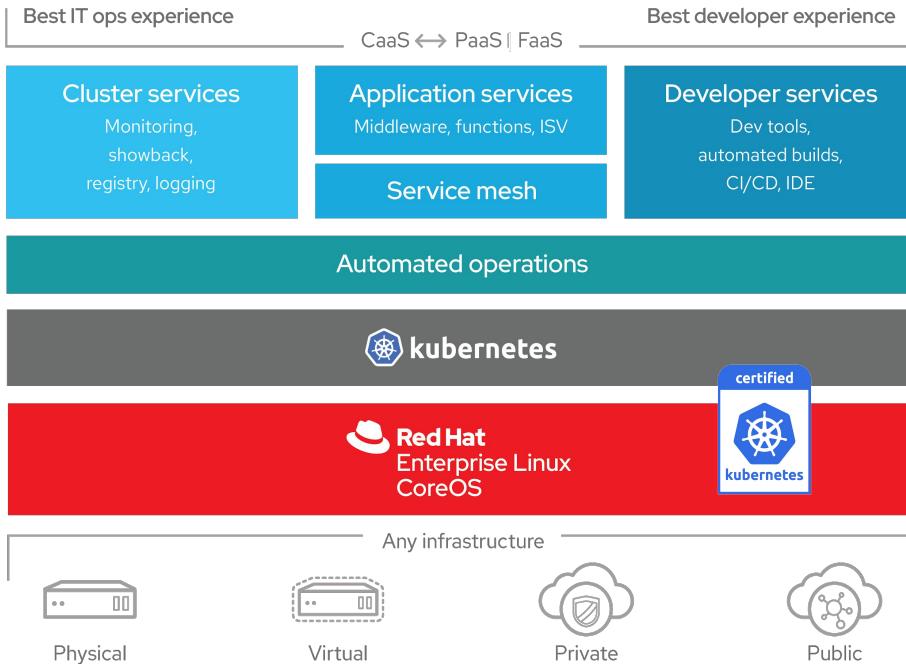




# What's New in OpenShift 4.3

Alfred Bach

Partner Enablement Manager Cloud



# OpenShift 4 Platform

- Fully integrated and automated
- Seamless Kubernetes deployment
- Fully automated installation
- 1-click platform updates
- Autoscaling of cloud resources

# OpenShift 4.3

## INSTALLER CUSTOMIZATION



Improvements for disconnected  
Internal facing/private clusters  
Customer provisioned  
VPC/VNet/etc and subnets

## SECURITY & COMPLIANCE



FIPS validated crypto  
Disk encryption for RHCOS  
Encrypted etcd datastore  
Kubernetes 1.16

## IMPROVED NETWORKING



High performance multicast to  
clients outside cluster  
SR-IOV graduates to GA  
Additional monitoring for OVN

# Install & Upgrades

# 4.3 Supported Providers

Full Stack Automation (IPI)



Microsoft Azure



RED HAT<sup>®</sup>  
OPENSTACK<sup>®</sup>  
PLATFORM

Pre-existing Infrastructure (UPI)



Microsoft Azure\*



IBM Z\*



Bare Metal

\* Support planned for an upcoming 4.3 z-stream release

Generally Available



# Provider Roadmap & Minimum Supported Version

Provider	Full Stack Automation (Installer provisioned infra)	Pre-existing Infrastructure (User provisioned infra)
 <b>amazon web services</b>	4.1	4.1
 <b>Microsoft Azure</b>	4.2	4.3+ (z-stream)
 <b>Bare Metal</b>	4.4 (TBD)	4.1
 <b>Google Cloud Platform</b>	4.2	4.2
 <b>RED HAT OPENSTACK PLATFORM</b>	4.2	4.4
 <b>RED HAT VIRTUALIZATION</b>	4.4	4.4
 <b>vmware vSphere</b>	4.4	4.1
<b>IBM Z</b>	-	4.2+ (z-stream)
 <b>IBM Power Systems</b>	-	4.3+ (z-stream)
 <b>Alibaba Cloud</b>	4.5	-

