What's New in OpenShift 4.3

Best IT ops experience

Best developer experience

CaaS ⟷ PaaS | FaaS

Cluster services
Monitoring,
showback,
registry, logging

Application services
Middleware, functions, ISV

Service mesh

Developer services
Dev tools,
automated builds,
CI/CD, IDE

Automated operations

certified
kubernetes

kubernetes

Red Hat
Enterprise Linux
CoreOS

Any infrastructure

Physical

Virtual

Private

Public

OpenShift 4 Platform

- Fully integrated and automated

- Seamless Kubernetes deployment

- Fully automated installation

- 1-click platform updates

- Autoscaling of cloud resources

Red Hat

Hosted OpenShift

Get the best of OpenShift without being on call

One Platform, Flexible Consumption Models

Managed service offering on public cloud

Jointly engineered, operated, and supported by Microsoft and Red Hat

Enterprise–grade Kubernetes platform that you manage

HOSTED SERVICES

SELF–MANAGED

What's New in OpenShift Dedicated (OSD)?
*As of Feb 2020

- Upgrade to OpenShift 4.3

- Customer Cloud Subscription (CCS)

- Self-Service AWS Network Management

- Self-Service Storage and Load Balancer Quotas

- Multiple Identity Providers

- Infrastructure Nodes

What's New in Azure Red Hat OpenShift (ARO)
*As of Feb 2020

- [Azure Monitor integration](#) [1]

- Private Clusters, including Express Route (Private Preview)

- Twistlock and Aqua Support

- [Additional Regions: North Central US](#) [2]

[1] https://docs.microsoft.com/en-us/azure/azure-monitor/insights/container-insights-azure-redhat-setup

[2] https://azure.microsoft.com/en-us/global-infrastructure/services/?products=openshift&regions=all

One Platform, Flexible Consumption Models

Red Hat OpenShift Dedicated

Azure Red Hat OpenShift — Microsoft

Red Hat OpenShift Container Platform

Managed service offering on public cloud

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Enterprise–grade Kubernetes platform that you manage

HOSTED SERVICES

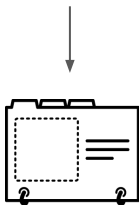SELF–MANAGED

Red Hat

A broad ecosystem of workloads

Operator-backed services allow for a
SaaS experience on your own infrastructure
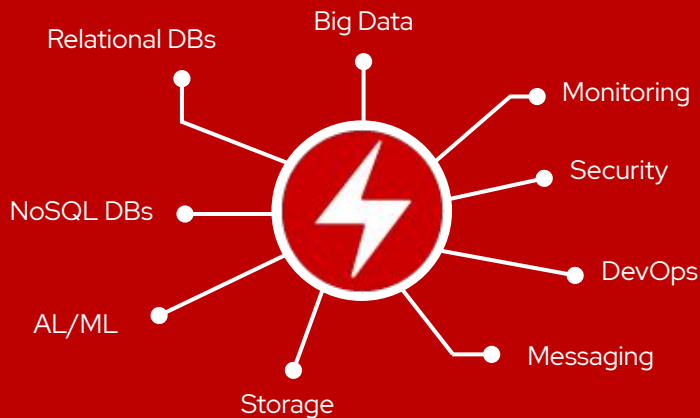
Simplified Mirroring of OperatorHub

Operator Catalog
on quay.io

crunchy/postgres-server:9.5

strimzi/kafka-image:latest

kubevirt/virt-api:1.0.1

...

1. Mirror Operator Catalog into
container image & push to
disconnected registry

2. Parse referenced Operator
and app images & push to
disconnected registry

3. Enable mirror catalog in
disconnected cluster

```
oc adm catalog build...
```

```
oc adm catalog mirror...
```

```
oc apply -f ./manifests
```

Red Hat Operators Supported in Disconnected Mode

Cloud Native Development

OpenShift has all of the latest **tools** and **services**
to make your devs more productive

Code	**Pipelines**
Serverless	**Service Mesh**

Red Hat
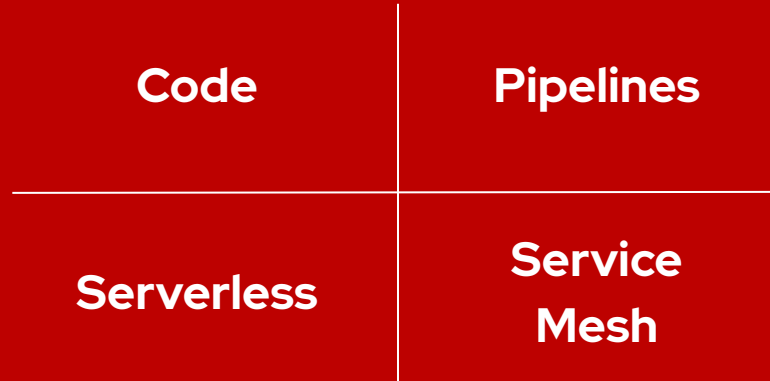
OpenShift Service Mesh

Key Features & Updates

- Version 1.1 coming mid–February

- Upgrade Istio to version 1.4

- Direct links from OCP Console

- Labeled HAProxy routes into the mesh

- Kiali has been updated to Patternfly4

- Jaeger streaming support via Kafka

- Allow Jaeger to be used with an external Elasticsearch instance

Product Manager: Brian 'redbeard' Harrington

Tech Preview
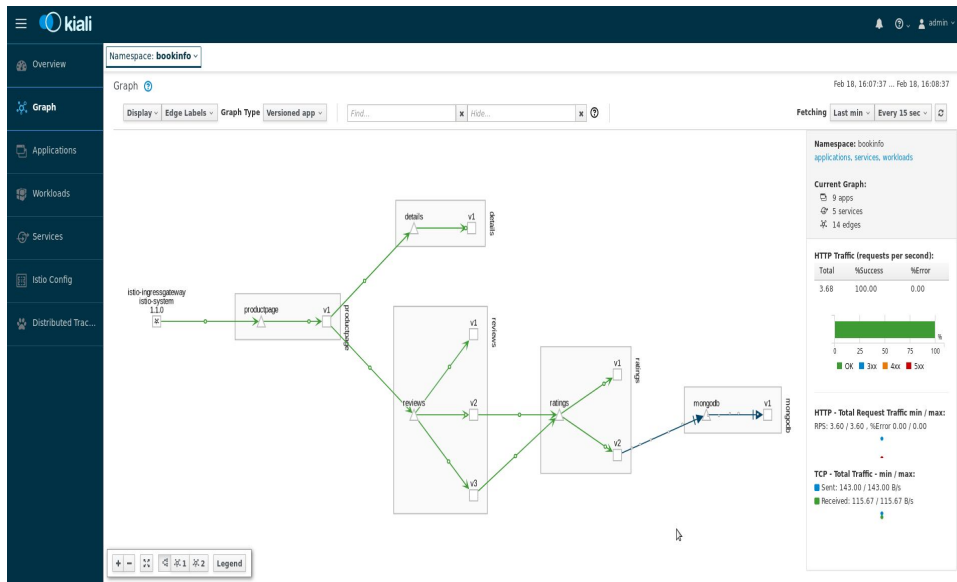
OpenShift Serverless in 4.3

Key features and updates

- **Serverless Operator v1.3.0**
- **Knative v0.10**
- **OLM dependency resolution for Service Mesh**
- Dropped support for Kubernetes 1.14 (OCP 4.1)

