

OpenShift Easy

How Red Hat Developer Tools Can Help Your Team

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Agenda

- AWS Simple Install
- OpenShift 'Easy Button' Node JS Demo
 - Developer Experience
 - Runtimes (Booster applications)
 - ODO (CF PUSH)
 - CodeReady Workspaces
 - Developer Console
 - CI/CD
 - Developer Operations & Infrastructures
 - Hybrid cloud
 - Third Party Applications (Operators: Kafka install demo)
 - Links

...And Red Hat provides developer tools that support your journey to cloud-native application development

“I JUST WANT TO CODE”

Simple / Opinionated

Intuitive plugins for all major IDEs that simplify dev on Kube.

CLI that requires no OpenShift knowledge: `odo push`.

UI wizards to create apps from git, container images, recipes, or pre-loaded components / services.

Packaging through **Helm Charts** or **Kube Operators**.

Unique Kube-native IDE that automatically containerizes a dev environment, hiding Kube complexity from developers.

“I WANT TO BE A KUBE EXPERT”

Powerful / Flexible

Expert plugins for all major IDEs that expose raw Kube.

CLIs and APIs based on Kubernetes: `kubectl apply`.

UI console that mixes Dev and Ops functions and enable experienced teams to move faster.

Packaging using **deployment.yaml**.

CI/CD that speed builds and deploys to OpenShift based on **Jenkins** or **Kube-native OpenShift Pipelines**.

KUBERNETES DONE RIGHT IS HARD

CONFIDENTIAL Customer facing

INSTALL

- Templating
- Validation
- OS Setup

DEPLOY

- Identity & Security Access
- App Monitoring & Alerts
- Storage & Persistence
- Egress, Ingress & Integration
- Host Container Images
- Build/Deploy Methodology

HARDEN

- Platform Monitoring & Alerts
- Metering & Chargeback
- Platform Security Hardening
- Image Hardening
- Security Certifications
- Network Policy
- Disaster Recovery
- Resource Segmentation

OPERATE

- OS Upgrade & Patch
- Platform Upgrade & Patch
- Image Upgrade & Patch
- App Upgrade & Patch
- Security Patches
- Continuous Security Scanning
- Multi-environment Rollout
- Enterprise Container Registry
- Cluster & App Elasticity
- Monitor, Alert, Remediate
- Log Aggregation

 75%

of enterprise users identify complexity of implementation and operations as the top blocker to adoption

Source: The New Stack, The State of the Kubernetes Ecosystem, August 2017

OpenShift 4 – Everything you need

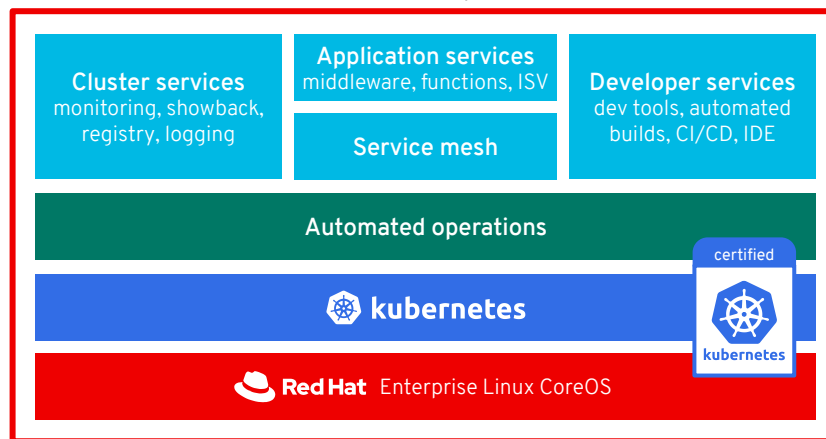


Everything you need, out of the box

1. Fully integrated and automated architecture
2. Seamless Kubernetes deployment on any cloud or on-premises environment
3. Fully automated installation, from cloud infrastructure to OS to application services
4. One click platform and application updates
5. Auto-scaling of cloud resources

Any infrastructure

Best IT ops experience — CaaS↔PaaS | Faas — Best developer experience



Physical



Virtual



Private



Public

Any infrastructure



Node JS Steps

CONFIDENTIAL PUBLIC

Download the Node.js source code or a pre-built installer for your platform, and start developing today.