# Security

# Stronger Platform Security

## Defense in Depth



### CONTROL Application Security

- [FIPS Compliance](#)
- [Encrypt etcd datastore](#)
- [RHEL CoreOS network bound disk encryption](#)
- [Private clusters with existing VPN / VPC](#)
- [Internal ingress controller](#)
- [Ingress Cipher & TLS Policy Configuration](#)
- [Log forwarding \(tech preview\)](#)



### DEFEND Infrastructure



### EXTEND

# RHEL CoreOS

# 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

## Kmods via containers:

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

# 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		

# 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

# OpenShift Console

The future is now.

**Extending the  
Console**

**Improve  
Observability**

**Administration  
made easy**

**Developer  
Focused**

# Enhanced Visibility with the New Project Dashboard

## Project-scope Dashboard gives Developer Clear Insights

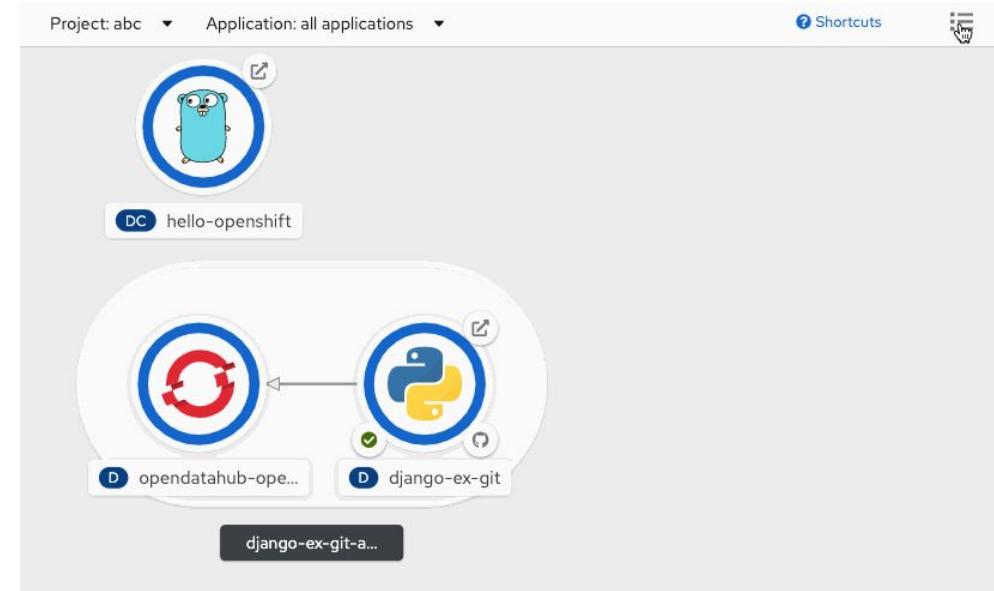
Drill down in context from the new project dashboard widgets:

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

The screenshot shows the 'Project Details' page for the 'tony' project. The top navigation bar includes the Red Hat logo, 'OpenShift Container Platform', and user information ('kube:admin'). The left sidebar has a 'Projects' section with options like 'Search', 'Explore', 'Events', 'Operators', 'Workloads', 'Networking', 'Storage', 'Builds', 'Monitoring', 'Compute', 'User Management', and 'Administration'. The main content area has tabs for 'Dashboard', 'Overview', 'YAML', 'Workloads', and 'Role Bindings'. The 'Dashboard' tab is selected, showing sections for 'Details', 'Status', 'Inventory', 'Utilization', and 'Pod count'. The 'Status' section shows 'Active' status with a green checkmark and 'No project messages'. The 'Inventory' section lists 4 Deployments, 4 Pods, 0 PVCs, 1 Service, 0 Routes, 4 Config Maps, and 21 Secrets. The 'Utilization' section shows CPU usage over time (15:10, 15:30, 15:50) with a chart showing values of 8.39m and 96.31 MiB. The 'Pod count' section shows a value of 4. On the right side, there are panels for 'Launcher' (with a 'Service Mesh' link), 'Activity' (showing 'Ongoing' with no events), and 'Recent Events' (listing various successful and CSV-related events from 15:07 to 16:00).