Learn more

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

Knative Tutorial

Red Hat
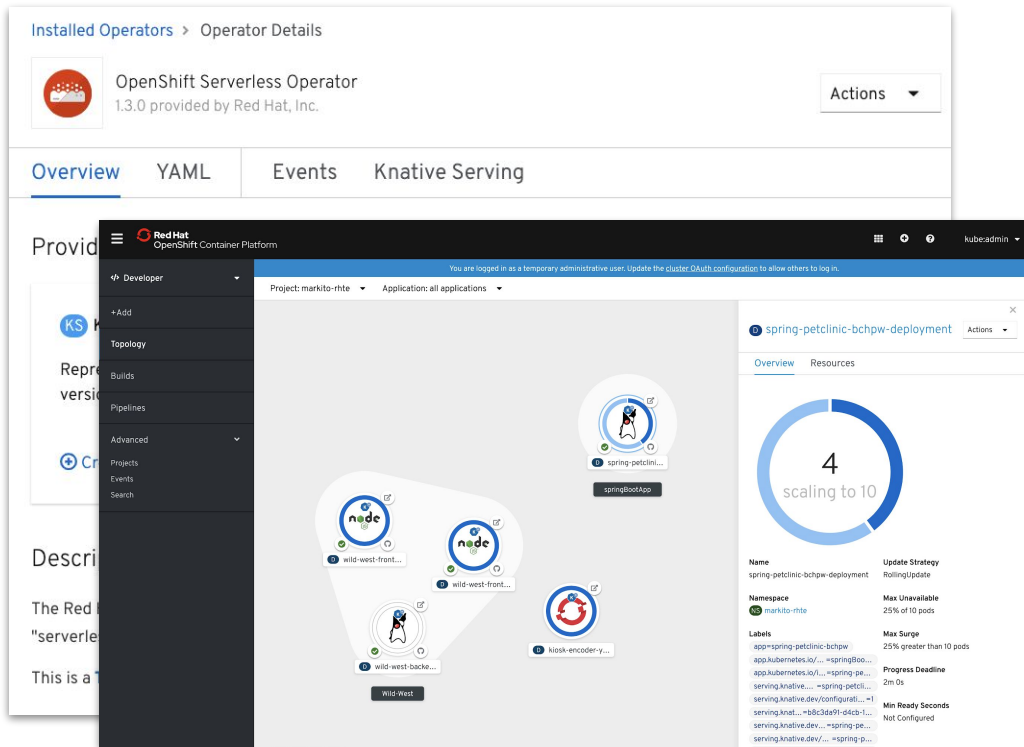
OpenShift Serverless in 4.3

Traffic Split for Revisions

Pipelines

Tech Preview (Feb)

Cloud-native CI/CD with OpenShift Pipelines

- Based on Tekton Pipelines

- Runs serverless (no CI engine!)

- Containers as building blocks

- Build images with Kubernetes tools
  (s2i, buildah, kaniko, jib, buildpack, etc)

- Pipelines portable to any Kubernetes

- Available in OperatorHub

- Tekton CLI

Tech Preview (Feb)
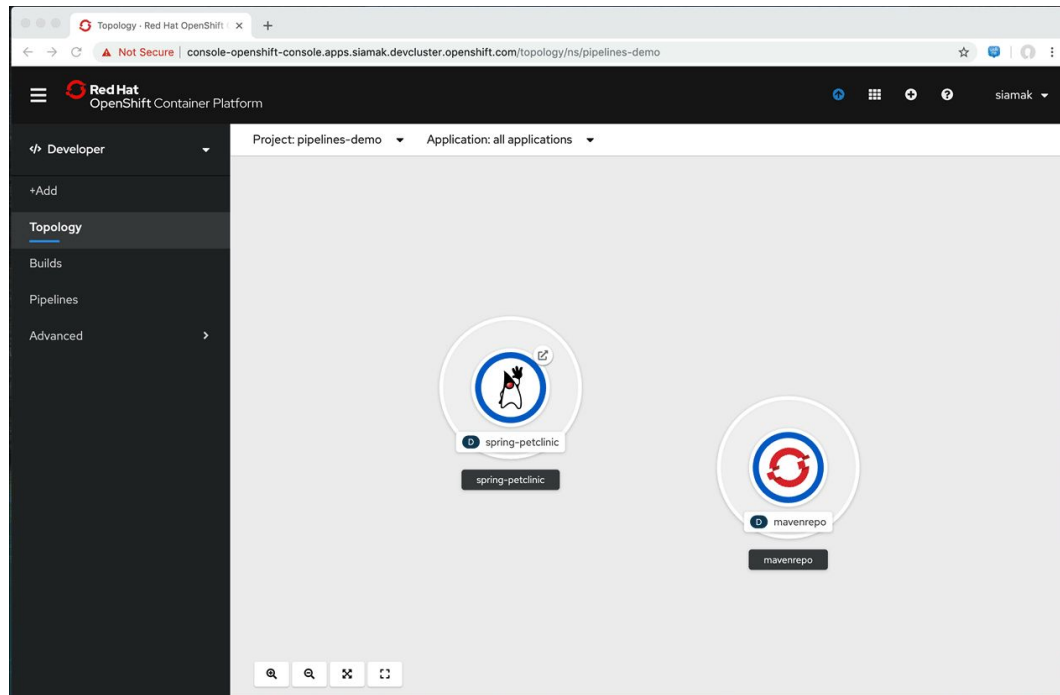
OpenShift Pipelines in OCP 4.3

- Git triggers (webhook)

- Automated RBAC setup

- Default curated tasks

- Pipeline metrics in Prometheus

- Pipeline samples and Task ref snippets in YAML editor
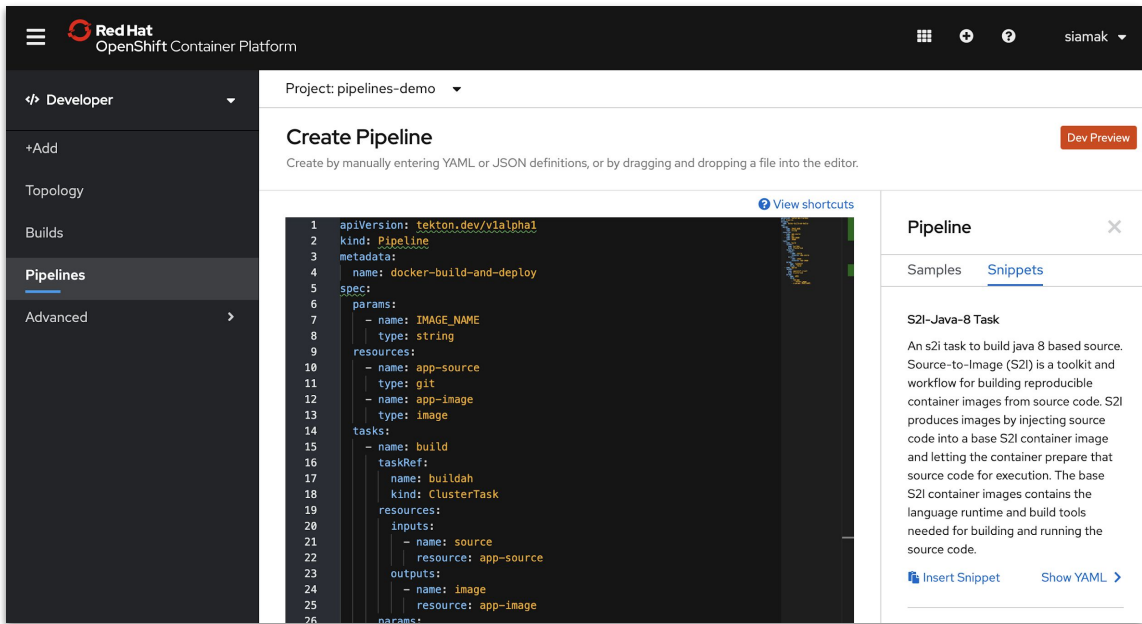
Jenkins

