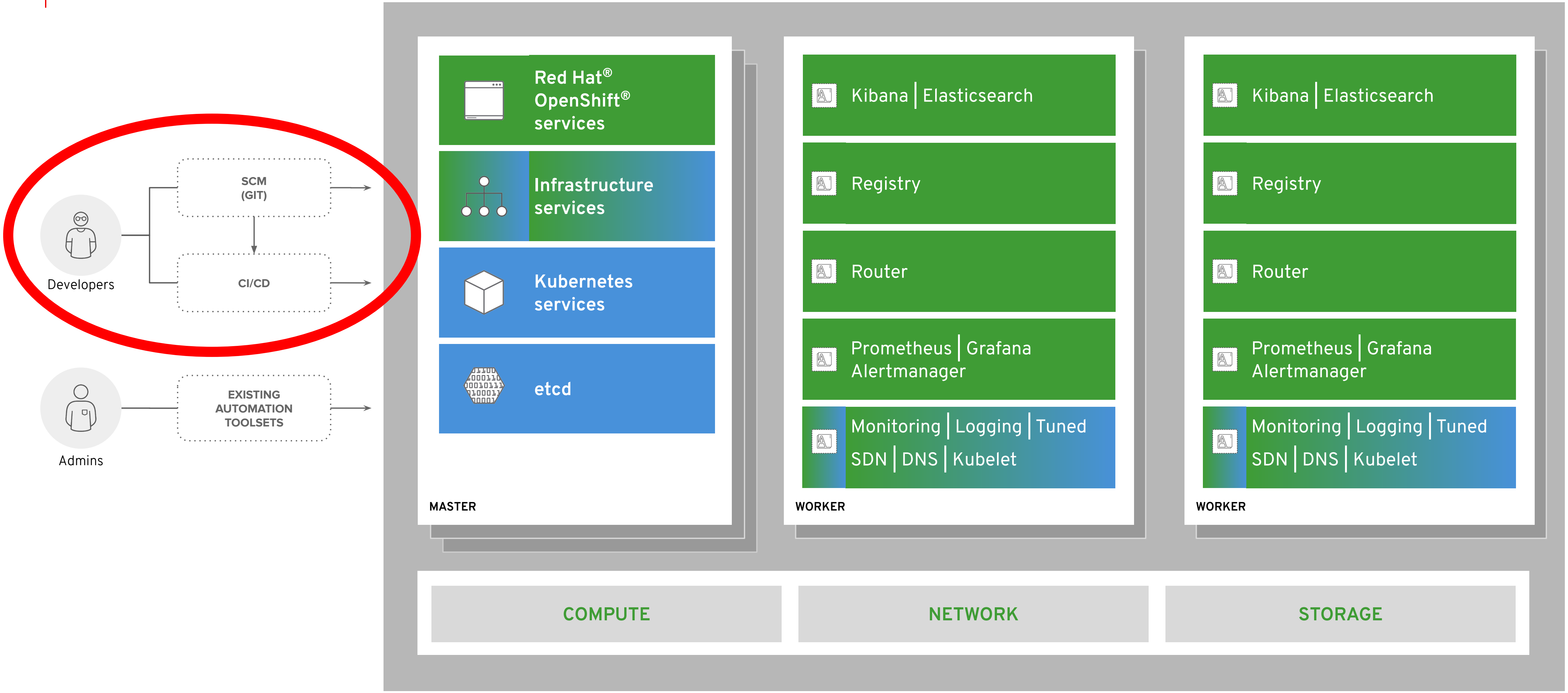
OpenShift for Developers

A high level overview including HandsOn


Developers
SCM (GIT)
CI/CD
Admins
EXISTING AUTOMATION TOOLSETS
Red Hat® OpenShift® services
Infrastructure services
Kubernetes services
etcd
MASTER
Kibana | Elasticsearch
Registry
Router
Prometheus | Grafana Alertmanager
Monitoring | Logging | Tuned
SDN | DNS | Kubelet
WORKER
Kibana | Elasticsearch
Registry
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Monitoring | Logging | Tuned
SDN | DNS | Kubelet
WORKER
COMPUTE
NETWORK
STORAGE

