OPENSHIFT 4 UPDATE
Developer Edition

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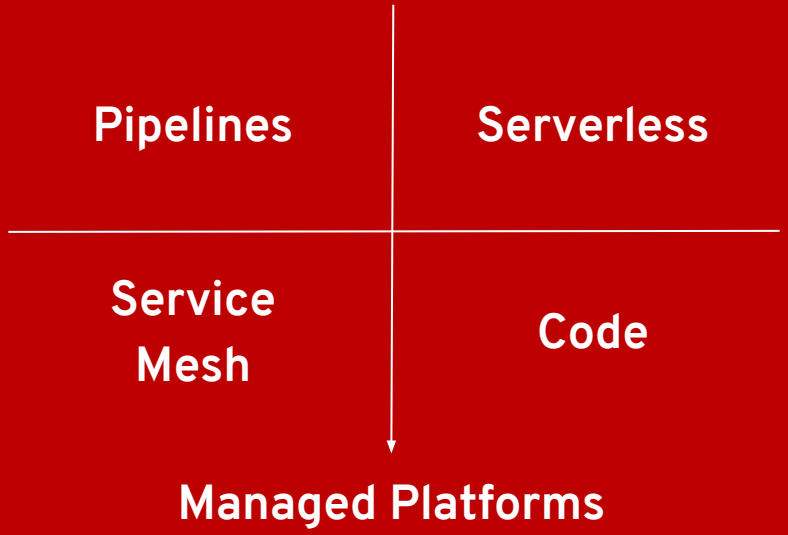
Red Hat Mobile Portfolio Center Event
June 10, 2019

Next wave of developer tools

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



Red Hat

PIPELINES

PIPELINES IN OPENSHIFT 4

Dual Pipeline Strategy

Cloud-native CI/CD for OpenShift

Transition From Centralized, alignment with Kubernetes CRD's

Support for existing investments in Jenkins

WHAT IS CLOUD-NATIVE CI/CD?

CONTAINERS

Built for containers and runs on Kubernetes

SERVERLESS

No CI/CD server to manage and maintain

DEVOPS

Microservices and distributed teams

a set of shared, open source components for building **Kubernetes**-style CI/CD systems

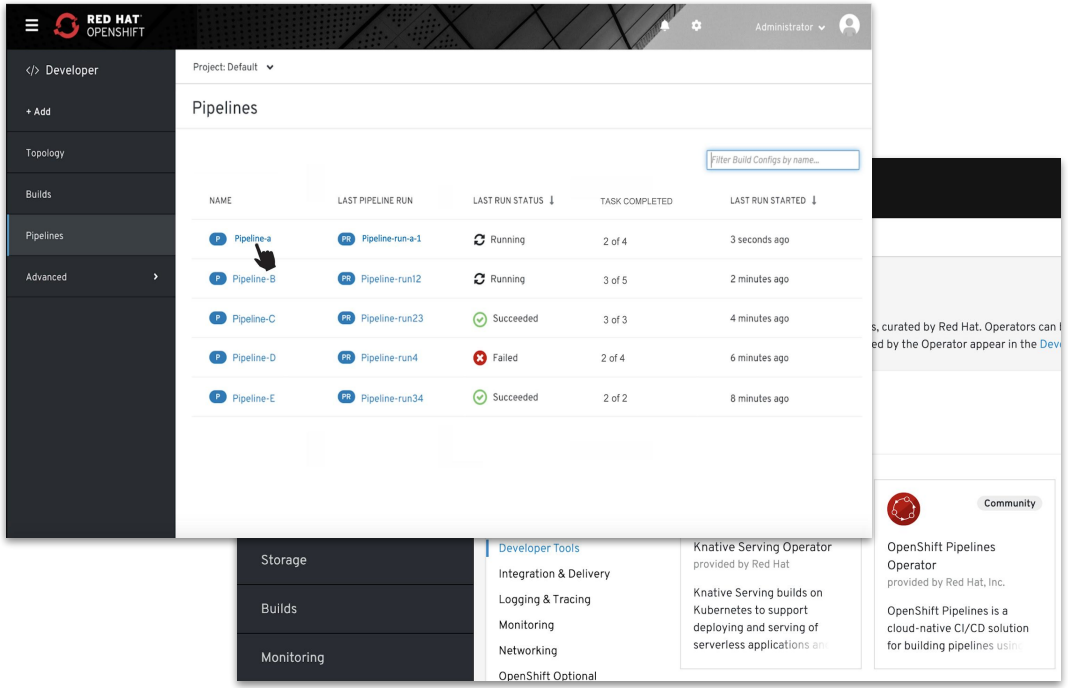
Governed by the **Continuous Delivery Foundation**

Contributions from Google, Red Hat, Cloudbees, Pivotal, IBM and more

Cloud-native CI/CD with OpenShift Pipelines

Based on Standard Tekton CRD's For Portability Across Kube Distros

- Based on Tekton Pipelines
- Runs serverless (no babysitting!)
- Containers as building blocks
- Deploy to multiple platforms
- Standard CRDs
- Pipelines portable to any Kubernetes
- Available in OperatorHub



Dev Preview on OCP 4.1 (June)

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Cloud-native CI/CD with OpenShift Pipelines

A Peek At Tekton CRD Pipeline Configuration

```
apiVersion: tekton.dev/v1alpha1
kind: Pipeline
metadata:
 name: funky-deploy-pipeline
spec:
 resources:
 ... # git, images, etc
 tasks:
 - name: build-app
   taskRef:
     name: mvn-build
   ...
 - name: build-image
   taskRef:
     name: s2i-java
   ...
 - name: deploy
   taskRef:
     name: openshift-cli
   ...
```