- Jenkins server on JDK 8 & 11

- Jenkins agents

  - JDK 11

  - Node.js 10

- Official Jenkins Operator

  - github.com/jenkinsci/kubernetes-operator

  - Available in OperatorHub.io

  - Developer Preview on OCP 4.3

  - Collaboration upstream
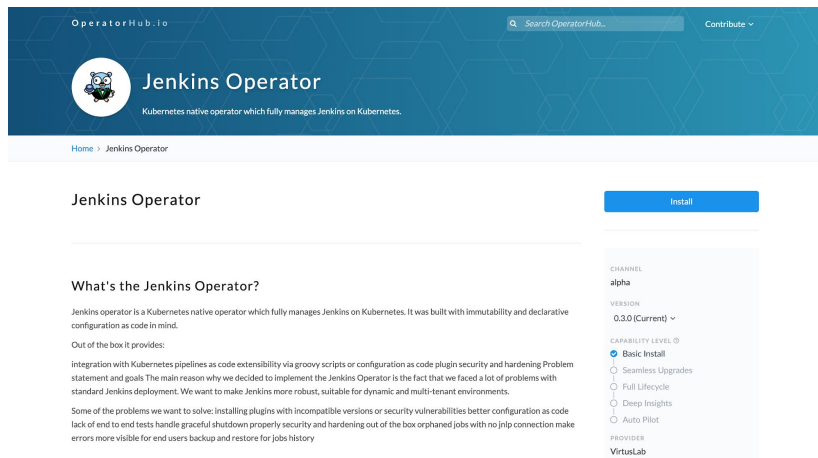
Helm

Helm 3 on OpenShift

Helm is a package manager for Kubernetes applications and helps to define, install and update apps
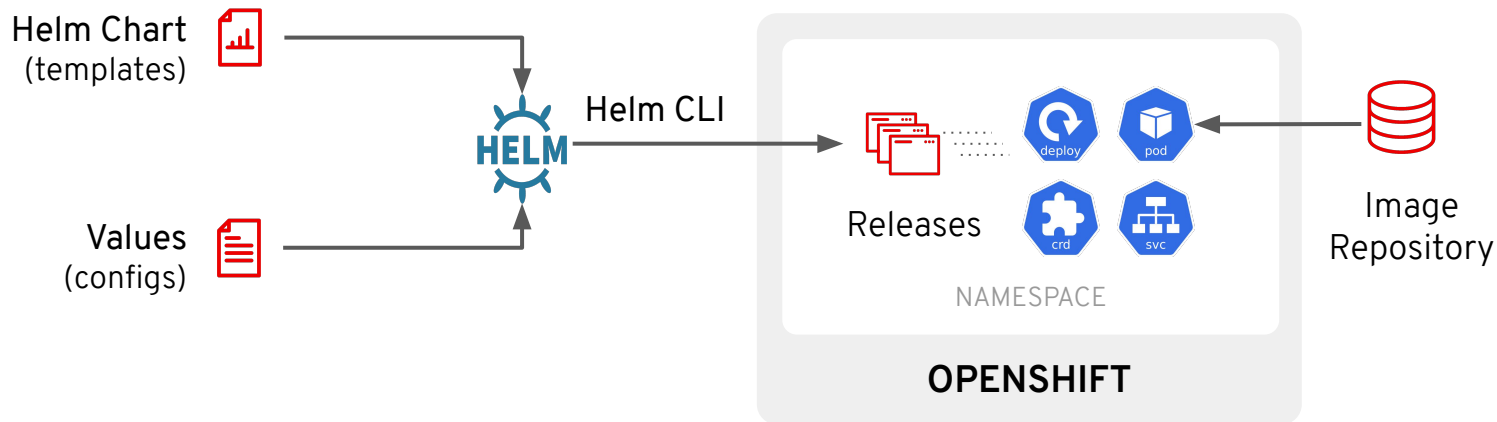
Helm 3 on OpenShift

OpenShift 4.3

- Helm 3 CLI in Tech Preview
- Built and shipped with OpenShift
- Available in Console CLI menu
- Added to OpenShift Docs

OpenShift 4.4+

- Helm 3 in Dev Console
  - Charts in Developer Catalog
  - Releases in Dev Console
  - Update/rollback/delete
- Helm developer guides

Product Manager: Siamak Sadeghianfar
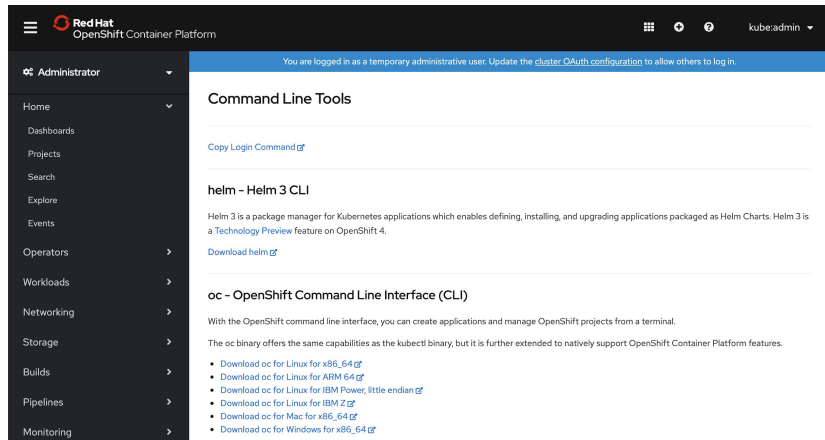
Helm and Operators

Package and Install

Automated Day-2 Operations

Helm

Operator

Phase I	Phase II	Phase III	Phase IV	Phase V
Basic Install	Seamless Upgrades	Full Lifecycle	Deep Insights	Auto Pilot
Automated application provisioning and configuration management	Patch and minor version upgrades supported	App lifecycle, storage lifecycle (backup, failure recovery)	Metrics, alerts, log processing and workload analysis	Horizontal/vertical scaling, auto config tuning, abnormal detection, scheduling tuning

Product Manager: Siamak Sadeghianfar

Red Hat

OpenShift Console

The future is now.

|	
Extending the Console	**Improve Observability**
Administration made easy	**Developer Focused**

Red Hat

Enhanced Visibility with the New Project Dashboard

Project-scope Dashboard gives Developer Clear Insights

Drill down in context from the new project dashboard widgets:

- Project Details
- Project Status/Health
- Project External Links (Launcher)
- Project Inventory
- Project Utilization
- Project Resource Quota
- Project Activity (Top consumers)

Product Manager: Ali Mobrem
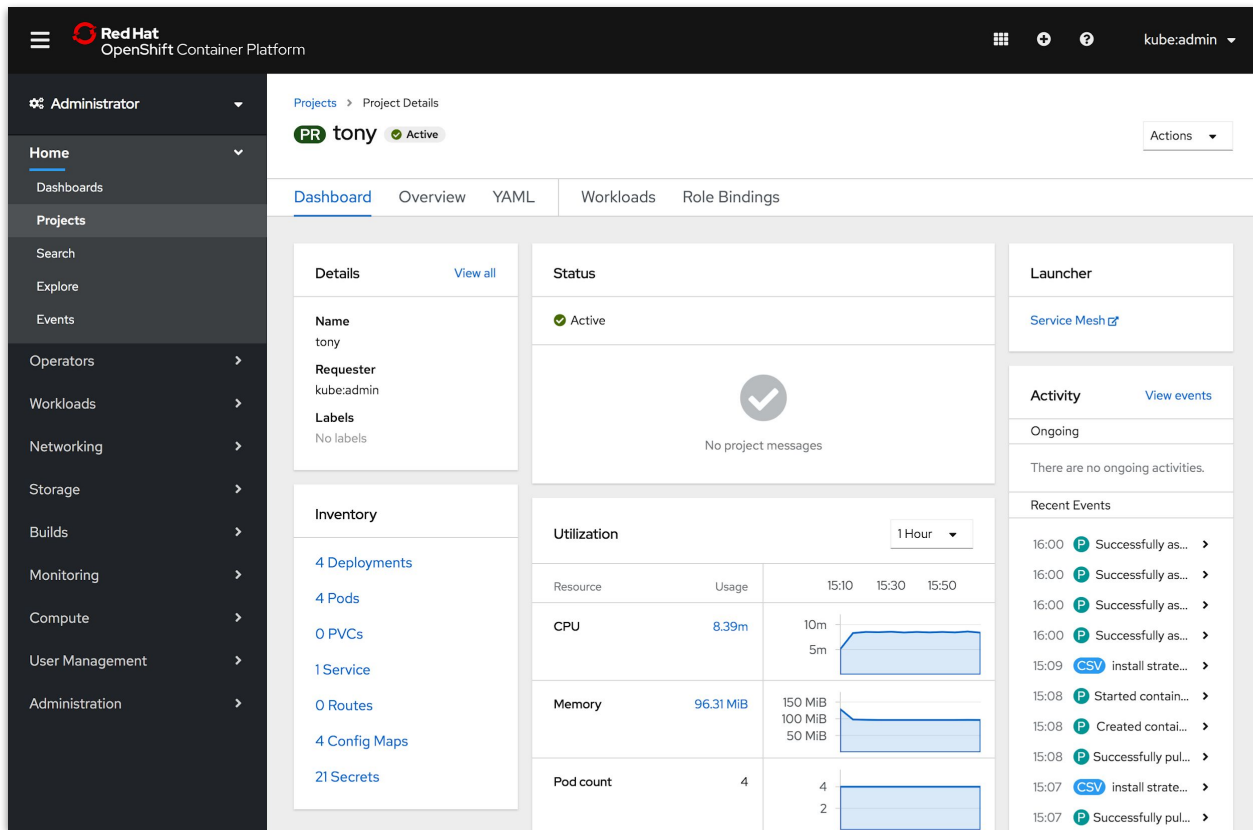
# Expose Third Party App Console **for Operator-backed Services**