Build and Deploy Container Images

Tools and automation

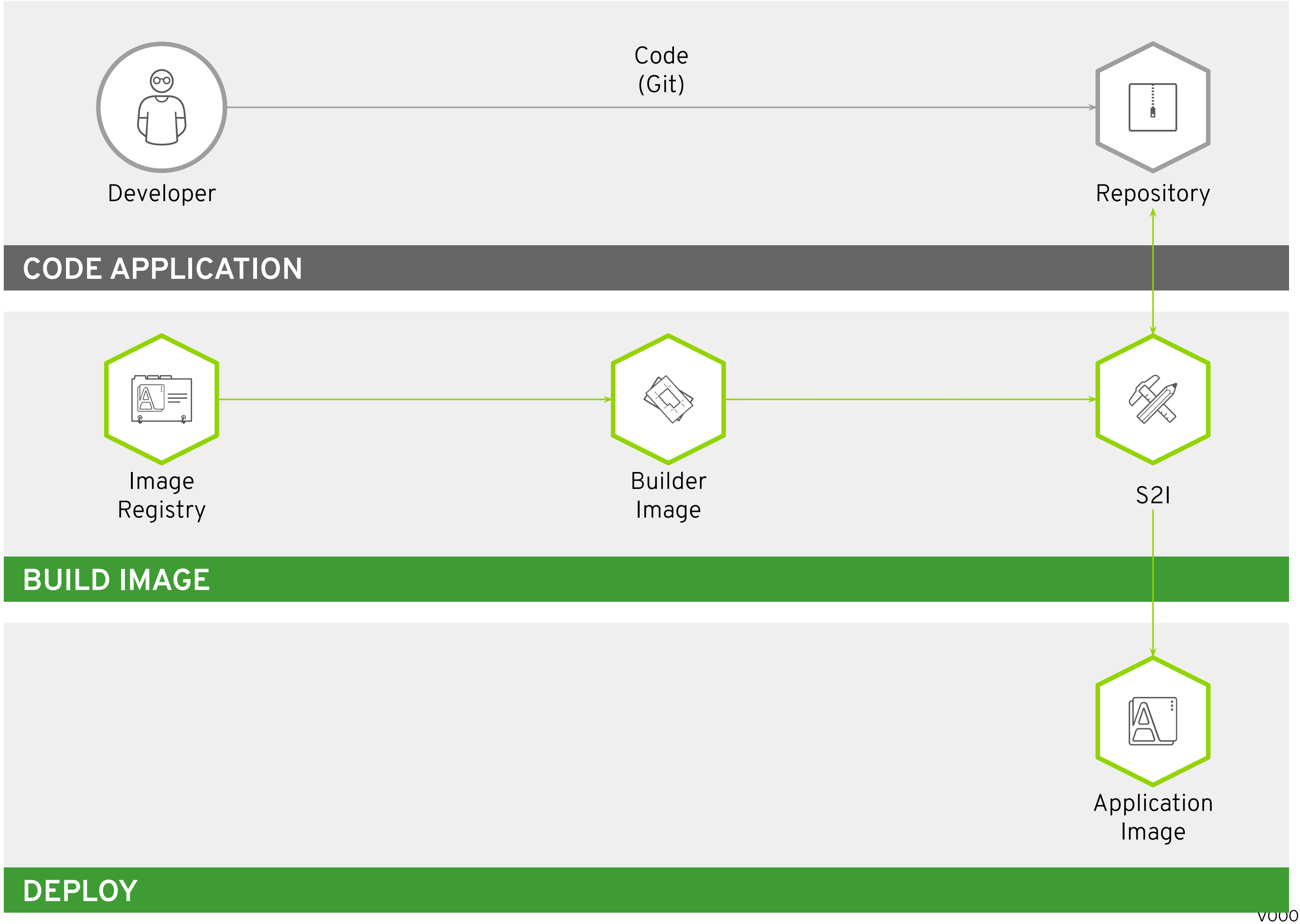
that makes developers

productive quickly

DEPLOY YOUR SOURCE CODE

DEPLOY YOUR APP BINARY

DEPLOY YOUR CONTAINER IMAGE


Code
(Git)
Developer
Repository
CODE APPLICATION
Image
Registry
Builder
Image
S2I
BUILD IMAGE
Application
Image
DEPLOY

Developer Console Live

odo - OpenShift Developer CLI

evolves into **udo*** - Universal Developer CLI

Expand beyond just OpenShift to support **Kubernetes primitives**

```
$ kdo create nodejs frontend --app game
```

Unified client to support Kubernetes & OpenShift, plus addons like **Knative**

```
$ udo create java backend --app game --as knative
```

Generate an application component ready to **`udo push`**

```
$ udo init --project-type quarkus
$ udo push
```

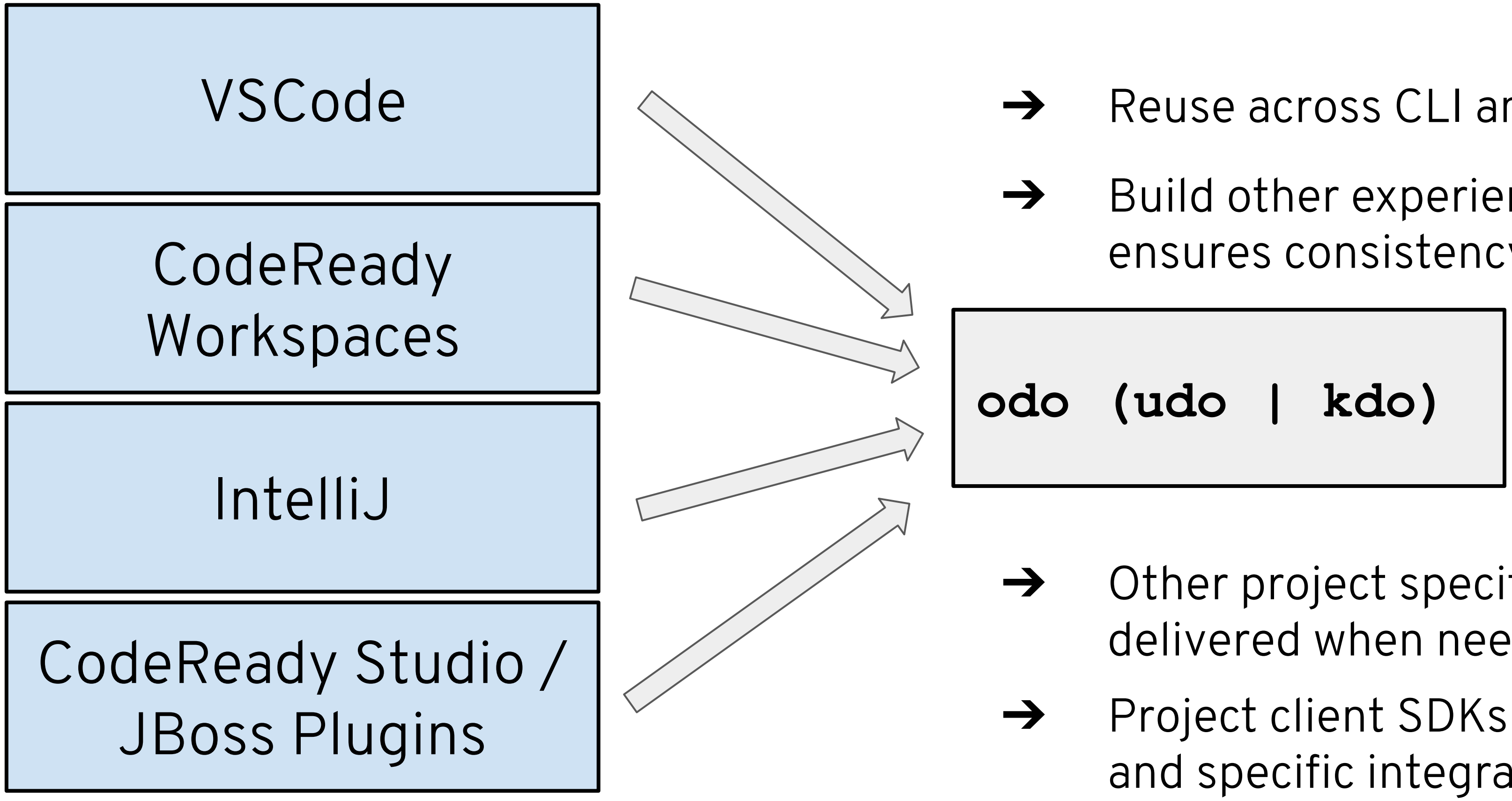
Provision **operator-backed** application

```
$ udo catalog list service
$ udo service create kafka
```

