



Red Hat OpenShift 4 Release Update

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Product Manager OpenShift



Red Hat OpenShift 4



Trusted enterprise Kubernetes

- Trusted Host, Content, Platform
- Full Stack Automated Install
- Over the Air Updates & Day 2 Mgt

A cloud-like experience, everywhere

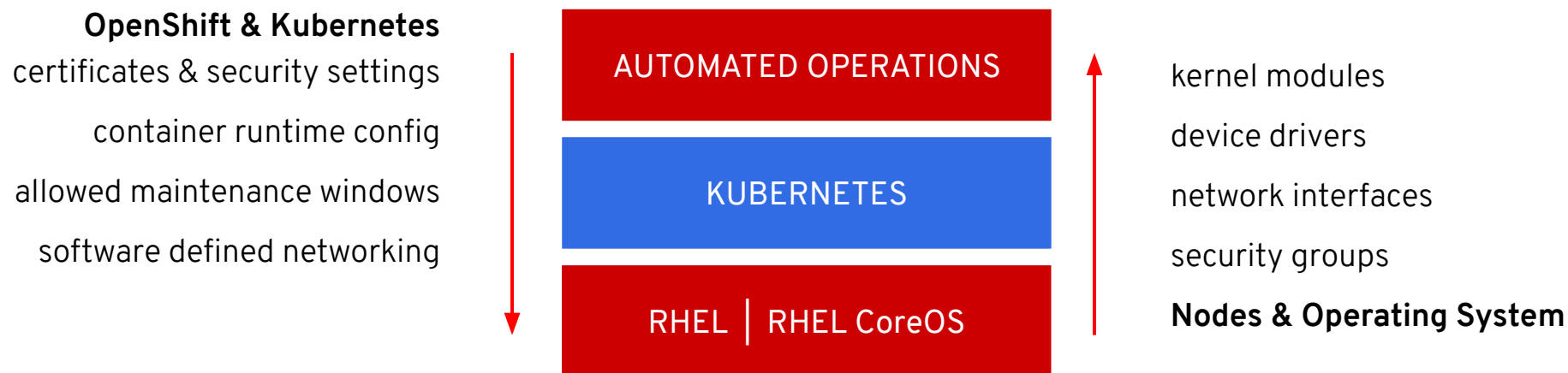
- Hybrid, Multi-Cluster Management
- Operator Framework
- Operator Hub & Certified ISVs

Empowering developers to innovate

- Developer Tools
- Cloud-Native CI/CD
- Serverless
- Service Mesh

The New Platform Boundary

OpenShift 4 is aware of the entire infrastructure and
brings the Operating System under management



Installation Experiences

OPENSIFT CONTAINER PLATFORM

Full Stack Automated

Simplified opinionated “Best Practices” for cluster provisioning

Fully automated installation and updates including host container OS.



Pre-existing Infrastructure

Customer managed resources & infrastructure provisioning

Plug into existing DNS and security boundaries



OPENSIFT DEDICATED



















Hosted By Red Hat

Get a powerful cluster with no maintenance required

Managed by Red Hat engineers

Free your team from the distraction of operations

Provider Roadmap

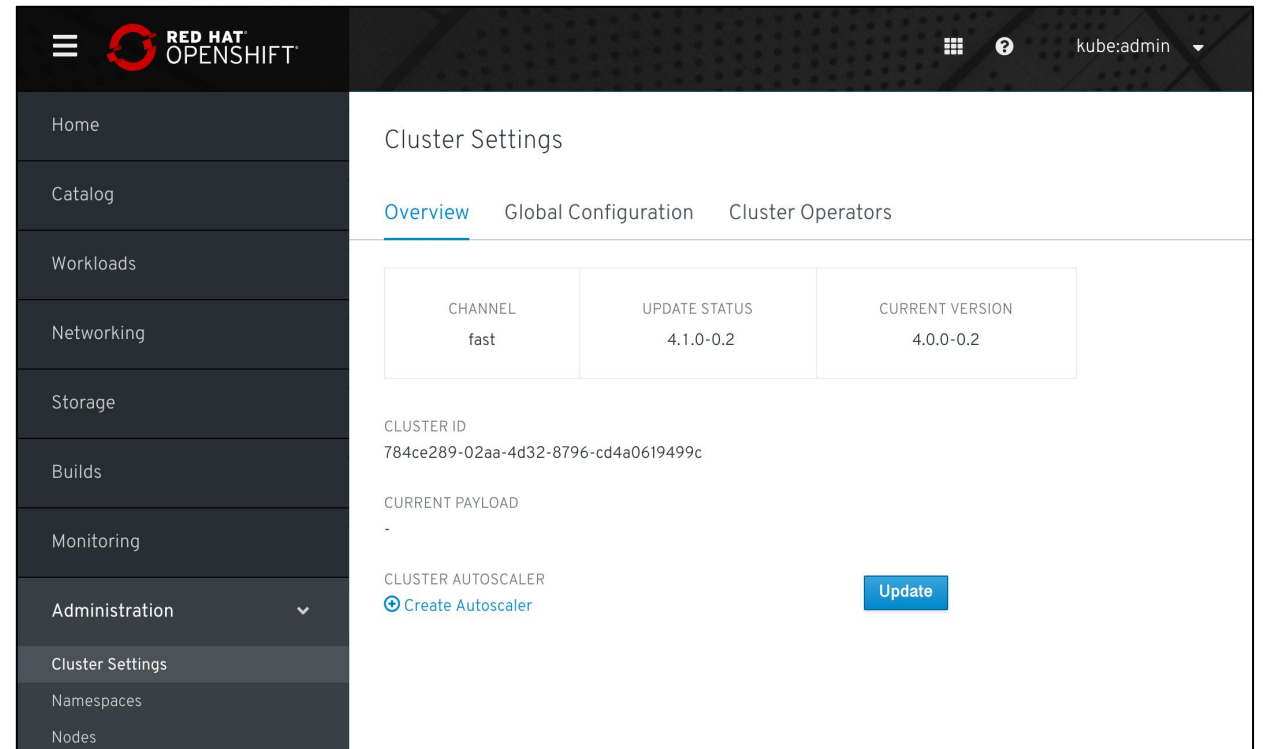
	Full Stack Automation	Pre-existing Infrastructure
 OPENSIFT by Red Hat [®] 4.1 [*]		   Bare Metal
 OPENSIFT by Red Hat [®] 4.2	   	
 OPENSIFT by Red Hat [®] 4.3 (tentative)	  	  

^{*} Requires Internet connectivity; support for cluster proxy & disconnected installation/updating not planned until 4.2