LTS Recommended For Most Users	Current Latest Features	
 Windows Installer node-v12.17.0-x86.msi	 macOS Installer node-v12.17.0.pkg	 Source Code node-v12.17.0.tar.gz

Windows Installer (.msi)

Windows Binary (.zip)

macOS Installer (.pkg)

macOS Binary (.tar.gz)

Linux Binaries (x64)

Linux Binaries (ARM)

Source Code

32-bit	64-bit
32-bit	64-bit
64-bit	
64-bit	
64-bit	
ARMv7	ARMv8
node-v12.17.0.tar.gz	

Additional Platforms

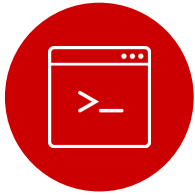
SmartOS Binaries

64-bit
64-bit

Simply Node JS Demo



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SPRING APPS



JAVA MICROSERVICES



JAVASCRIPT FLEXIBILITY



REACTIVE SYSTEMS

VERT.X

TOMCAT SIMPLICITY

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WEB SERVER

Zero to Hero Demo



OpenShift's developer-focused CLI: "odo"

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

Simplifies building of microservices applications on OpenShift.

Targeting GA release with OpenShift 4.2.

```
$ 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
```

Why? Enable the 'git push' flow developers love, but with Kubernetes.

ODO Push Demo

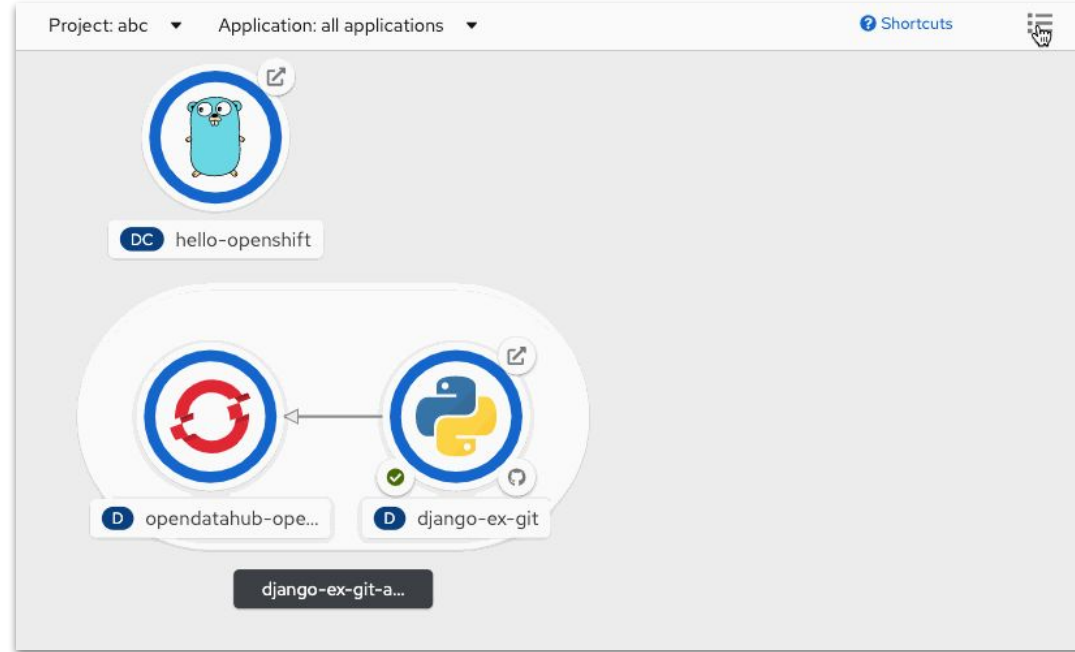


OpenShift Console: Developer perspective and DevOps capabilities

A developer-focused console perspective:

- Create apps from git, images, etc...
- Application topology views
- Pipeline creation and tracking
- Scale up/down in a single click
- Monitor app health and metrics
- Link to more detailed admin views

Creates a UI to focus DevOps teams.



Why? A PaaS layer on OpenShift's hybrid multi-cloud Kubernetes platform.

CodeReady Workspaces creates a containerized developer environment in Kubernetes - requires no Kube knowledge

Project sources
Dependencies
Developer Tools
Commands
Build and packaging tools
Terminal
Operating system
Web server / application server
Database
(All other runtime components)

Everything a developer needs is managed in a personal Workspace hosted in an IT-Managed OpenShift cluster.

1. Accelerates projects and onboarding of developers.
2. Removes inconsistencies between dev and prod.
3. Protects source code by keeping it off laptops.

