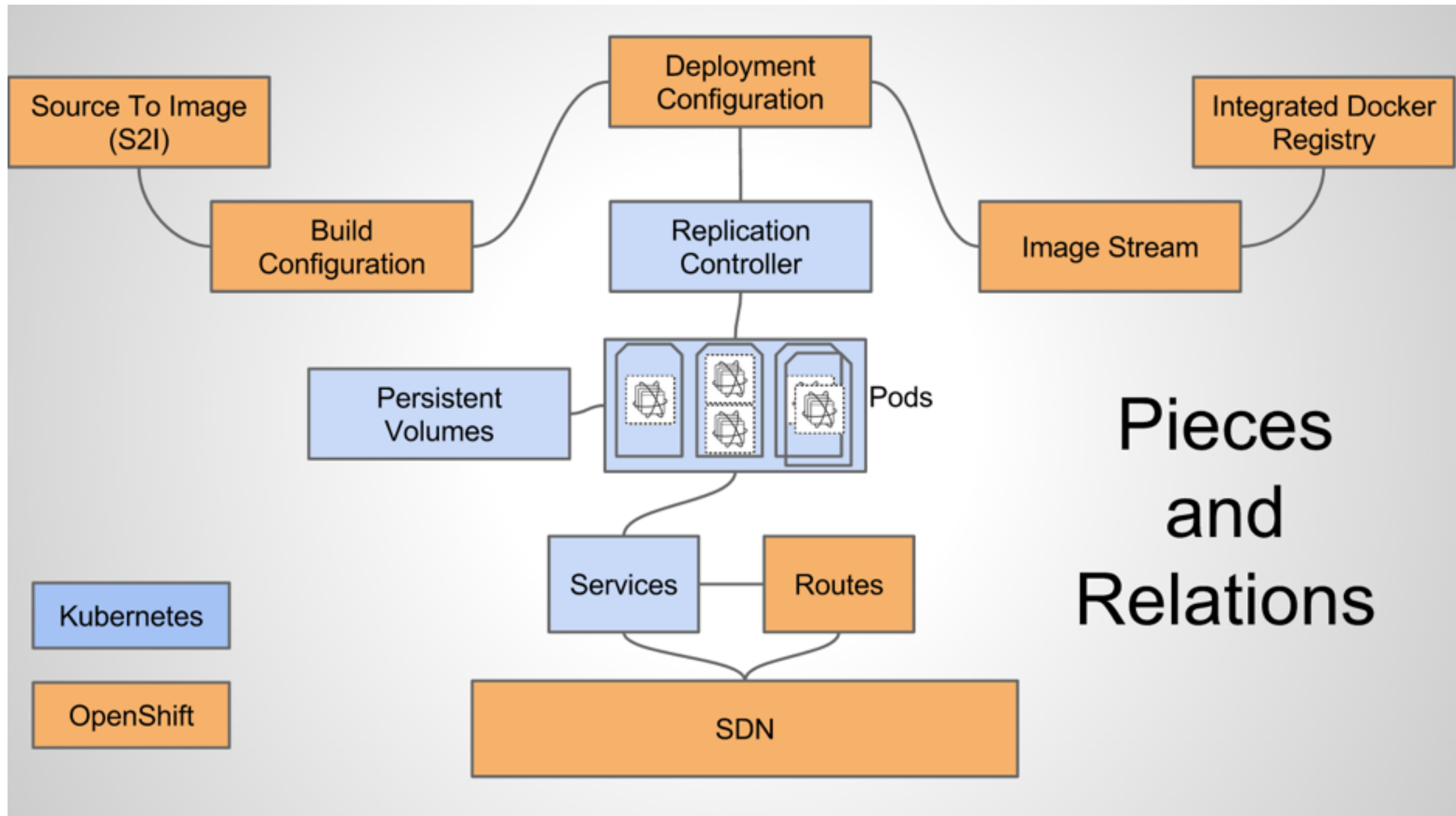
OPENSIFT



History

- 2011: Platform-as-a-Service (PaaS) from Red Hat
- Three variants:
 - ▶ Online - Public PaaS
 - ▶ Enterprise - Private PaaS
 - ▶ Origin - Community PaaS
- OpenShift V3: Complete rewrite on top of Kubernetes

OpenShift on top of Kubernetes





Features

- Adds the “Build” aspect to Kubernetes
- Developer and Operation Tools
- Application Templates
- Infrastructure Services
 - Registry, Router, OAuth2 Security
- Team and user isolation (multi-tenancy)
- Management UI



Templates

```
{
  "apiVersion": "v1beta1",
  "kind": "Template",
  "metadata": {
    "name": "Template_Name",
    "annotations": {
      "description": "Description"
    }
  },
  "parameters": [{
    "name": "username"
    "value": "admin"
    "description": "administrative user"
  }],
  "labels": {
    "custom_label": "Label_Name"
  },
  "items": [{
    ...
  }]
}
```