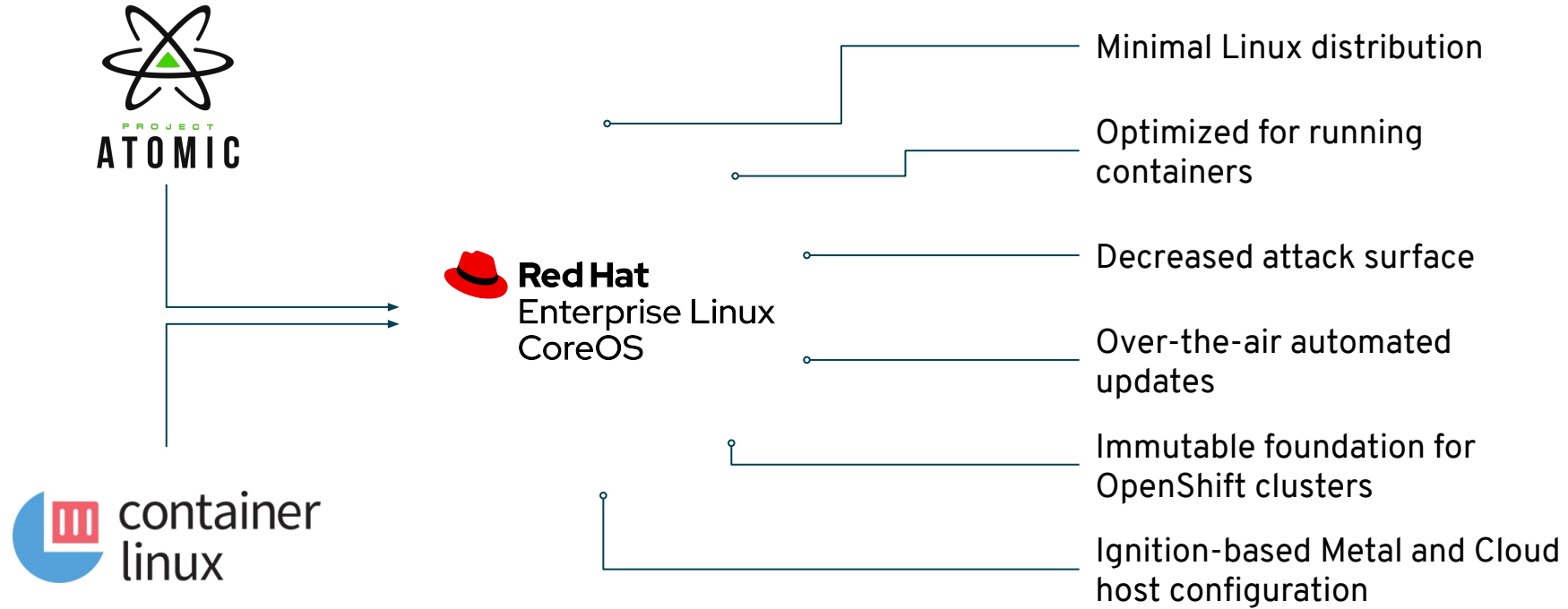
^{**} On qualified hardware stack

Over-the-Air Updates

- Retrieves list of available updates
- Admin selects the target version
- OpenShift is updated over the air
- Auto-update support