# Application Topology streamlined flows

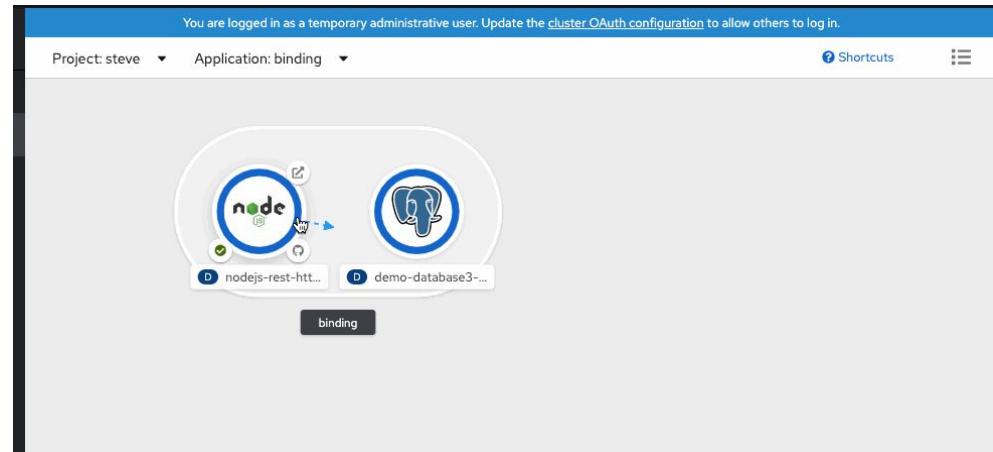
- Toggle between List and Topology views
- Easily group applications
- Connect/bind applications easily
- Contextual actions
- Quickly delete applications



# 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

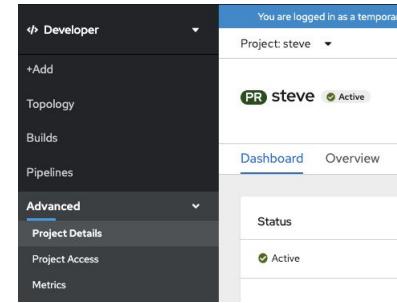


Learn more about service binding:  
<https://github.com/redhat-developer/service-binding-operator>

