



Red Hat

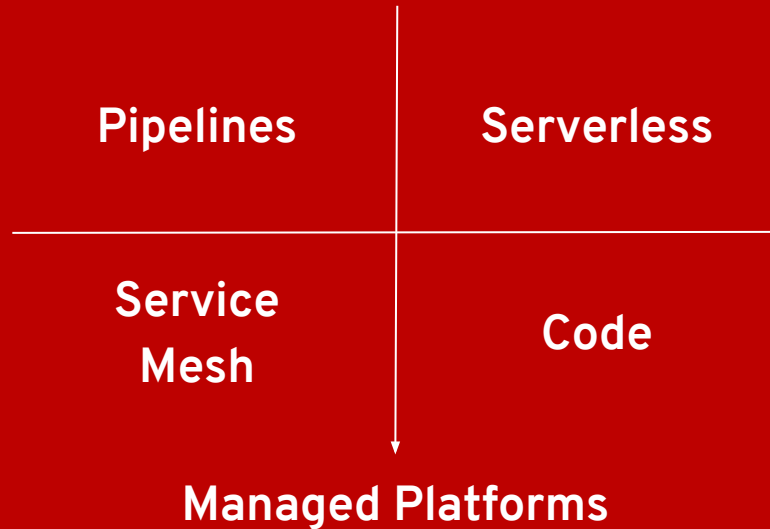
OPENSIFT 4 UPDATE Developer Edition

**Jon McDonald
Senior Specialist Cloud Solution Architect**

**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



PIPELINES

PIPELINES IN OPENS SHIFT 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 Distro's

- 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

The screenshot displays the OpenShift Pipelines console. The left sidebar shows navigation options: Developer, Add, Topology, Builds, Pipelines (selected), and Advanced. The main content area shows a table of pipelines with columns for Name, Last Pipeline Run, Last Run Status, Task Completed, and Last Run Started. A search bar at the top right allows filtering by name.

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

Below the main content, there is a footer section with navigation links: Storage, Builds, Monitoring, Developer Tools, Integration & Delivery, Logging & Tracing, Monitoring, Networking, and OpenShift Optional. On the right, there is a sidebar with the OpenShift Pipelines Operator logo and a description: 'OpenShift Pipelines Operator provided by Red Hat, Inc. OpenShift Pipelines is a cloud-native CI/CD solution for building pipelines using...'

Dev Preview on OCP 4.1 (June)