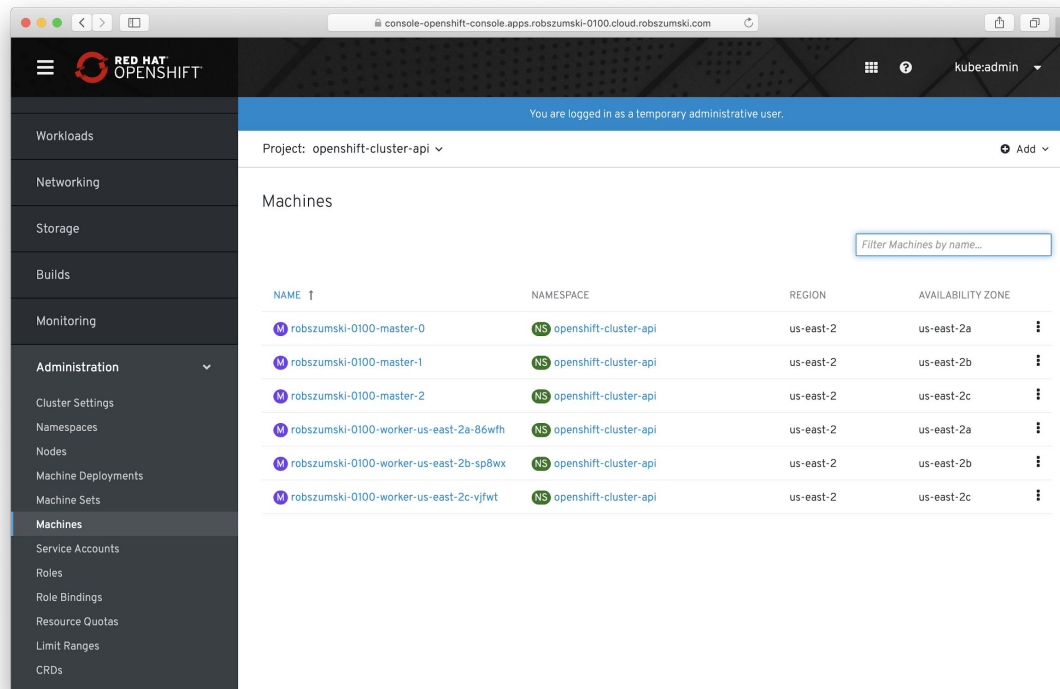


Red Hat Enterprise Linux CoreOS



Kubernetes Machine API Operator

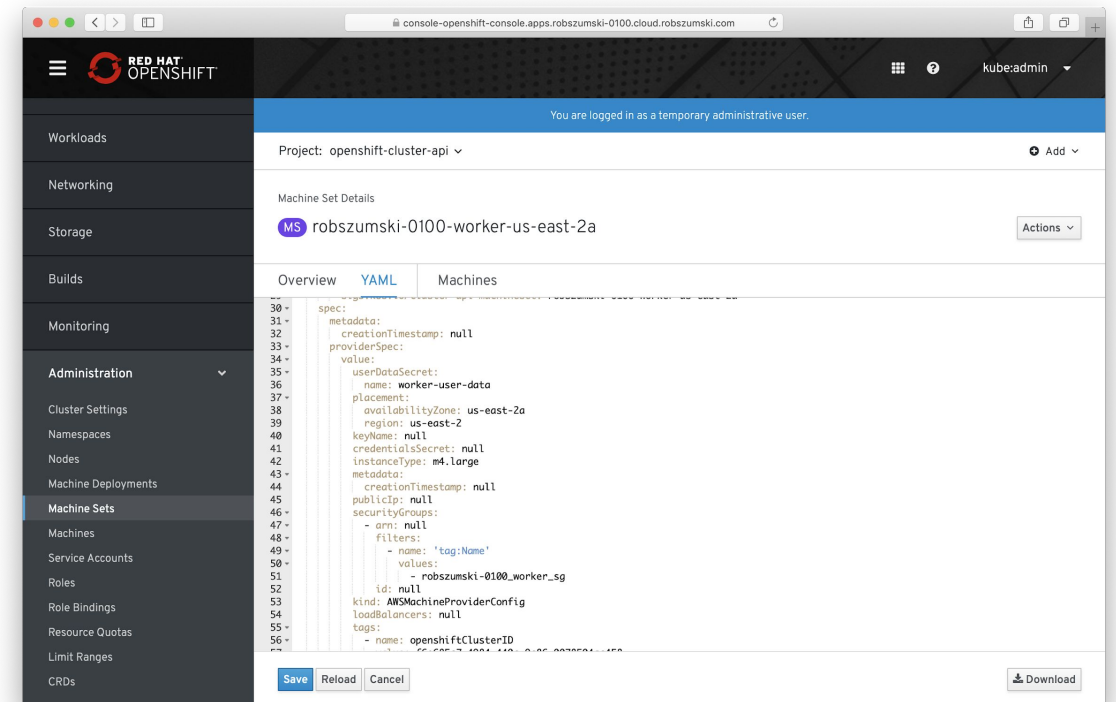
Using Kubernetes To Provision Kubernetes Clusters



Project: openshift-cluster-api

Machines

NAME	NAMESPACE	REGION	AVAILABILITY ZONE
robszumski-0100-master-0	openshift-cluster-api	us-east-2	us-east-2a
robszumski-0100-master-1	openshift-cluster-api	us-east-2	us-east-2b
robszumski-0100-master-2	openshift-cluster-api	us-east-2	us-east-2c
robszumski-0100-worker-us-east-2a-86wfh	openshift-cluster-api	us-east-2	us-east-2a
robszumski-0100-worker-us-east-2b-sp8wx	openshift-cluster-api	us-east-2	us-east-2b
robszumski-0100-worker-us-east-2c-vjfwf	openshift-cluster-api	us-east-2	us-east-2c



Project: openshift-cluster-api

Machine Set Details

robszumski-0100-worker-us-east-2a

Overview YAML Machines

```
spec:
  metadata:
    creationTimestamp: null
  providerSpec:
    value:
      userDataSecret:
        name: worker-user-data
      placement:
        availabilityZone: us-east-2a
        region: us-east-2
      keyName: null
      credentialsSecret: null
      instanceType: m4.large
      metadata:
        creationTimestamp: null
        publicIp: null
        securityGroups:
          - arn: null
            filters:
              - name: 'tag:Name'
                values:
                  - robszumski-0100_worker_sg
            id: null
      kind: AWSMachineProviderConfig
      loadBalancers: null
      tags:
        - name: openshiftClusterID
          value: 66-2023-0001-100-000-000000000000
```

Save Reload Cancel Download



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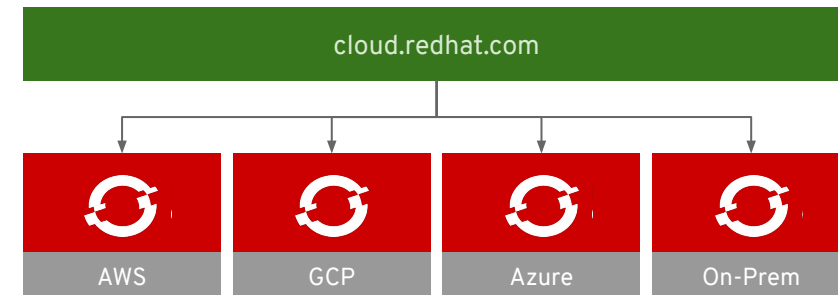
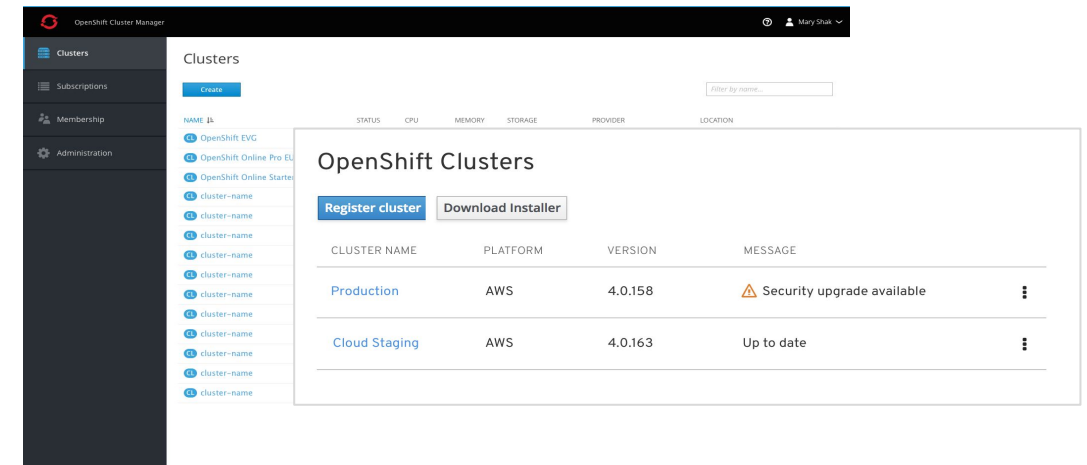
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- Operator Framework
- Operator Hub & Certified ISVs

Empowering developers to innovate

- Developer Tools
- Cloud-Native CI/CD
- Serverless
- Service Mesh

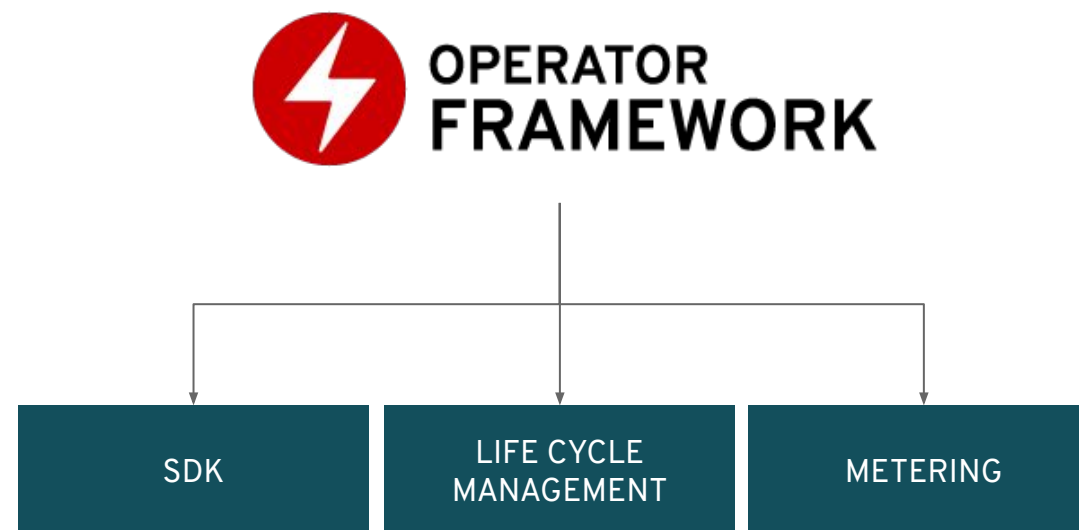
Unified Hybrid Cloud

- Multi-cluster management
 - New clusters on AWS, Azure, GCP, vSphere, OpenStack, and bare metal
 - Register existing clusters
 - Including OpenShift Dedicated
- Management operations
 - Install new clusters
 - View all registered clusters
 - Update clusters