Inputs (e.g. git repo) to and outputs (e.g. images) from the pipeline

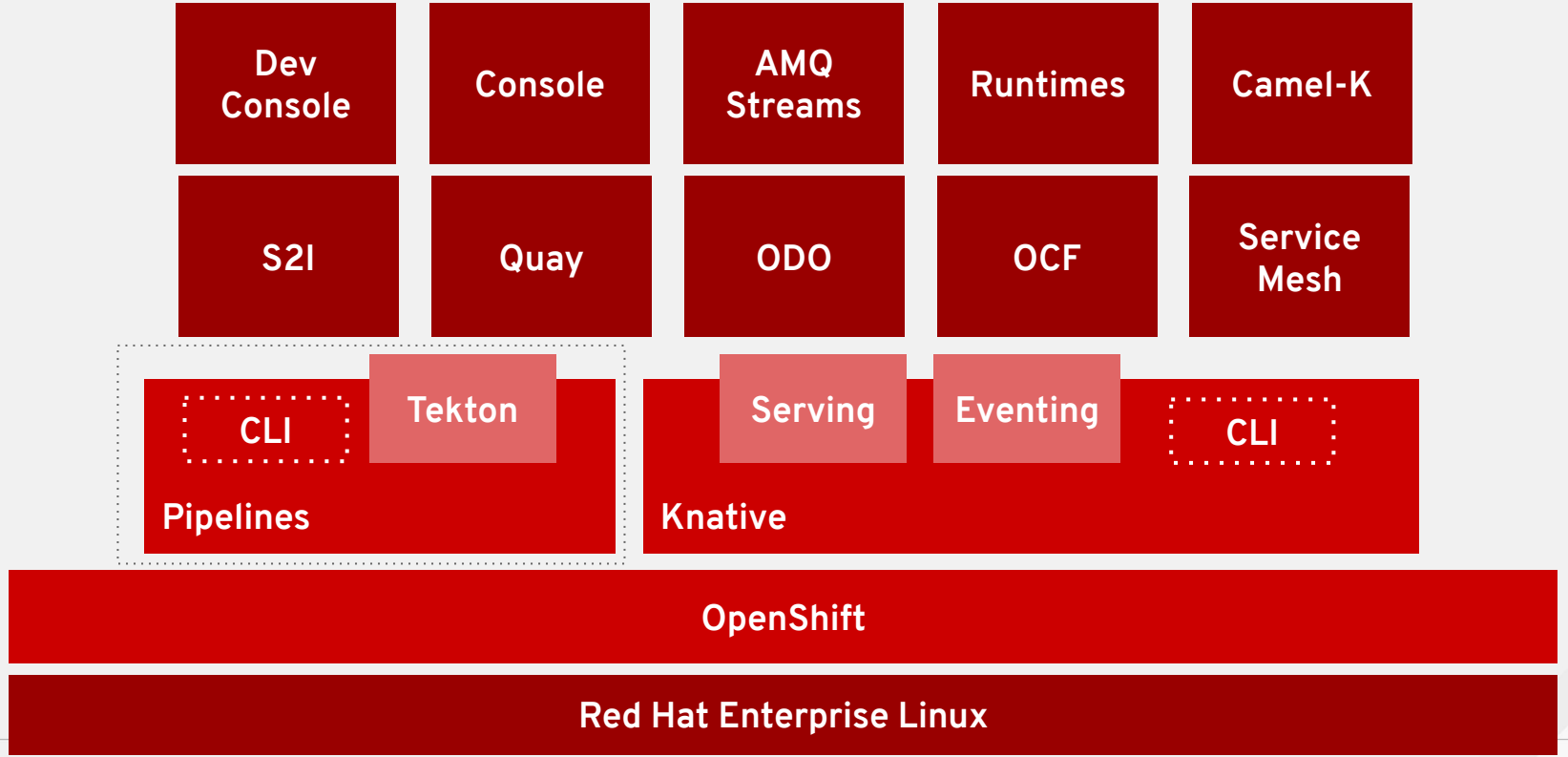
Provided task library:
`s2i, buildah, oc, jib, kaniko, etc`

User can create custom ones

SERVERLESS

Serverless: The (evolving) big picture

..building a foundation of FAAS and Serverless Systems On KNative



...an extension to Kubernetes API exposing building blocks to build modern, source-centric, and container-based applications that can run anywhere"

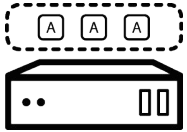
Knative Components

Build

A pluggable model for building artifacts, like jar files, zips or containers from source code.

Serving

An event-driven model that serves the container with your application and can "scale to zero".



Eventing

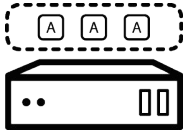
Common infrastructure for consuming and producing events that will stimulate applications.

Pipelines

Provides Kubernetes native modern resources for declaring CI/CD pipelines.

Serving

An event-driven model that serves the container with your application and can "scale to zero".