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

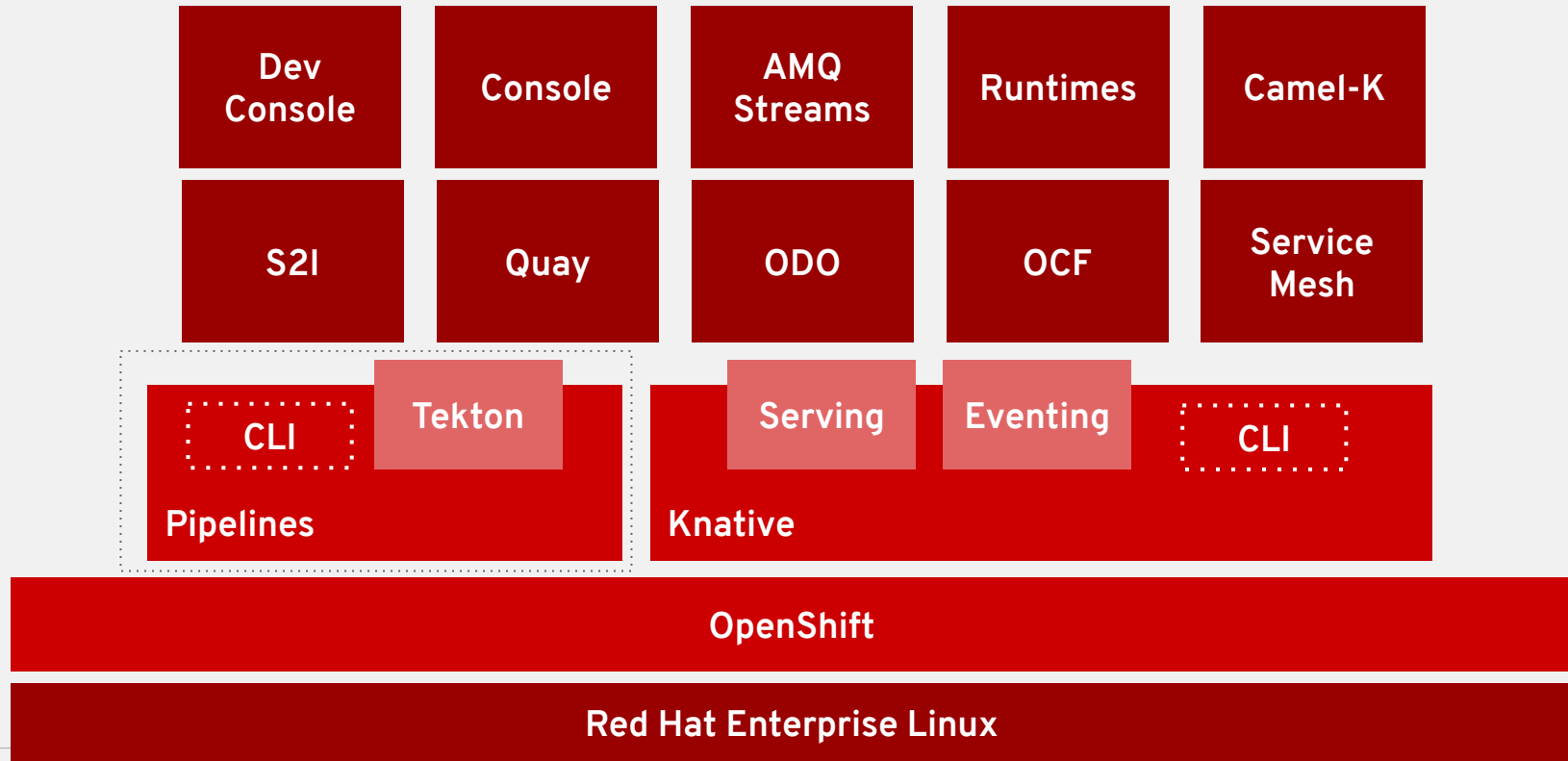
Provided task library:
s2i, buildah, oc, jib, kaniko, etc

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

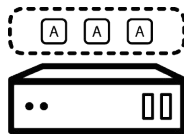
Build

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.





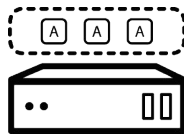
Pipelines

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

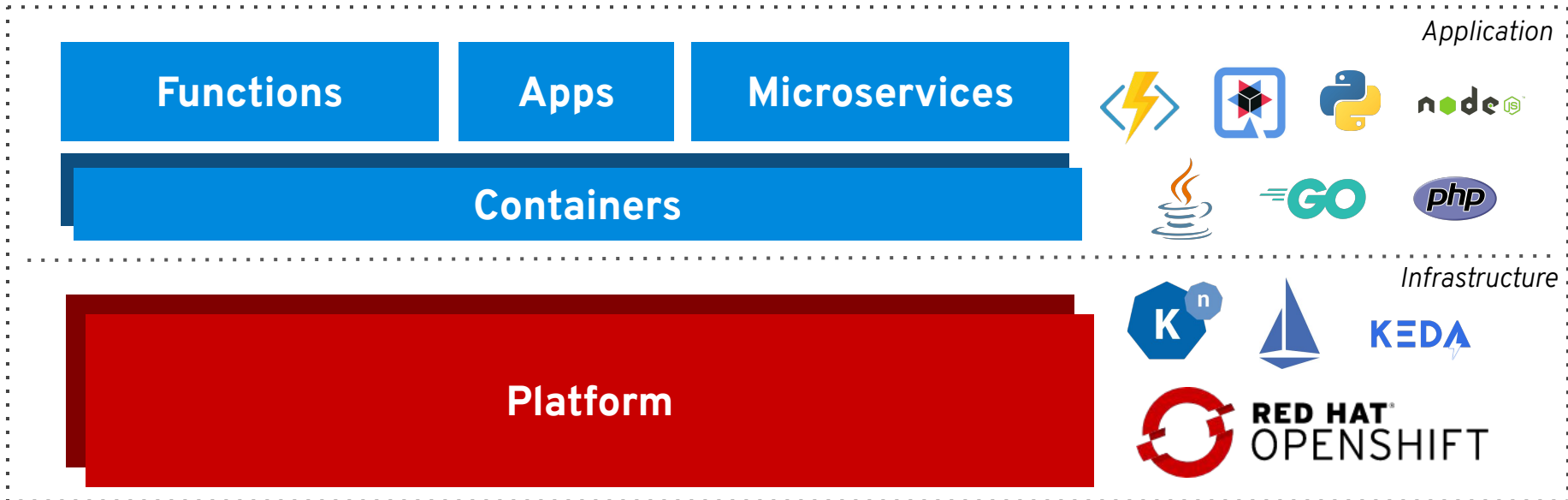
Common infrastructure for consuming and producing events that will stimulate applications.