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XXOVWEQ
fabric8



fabric8



History

- **Fuse ESB**: Open Source integration platform by FuseSource
- **Fabric**: Extension for managing many ESBs
- Red Hat acquired FuseSource in 2012
 - ▶ Fuse ESB \Rightarrow JBoss Fuse
 - ▶ Fabric (closed) \Rightarrow fabric8 (open source)
- **fabric8 1.x** is based on **Zookeeper** as central view of the system
- **fabric8 2.x** sits on top of **Kubernetes**



fabric8 Themes

- DevOps
- Management
- Quickstarts
- iPaaS
- Tooling



DevOps

- Jenkins based Continuous Integration
- Continuous Delivery
- Reusable Jenkins Workflow Library
- Pick-and-Choose:
 - ▶ Nexus : Maven Repository
 - ▶ Gogs : Git Repository
 - ▶ SonarQube : Code Quality
 - ▶ Hubot : Notifications and Approvals
 - ▶ Chaos Monkey : Resilience Tester



Management

- Fabric8 Management Console
 - ▶ Apps, Services, Replication Controller, Pods
 - ▶ Deep inspection of Java applications via hawt.io and Jolokia
 - ▶ Project Builder
 - ▶ Angry Pods :)
- Logging
- Metrics



Quickstart

- Full featured Vagrantfile
 - ▶ Latest OpenShift Origin and Kubernetes Version
 - ▶ Installation of fabric8 Console + Route
- gofabric8
 - ▶ Easy set up of Routes, Secrets and Volumes
 - ▶ Pre-fetching of fabric8 microservice images
- Sample projects
 - ▶ <https://github.com/fabric8io/ipaas-quickstarts>
 - ▶ Available also as archetypes



iPaaS

- Camel Tooling
 - ▶ Visualization and Management of Camel Routes
- Fabric8 MQ
 - ▶ Smart messaging proxy
 - ▶ Autoscaling of ActiveMQ
- API Management
 - ▶ <http://www.apiman.io>
 - ▶ Quotas, Rate Limiting, Security and Metrics for arbitrary microservices
 - ▶ Autodiscovery of Kubernetes services





Tooling

- Maven Plugins
 - ▶ Building of Docker Images
 - ▶ Create Kubernetes / OpenShift API objects
 - ▶ Create OpenShift routes for all services
- Kubernetes Remote API
 - ▶ e.g. used by Jenkins Kubernetes Plugin
- Kubernetes Arquillian Extension
- CDI extension for service injection
- JBoss Forge Addons



Demo

fabric8io/fabric8-installer · Gi... x +

GitHub, Inc. (US)

https://github.com/fabric8io/fabric8-installer

Suchen

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ℹ

☰

GitHub

This repository Search

ExploreFeaturesEnterprisePricing

Sign up

Sign in

fabric8io / fabric8-installer

👁 Watch35

★ Star6

🍴 Fork10

A maven project which can be used to install fabric8 into a Kubernetes, OpenShift or Atomic environment

🕒 134 commits

🌿 2 branches

🏷 0 releases

👤 9 contributors

🔄

Branch: master ▾

fabric8-installer / +

☰

rhuss

Merge pull request #33 from rhuss/master

...

Latest commit 954ef85 7 days ago

📁 bin

add some helper scripts for working with vanilla kubernetes

3 months ago

📁 sandbox

lets move the old maven based installer to the sandbox to avoid confu...

29 days ago

📁 vagrant

Fix README wrt vagrant.f8 (instead of vagrant.dev)

7 days ago

📄 .gitignore

Initial vagrant cluster

4 months ago

📄 ReadMe.md

lets move the old maven based installer to the sandbox to avoid confu...