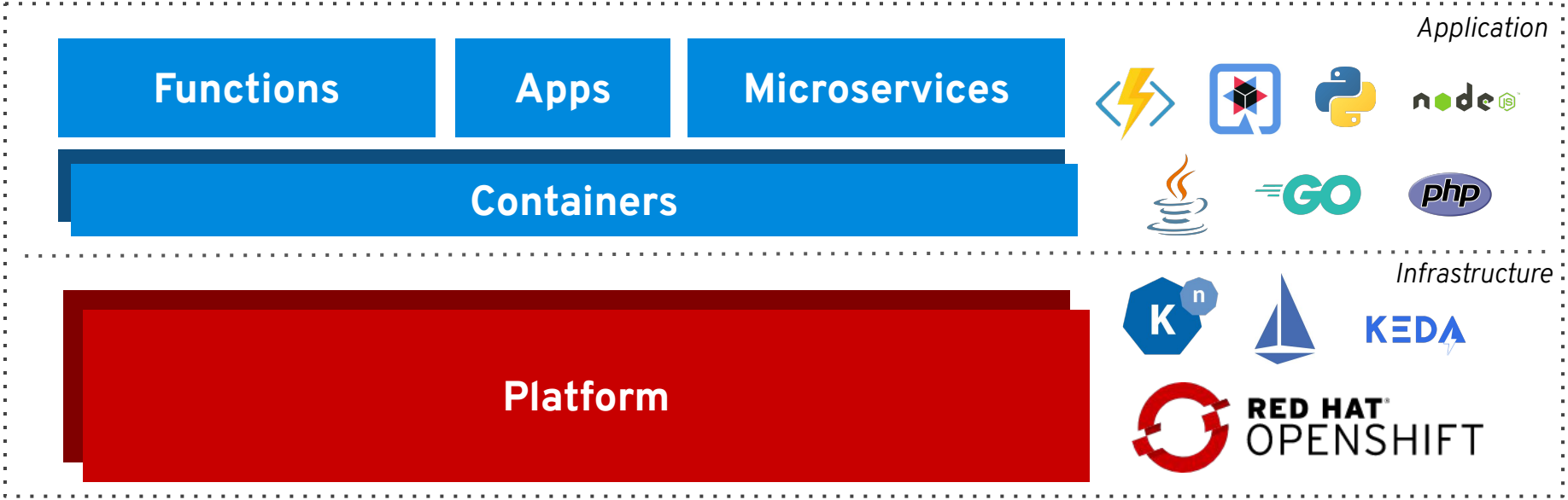


Eventing

Common infrastructure for consuming and producing events that will stimulate applications.

OpenShift Serverless

Expanding capabilities beyond just FAAS



Tech Preview 4.2

OpenShift Serverless

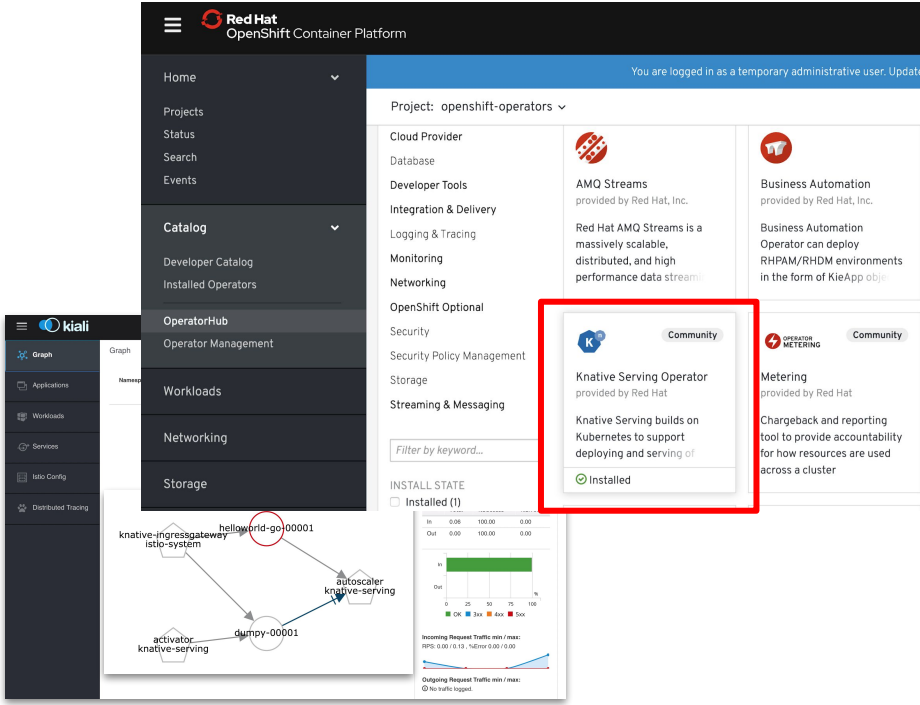
Key Features

- 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 v0.6 (v1beta1 APIs)
- No vendor lock in

Learn more

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

http://bit.ly/knative-tutorial



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"Lift & Shift" to Serverless

Kubernetes

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
 name: frontend
 labels:
   app: guestbook
spec:
 selector:
   matchLabels:
     app: guestbook
     tier: frontend
 replicas: 1
 template:
   metadata:
     labels:
       app: guestbook
       tier: frontend
   spec:
     containers:
     - image: markusthoemmes/guest
       name: guestbook
       resources:
         requests:
           cpu: 100m
           memory: 100Mi
       env:
       - name: GET_HOSTS_FROM
         value: dns
       ports:
       - containerPort: 80
```

```yaml
---
apiVersion: v1
kind: Service
metadata:
 name: frontend-service
 labels:
   app: guestbook
   tier: frontend
spec:
 ports:
 - port: 80
 selector:
   app: guestbook
   tier: frontend
---
apiVersion: route.openshift.io/v1
kind: Route
metadata:
 name: frontend-route
spec:
 to:
   kind: Service
   name: frontend-service
```

53 lines

Knative