# Project Details & Access

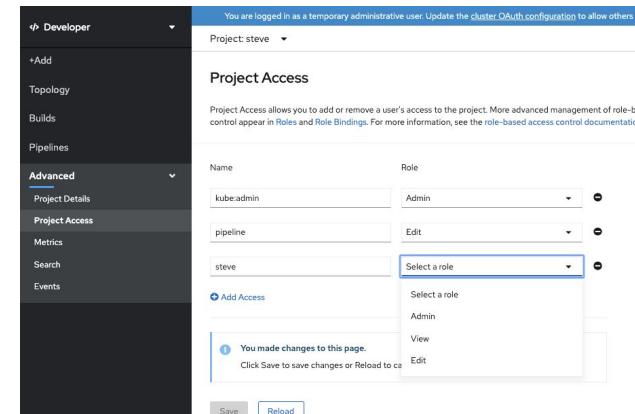
## Project Details

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



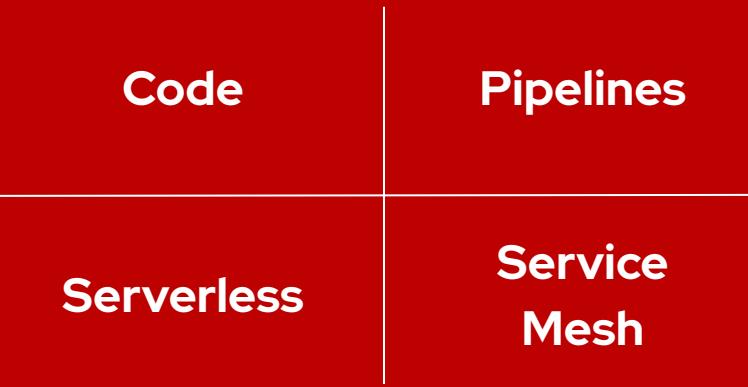
## Project Access

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



# Cloud Native Development

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

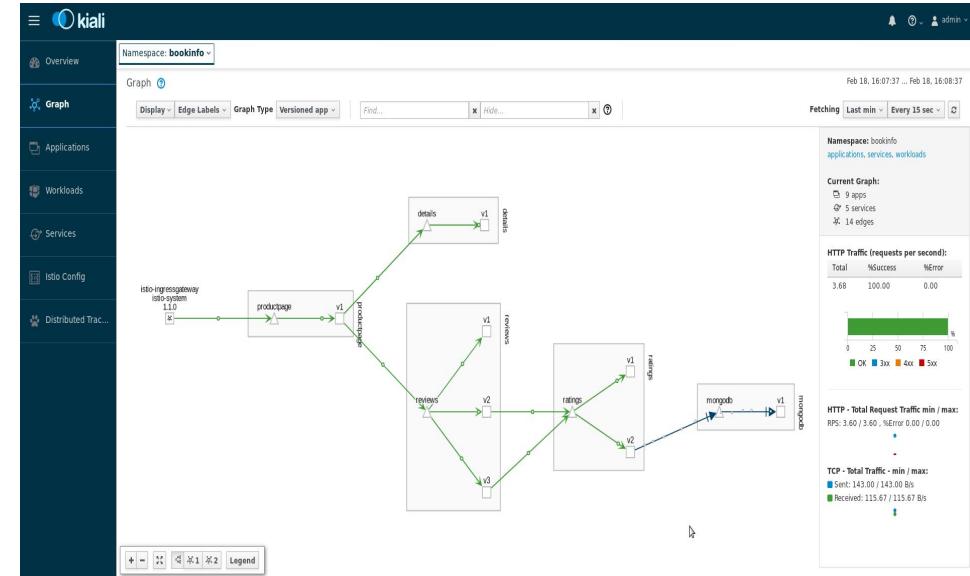


# Service Mesh

# 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



# Serverless

# 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>

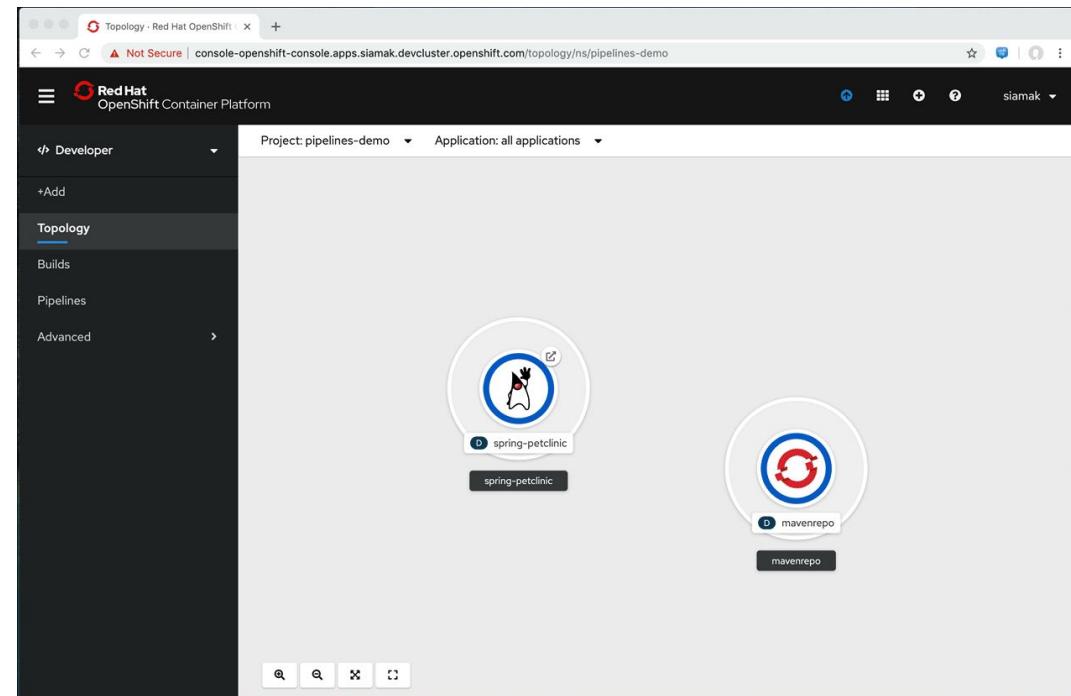
[Knative Tutorial](#)