The screenshot shows the Eclipse IDE interface. The top menu bar includes File, Edit, Selection, View, and C. A dropdown menu is open, showing 'maven build' and 'run webapp'. The main editor displays Java code for a Spring MVC controller. The terminal window at the bottom shows the output of the 'top' command, displaying system statistics and a list of running processes.

```
public Owner {
    this.owners = clinicService;
    this.visits = visits;
}

@InitBinder
public void setAllowedFields(WebDataBinder dataBinder) {
    dataBinder.setDisallowedFields("id");
}

@GetMapping("/owners/new")
public String initCreationForm(Map<String, Object> model) {
    Owner owner = new Owner();
    model.put("owner", owner);
    return VIEWS_OWNER_CREATE_OR_UPDATE_FORM;
}
```

```
top - 14:18:17 up 244 days, 17:43, 0 users, load average: 1.45, 1.29, 1.03
Tasks: 3 total, 1 running, 2 sleeping, 0 stopped, 0 zombie
%Cpu(s): 7.7 us, 16.8 sy, 0.0 ni, 75.3 id, 0.0 wa, 0.0 hi, 0.0 si, 0.2 st
KiB Mem : 32779224 total, 1072212 free, 6796788 used, 24910224 buff/cache
KiB Swap: 0 total, 0 free, 0 used, 25563788 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM     TIME+ COMMAND
  32 user      20   0  42648  1856  1432  R   0.7   0.0   0:00.09 top
    1 user      20   0   5964    612   532  S   0.0   0.0   0:00.09 tail
   24 user      20   0  19992   2268  1660  S   0.0   0.0   0:00.01 bash
```

Red Hat IDE extensions are used by >5M developers!

Red Hat plugins for your favorite desktop IDE add IDE superpowers for **Java, Kubernetes** YAML and XML.

Available for: VS Code, JetBrains IntelliJ, Eclipse desktop IDE and Eclipse Che / Theia.

The **OpenShift** plugin allows developers to quickly connect and deploy to OpenShift instances locally or remotely.

Dependency Analytics adds license and CVE package alerts.

The screenshot displays the Red Hat marketplace interface. At the top, the Red Hat logo and name are visible, along with a brief description of Red Hat as a provider of open source software solutions. Below this, the marketplace is divided into sections for 'Visual Studio Code' and 'Azure DevOps'. A grid of extension cards is shown, each featuring a Red Hat logo icon, the extension name, the provider (Red Hat), the number of users, a star rating, and the price (FREE). The extensions listed include: Language Support for Java (5.4M users, 4 stars), YAML (3.2M users, 4 stars), XML (514K users, 4 stars), Dependency Analytics (32.6K users, 5 stars), OpenShift Connector (15.8K users, 5 stars), Server Connector (13.6K users, 5 stars), Quarkus (12.2K users, 5 stars), Remote Server Protocol (10.7K users, 5 stars), Project Initializer by Red Hat (10.7K users, 5 stars), Language Support for Camel (5.8K users, 5 stars), OpenShift Extension (5.4K users, 5 stars), and OpenShift Extension (5.1K users, 5 stars). The bottom row shows several more extension cards, some with the Red Hat logo and others with specific logos like 'RH AMT' and a cat icon.

Why? Get the most out of your Red Hat products, in your favorite IDE.

OpenShift on your laptop

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.

Available for:

- Linux (KVM)
- Windows (Hyper-V)
- MacOS (hyperkit)

OpenShift 4.x: CodeReady Containers

- Linux, Windows and Mac
- Toolbar widget for quick access
- Simplified RHEL entitlement

OpenShift 3.x: Container Development Kit (CDK)

- Linux, Windows and Mac
- Simplified RHEL entitlement

Why? Work with Kubernetes anywhere you are.

OpenShift Pipelines: A Kubernetes-native CI/CD platform

Provides a next-gen Kubernetes CI/CD pipeline that works for containers (including serverless).

Based on the Tekton project (which was spun out of the Knative Pipelines project) started by Google, Red Hat and others.

Target Dev Preview (pre-beta) in June, 2019.

The screenshot displays the OpenShift Pipelines console interface. At the top, the Red Hat OpenShift logo is visible. The main area shows a pipeline named 'aa-build-3' in a 'Running' state, which started 10 minutes ago and has a duration of 2 minutes and 4 seconds. The pipeline is triggered by a 'Commit #123456ABC'. Below the pipeline overview, a graph shows the sequence of steps: 'Input Info' (3/3), 'build-name' (30s), 'Test-st...' (6s), 'Code a...' (13s), 'Security...' (20s), 'Image b...' (0s), and 'DeployTo...' (0s). The 'Code a...' and 'Security...' steps are currently running. A terminal window at the bottom shows the execution output for the 'Code a...' step, including package installation and a successful Python test.

```
Downloading six-1.11.0-py2.py3-none-any.whl
Building wheels for collected packages: tornado, configparser
Running setup.py bdist_wheel for tornado: started
Running setup.py bdist_wheel for tornado: finished with status 'done'
Stored in directory: /root/.cache/pip/wheels/1c/bd/b4/277af3f6c40645661b4cd1c1df26aca0f2e1e9714a1d4cd8
Running setup.py bdist_wheel for configparser: started
Running setup.py bdist_wheel for configparser: finished with status 'done'
Stored in directory: /root/.cache/pip/wheels/1c/bd/b4/277af3f6c40645661b4cd1c1df26aca0f2e1e9714a1d4cd8
Successfully built tornado configparser
Installing collected packages: six, singledispatch, certifi, backports-abc, tornado, enum34, configparser, mccabe, pyflakes, pycodestyle, flake8
Found existing installation: six 1.8.0
Uninstalling six-1.8.0:
  Successfully uninstalled six-1.8.0
Successfully installed backports-abc-0.5 certifi-2017.11.5 configparser-3.5.0 enum34-1.1.6 flake8-3.5.0 mccabe-0.6.1 pycodestyle-2.3.1 pyflakes-1.6.0
singledispatch-3.4.0.3 six-1.11.0 tornado-4.5.3
$ python -c 'print("Hello, world!")'
Hello, world
Job succeeded
```