```yaml
apiVersion: serving.knative.dev/v1alpha1
kind: Service
metadata:
 name: frontend
spec:
 template:
   metadata:
     labels:
       app: guestbook
       tier: frontend
   spec:
     containers:
     - image: markusthoemmes/guestbook
       resources:
         requests:
           cpu: 100m
           memory: 100Mi
       env:
       - name: GET_HOSTS_FROM
         value: dns
       ports:
       - containerPort: 80
```

22 lines

Developer Preview

Demo: https://www.youtube.com/watch?v=YFI36EteDOs

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OpenShift Serverless + Azure Functions

Key Features

- Enable FaaS in OpenShift
- Familiar developer experience using VS Code and Azure CLI
- Polling based auto-scaling for Azure Queues, Kafka...
- Reuse Knative event sources, HTTP auto-scaling
- On premise or Any cloud.

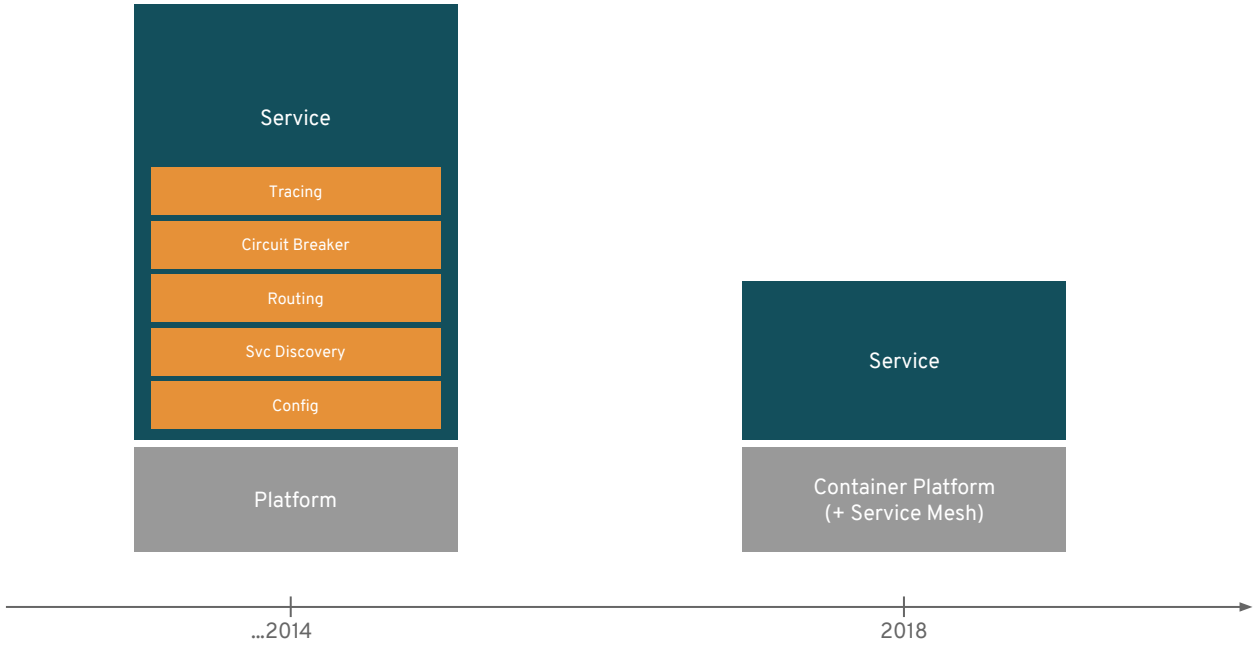
Learn more

https://github.com/kedacore/keda

In partnership with

SERVICE MESH

Microservices Evolution



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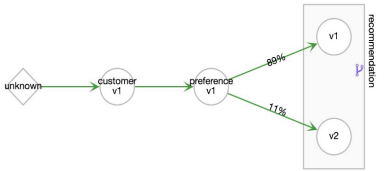
OpenShift Service Mesh



Jaeger

Secure

Istio

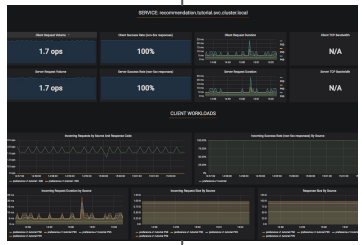