**official name TBD*

`odo` - OpenShift Developer CLI

The foundation of IDE adapters



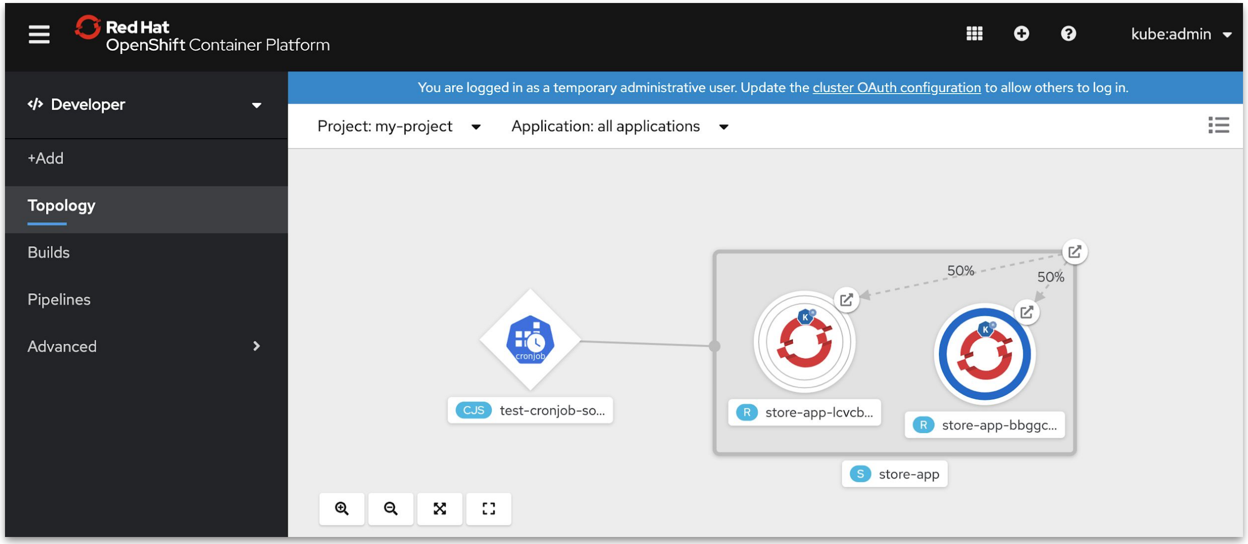
- ➔ Reuse across CLI and all IDEs
- ➔ Build other experiences off, ensures consistency
- ➔ Other project specific CLIs delivered when needed
- ➔ Project client SDKs integrated and specific integrated use cases supported

Dev Perspective

Improved grouping of like resources such as Knative Service

Alignment across various enabled capabilities: **Istio/Kiali**, **App Monitoring, …**

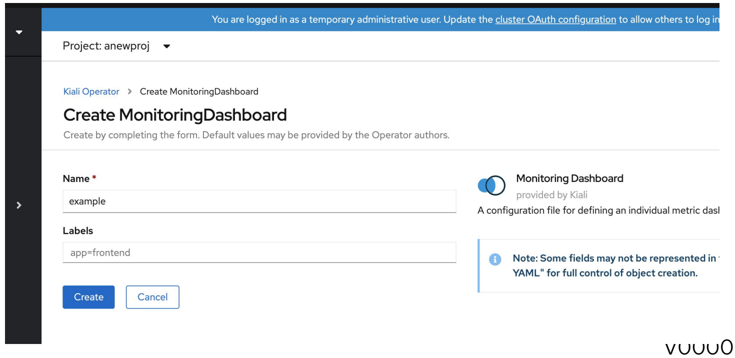
Smooth deployment of operator-backed apps



You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: my-project

Application: all applications



You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in

Project: anewproj

Kiali Operator > Create MonitoringDashboard

Create MonitoringDashboard

Create by completing the form. Default values may be provided by the Operator authors.

Name * example

Labels app=frontend

Create Cancel

Monitoring Dashboard

provided by Kiali

A configuration file for defining an individual metric dasl

Note: Some fields may not be represented in
YAML" for full control of object creation.

Product Manager: Steve Speicher

CodeReady Containers: OpenShift on your Laptop

```
$ crc setup
Prepare your machine for running OpenShift

$ crc start
Start with the Hyperkit bundle

$ crc status
Get the status of the cluster
```

- Node cert expiration handling
- Focus on minimizing resource consumption
- Ease of upgrade
- Overall usability
- System tray

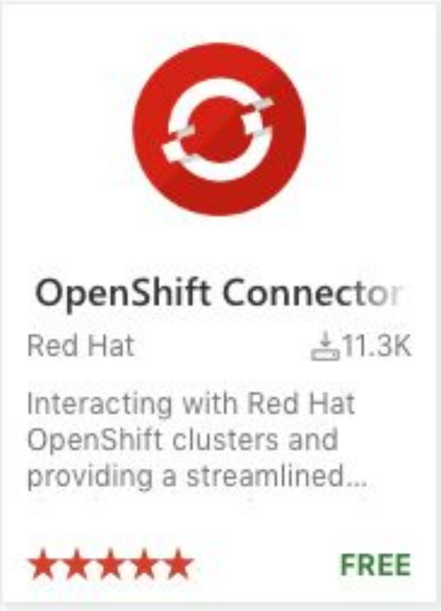
Product Manager: Steve Speicher

OpenShift Deploy Plugin

Evolve Red Hat created plugins to simplify development and deployment to OpenShift from popular IDEs and DevOps Toolchains:

- Azure DevOps
- VS Code
- JetBrains IDEs (e.g. IntelliJ)
- CodeReady Workspaces
- CodeReady Studio
- Eclipse IDE

OpenShift Connector by Red Hat

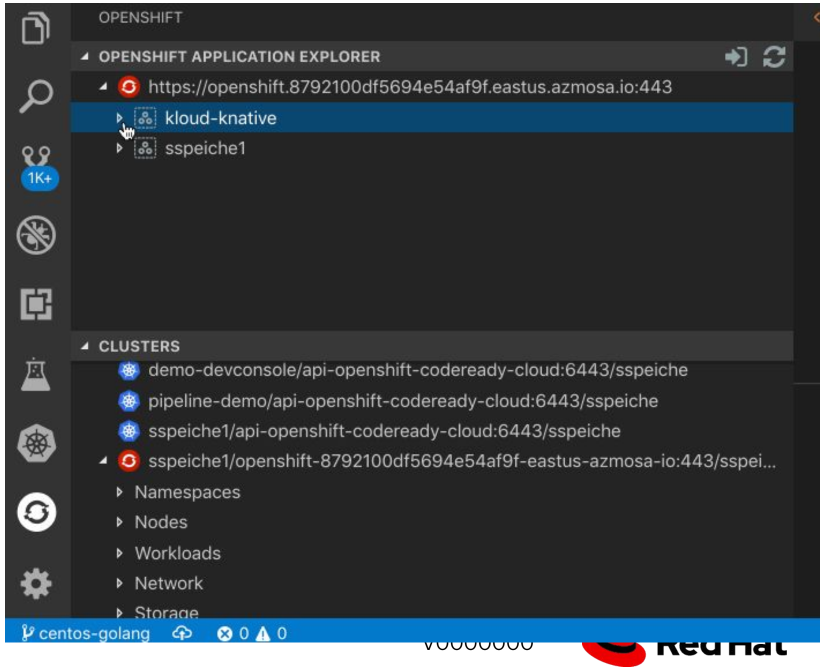


OpenShift Connector

Red Hat ⤓11.3K

Interacting with Red Hat OpenShift clusters and providing a streamlined...