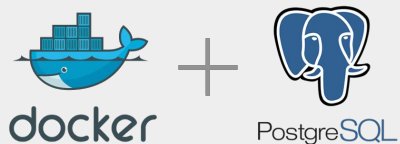


Operator Framework

Operators codify operational knowledge and workflows to automate life cycle management of containerized applications with Kubernetes



Evolution of Self-Service Backend Workloads

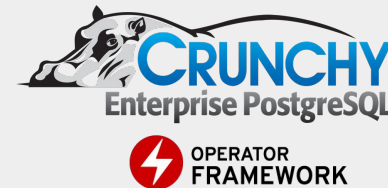


- Containerized



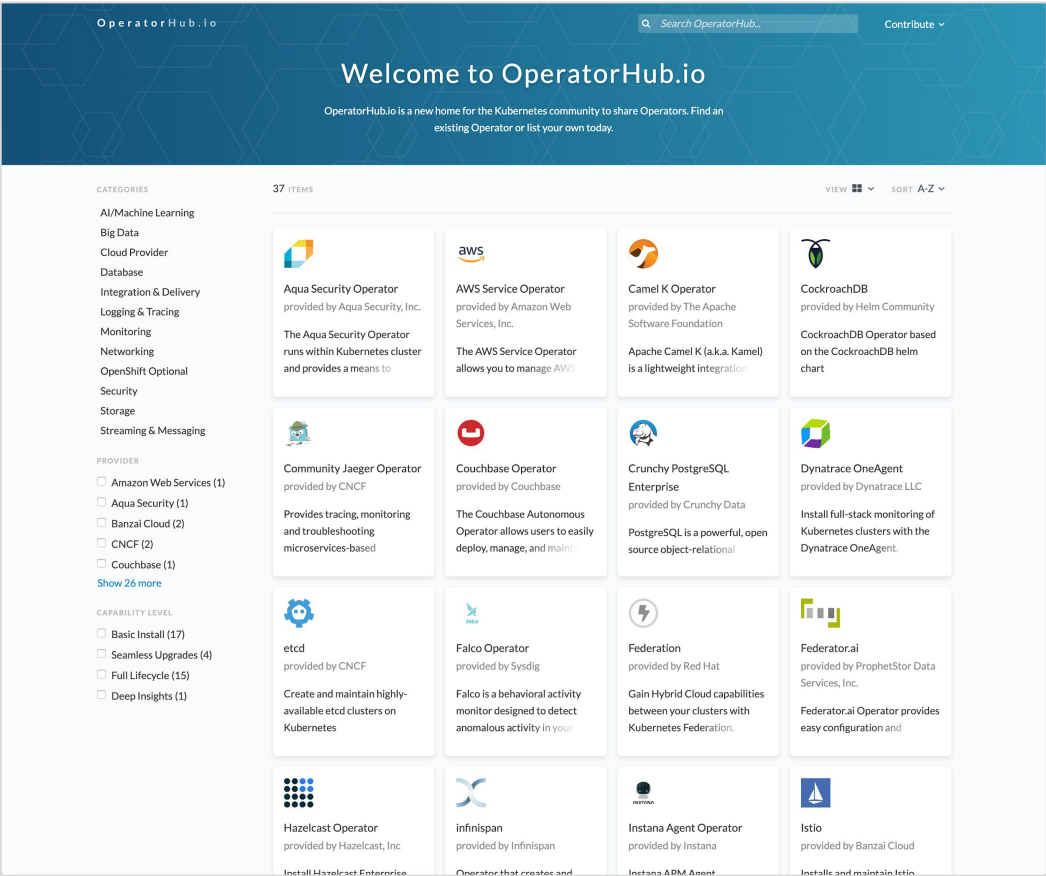
Amazon
RDS

- Virtualized
- External to the cluster
- Cloud storage ready
- Replicated
- Backup
- Automated updates



- Containerized
- Container storage ready
- Replicated
- Backup
- Automated updates
- Enhanced observability
- Customization
- Local development
- Fully Open Source
- Any Kubernetes
- Certified on OpenShift