Observe

Connect

Control

Observe

Prometheus



kiali

Kiali

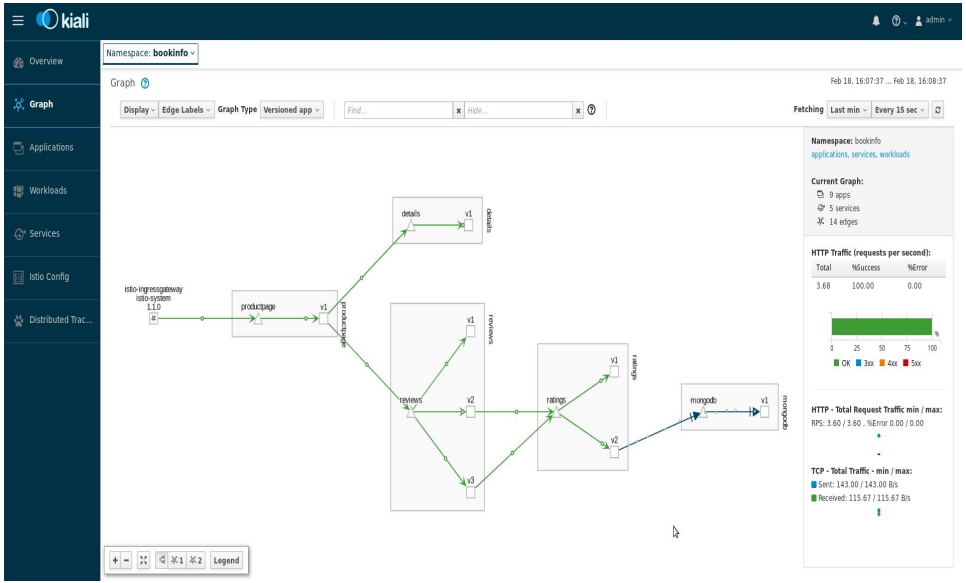
Grafana

Red Hat

OpenShift Service Mesh

Key Features

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

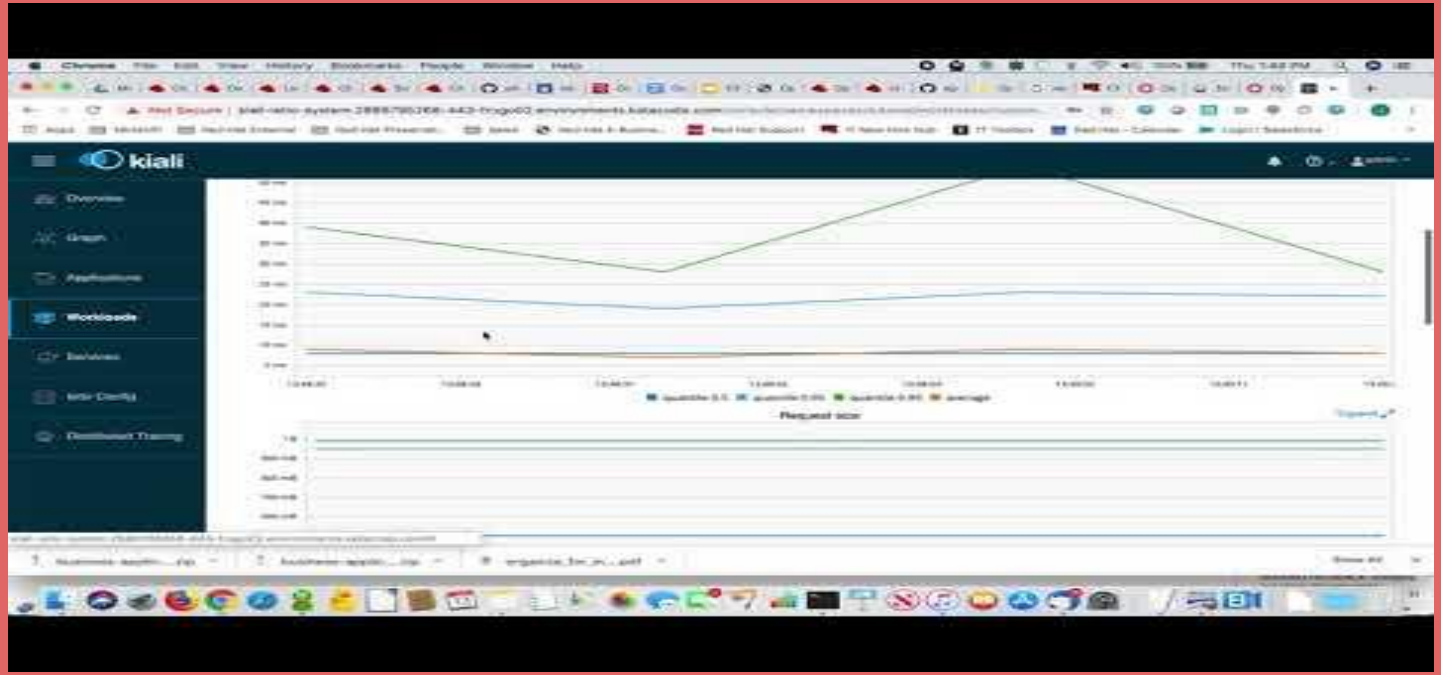


Try It: https://learn.openshift.com/servicemesh/

Generally Available in July

KIALI DEMO

http://learn.openshift.com/servicemesh



Click Image to view on YouTube

redhat.

DEVELOPER TOOLS AND EXTENSIONS

DEVELOPERS FACE NEW CHALLENGES

Config and Setup

24%

Of a development team's weekly time is spent building and maintaining developer environments.

Dev Tool Integration

41%

Of enterprises cite a lack of integration of development tools and process as a primary challenge of container adoption.

Sources: Cloud development Survey 2017 - Evans Data Corp; NGINX app dev survey 2017

OUR FOCUS: MODERN. TEAMS. CLOUD.

CodeReady Workspaces

The collaborative OpenShift-Native IDE. Free for any customer of OpenShift Dedicated or OpenShift Container Platform.

Container Workspaces

Workspace replicas to end "works on my machine" and enable team collaboration.