★★★★★ FREE



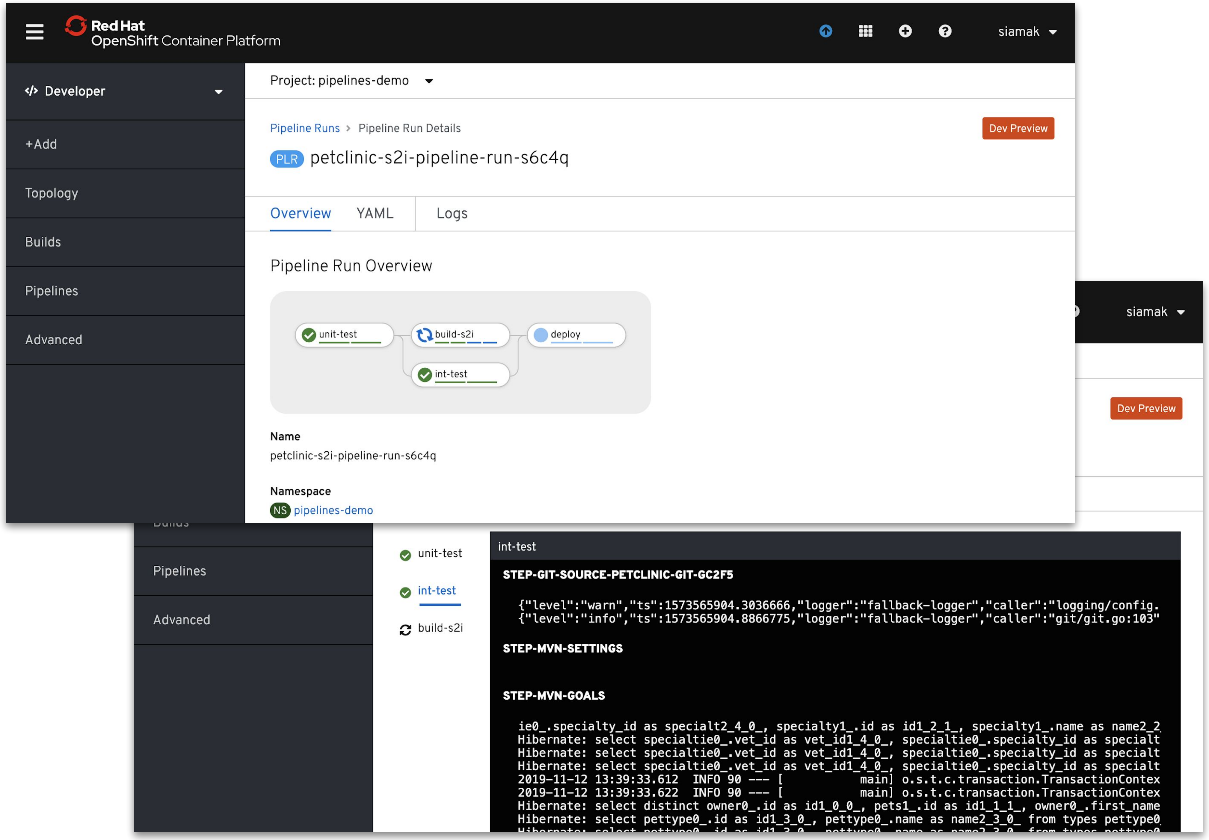
```
OPENSHIFT
◢ OPENSHIFT APPLICATION EXPLORER
  ◢ https://openshift.8792100df5694e54af9f.eastus.azmosa.io:443
    ▸ kloud-knative
    ▸ sspeiche1
◢ CLUSTERS
    demo-devconsole/api-openshift-codeready-cloud:6443/sspeiche
    pipeline-demo/api-openshift-codeready-cloud:6443/sspeiche
    sspeiche1/api-openshift-codeready-cloud:6443/sspeiche
  ◢ sspeiche1/openshift-8792100df5694e54af9f-eastus-azmosa-io:443/sspei...
    ▸ Namespaces
    ▸ Nodes
    ▸ Workloads
    ▸ Network
    ▸ Storage
centos-golang   ⊗ 0 ⚠ 0
```

Pipelines

NEXT WAVE OF DEVELOPER TOOLS

Cloud-native CI/CD with OpenShift Pipelines

- Based on Tekton Pipelines
- Runs serverless (no babysitting!)
- Containers as building blocks
- Deploy to multiple platforms
- Standard CRDs
- Build images with Kubernetes tools (s2i, buildah, kaniko, jib, buildpack, etC)
- Pipelines portable to any Kubernetes