Why? A faster, less resource-intensive CI/CD platform that's Kubernetes-native.

Jenkins CI/CD, run in OpenShift and deploy to OpenShift

Jenkins is still the most used CI/CD platform in enterprises and can be used from inside OpenShift.

An intuitive pipeline visualization makes it simple for users to see how builds are progressing.

The full Jenkins UI is also available.

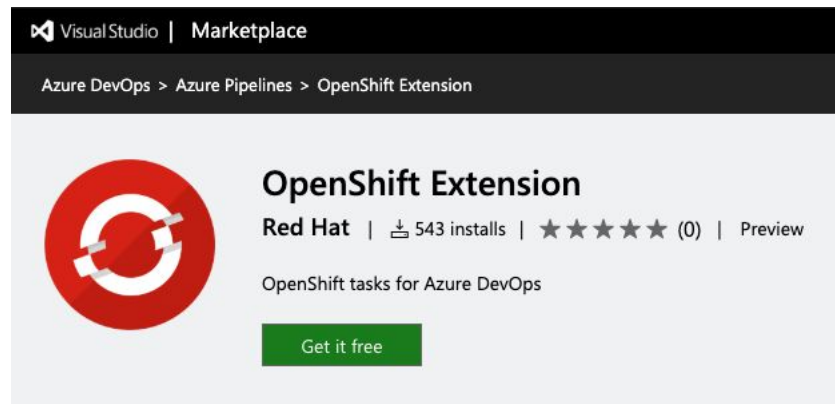
The screenshot displays the Jenkins web interface for a pipeline named 'tasks-pipeline-1'. The left sidebar shows navigation options: Workloads, Networking, Storage, Builds (selected), Build Configs, Image Streams, Monitoring, Compute, and Administration. The main content area shows the 'Build Details' for 'tasks-pipeline-1' with tabs for Overview, YAML, Environment, Logs, and Events. The 'Build Overview' section features a horizontal pipeline visualization with the following steps: 'Build App' (6 minutes ago), 'Test' (5 minutes ago), 'Code Analysis' (5 minutes ago), 'Archive App' (5 minutes ago), 'Build Image' (5 minutes ago), and 'Deploy DEV' (2 minutes ago). Below the pipeline, there is a 'Build 1' entry (8 minutes ago) and a 'Promote to ST...' entry (2 minutes ago) with a status of 'Input Required'. At the bottom, metadata is shown: NAME 'tasks-pipeline-1', STATUS 'Running', NAMESPACE 'cicd-smx', and TYPE 'JenkinsPipeline'.

OpenShift plugin for Microsoft Azure DevOps and Team Foundation Server

An extensions that offers tasks for integrating OpenShift into your build and release pipelines whether you're using Azure DevOps (cloud) or Team Foundation Server (on-premises).