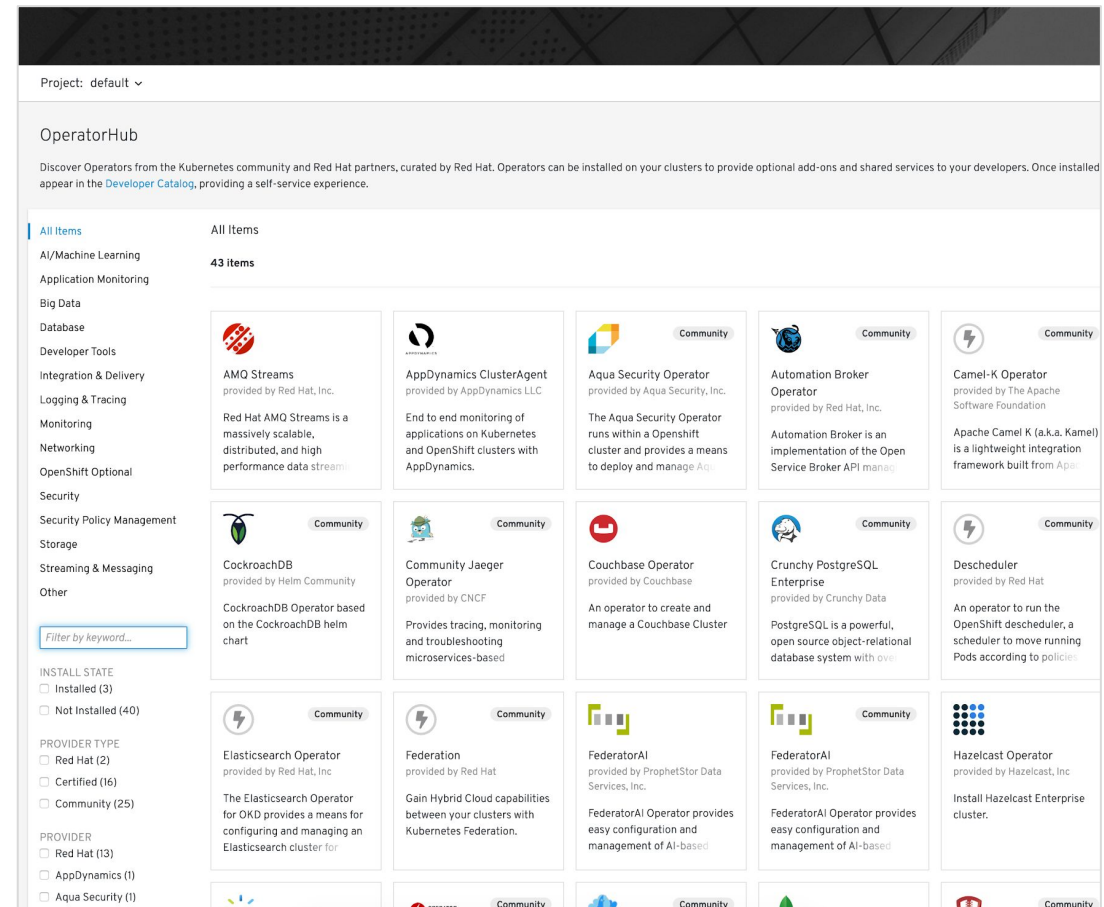
OperatorHub.io Ecosystem



The public registry for finding
Kubernetes Operator backed
services

OperatorHub in OpenShift

The embedded registry for
Community and Certified
Operators from Red Hat and
Partners, tested and verified on
OpenShift 4