OpenShift Serverless

Expanding capabilities beyond just FAAS



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>

The screenshot displays the OpenShift Container Platform interface. On the left, a sidebar menu includes options like Home, Projects, Status, Search, Events, Catalog, OperatorHub, Workloads, Networking, and Storage. The main content area shows a list of installed operators, with the 'Knative Serving Operator' highlighted in a red box. Below the operator list, there is a diagram of a Knative Serving architecture showing components like 'knative-ingressgateway', 'hello-world-go-00001', 'autoscaler', 'knative-serving', 'activator', and 'dummy-00001'. To the right of the diagram is a performance graph showing 'Incoming Request Traffic min / max' and 'Outgoing Request Traffic min / max' over time.



Kubernetes

```

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/guestbook
          name: guestbook
          resources:
            requests:
              cpu: 100m
              memory: 100Mi
          env:
            - name: GET_HOSTS_FROM
              value: dns
          ports:
            - containerPort: 80

```

```

---
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

```

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



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



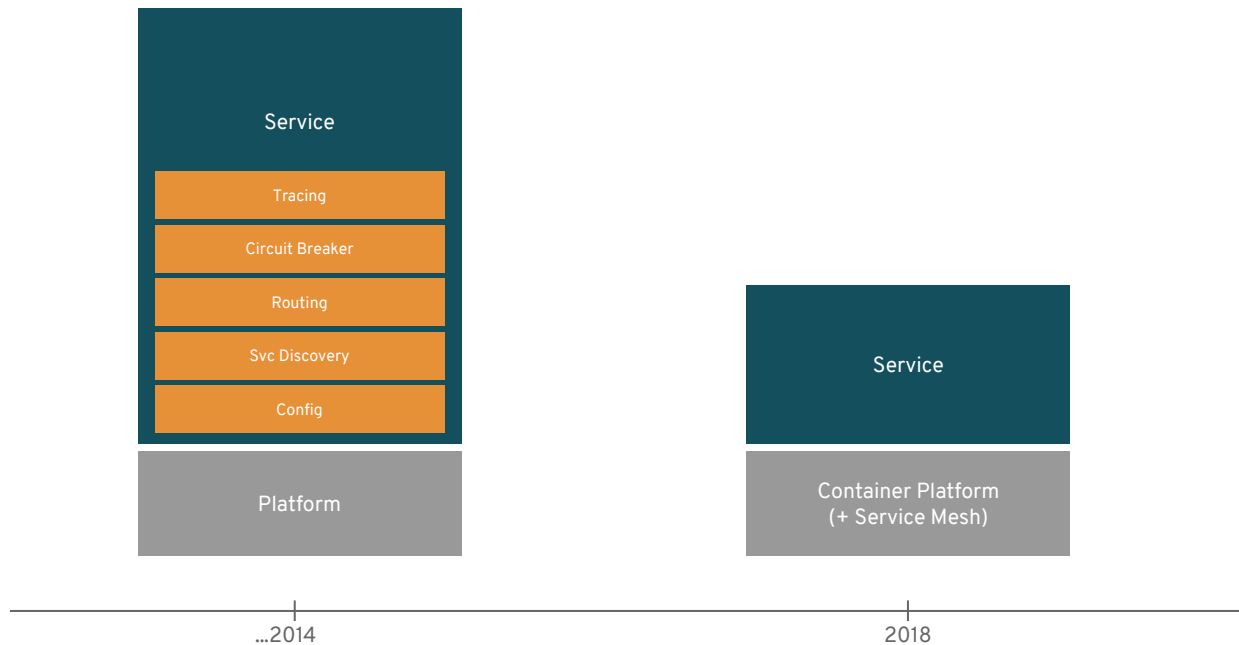
Red Hat



Microsoft Azure

SERVICE MESH

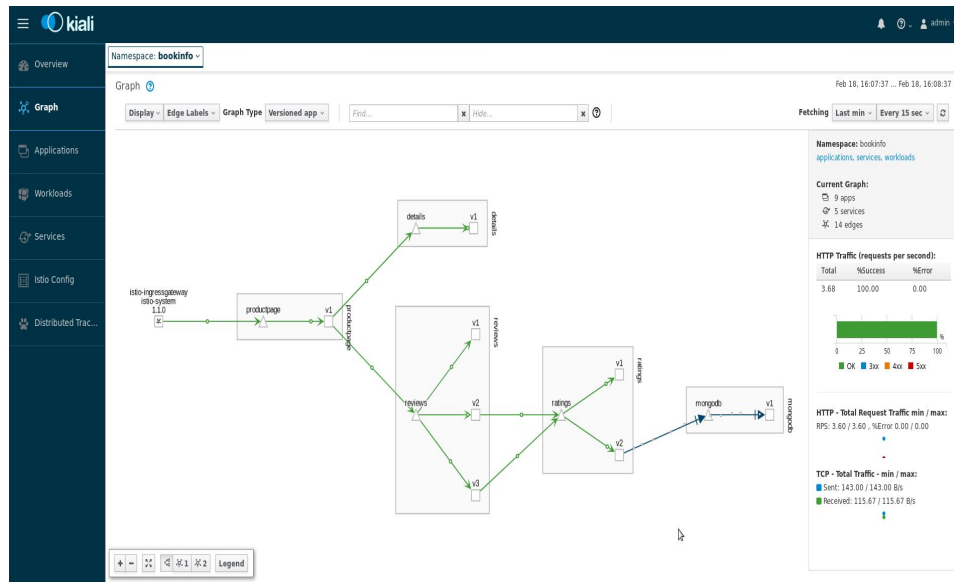
Microservices Evolution



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

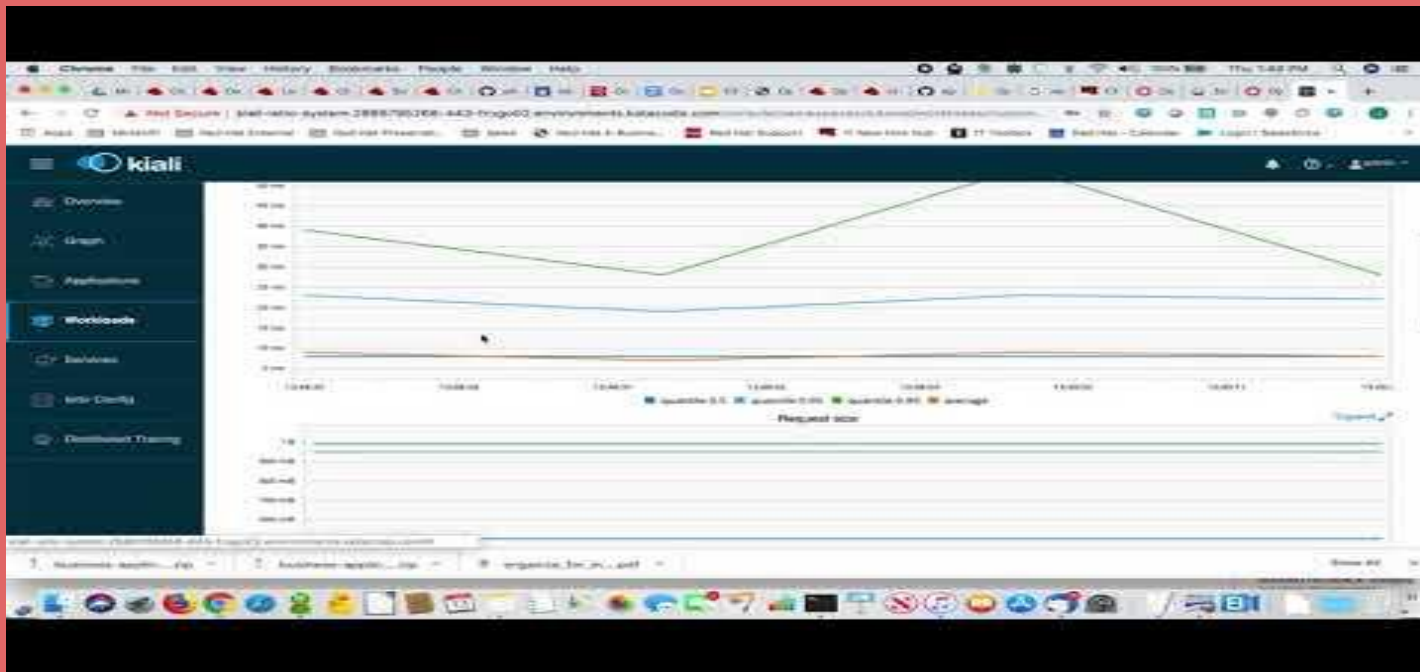


Try It: <https://learn.openshift.com/servicemesh/>

Generally Available in July

KIALI DEMO

<http://learn.openshift.com/servicemesh>



Click Image to view on YouTube

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

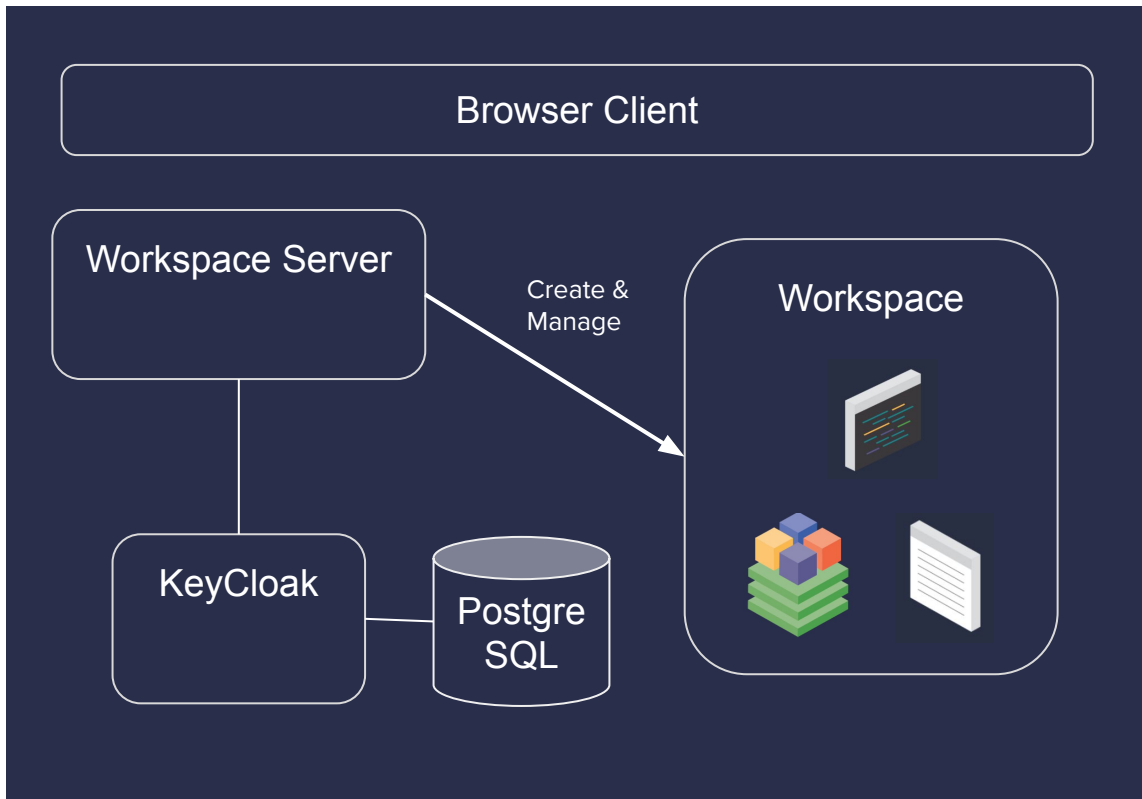
Serverless support (coming later)