Project: pipelines-demo

PLR petclinic-s2i-pipeline-run-s6c4q

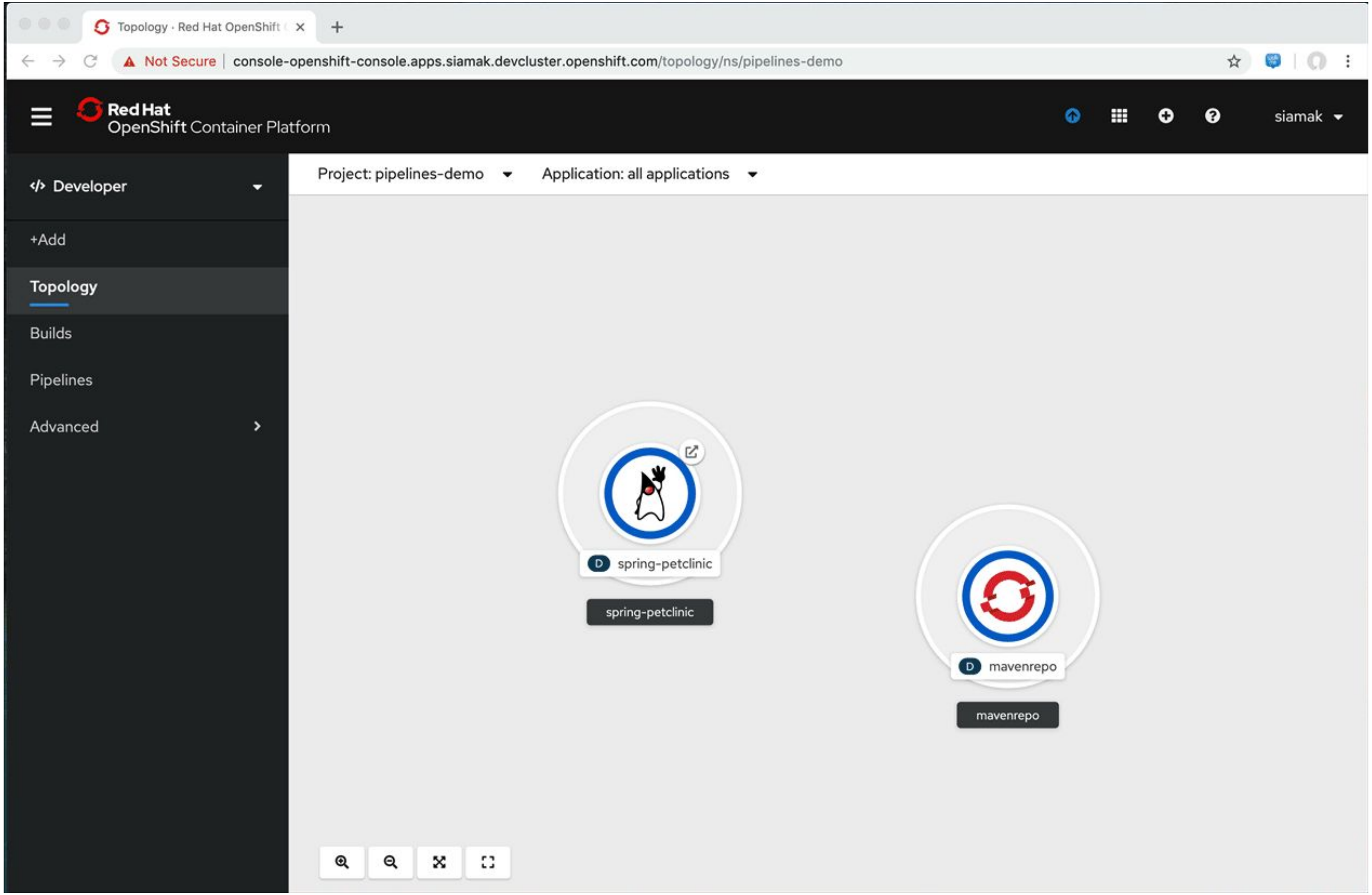
Pipeline Run Overview

Name
petclinic-s2i-pipeline-run-s6c4q

Namespace
NS pipelines-demo

```
int-test
STEP-GIT-SOURCE-PETCLINIC-GIT-GC2F5

  {"level":"warn","ts":1573565904.3036666,"logger":"fallback-logger","caller":"logging/config.
  {"level":"info","ts":1573565904.8866775,"logger":"fallback-logger","caller":"git/git.go:103"

STEP-MVN-SETTINGS


STEP-MVN-GOALS

  ie0_.specialty_id as specialt2_4_0_, specialty1_.id as id1_2_1_, specialty1_.name as name2_2
  Hibernate: select specialtie0_.vet_id as vet_id1_4_0_, specialtie0_.specialty_id as specialt
  Hibernate: select specialtie0_.vet_id as vet_id1_4_0_, specialtie0_.specialty_id as specialt
  Hibernate: select specialtie0_.vet_id as vet_id1_4_0_, specialtie0_.specialty_id as specialt
  2019-11-12 13:39:33.612  INFO 90 --- [           main] o.s.t.c.transaction.TransactionContex
  2019-11-12 13:39:33.622  INFO 90 --- [           main] o.s.t.c.transaction.TransactionContex
  Hibernate: select distinct owner0_.id as id1_0_0_, pets1_.id as id1_1_1_, owner0_.first_name
  Hibernate: select pettype0_.id as id1_3_0_, pettype0_.name as name2_3_0_ from types pettype0
```

Product Manager: Siamak Sadeghianfar



Topology · Red Hat OpenShift
Not Secure
console-openshift-console.apps.siamak.devcluster.openshift.com/topology/ns/pipelines-demo
Red Hat
OpenShift Container Platform
siamak
Developer
+Add
Topology
Builds
Pipelines
Advanced
Project: pipelines-demo
Application: all applications
D spring-petclinic
spring-petclinic
D mavenrepo
mavenrepo