Operators as a First-Class Citizen



Operator Lifecycle Management

Operator Catalog



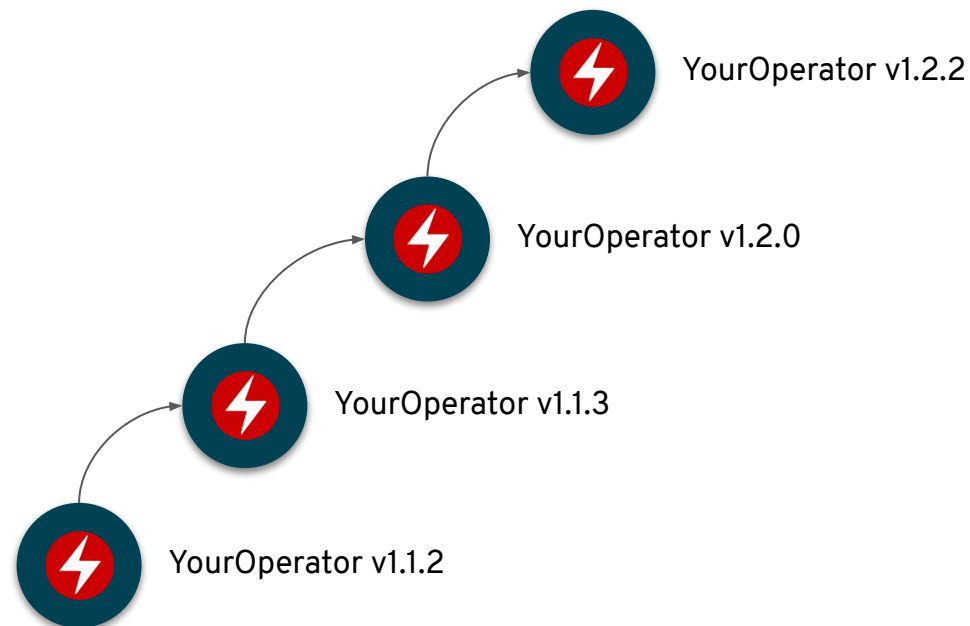
**OPERATOR
LIFECYCLE MANAGER**



Subscription for
YourOperator



Version



Time

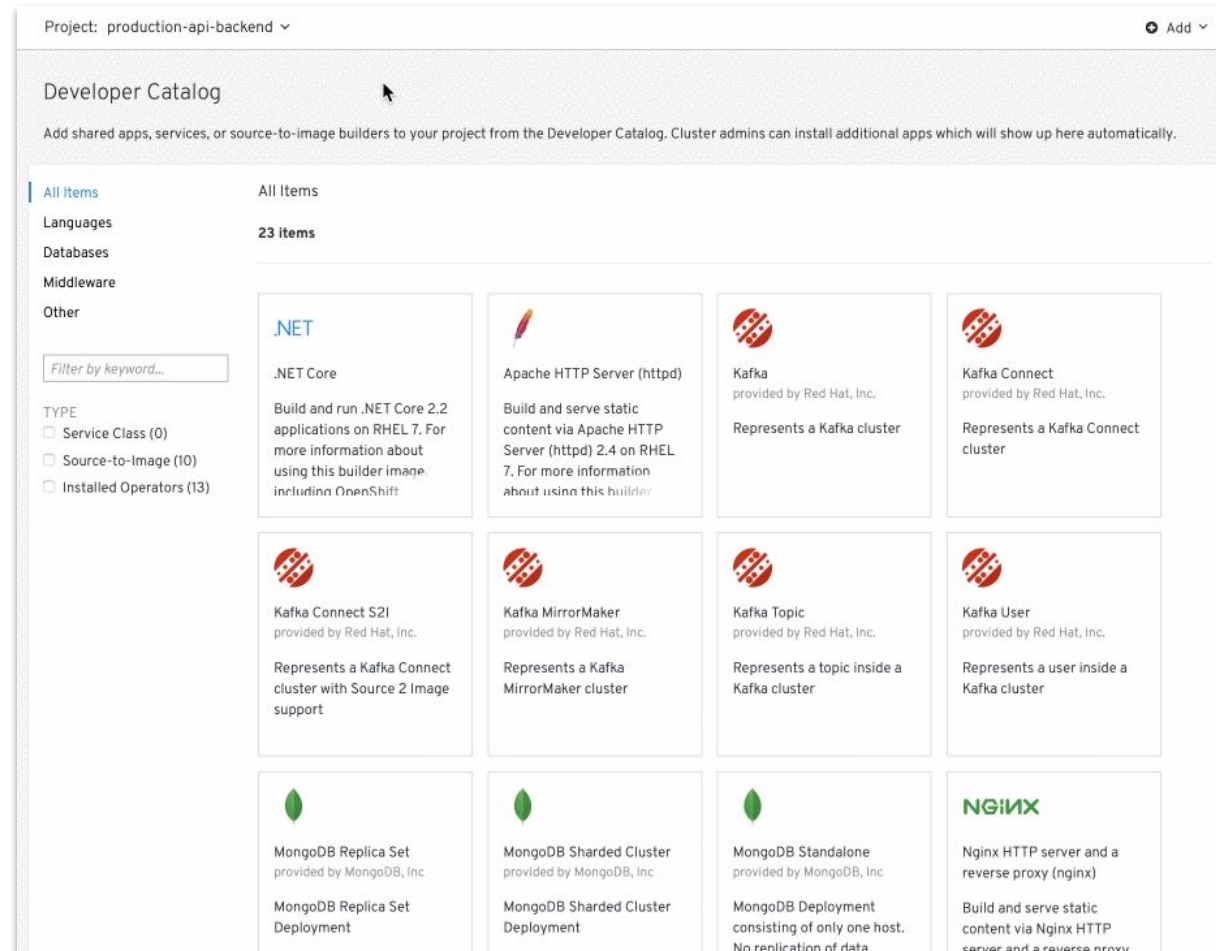
Services ready for your developers

New Developer Catalog aggregates apps

- Blended view of Operators, Templates and Broker backed services
- Operators can expose multiple CRDs. Example:
 - MongoDBReplicaSet
 - MongoDBSharded Cluster
 - MongoDBStandalone
- Developers can't see any of the admin screens

Self-service is key for productivity

- Developers with access can change settings and test out new services at any time





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- Serverless
- Service Mesh

A developer-focused command-line tool for rapid development iterations on OpenShift

```
$odo create
```

Create app from supported runtimes

```
$odo push
```

Build and deploy app from current directory

```
$odo watch
```

Sync local changes to running pods on OpenShift

Developer Web Console

≡ okd

+Add

Topology

Builds

Pipelines

Advanced

You are logged in as a temporary administrative user. Update the [cluster OAuth configuration](#) to allow others to log in.

Project: sspeiche1 ▾

MySQL

payment

node

backend

app1

njs

app2

DC njs

Actions ▾

Overview Resources

DESIRED COUNT3 pods

UP-TO-DATE COUNT3 pods

MATCHING PODS3 pods

1 available2 unavailable

NAMEnjs

LATEST VERSION1

NAMESPACENS sspeiche1

REASONconfig change

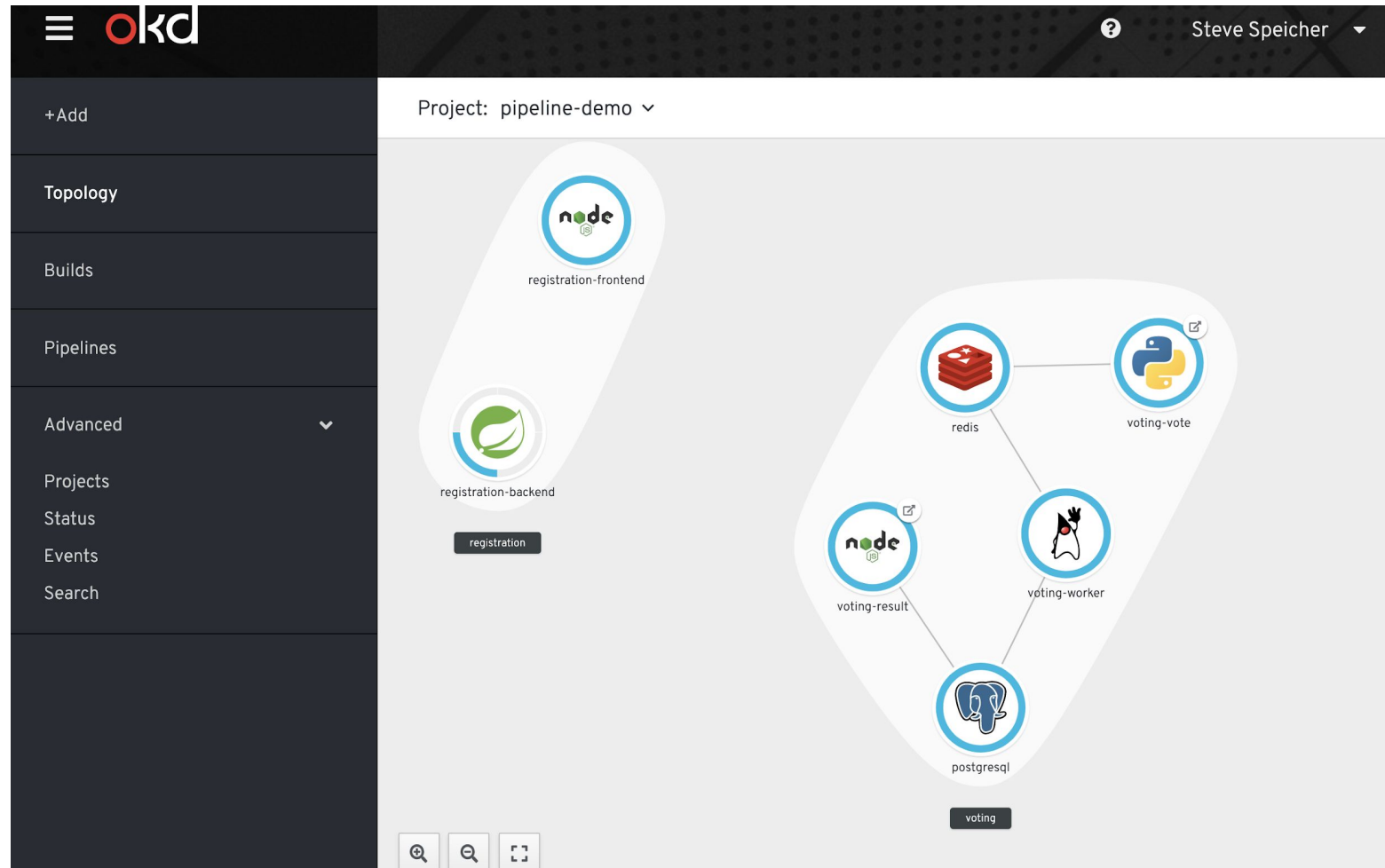
LABELSapp=njsapp.kubernetes.io/name=openjdkapp.kubernetes.io/part-of=app2

UPDATE STRATEGYRolling

TIMEOUT600 seconds

20

Developer Web Console



Developer Web Console

The screenshot displays the Red Hat OpenShift Developer Web Console interface. The left sidebar contains navigation links: +Add, Topology, Builds, Pipelines, Advanced (expanded), Projects, Status, Events, and Search. The main content area shows the 'Project: pipeline-demo' selected. A deployment named 'registration-frontend' is highlighted, with its icon (a blue circle with a green leaf) and the label 'registration-frontend' visible. Below the deployment icon, the namespace 'registration' is shown. The deployment details are displayed in a table-like format:

registration-frontend	
DESIRED COUNT	UP-TO-DATE COUNT
1 pod	1 pod
MATCHING PODS	
1 available	
0 unavailable	
NAME	LATEST VERSION
registration-frontend	1
NAMESPACE	REASON
NS pipeline-demo	config change
LABELS	UPDATE STRATEGY
app=registration-frontend	Rolling
app.kubernetes.io/name=nodejs	
app.kubernetes.io/part-of=registration	
TIMEOUT	UPDATE PERIOD
600 seconds	