DevOps Integrations

Reference developer workspaces from any issue, failed build, or git notification.

Protect Source Code

Full access to source code without any of it landing on hard-to-secure laptops.

Based on the open Eclipse Che project	Red Hat Linux and Application Infrastructure	Plugin model for extensibility	Serverless support (coming later)

Use It To: Replace VDI for devs, and enable true container-based DevOps.

Try: http://che.openshift.io

Generally Available

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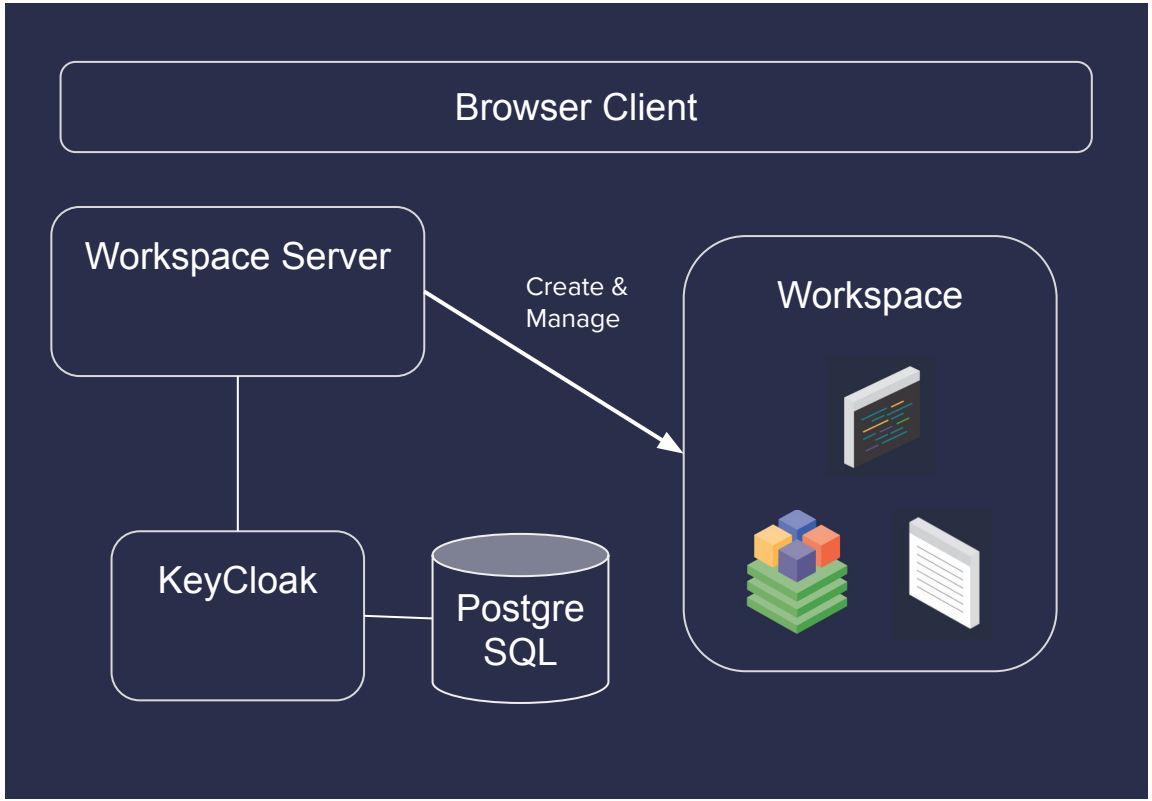
CodeReady Workspaces



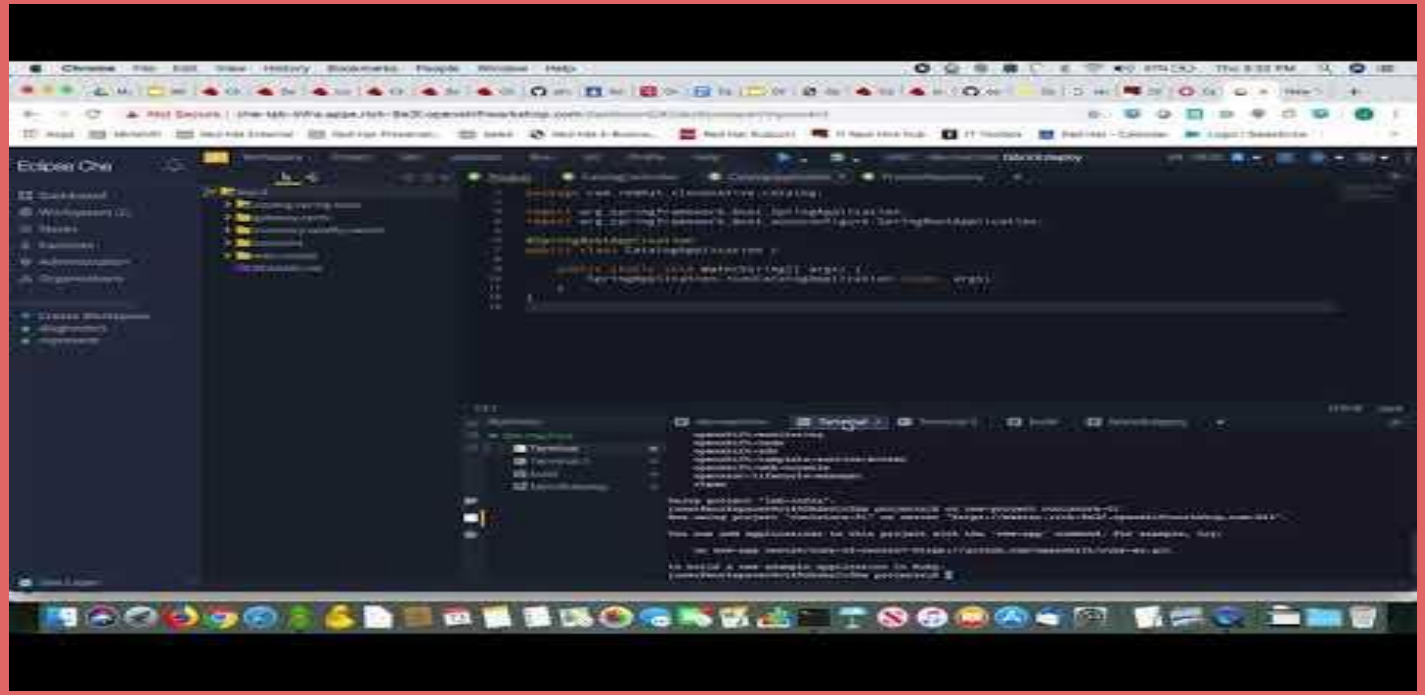
Workspaces are managed by a **Workspace Server**

- Workspace Orchestration
- Stacks
- Factories
- Administration
- Organizations & Members

KeyCloak Server

- User Mgmt

CODEREADY WORKSPACE DEMO



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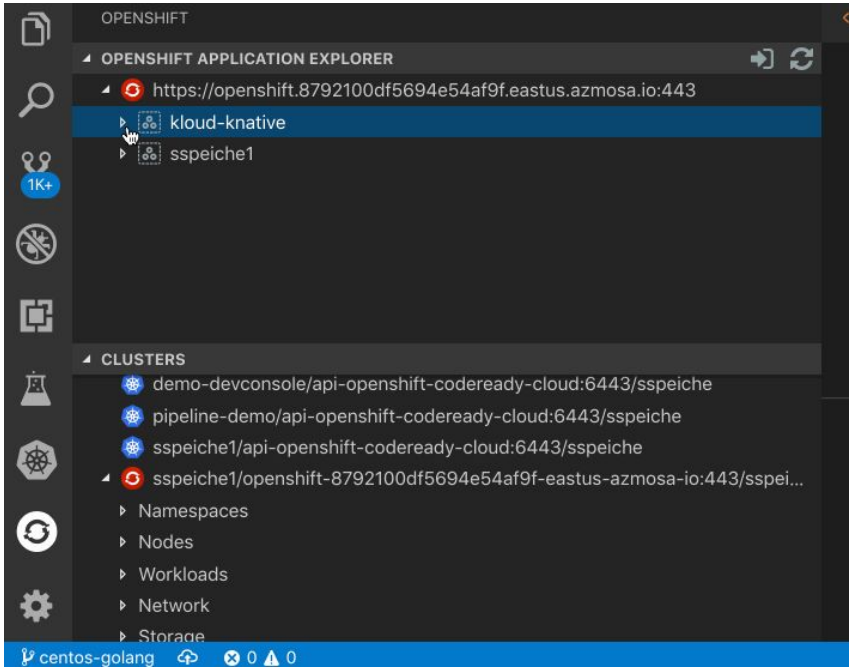
VS Code Kubernetes Extension

Kubernetes Extension Improvements

- Collaboration spearheaded by Red Hat and OpenShift needs
- Many improvements around:
  - Non-cluster-admin use cases
  - Auto-hide Helm features when no Tiller installed