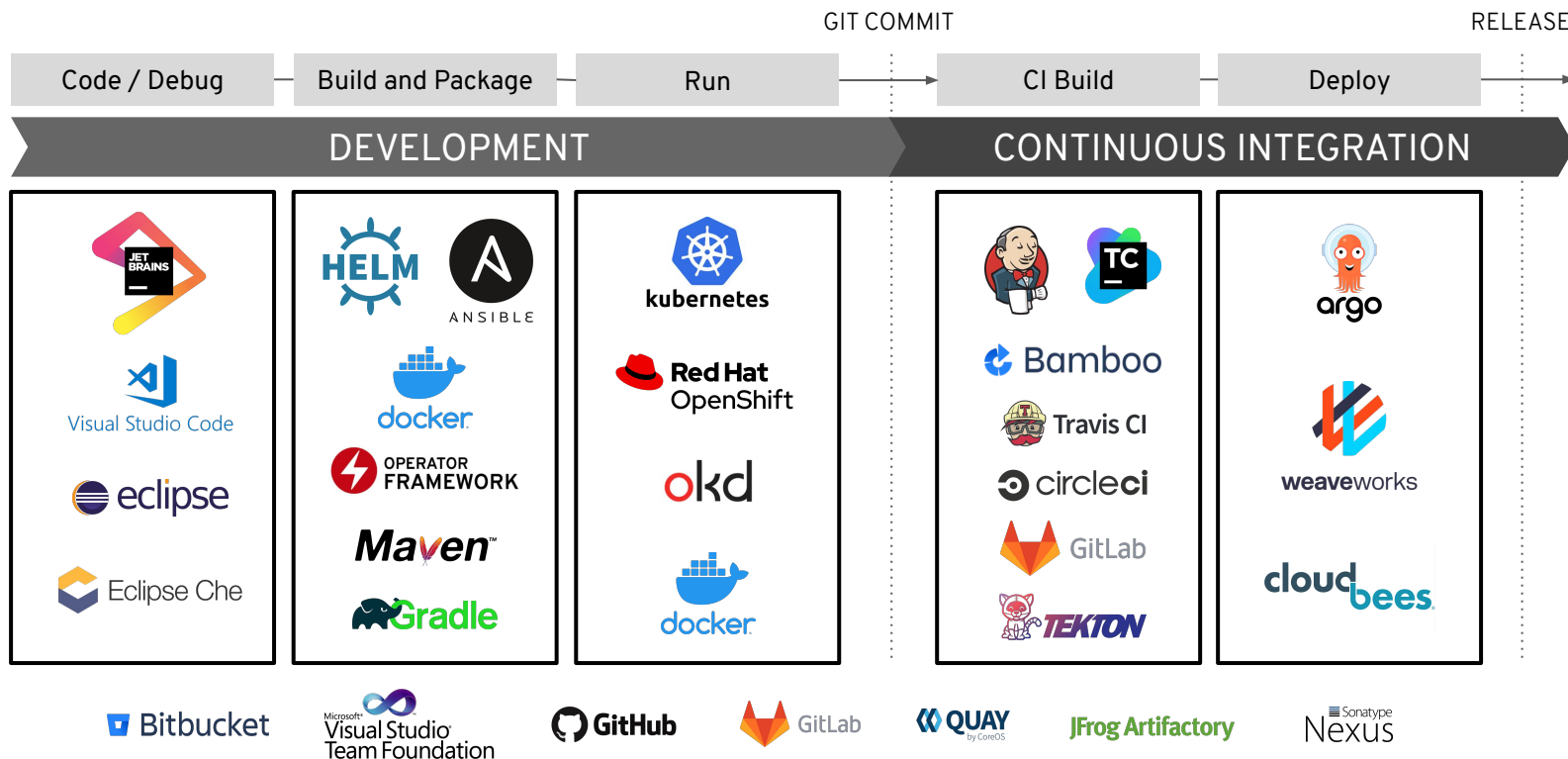
Developers can deploy to any OpenShift:

- On-premises
- In the cloud
- Hosted by Red Hat
- On the Azure Red Hat OpenShift service
- etc...