"Cluster-wide" ConsoleLink CRD

- Easily integrate/onboard **cluster-wide** third-party user interfaces to develop, administer, and configure Operator-backed services.
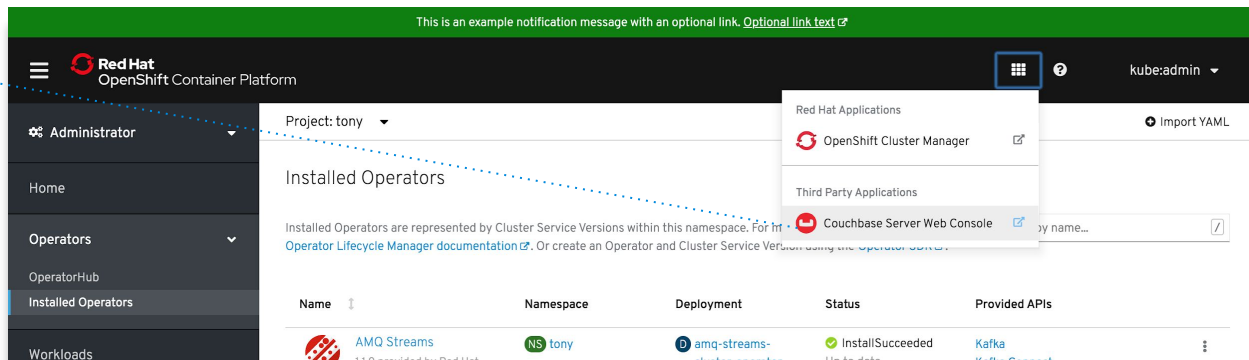
"Project-scoped" ConsoleLink CRD

- Customize the access to integrated **project-scoped** third-party user interfaces for your users.
- With the project-scoped external link launch mechanism, **link in context** to your interface.

Product Manager: Ali Mobrem
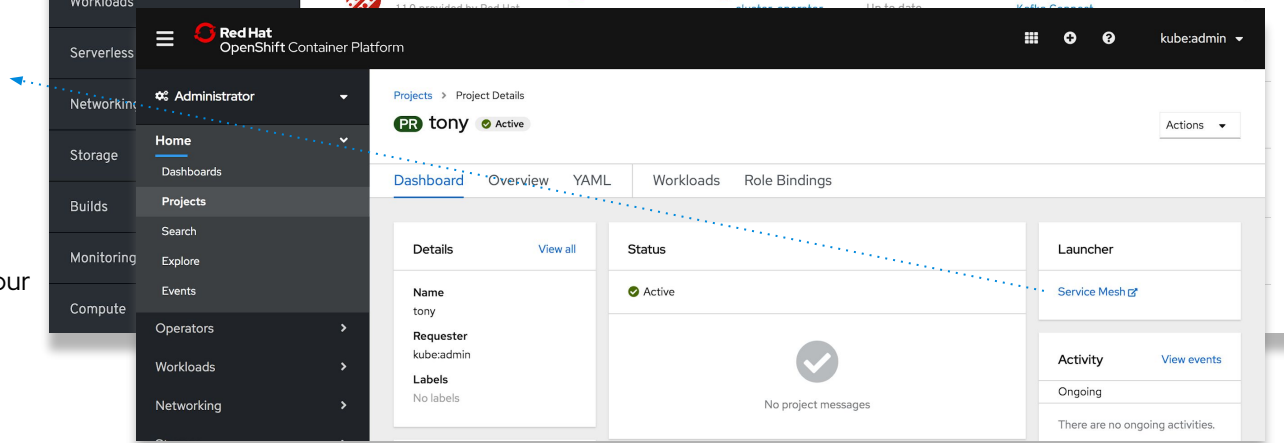
Add YAML Samples for a specific resource

Educate your Users with an Easy Way to Understand Kubernetes Resources

- You can now add cluster-wide samples to any Kube Resource with *ConsoleYAMLSamples CRD*.
- Each team that manages kube resources owns their samples and should make it part of their Operator.
- Any Operators can add YAML samples including Third-Party ISVs

Product Manager: Ali Mobrem

View Security Vulnerabilities with the Quay Operator

See all your Container Vulnerabilities right from the Console Dashboard

- Link out to **Red Hat Quay** for more in depth information
- The Quay Operator supports both **On-premise and External** Quay Registries
- Currently uses **Clair for Security Scan**; Planning to expand to other Vendors(TwistLock, Aqua, e.g.)
- *Only works for images managed by Quay*

New User Management Section with the Console

Allow cluster admins to easily see who has access to the cluster and how they are organized

1. **All user management** resources under **one navigation section**

2. **Dedicated pages** to view **Users** and **Groups** for the cluster have been added