  - Add nodes to navigator

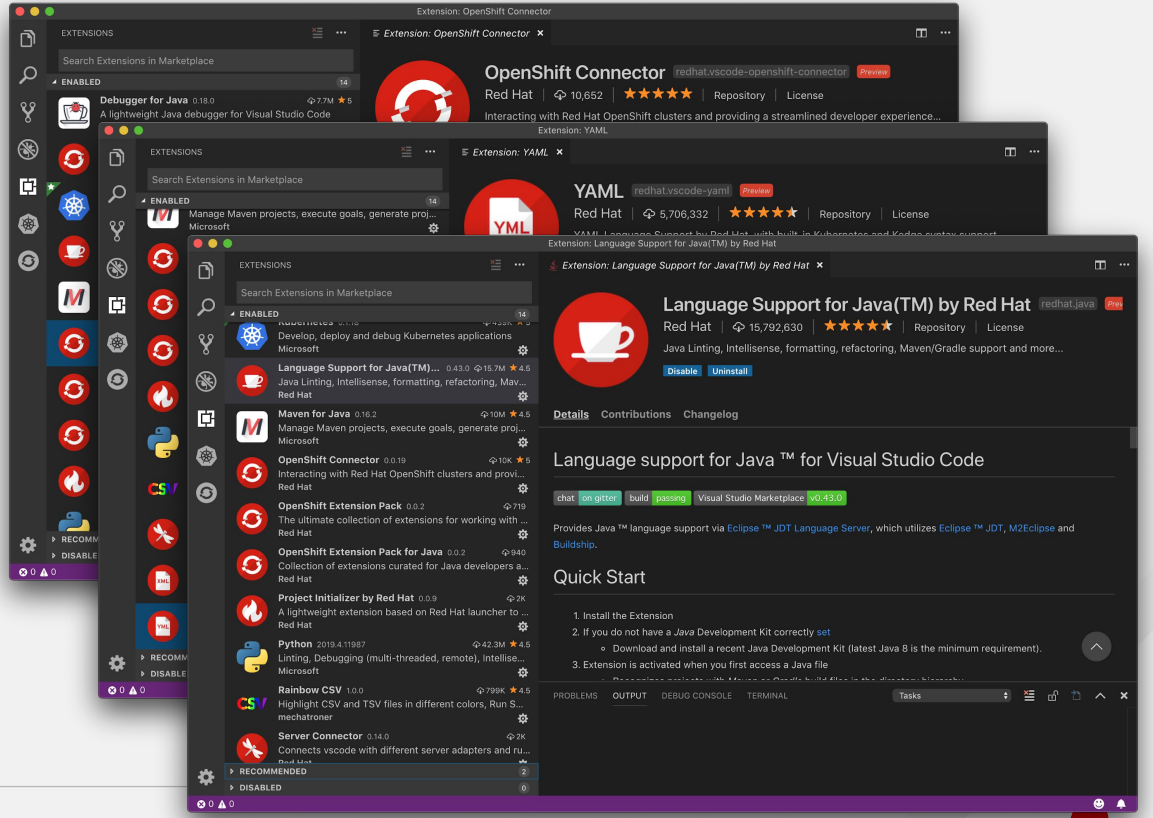
OpenShift Improvements

- OpenShift logo on OpenShift clusters
- Add: Routes, DeploymentConfig, Projects, ImageStreams
- Ability to set Project context



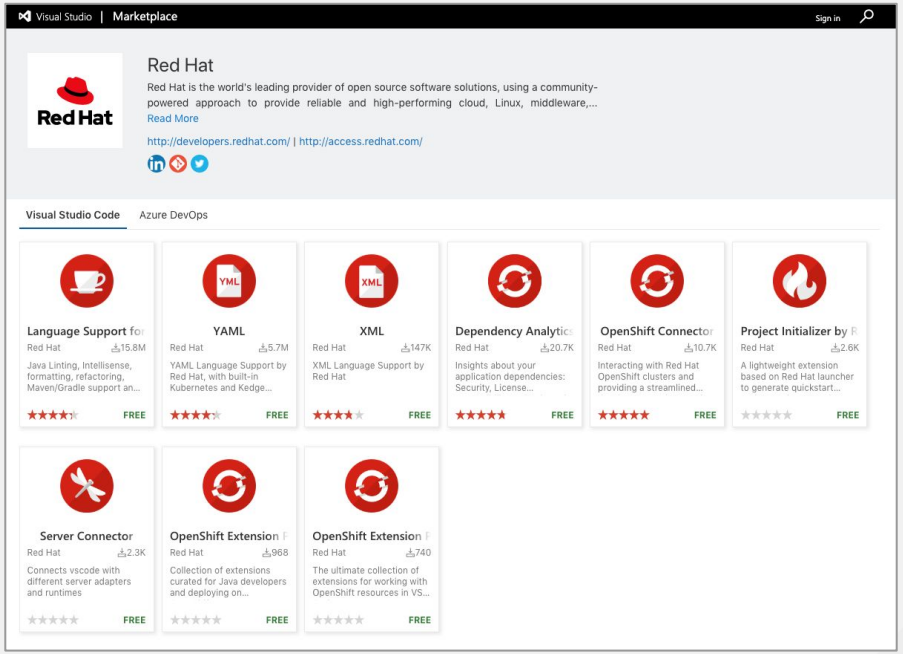
Visual Studio Code and Red Hat!

- Our first extension, Language Support for Java™ by Red Hat, was published in Sept., 2016 as an experiment.
- Over 50 releases later, it's been downloaded nearly **16 million** times by over **2.5 Million** developers!
- We've been adding more extensions to help developers using VS Code have a fantastic experience when coding in Java, XML, Yaml, etc., or when working with OpenShift or other technologies where Red Hat is the expert.



Visual Studio Code Plugins

Java	>15M downloads + updates
Kube YAML	>5M downloads + updates
XML	>139k downloads + updates
Analytics	>17k downloads + updates
OpenShift	>10k downloads + updates
Project Initializer	>2k downloads + updates



odo: OpenShift's Dev-focused CLI

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

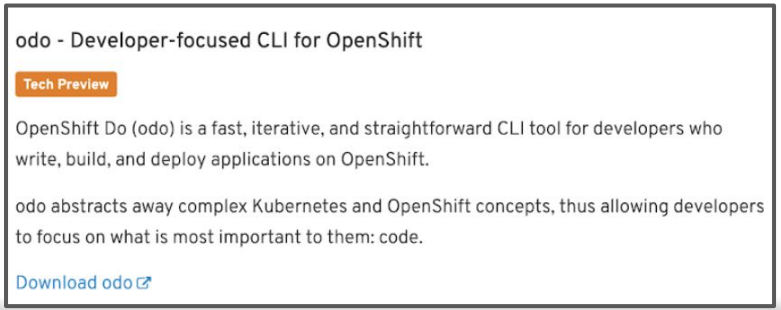
Available for download from Web Console