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

Try: <http://che.openshift.io>

Generally Available

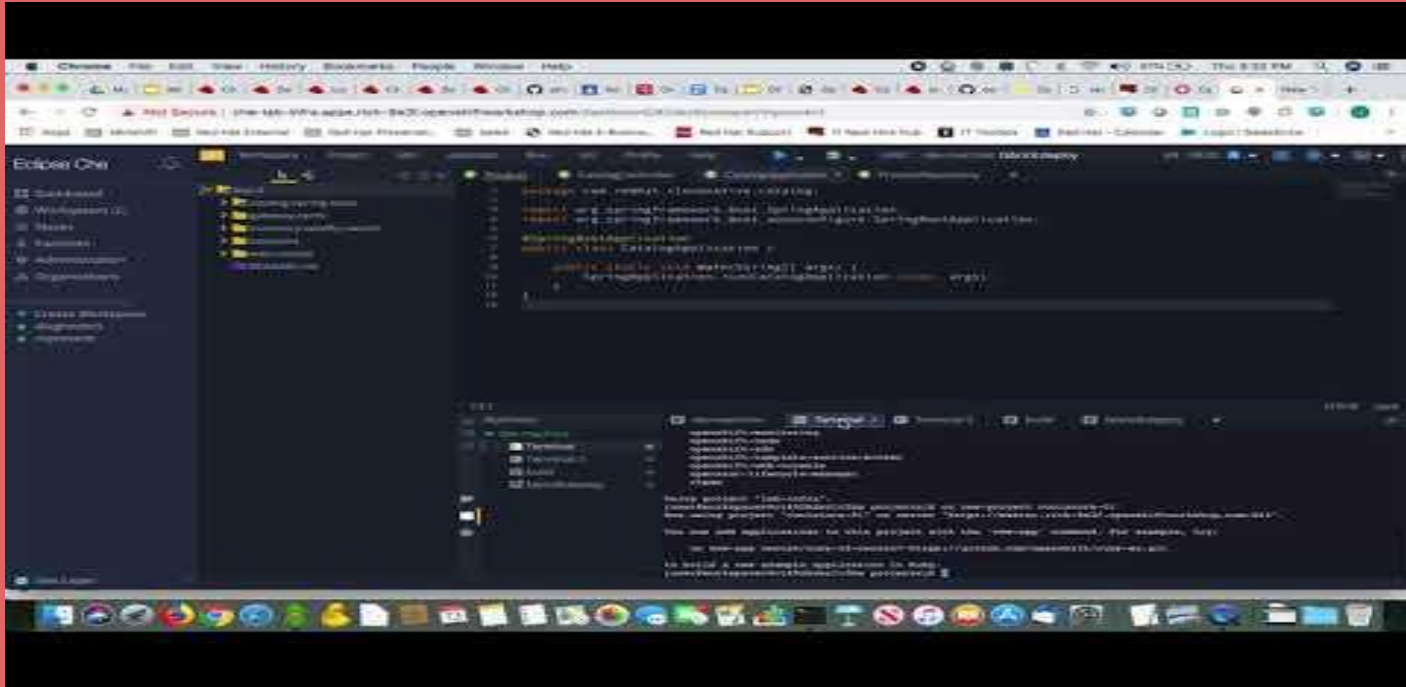
CodeReady Workspaces



- Workspaces are managed by a **Workspace Server**
- Workspace Orchestration
 - Stacks
 - Factories
 - Administration
 - Organizations & Members

- KeyCloak Server
- User Mgmt

CODEREADY WORKSPACE DEMO



[Click Image to view on YouTube](#)