3. Ability to **impersonate a user;** view exactly what they can see
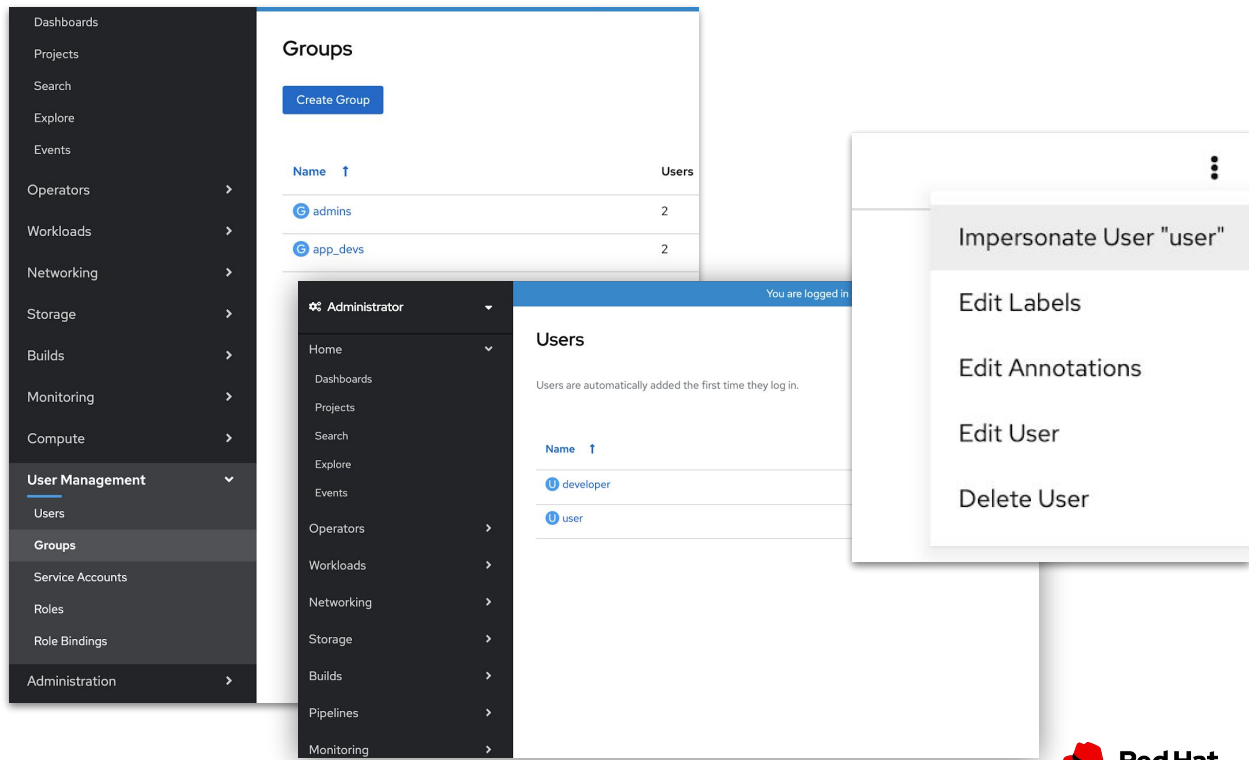
Be Informed with the Alert Receivers

Alerts are only useful if you know about them!

- **Reduce** your **Mean Time To Resolution** (MTTR)
- Create alerts receivers for:
  - **Pager Duty**
  - **Webhooks**
- **More receivers** to come in **future** releases
- Send alerts to the teams that need them; **Reduce the noise** for teams that don't
- Default receiver in place as a **catch all**

DEVELOPER FOCUSED
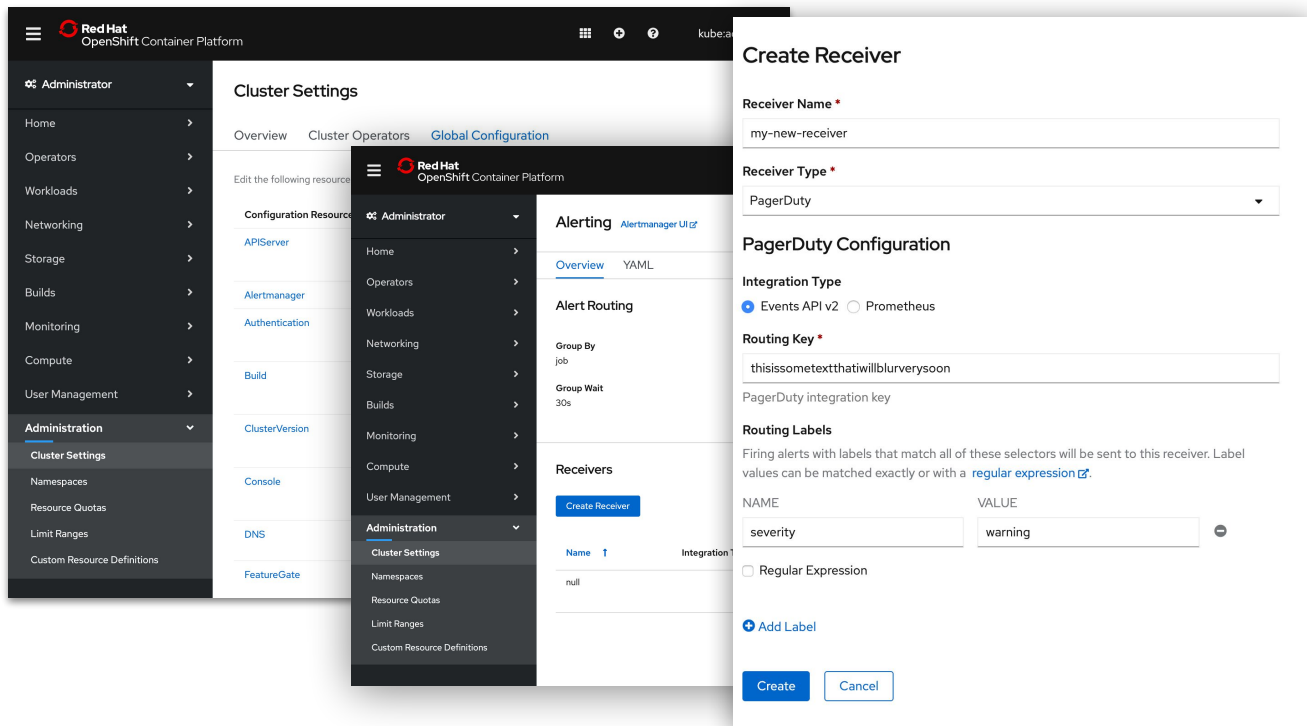
Deploy Applications streamlining flows

Deploy Image from Internal Registry

- Allow for rapidly deploying with alternate paths
- No need to repush/pull images
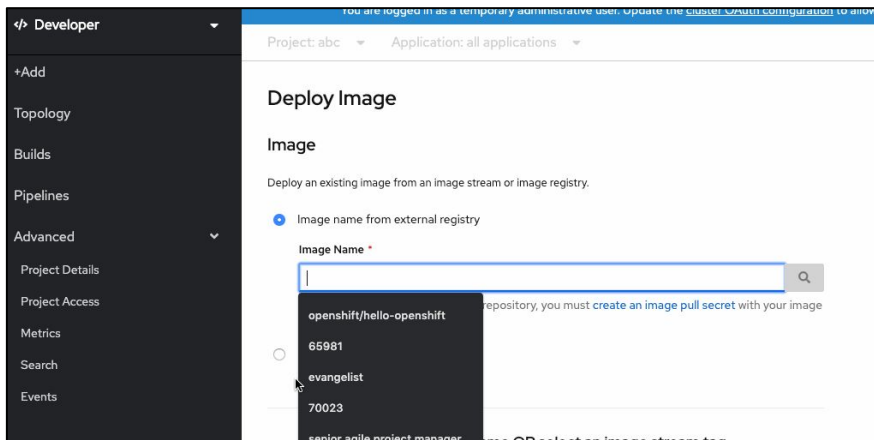
Auto-detect builder image

- Recommends builder images based on detected language by git provider

Product Manager: Steve Speicher
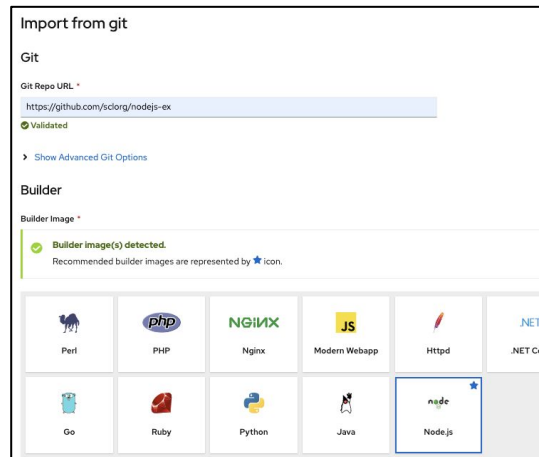
Deploy Applications alternate deployment targets