Product Manager: Siamak Sadeghianfar

Serverless

Tech Preview 4.3

CONFIDENTIAL designator

NEXT WAVE OF DEVELOPER TOOLS

OpenShift Serverless

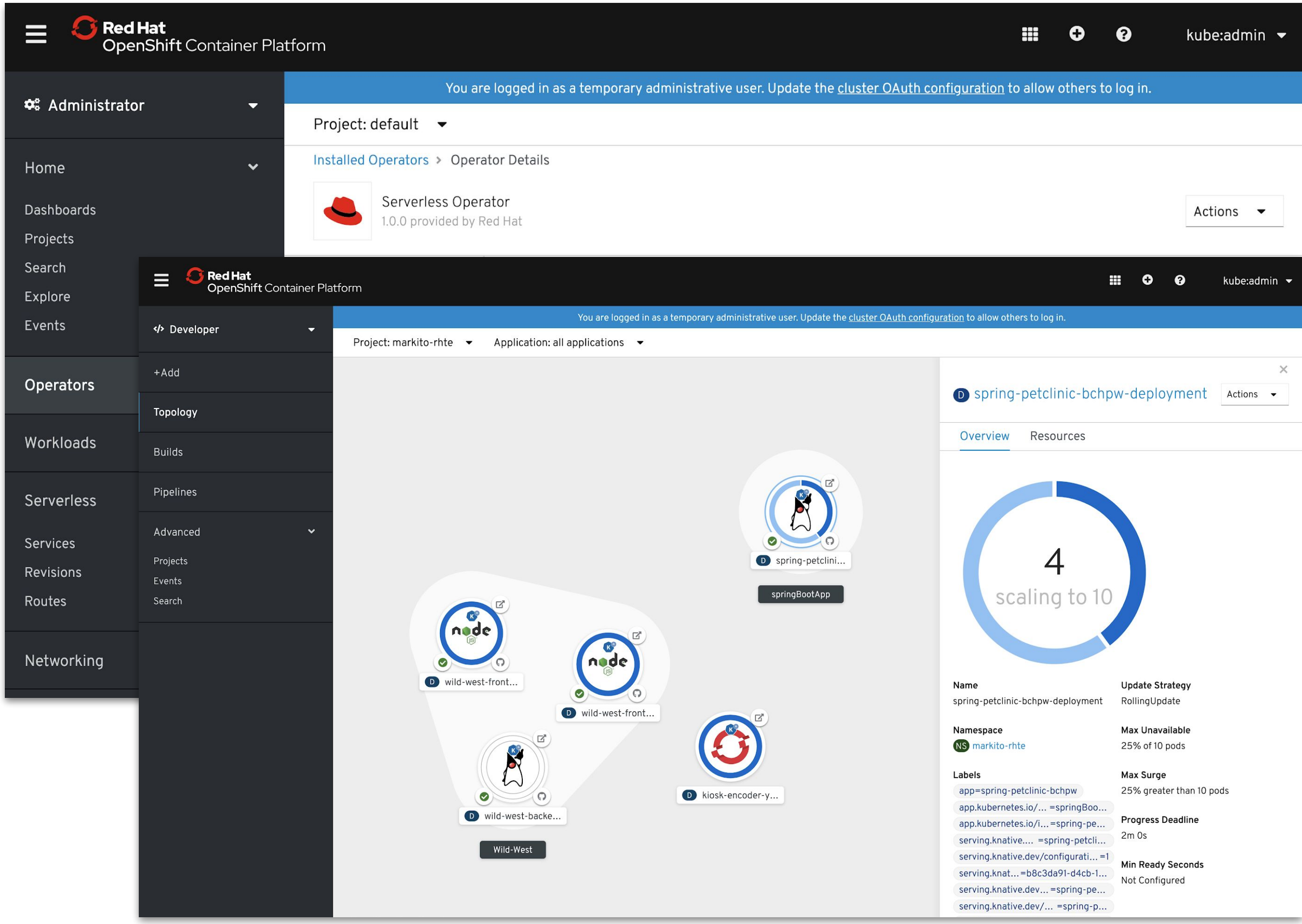
Key Features

- Familiar to Kubernetes users. Native.
- Scale to 0 and autoscale to N based on demand
- Applications and functions. Any container workload.
- Powerful eventing model with multiple event sources.
- Operator available via OperatorHub
- **Knative v0.9**
- No vendor lock in

Learn more

https://openshift.com/learn/topics/serverless

https://redhat-developer-demos.github.io/knative-tutorial/



You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: default

Serverless Operator
1.0.0 provided by Red Hat

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: markito-rhte

Application: all applications

Name
spring-petclinic-bchpw-deployment

Namespace
NS markito-rhte

Labels
app=spring-petclinic-bchpw
app.kubernetes.io/... =springBoo...
app.kubernetes.io/i... =spring-pe...
serving.knative.... =spring-petcli...
serving.knative.dev/configurati... =1
serving.knat... =b8c3da91-d4cb-1...
serving.knative.dev... =spring-pe...
serving.knative.dev/... =spring-p...

Update Strategy
RollingUpdate

Max Unavailable
25% of 10 pods

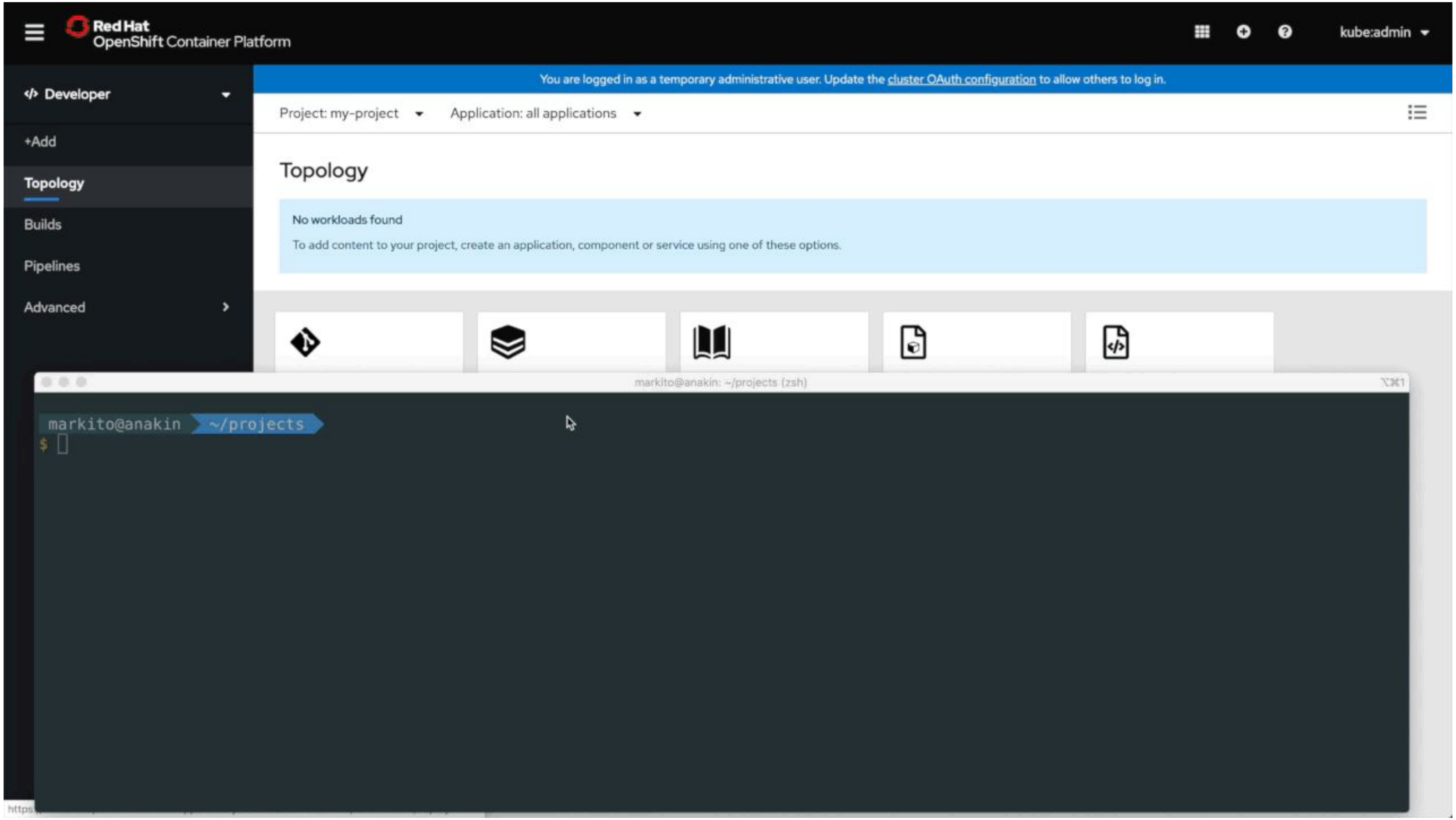
Max Surge
25% greater than 10 pods

Progress Deadline
2m 0s

Min Ready Seconds
Not Configured

Product Manager: William Markito

Canary Deployments with OpenShift Serverless



You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Topology

No workloads found

To add content to your project, create an application, component or service using one of these options.