Cloud-native CI/CD with OpenShift Pipelines

- Based on Tekton Pipelines
- Built for cloud-native apps
- Containers as building blocks
- Deploy to multiple platforms
- Available in OperatorHub

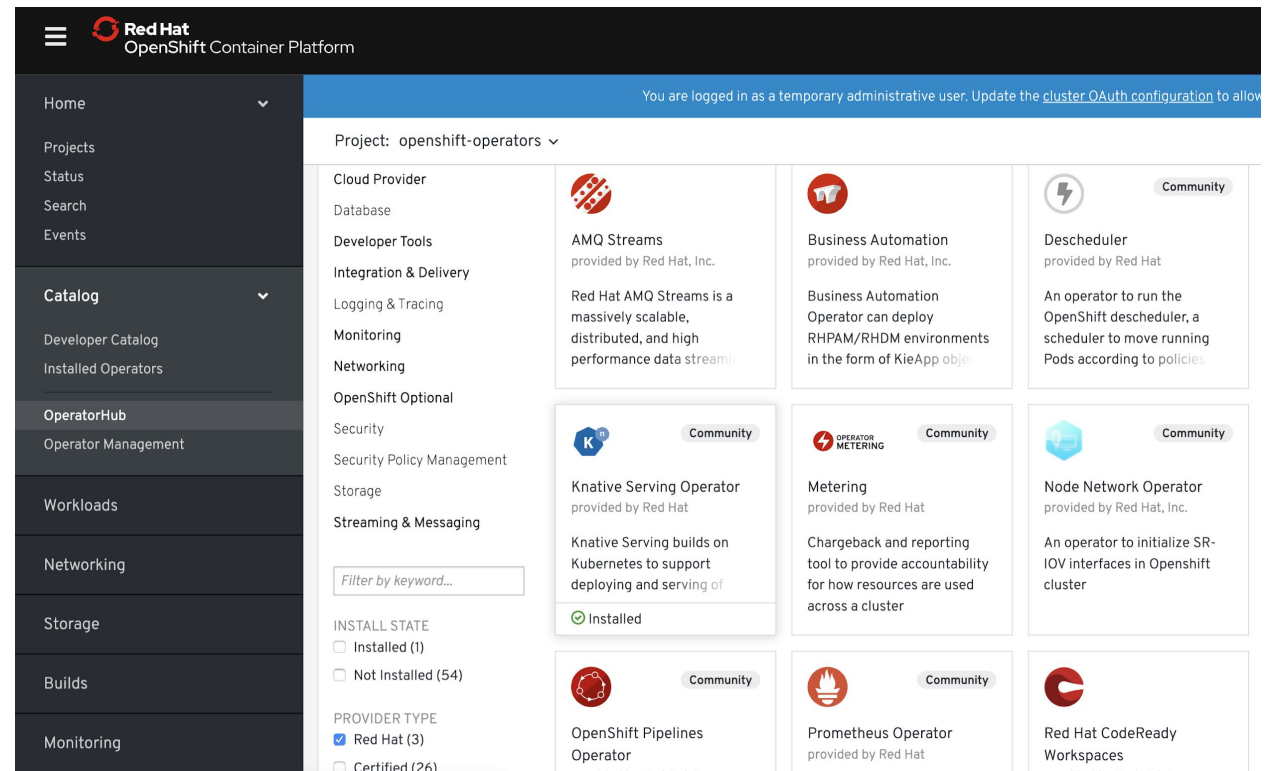
The screenshot shows the Red Hat OpenShift Pipelines console. The left sidebar contains navigation links: Developer, + Add, Topology, Builds, Pipelines (selected), and Advanced. The main area displays a table of pipelines under the 'Pipelines' heading. The table has columns for NAME, LAST PIPELINE RUN, LAST RUN STATUS, TASK COMPLETED, and LAST RUN STARTED. A search bar 'Filter Build Configs by name...' is located at the top right of the table. A hand cursor is pointing at the 'Pipeline-a' entry in the table.

NAME	LAST PIPELINE RUN	LAST RUN STATUS ↓	TASK COMPLETED	LAST RUN STARTED ↓
P Pipeline-a	PR Pipeline-run-a-1	Running	2 of 4	3 seconds ago
P Pipeline-B	PR Pipeline-run12	Running	3 of 5	2 minutes ago
P Pipeline-C	PR Pipeline-run23	Succeeded	3 of 3	4 minutes ago
P Pipeline-D	PR Pipeline-run4	Failed	2 of 4	6 minutes ago
P Pipeline-E	PR Pipeline-run34	Succeeded	2 of 2	8 minutes ago