- Default to Kubernetes Deployments
- Alternately can use OpenShift's DeploymentConfigs or Knative Service (tech preview) objects
- Advanced options changes accordingly
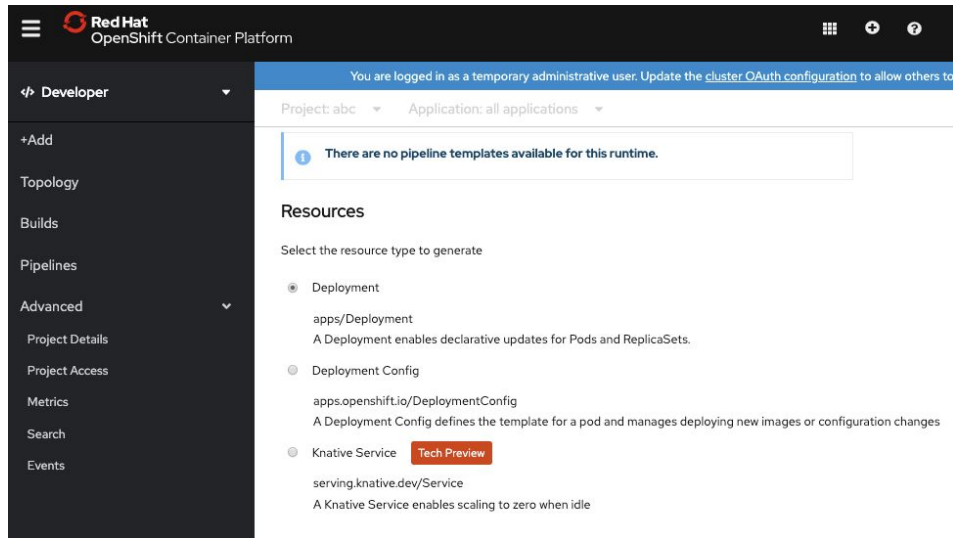
Application Topology streamlined flows

- Toggle between List and Topology views
- Easily group applications
- Connect/bind applications easily
- Contextual actions
- Quickly delete applications
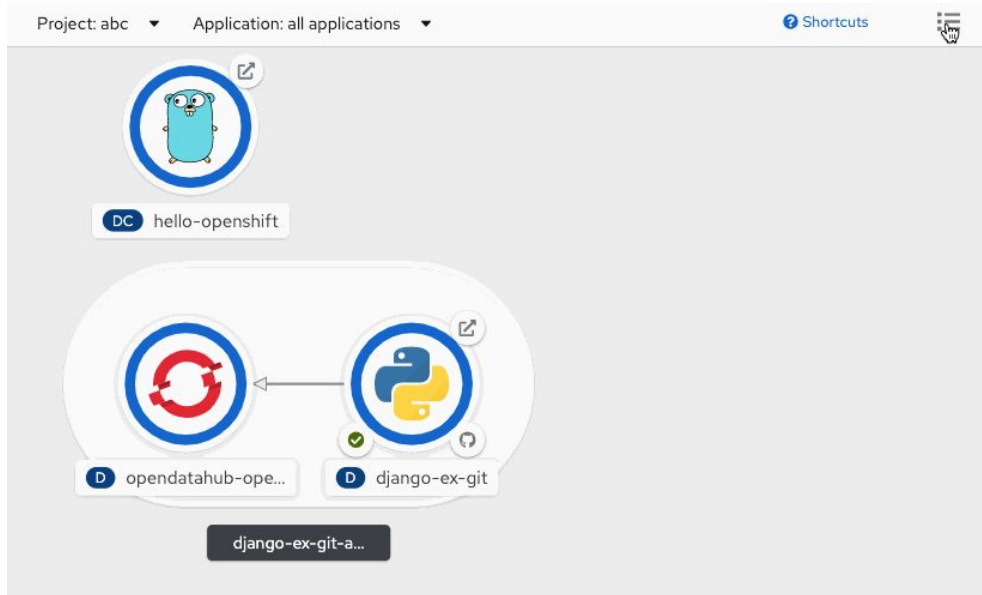
Service Binding easily connecting apps

- Leverages new ServiceBindingRequest and Operator to handle binding requests
- Easily create in Topology by dropping connector to valid drop target
- Injects config into source pod template as environment variables as a secret
- Pods are redeployed to pick up binding credentials
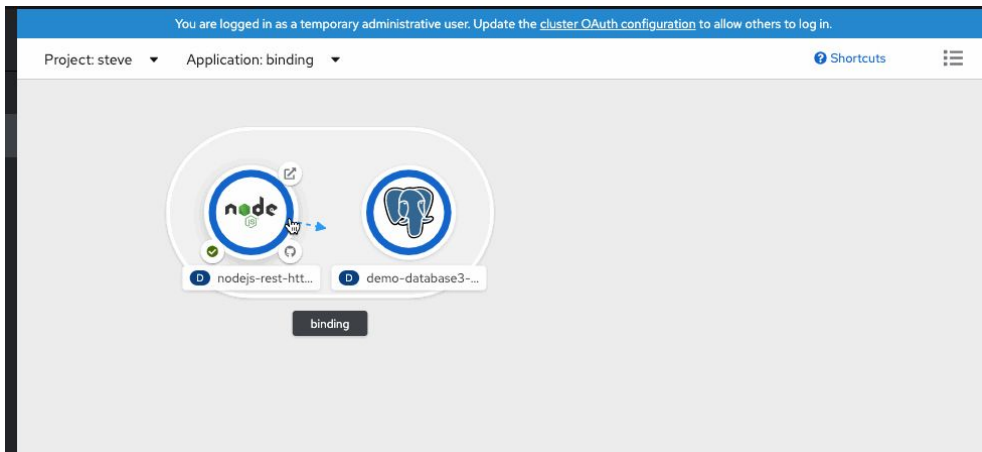
Learn more about service binding:
https://github.com/redhat-developer/service-binding-operator

Project Details & Access

Project Details

- Quick access to current project details
- View dashboard for status and resource utilization
- Actions for edit or delete
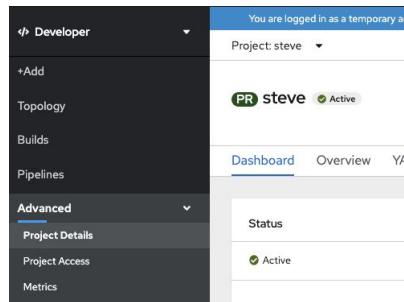
Project Access

- Simplify sharing projects
- Reduces to a simple set of Roles that developer frequently use

Tech Preview
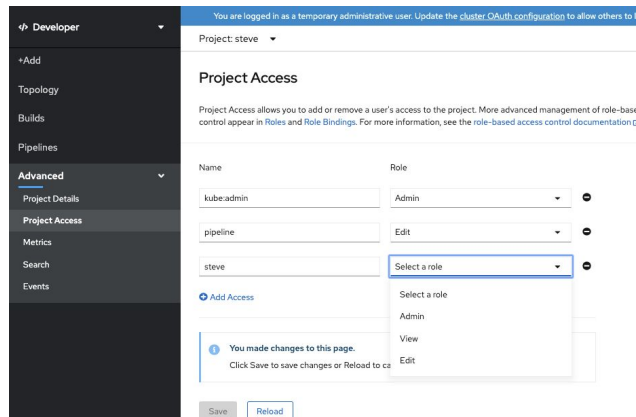
Metrics

Quick access to key application metrics

- Use of Prometheus Query Language
- Easily build up queries and plot to visualize application and component trends
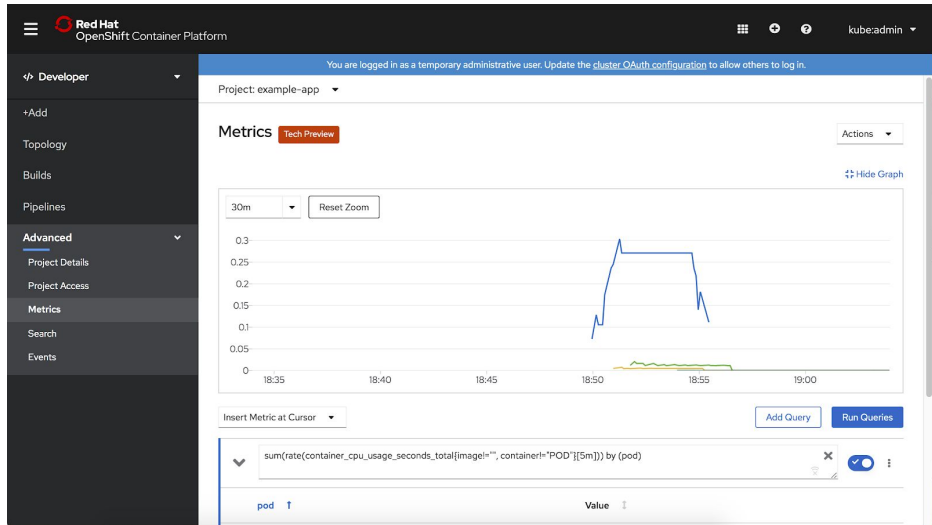
Install & Upgrades