The screenshot shows the OpenShift web console interface. At the top, there is a navigation bar with 'Installed Operators' and 'Operator Details'. Below this, the 'OpenShift Serverless Operator' is listed as version 1.3.0 provided by Red Hat, Inc. The interface includes tabs for 'Overview', 'YAML', 'Events', and 'Knative Serving'. The 'Overview' tab is selected, showing a summary of the operator's status and a link to the Red Hat OpenShift Container Platform provider. On the right side, a detailed view of a Knative application deployment named 'spring-petclinic-bchpw-deployment' is shown. This view includes a circular progress indicator showing '4 scaling to 10', and a table with columns for Name, Namespace, Labels, Update Strategy, MaxUnavailable, MaxSurge, ProgressDeadline, and MinReadySeconds. The deployment is currently at 25% greater than 10 pods, with a progress deadline of 2m 0s and no minimum ready seconds. The labels include app=spring-petclinic-bchpw, app.kubernetes.io/...=springBootApp, and serving.knative.dev/configured=1. The Red Hat logo is visible in the bottom right corner.

# Pipelines

# 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



# OpenShift Pipelines in OCP 4.3

- Default pipeline on app import (+Add) in Dev Console
- Pipeline objects in Admin Console
- New Tekton CLI commands
  - Start pipelines
  - Start tasks
  - Create resources

The screenshot displays two side-by-side views of the Red Hat OpenShift Container Platform interface.

**Left View (Dev Console):** Shows the navigation bar "Red Hat OpenShift Container Platform" and the "Administrator" dropdown. The main menu includes Home, Operators, Workloads, Networking, Storage, Builds, Pipelines, Tasks, Task Runs, Cluster Tasks, and Monitoring.

**Right View (Admin Console):** Shows the navigation bar "Red Hat OpenShift Container Platform" and the "Developer" dropdown. The main menu includes +Add, Topology, Builds, Pipelines, and Advanced. Under Pipelines, there are sub-options for Pipelines, Pipeline Runs, Pipeline Resources, Tasks, Task Runs, Cluster Tasks, and Monitoring.

**Details Panel:** Shows a component named "Red Hat OpenJDK 11" with the description "Builder Java OpenJDK 11. Build and run Java applications using Maven and OpenJDK 11. Sample repository: <https://github.com/jboss-openshift/openshift-quickstarts>".

**Form Fields:** A form for creating a new pipeline component. It includes fields for "Application" (set to "Triggers"), "Name" (input field), and a description: "A unique name given to the component that will be used to name associated resources".

**Pipelines Tab:** A tab labeled "Pipelines" with a "Dev Preview" badge. It contains a checkbox for "Add pipeline" and a link to "Hide pipeline visualization".

**Diagram:** A small diagram showing a sequence of nodes: "build" and "deploy" connected by an arrow.

# CodeReady / Dev Tools

# odo - OpenShift's Dev-Focused CLI

Focus on additional stability & customer usage (46 issues fixed)

Improve output when showing list of components

Focus on R&D/spike for new use cases: Knative, other runtimes, devfile support, etc

```
$ odo create wildfly backend
Component 'backend' was created.

$ odo push
Pushing changes to component: backend

$ odo create php frontend
Component 'frontend' was created.
To push source code to the component run 'odo push'

$ odo push
Pushing changes to component: frontend

$ odo url create
frontend - http://frontend-myapp.192.168.99.100.nip.io

$ odo watch
Waiting for something to change in /dev/frontend
```