```
$ 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
```



Use It To: Enable the 'git push' flow developers love, but with OpenShift Kubernetes.

CodeReady Containers

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.

Internal Alpha Details

- Linux (KVM) provides a single machine (node) instance
- Commands: setup, start, stop, delete
- Internal-only until pull secret is externalized / configured
- PoCs exist for Windows and MacOS (VirtualBox)

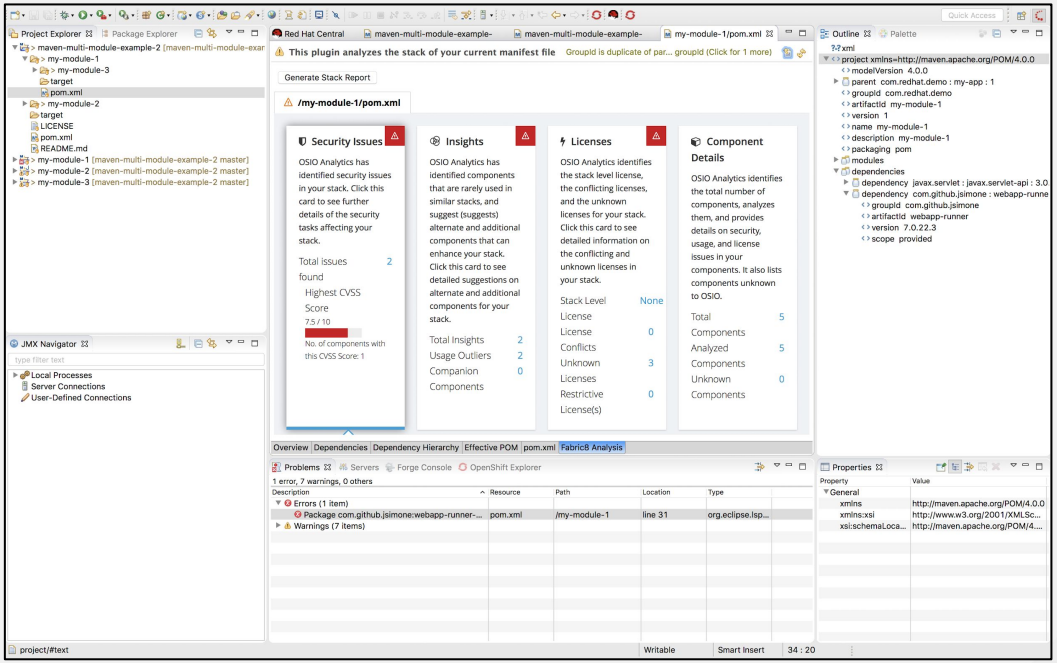
Use It To: Simplify direct-to-OpenShift 4 development on laptops.

Red Hat CodeReady Studio

CodeReady Studio is a hardened Eclipse desktop IDE that supports: Java, Node, Spring Boot, and Thorntail (ex-Wildfly).

The OpenShift Connector enables container-native “inner loop” development, for fast iterations as you code.

It also includes security and licensing checks against any dependent package with “Dependency Analytics”



Hosted OpenShift

Get the best of OpenShift without being on call

Hosted OpenShift Benefits

OPENSHIFT CONTAINER PLATFORM

HOSTED OPENSHIFT

	Full Stack Automated	Pre-existing Infrastructure	Azure Red Hat OpenShift	OpenShift Dedicated
Skip the on-call rotation			Deploy directly from the Azure console.	Powerful cluster, no maintenance needed
Red Hat engineers keep you up to date			Jointly managed by Red Hat and Azure engineers.	Managed by Red Hat engineers and support
Expand capacity without hassle			Free your team from the distraction of ops	Free your team from the distraction of ops

Azure Red Hat OpenShift

Jointly engineered, operated, and supported by both Microsoft and Red Hat with an integrated support experience

Experience OpenShift as a native Microsoft Azure service.

- Create fully managed OpenShift clusters in minutes using `az openshift create`
- Add or remove compute nodes to match resource demand using `az openshift scale`
- 99.9% SLA
- Will soon inherit Azure regulatory compliance
- Pricing available at https://azure.microsoft.com/en-us/pricing/details/openshift/

OpenShift Dedicated

Dedicated with OpenShift 3

Available today, hosted on Amazon Web Services

Consumption based billing now available

Bring Your Own Cloud Account

Dedicated with OpenShift 4

Initial availability June 2019

Broader availability in fiscal Q2

OperatorHub

Red Hat products and certified Operators will be added in a curated catalog later in the year.

The Service Catalog and Brokers will not migrate to Dedicated due to their deprecation.

Connected to cloud.redhat.com

Clusters will appear beside other self-managed installs

redhat.

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linkedin.com/company/red-hat

twitter.com/RedHat

youtube.com/user/RedHatVideos