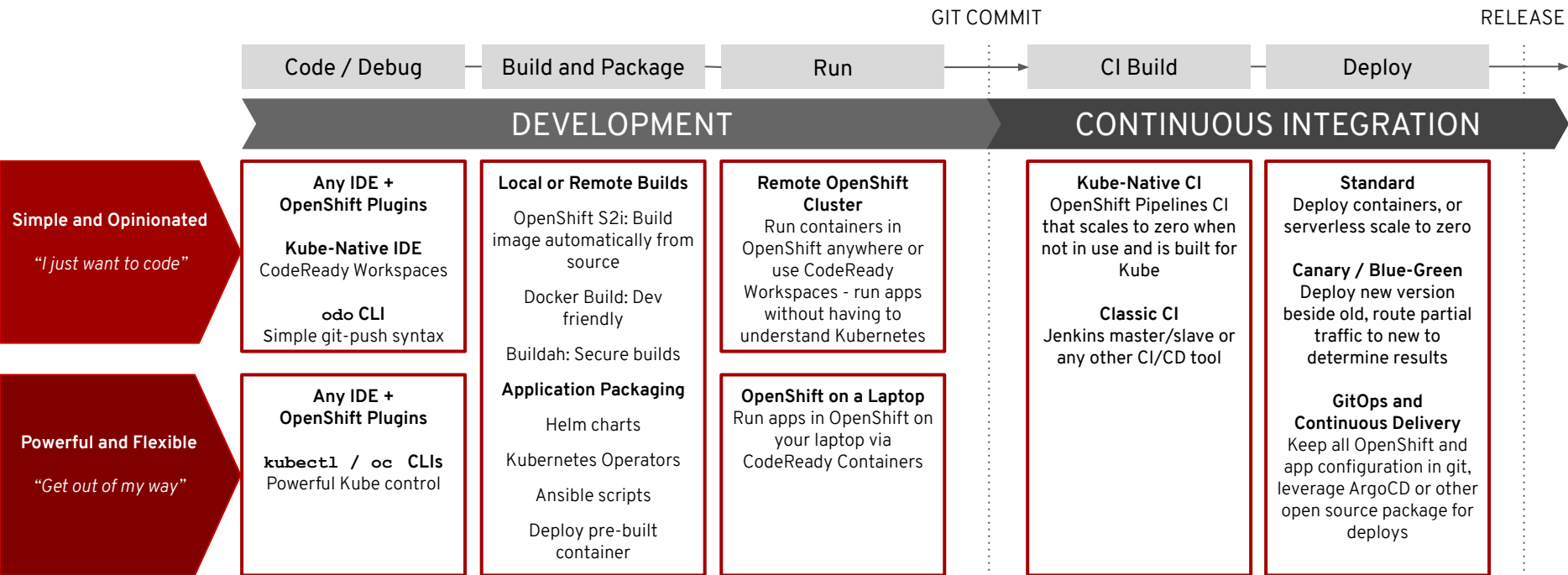


Why? Deploy to OpenShift as part of a Microsoft enterprise development toolchain.

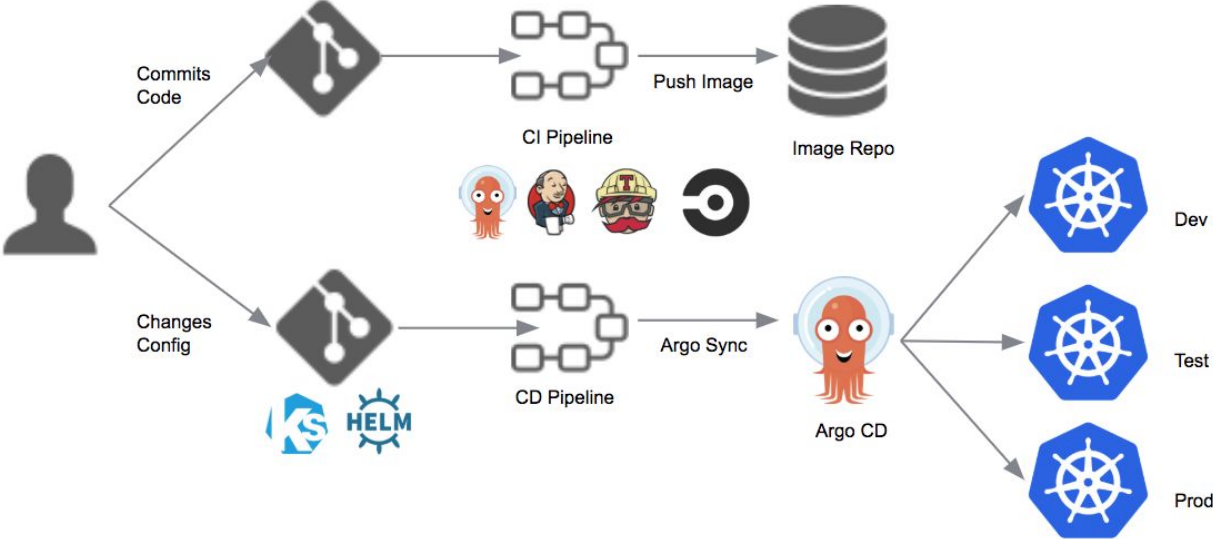
OpenShift integrates into your organization's preferred toolchain