markito@anakin: ~/projects (zsh)

```
markito@anakin  ~/projects
$ 
```

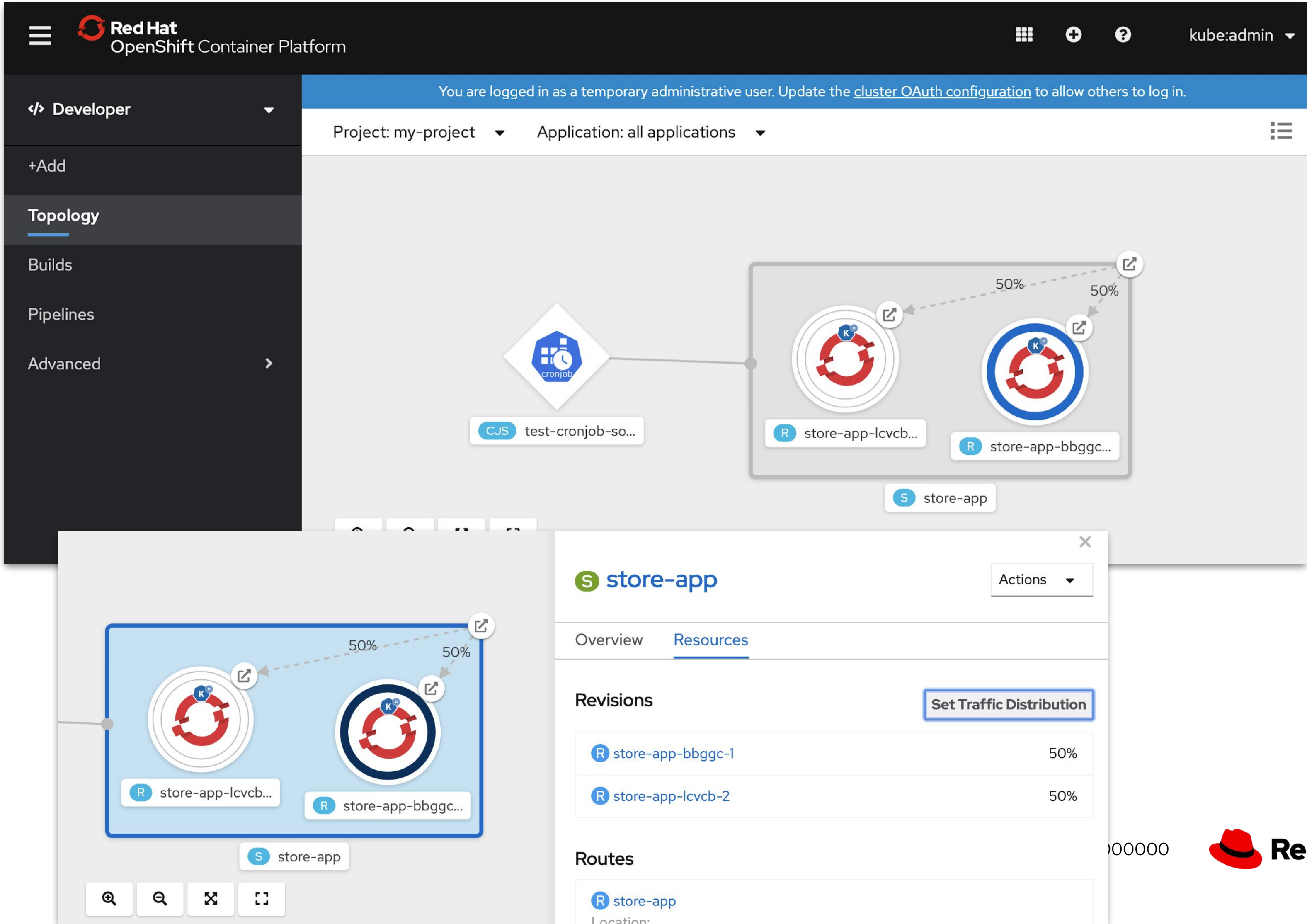
Tech Preview 4.3

CONFIDENTIAL designator

OpenShift Serverless

New features in Dev Console 4.3

- Support for multiple revisions
- Event Sources to Services
  - Cron
  - Kafka
  - Camel-K
  - ContainerSource
  - ApiServer (K8s)



You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: my-project

Application: all applications

store-app

Revisions

R store-app-bbggc-1	50%
R store-app-lcvcb-2	50%

Routes

R store-app

Location:

Product Manager: William Markito

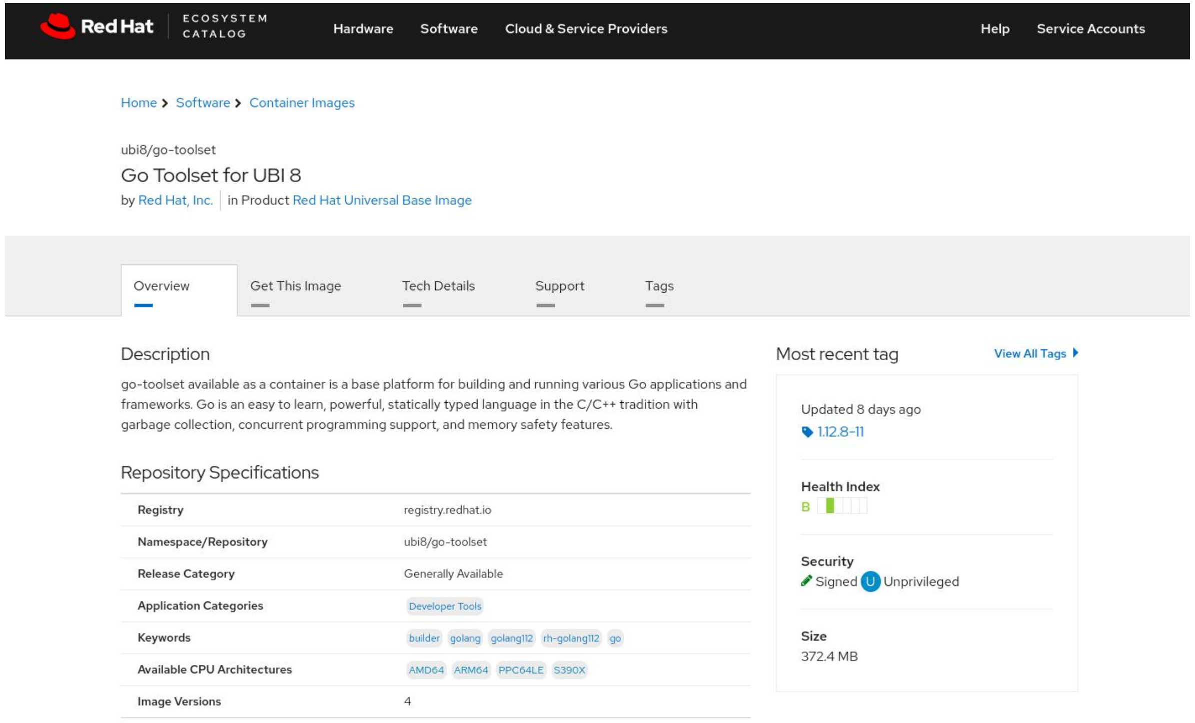
Red Hat

UBI and Runtimes

Universal Base Image

Key Features

- Existing workloads include Python, Ruby, Node.js, PHP, Perl, and .Net
- Expanded to include Golang (go-toolset 1.11.5) on UBI 7 and UBI 8
- Listed on new unified catalog including, hardware, software, and certified container images
- Will be releasing OpenJDK images (targeted May, 2020)
- Evaluating Package Builder, AI/ML, C/C++ use cases
- Evaluating containerized versions of Podman, Buildah and Skopeo



ubi8/go-toolset

Go Toolset for UBI 8

by Red Hat, Inc. | in Product Red Hat Universal Base Image

Description

go-toolset available as a container is a base platform for building and running various Go applications and frameworks. Go is an easy to learn, powerful, statically typed language in the C/C++ tradition with garbage collection, concurrent programming support, and memory safety features.

Repository Specifications

Registry	registry.redhat.io
Namespace/Repository	ubi8/go-toolset
Release Category	Generally Available
Application Categories	Developer Tools
Keywords	builder golang golang112 rh-golang112 go
Available CPU Architectures	AMD64 ARM64 PPC64LE S390X
Image Versions	4

Most recent tag

Updated 8 days ago

1.12.8-11

Health Index

B

Security

Signed U Unprivileged

Size

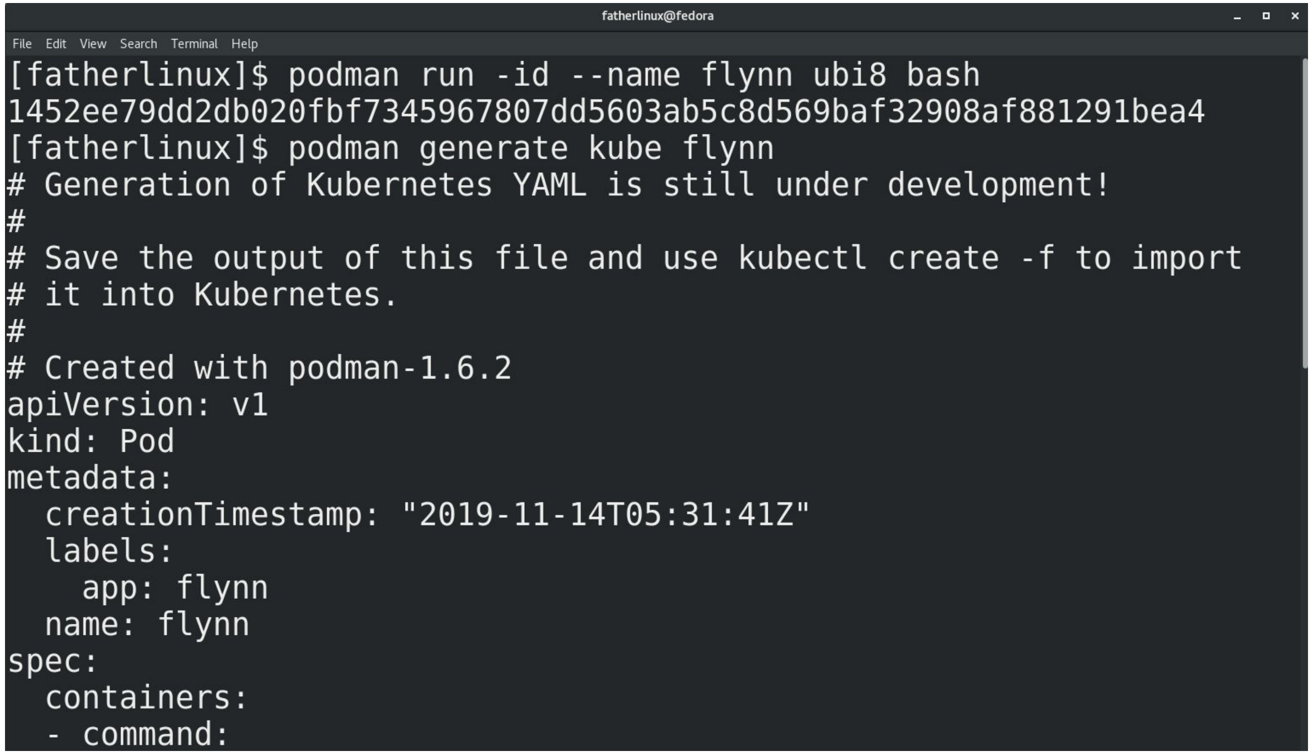
372.4 MB

Product Manager: Scott McCarty

Engine & Runtime Development

Key Features

- First to market with rootless Podman
- Podman *generate kube* -sooths transition to OpenShift
- Podman *play kube* - smooths transition between developers, replaces Compose
- Better simultaneous pulls/pushes (CRI-O, Podman, etc)

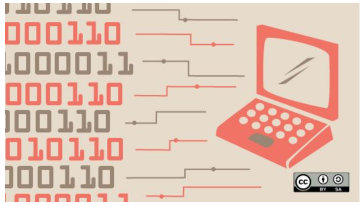


```
[fatherlinux]$ podman run -id --name flynn ubi8 bash
1452ee79dd2db020fbf7345967807dd5603ab5c8d569baf32908af881291bea4
[fatherlinux]$ podman generate kube flynn
# Generation of Kubernetes YAML is still under development!
#
# Save the output of this file and use kubectl create -f to import
# it into Kubernetes.
#
# Created with podman-1.6.2
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: "2019-11-14T05:31:41Z"
  labels:
    app: flynn
  name: flynn
spec:
  containers:
  - command:
```

Engine & Runtime Research

Key Features

- A lot of investment in security research (MicroVMs, Rootless, SELinux, SECCOMP)
- Rootless builds in OpenShift
- Alternative runtimes (Kata Containers)
- Better caching on builds
- Leveraging tools like Podman, Buildah, and Skopeo inside of OpenShift and Quay
- FIPS compatibility



virtio-fs

QEMU

udica

kata containers

CRIU

Product Manager: Scott McCarty

Thank you

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