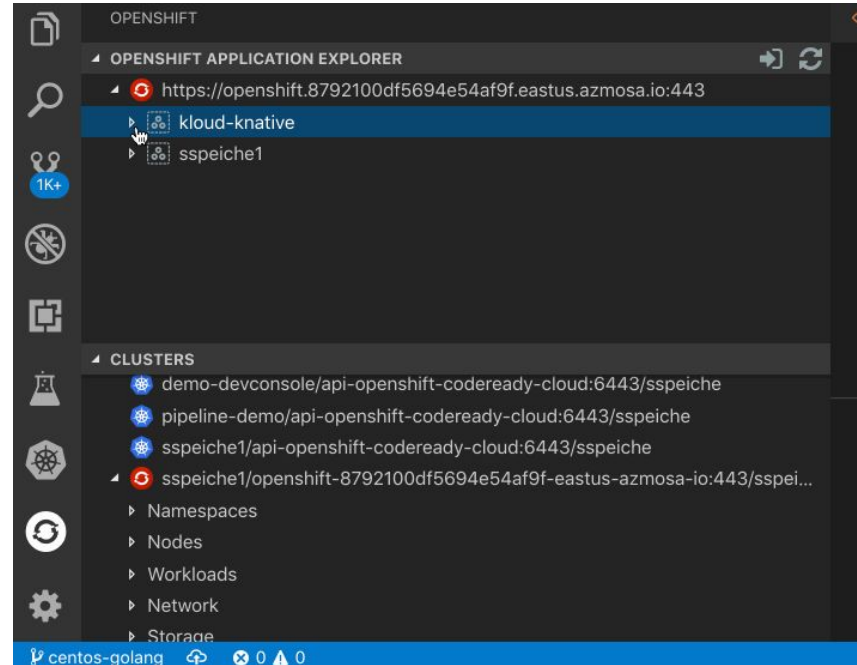
VS Code Kubernetes Extension

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

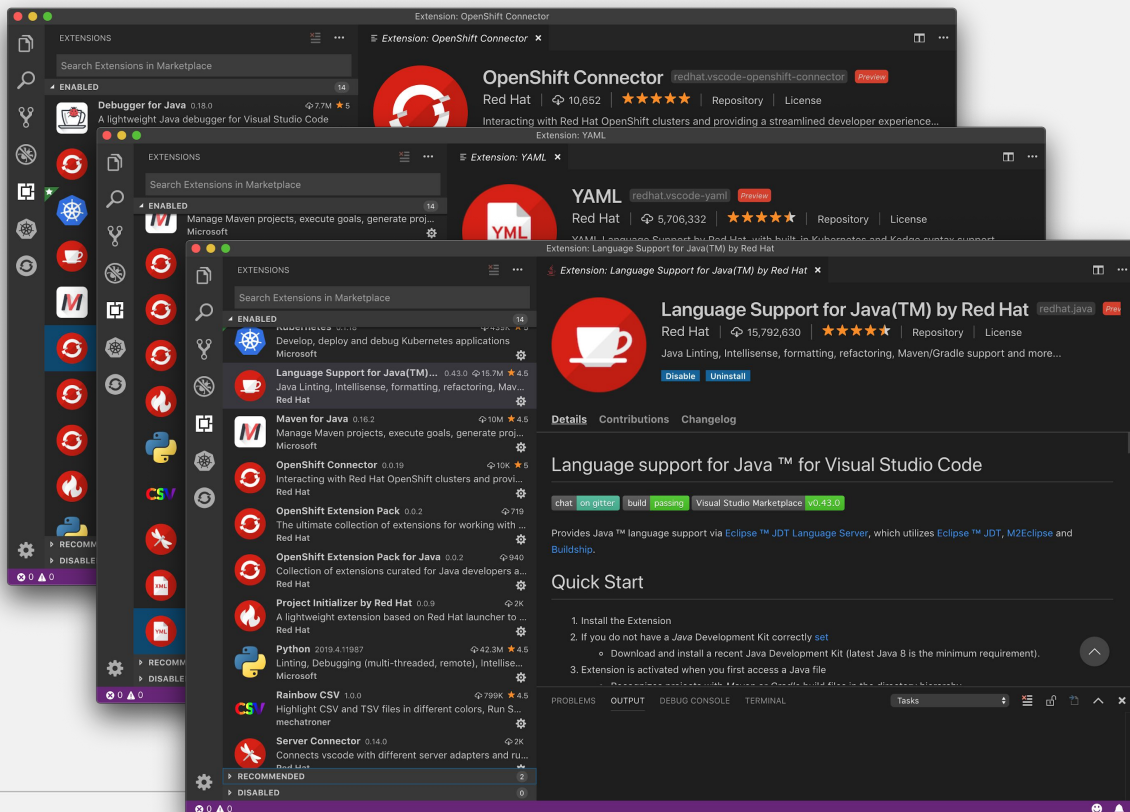
OpenShift Improvements

- 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

The screenshot displays the Visual Studio Marketplace interface for Red Hat. At the top, the 'Red Hat' profile is shown with its logo, a description of the company as a leading provider of open source software solutions, and links to their developer and access pages. Below this, there are two tabs: 'Visual Studio Code' and 'Azure DevOps'. The 'Visual Studio Code' tab is active, showing a grid of plugins. Each plugin card includes an icon, the plugin name, the publisher (Red Hat), the number of downloads, a star rating, and the price (FREE). The plugins listed are: Language Support for Java (15.8M downloads, 4.5 stars), YAML (5.7M downloads, 4.5 stars), XML (147K downloads, 4.5 stars), Dependency Analytic... (20.7K downloads, 5 stars), OpenShift Connector (10.7K downloads, 5 stars), Project Initializer by R... (2.6K downloads, 4.5 stars), Server Connector (2.3K downloads, 5 stars), OpenShift Extension I... (968 downloads, 5 stars), and OpenShift Extension | (740 downloads, 5 stars).



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
```

odo - Developer-focused CLI for OpenShift

Tech Preview

OpenShift Do (odo) is a fast, iterative, and straightforward CLI tool for developers who write, build, and deploy applications on OpenShift.

odo abstracts away complex Kubernetes and OpenShift concepts, thus allowing developers to focus on what is most important to them: code.

[Download odo](#)

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”

The screenshot displays the Red Hat CodeReady Studio IDE interface. The main window shows the 'Generate Stack Report' for the file '/my-module-1/pom.xml'. The report is divided into four sections: Security Issues, Insights, Licenses, and Component Details.