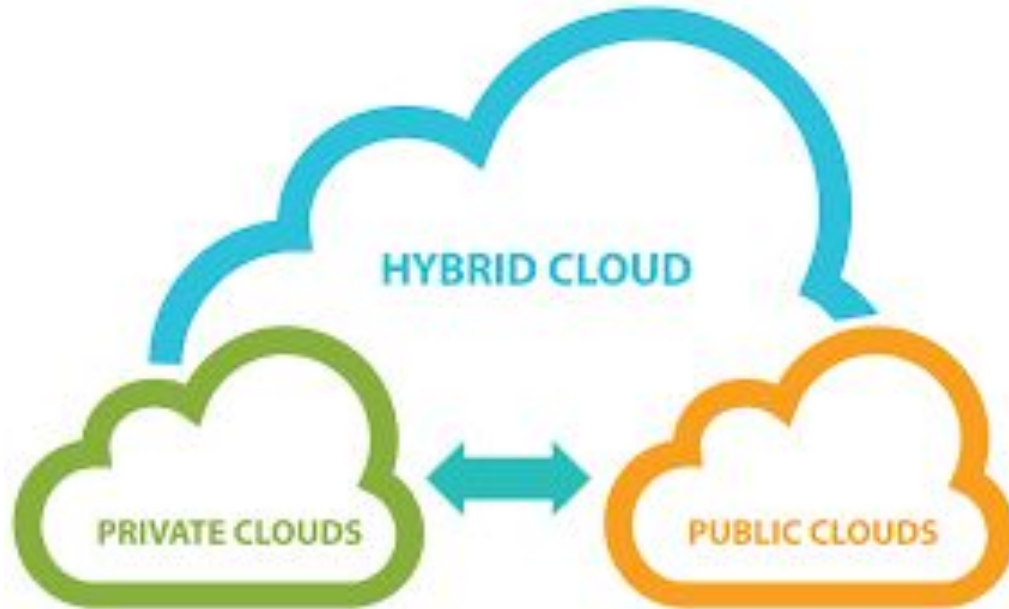
...And Red Hat provides developer tools that support your journey to cloud-native application development











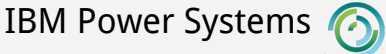



GitOps ArgoCD



Hybrid Cloud



Provider Roadmap & Minimum Supported Version

Provider	Full Stack Automation (installer-provisioned infrastructure)	Pre-existing Infrastructure (user-provisioned infrastructure)
 amazon web services	4.1	4.1
 Microsoft Azure	4.2	4.4 & 4.3+ (<i>z-stream</i>)
 Bare Metal	4.6*	4.1
 Google Cloud Platform	4.2	4.2
 RED HAT OPENSTACK PLATFORM	4.2	4.4
 RED HAT VIRTUALIZATION	4.4	4.6*
 vmware vSphere	4.5	4.1
 IBM Z	-	4.2+ (<i>z-stream</i>)
 IBM Power Systems 	-	4.3+ (<i>z-stream</i>)
 Alibaba Cloud	4.7*	4.8*
 Microsoft Hyper-V	-	4.7*

* Tentatively planned & subject to change



Third Party Apps



What's an Operator

- An Operator is a method of packaging, deploying and managing a Kubernetes application.
- End to end lifecycle.
- Internal and 3rd party support.

Build Operators for your apps

Helm Chart

Helm SDK



Build operators from
Helm chart, without any
coding

Ansible Playbooks,
Roles & APBs

Ansible SDK



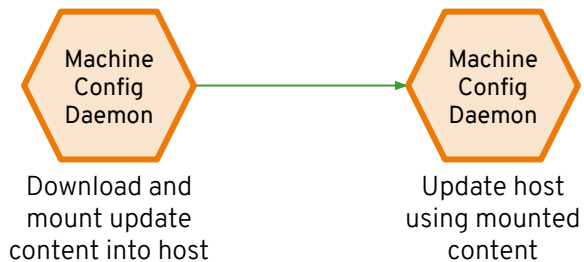
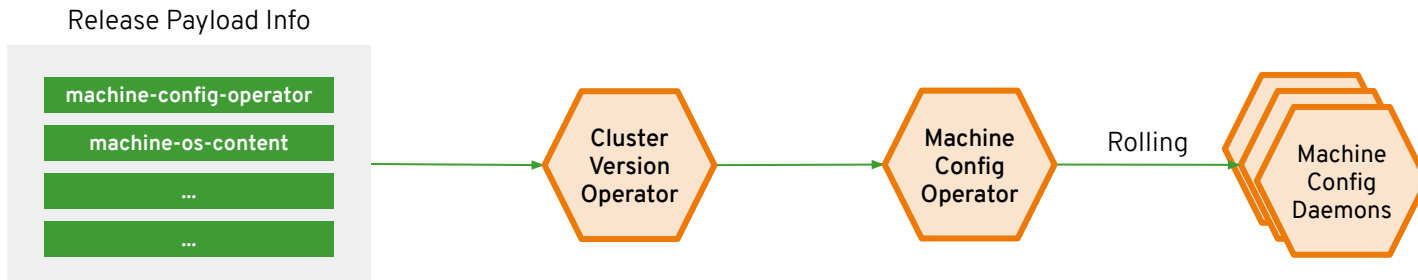
Build operators from
Ansible playbooks and
APBs