4.3 Supported Providers

Full Stack Automation (IPI)

Pre-existing Infrastructure (UPI)
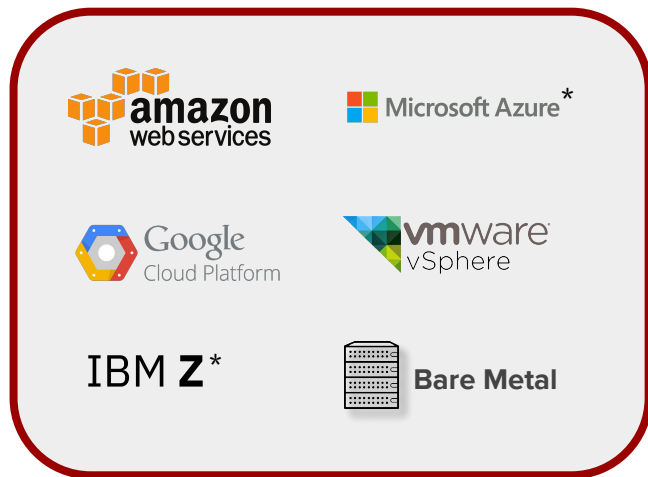
Support planned for an upcoming 4.3 z-stream release

Generally Available

PMs: Katherine Dubé (AWS, Azure, GCP), Maria Bracho (BM UPI, VMware, Upgrades), Peter Lauterbach (RHV), Ramon Acedo Rodriguez (OSP, BM IPI), Mike Barrett (IBM Z & Power)

OpenShift Upgrades

OCP 4.3 Upgrade Channels

- OCP 4.3 includes three upgrade channels:
  - candidate-4.3
    - Should be used to test features coming up in new releases
    - Ideal for test environment
  - fast-4.3
    - This channel will be updated with new 4.3 patch versions as soon as GA.
  - stable-4.3
    - This channel will be updated with new 4.3 patch versions on a time delay by design. This allows Red Hat's SREs to receive feedback from connected environments. If issues are found, then upgrades to it are blocked in both stable and fast channels. New versions on both channels are updated as soon as fixes are in place.

Generally Available

Red Hat

GitOps with ArgoCD Reference Architecture

- Install and configuration of ArgoCD on OpenShift

- OpenShift cluster configs with ArgoCD
  - Cluster config CRs (identify provider, registry, etc)
  - Operator installation via OLM

- Multiple clusters with single GitHub repo
  - Shared configs
  - Cluster-specific configs

- ArgoCD Operator
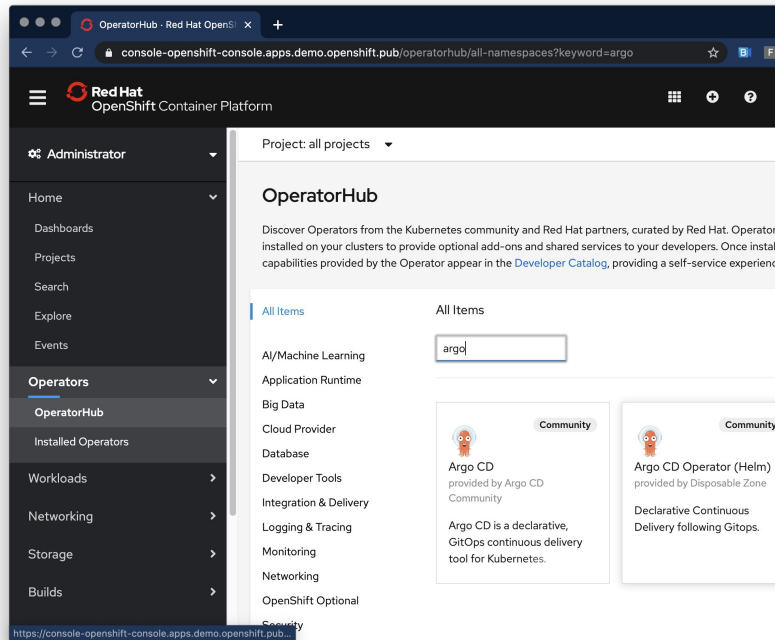
RHEL CoreOS

Red Hat

Red Hat Enterprise Linux CoreOS

4.3 Image Availability: (***** = new)

- OpenStack
- GCP
- Azure

- Amazon
- vSphere
- Bare Metal (unified x86_64 image)*
- IBM Z (DASD & FCP via z-stream)*

FIPS mode support:

- Enforces FIPS validated ciphers for node-level cryptography
- Configurable at install/provisioning

Network Bound Disk Encryption:

- Provides encryption for local storage
- Addresses disk/image theft
- Platform/cloud agnostic implementation
- TPM/vTPM (v2) and Tang endpoints for automatic decryption

| kubelet | cri-o | podman |
| Ignition | systemd | SELinux |

RHEL CoreOS®

Kmods via containers:

- A framework to build and load 3rd party kmods
- Viable for drivers unsuitable for the SRO

Product Manager: Ben Breard   Generally Available

Red Hat

Cluster Monitoring & Logging

Monitoring your own services

Extend existing stack to configure monitoring for any service running on OpenShift.

Goals for this milestone are:

- Feedback!
- Enable additional Prometheus servers that your customers own, but are managed by us.
- Configure monitoring for your business critical services not covered by the out-of-the-box monitoring stack.
- Access metrics through a single, multi-tenant interface.
- Maintain notifications in a centralized Alertmanager setup.
- Developers can query metrics through the developer perspective.

.
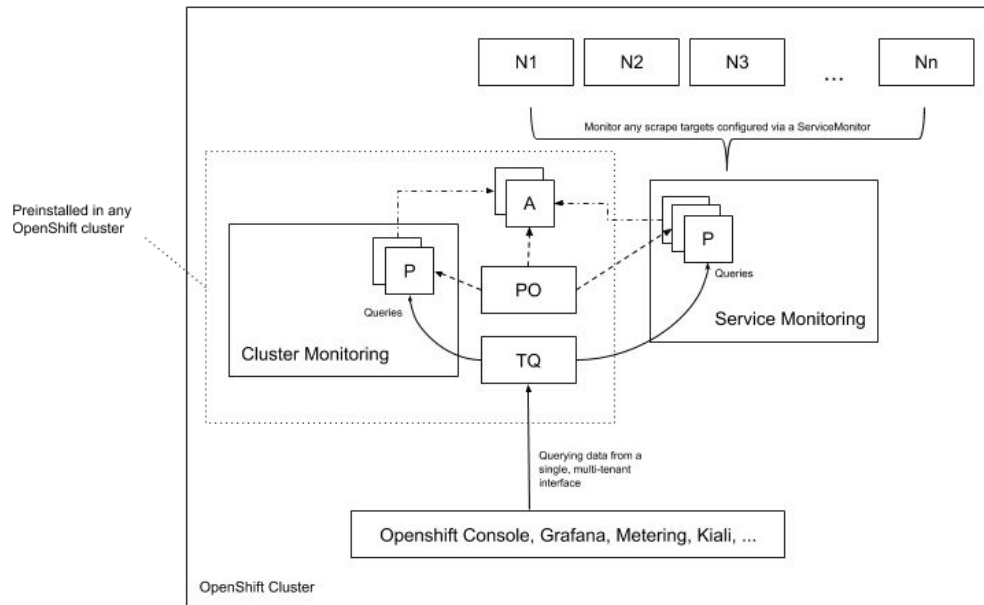
Log forwarding

Foundation for a new ability to configure forwarding logs to various logging systems.