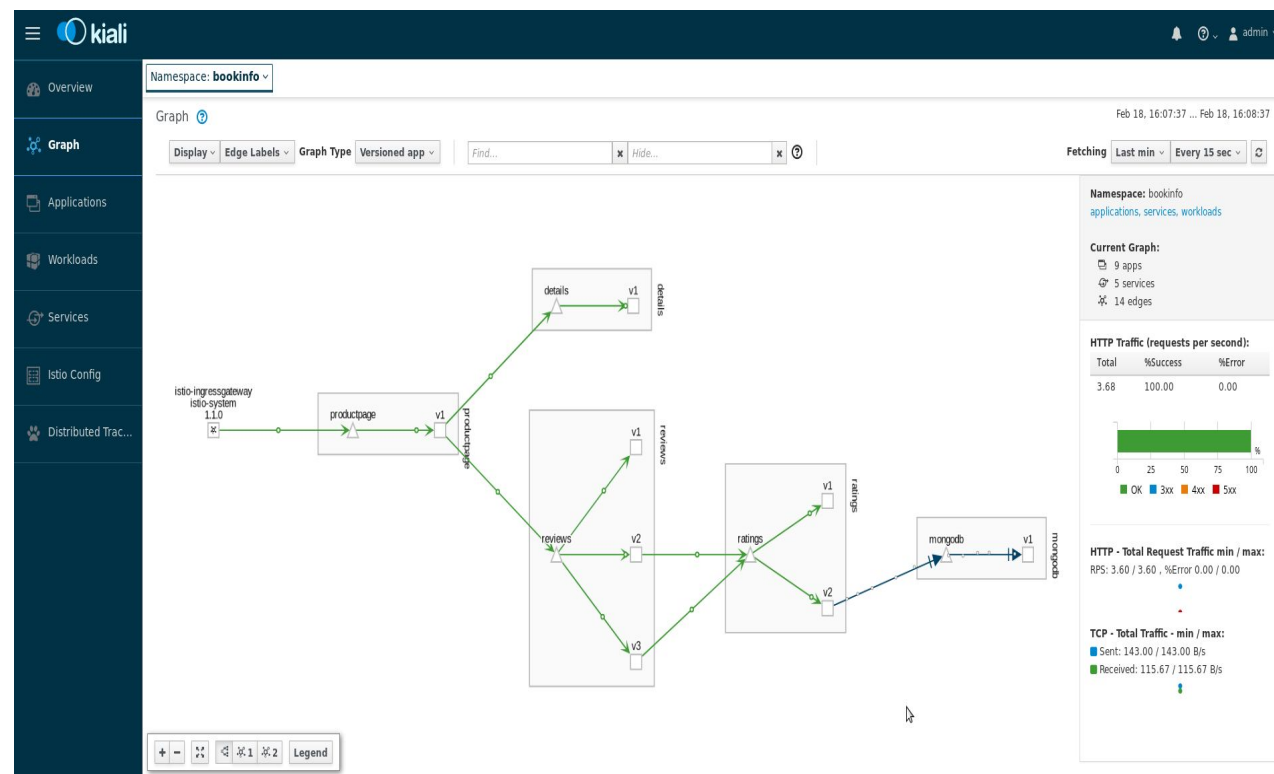
OpenShift Serverless

- Familiar to Kubernetes users. Native
- Scale to 0 or to N based on demand
- Applications, functions and containers
- Powerful eventing model
- Multiple event sources
- No vendor lock in
- Available in OperatorHub



OpenShift Service Mesh

- A dedicated network for service to service communications
- Observability and distributed tracing
- Policy-driven security
- Routing rules & chaos engineering
- Powerful visualization & monitoring
- Available in OperatorHub





CodeReady Workspaces

- Web-based Eclipse Che IDE
- Developer workspaces in pods
- Bundled development stacks
- Available in OperatorHub

The screenshot shows the CodeReady Workspaces web-based Eclipse Che IDE interface. The browser address bar displays the URL: `https://che.openshift.io/dashboard/#/ide/bmicklea/wksp-8k2`. The IDE interface includes a sidebar on the left with a project tree for `web-java-spring (master)`, showing folders like `src`, `main`, and `java`, and files like `GreetingController.java`, `pom.xml`, and `README.md`. The main editor displays the `GreetingController.java` file with the following Java code:

```
1 package org.eclipse.che.examples;
2
3 import org.springframework.web.servlet.ModelAndView;
4 import org.springframework.web.servlet.mvc.Controller;
5
6 import javax.servlet.http.HttpServletRequest;
7 import javax.servlet.http.HttpServletResponse;
8
9 public class GreetingController implements Controller
10 {
11
12     @Override
13     public ModelAndView handleRequest(HttpServletRequest request, HttpServletResponse response)
14     {
15         String userName = request.getParameter("user");
16         String
17         if (use
18         {
19             result
20         }
21     }
```

A tooltip is visible over the code, showing the method signature: `String userName - org.eclipse.che.examples.GreetingController.handleRequest(HttpServletRequest, HttpServletResponse)`. At the bottom of the IDE, there is a `Machines` panel showing a `dev-machine` and a `Terminal` panel displaying system statistics and a process list.

Terminal output:

```
top - 21:28:41 up 133 days, 7:17, 0 users, load average: 13.88, 6.37, 3.86
Tasks: 10 total, 1 running, 9 sleeping, 0 stopped, 0 zombie
%Cpu(s): 65.4 us, 30.3 sy, 0.2 ni, 1.0 id, 0.0 wa, 0.0 hi, 2.9 si, 0.3 st
KiB Mem : 32779896 total, 3926416 free, 6193528 used, 22659952 buff/cache
KiB Swap: 0 total, 0 free, 0 used. 24871796 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
267	user	20	0	4240812	217728	14088	S	0.3	0.7	0:20.81	java
1	user	20	0	5972	620	524	S	0.0	0.0	0:00.03	tail
128	user	20	0	10812	7148	2712	S	0.0	0.0	0:00.10	bootstrapper

2019 Roadmap

Q2 CY2019 OpenShift 4.1	
DEV	<ul style="list-style-type: none"> • Serverless w/ Knative Dev Preview • OpenShift Pipelines (Tekton) Dev Preview • CodeReady Workspaces • CodeReady Containers Alpha • Developer CLI (odo) Beta
APP	<ul style="list-style-type: none"> • OperatorHub • Operator Lifecycle Manager • Service Mesh (~2 month after)
PLATFORM	<ul style="list-style-type: none"> • Kubernetes 1.12 with CRI-O runtime • RHEL CoreOS, RHEL7 • Automated Installer for AWS • Pre-existing Infra Installer for Bare Metal, VMware, AWS • Automated, one-click updates • Multus (Kubernetes multi-network) • Quay v3
HOSTED	<ul style="list-style-type: none"> • Universal Hybrid Cloud (UHC) • OCP Cluster Subscription Management • OpenShift on Azure by MSFT and RHT • OpenShift Dedicated consumption pricing
Q3 CY2019 OpenShift 4.2	
DEV	<ul style="list-style-type: none"> • Developer Console GA • Serverless w/ Knative Tech Preview • OpenShift Pipelines (Tekton) Tech Preview • CodeReady Containers GA • Developer CLI (odo) GA
APP	<ul style="list-style-type: none"> • GPU metering • OperatorHub Enhancements • Operator Deployment Field Forms • Application Binding with Operators • Application Migration Console
PLATFORM	<ul style="list-style-type: none"> • Kubernetes 1.14 w/ CRI-O runtime • Disconnected Install and Update • Automated Installer for Azure, OSP, GCP • OVN Tech Preview • FIPS • Federation Workload API • Automated App cert rotation • OpenShift Container Storage 4.2
HOSTED	<ul style="list-style-type: none"> • UHC Multi-Cluster deployment • Proactive Support Operator
Q4 CY2019 OpenShift 4.3	
DEV	<ul style="list-style-type: none"> • Serverless w/ Knative GA • OpenShift Pipelines (Tekton) GA
APP	<ul style="list-style-type: none"> • Metering for Services • Windows Containers
PLATFORM	<ul style="list-style-type: none"> • Kubernetes 1.15 w/ CRI-O runtime • Automated Installer for IBM Cloud, Alibaba, RHV, Bare Metal Hardware Appliance • Pre-existing Infra Installer for Azure, OSP, GCP • OVN GA w/ Windows Networking Integration
HOSTED	<ul style="list-style-type: none"> • UHC Subscription Mgmt Consumption Improvements

Thank you

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