Go SDK

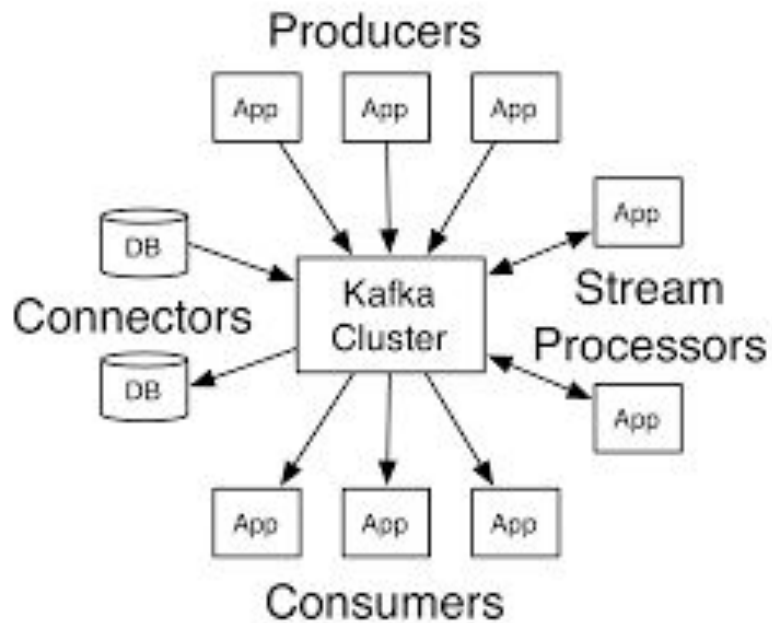


Build advanced operators
for full lifecycle
management

Over-the-air updates



Kafka Install Demo



Links

<https://launch.openshift.io/launch/login?request=>

<https://learn.openshift.com/>

<https://developers.redhat.com/>

<https://docs.openshift.com/index.html>

<https://operatorhub.io/>

<https://www.okd.io/>

Thank you

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Developer: [linkedin.com/showcase/red-hat-developer/](https://www.linkedin.com/showcase/red-hat-developer/)



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Developer: [youtube.com/channel/UC7noUdfWp-ukXUIAsJnSm-Q](https://www.youtube.com/channel/UC7noUdfWp-ukXUIAsJnSm-Q)

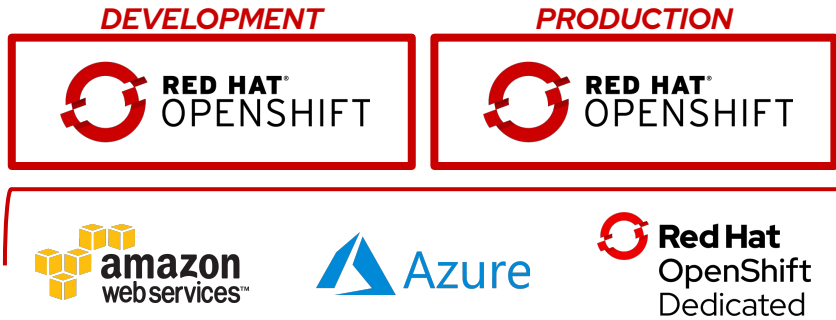


Corporate: @RedHat
Developer: @rhdevelopers

OpenShift: Adds consistency and portability to your cloud journey

1) OpenShift provides consistency and portability

- Develop on OpenShift regardless of deployment location
- Deploy on OpenShift in AWS, Azure, or anywhere else



One consistent development environment enables developers to move from project to project quickly. They don't need to learn new cloud-specific UIs and tools.

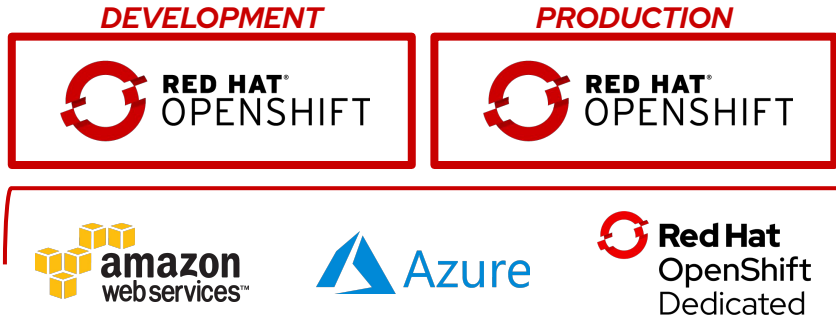
If teams need to leverage other cloud providers at any point it's easy to move specific apps because OpenShift provides an abstraction layer.

OpenShift: Adds consistency and portability to your cloud journey

1) OpenShift provides consistency and portability

- Develop on OpenShift regardless of deployment location
- Deploy on OpenShift in AWS, Azure, or anywhere else

One consistent development and operations control plane



2) OpenShift provides consistency

- Develop on OpenShift regardless of deployment location
- Deploy directly to AWS, Azure, or anywhere else

One consistent development experience, but multiple operational interfaces and limited portability