29 days ago

📖 ReadMe.md

<> Code

! Issues8

🔗 Pull requests0

📶 Pulse

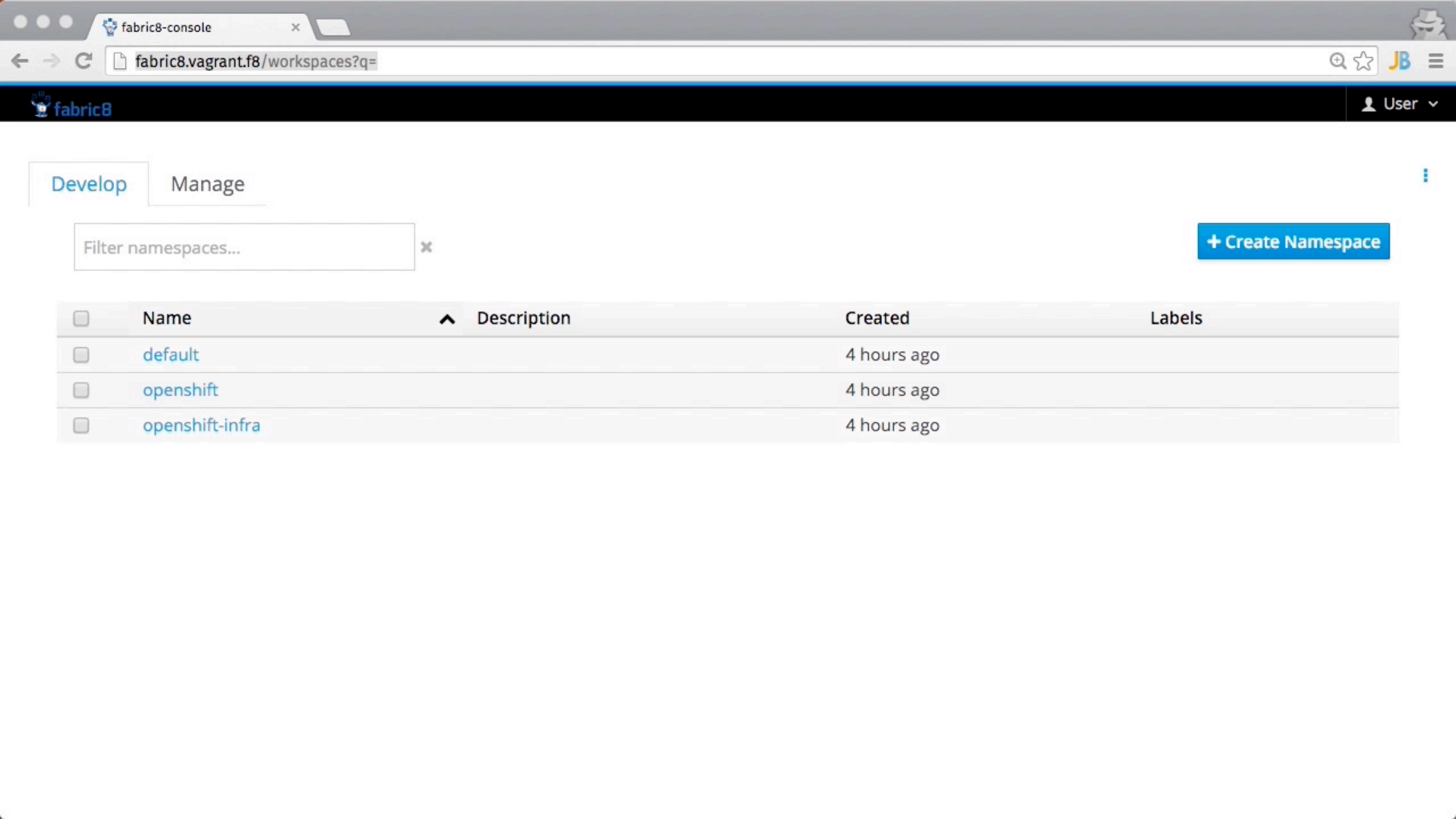
📊 Graphs

HTTPS clone URL

https://github.com📄

You can clone with HTTPS or Subversion. ?

📄 Clone in Desktop



Develop

Manage

Filter namespaces...



+ Create Namespace

<input type="checkbox"/>	Name	Description	Created	Labels
<input type="checkbox"/>	default		4 hours ago	
<input type="checkbox"/>	openshift		4 hours ago	
<input type="checkbox"/>	openshift-infra		4 hours ago	



Summary

- Fabric8 adds microservices and Java tooling to Docker, Kubernetes and OpenShift
- Fabric8 consists of multiple modules and is easy to install
- There might be dragons, though ;-)

Try it yourself !



Questions ?

Web: **<http://fabric8.io>**

Freenode: **#fabric8**

Twitter: **@fabric8io**

Github: **<https://github.com/fabric8io/fabric8>**

Develop > default > Projects > camel5

Overview Pipelines Builds Metrics Tools Settings Source

Environments

[Browse...](#)

Testing

camel5 : 1.0.6 1
Build #6 P Commit 654d034

Staging

camel5 : 1.0.6 1
Build #6 P Commit 654d034

Production

camel5 : 1.0.6 1
Build #6 P Commit 654d034

Pipelines

#6
started 10 minutes ago

canary release
52 seconds

integration test
23 seconds

stage
32 seconds

approve
50 seconds

promote
38 seconds

Logs

View the Promoted environment at:
/kubernetes/pods?environment=Production
Running: Set environment variables : Body : End
Running: Set environment variables : End
Running: Allocate node : Body : End
Running: Allocate node : End
Running: End of Workflow
Finished: **SUCCESS**