# CodeReady Containers: OpenShift on your Laptop

## New in 4.3:

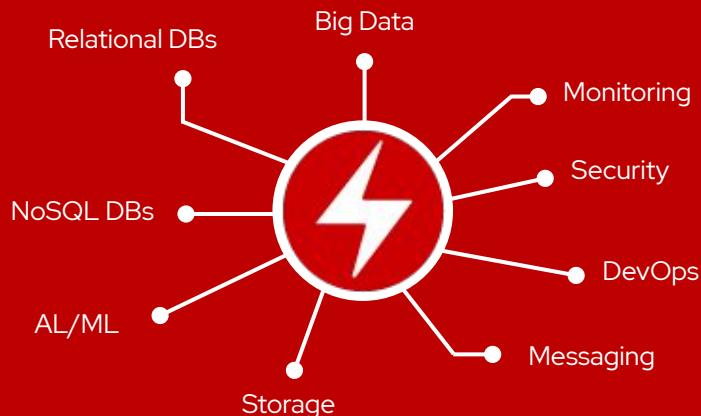
- Automatic certificate rotation for internal node<->master communication
- 4.3 embedded GA version targeted for February 4th
- Ongoing updates with 4.2 z-stream updates
- Deprecated: removed VirtualBox support
- crc version outputs embedded OCP version number
- Many stability fixes around host networking

Provides a pre-built development environment based on **Red Hat Enterprise Linux** and **OpenShift** for quick container-based application development. Use with OpenShift on-premises or cloud.

```
$ crc setup  
Prepare your machine for running OpenShift  
  
$ crc start  
Start with the Hyperkit 4.3 bundle  
  
$ crc status  
Get the status of the cluster
```

# A broad ecosystem of workloads

Operator-backed services allow for a  
SaaS experience on your own infrastructure



# Operator Telemetry & Alerts

OpenShift 4.3 Cluster

OPERATOR LIFECYCLE MANAGER

aqua v1.0.1   mongoDB v2.0.0   MEMSQL v1.3.5   PlanetScale v4.1.2



OLM reports installed Operators name, version, channel and health state to Red Hat

Alerts - Alertmanager List

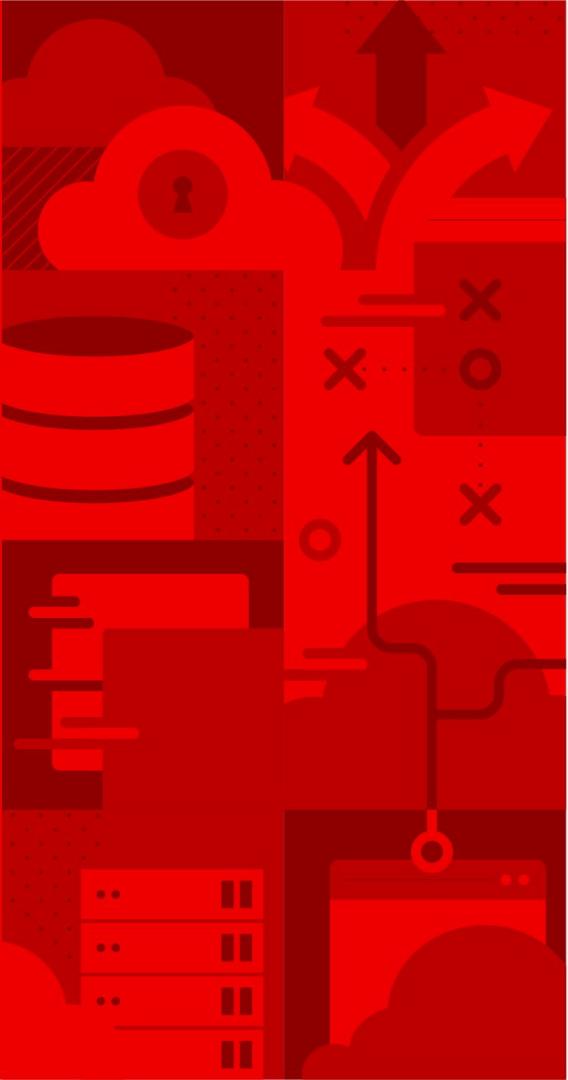
Alerts help notify you when certain conditions in your environment are met. Learn more about how alerts are configured.