- Security Issues:** OSIO Analytics has identified security issues in your stack. Total issues found: 2. Highest CVSS Score: 7.5/10. No. of components with this CVSS Score: 1.
- Insights:** OSIO Analytics has identified components that are rarely used in similar stacks, and suggest alternate and additional components that can enhance your stack. Total Insights: 2, Usage Outliers: 2, Companion Components: 0.
- Licenses:** OSIO Analytics identifies the stack level license, the conflicting licenses, and the unknown licenses for your stack. Stack Level: None, License Conflicts: 0, Unknown Licenses: 3, Restrictive License(s): 0.
- Component Details:** OSIO Analytics identifies the total number of components, analyzes them, and provides details on security, usage, and license issues in your components. Total Components: 5, Analyzed Components: 5, Unknown Components: 0.

Below the report, there is a 'Problems' view showing 1 error and 7 warnings. The error is related to the package 'com.github.jsimone:webapp-runner'. The warnings are related to the package 'org.eclipse.jsp...'. The Properties view on the right shows the 'General' properties for the 'pom.xml' file, including the 'URI' and 'Schema Location'.



Hosted OpenShift

Get the best of OpenShift without being on call



Hosted OpenShift Benefits

OPENSIFT CONTAINER PLATFORM

Full Stack Automated

Pre-existing Infrastructure

Skip the on-call rotation

Red Hat engineers keep you up to date

Expand capacity without hassle

HOSTED OPENSIFT

Azure Red Hat OpenShift

Deploy directly from the Azure console.

Jointly managed by Red Hat and Azure engineers.

Free your team from the distraction of ops

OpenShift Dedicated

Powerful cluster, no maintenance needed

Managed by Red Hat engineers and support

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



THANK YOU



plus.google.com/+RedHat



facebook.com/redhatinc



linkedin.com/company/red-hat



twitter.com/RedHat



youtube.com/user/RedHatVideos