Goals for this milestone are:

- Feedback!
- Expose singleton LogForwarding CRD to configure OpenShift Logging to forward logs to an external system.
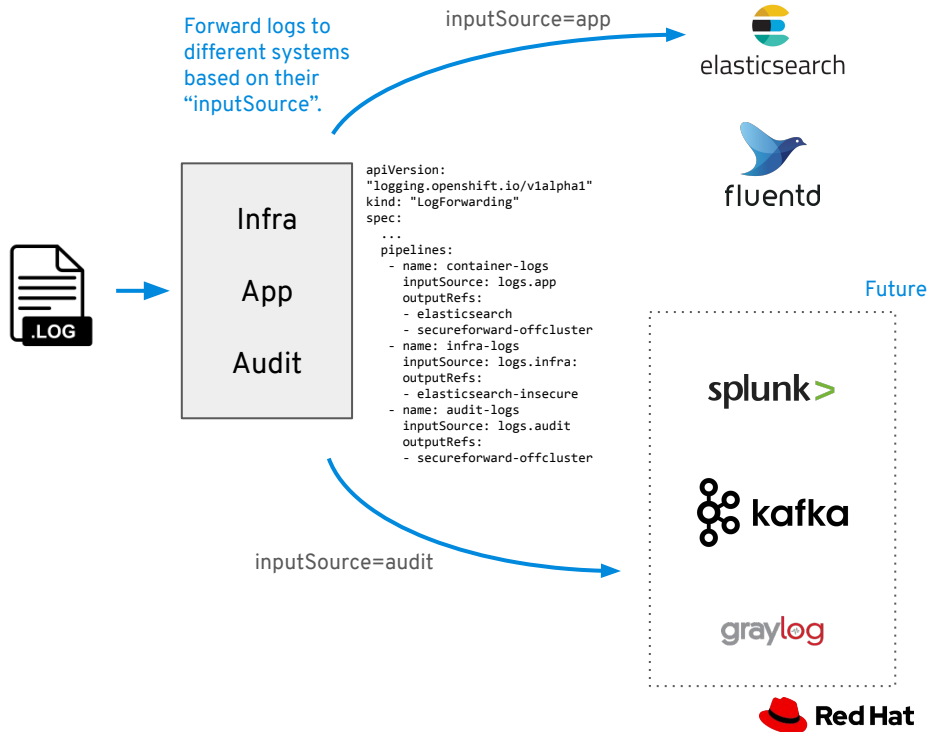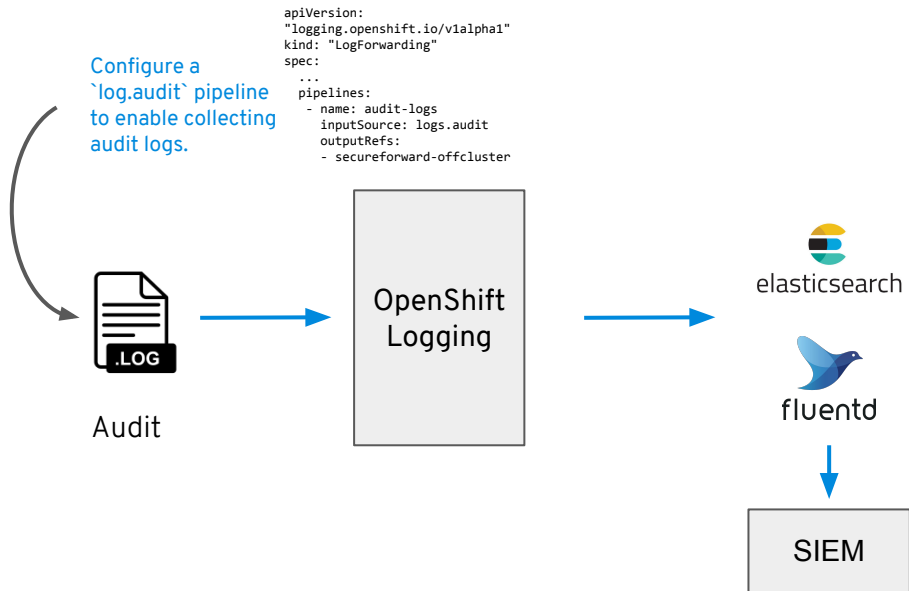- Supported systems: Elasticsearch and another fluentd via secure-forward.
- Allow deployment of OpenShift Logging without deploying the entirety infrastructure (e.g. Kibana, Elasticsearch)
- Support TLS between the collector and destination if so configured.

.

Forward logs to different systems based on their "inputSource".

inputSource=app

elasticsearch

fluentd

```
apiVersion:
"logging.openshift.io/v1alpha1"
kind: "LogForwarding"
spec:
   ...
   pipelines:
   - name: container-logs
     inputSource: logs.app
     outputRefs:
     - elasticsearch
     - secureforward-offcluster
   - name: infra-logs
     inputSource: logs.infra
     outputRefs:
     - elasticsearch-insecure
   - name: audit-logs
     inputSource: logs.audit
     outputRefs:
     - secureforward-offcluster
```

Future

splunk>

kafka

graylog

inputSource=audit

Red Hat

Collect audit logs through log forwarding

Collect and forward audit logs to external systems.

- Configure `logs.audit` pipeline to enable a new ability to collect audit logs and to setup and external system you'd like to forward them.
- Either use your own Elasticsearch or your own fluentd via secure-forward as in previous OCP releases; where you can send them to any SIEM system.

.

Configure a `log.audit` pipeline to enable collecting audit logs.

```
apiVersion:
"logging.openshift.io/v1alpha1"
kind: "LogForwarding"
spec:
  ...
  pipelines:
   - name: audit-logs
     inputSource: logs.audit
     outputRefs:
      - secureforward-offcluster
```

Audit

OpenShift Logging

elasticsearch

fluentd

SIEM

Red Hat

Storage

Storage Devices

Continued improvements

- iSCSI support to GA
- Raw block support additions
  - Raw block with iSCSI to GA
  - Raw Block with Cinder to Tech Preview
- CSI
  - Ember driver Tech Preview
- Continued focus on partner enablement

OCP Supported	
AWS EBS	Fibre Channel
Azure File & Disk	HostPath
GCE PD	Local Volume
VMware vSphere Disk	Raw Block IMPROVED
NFS	iSCSI NEW

Supported via OCS	
File , Block, Raw Block, Object	

Supported via OSP	
Cinder	

Product Manager: Duncan Hardie

Red Hat

OpenShift Container Storage 4.2

GA with OpenShift Container Platform 4.3

Portability

Seamless data placement and access across clouds

Multi Cloud Data Portability/Hybrid Cloud with S3

Consistent set of management tools across clouds
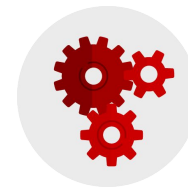
AWS (UPI + IPI), VMware (UPI)

Simplicity

Operator driven install, upgrade, expand through OLM

Integrated OCP + OCS monitoring and management

Dynamic provisioning of persistent volumes for RWX, RWO, S3 in Converged Mode

Scalability

Support Traditional and Emerging OCP Workloads

Easily share data across geo-locations and platforms

5,000 PV's in a 10 node setup

Product Manager: Sudhir Prasad

Thank you

linkedin.com/company/red-hat

facebook.com/redhatinc

youtube.com/user/RedHatVideos

twitter.com/RedHat

Red Hat