Start	Severity
2019-04-15T20:00:00Z	Warning
2019-04-15T20:00:00Z	Warning
2019-04-15T20:00:00Z	Critical

OLM fires alerts about Operator transitioning into failure state

# OPENSHIFT ROADMAP

Q3 CY2019 OpenShift 4.2		Q1 CY2020 OpenShift 4.3		CY2020 OpenShift 4.4+	
HOSTED	PLATFORM	HOSTED	PLATFORM	HOSTED	PLATFORM
HOSTED	PLATFORM	HOSTED	PLATFORM	HOSTED	PLATFORM
<ul style="list-style-type: none"><li>• Insights Operator</li><li>• Azure Red Hat OpenShift new features (monitoring, logging)</li></ul>	<ul style="list-style-type: none"><li>• Kubernetes 1.14 w/ CRI-O runtime</li><li>• Disconnected Install and Update</li><li>• Automated Installer for Azure, OSP, GCP</li><li>• Pre-existing Infra Installer for GCP</li><li>• Cluster-wide Egress Proxy</li><li>• OVN Tech Preview</li><li>• OpenShift Container Storage 4.2 (1 month after)</li></ul>	<ul style="list-style-type: none"><li>• Developer Console GA</li><li>• OpenShift Serverless (Knative) - TP</li><li>• OpenShift Pipelines (Tekton) DP3</li><li>• CodeReady Containers GA</li><li>• Developer CLI (odo) GA</li></ul>	<ul style="list-style-type: none"><li>• OperatorHub Enhancements</li><li>• Operator Deployment Field Forms</li><li>• Application Migration Console</li></ul>	<ul style="list-style-type: none"><li>• Kubernetes 1.16 w/ CRI-O runtime</li><li>• Automated Installer for RHV</li><li>• Private/Internal Clusters support from the installer</li><li>• Deploy to pre-existing VPC &amp; Subnets</li><li>• FIPS</li><li>• Pre-existing Infra Installer for OSP</li><li>• OpenShift Container Storage 4.3</li><li>• Subscription Mgmt Improvements (cloud.redhat.com)</li><li>• Azure Red Hat OpenShift new features (private clusters)</li><li>• Azure Red Hat OpenShift preview of 4.x</li><li>• OSD on Google Cloud preview on 4.x</li></ul>	<ul style="list-style-type: none"><li>• OpenShift Pipelines (Tekton) TP</li><li>• Helm 3 TP</li></ul>
<ul style="list-style-type: none"><li>• OpenShift Pipelines (Tekton) GA</li><li>• Guided application creation</li><li>• Helm 3 GA</li></ul>	<ul style="list-style-type: none"><li>• Metering for Services</li><li>• Windows Containers (Planned)</li><li>• GPU Metering</li><li>• Application Operator Binding - DP</li></ul>	<ul style="list-style-type: none"><li>• Monitor application workloads</li><li>• Simplify OLM interactions</li><li>• Improving native developer console for monitoring and troubleshooting</li></ul>	<ul style="list-style-type: none"><li>• Compact 3 node clusters</li><li>• OVN GA w/ Windows Networking Integration (Planned)</li><li>• Windows Containers GA</li><li>• Multi-cluster summary dashboards</li><li>• Centralized cluster updates</li><li>• Compliance operator</li><li>• Node problem detector</li><li>• IPv6 (single/dual on control plane)</li><li>• HTTP/2 Support</li><li>• CSI certification suite</li></ul>	<ul style="list-style-type: none"><li>• Enhanced consumption building</li><li>• Regulatory compliance</li><li>• Machine autoscaling</li><li>• Google cloud platform</li></ul>	



# Thank you

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