



The Kubernetes platform
for big ideas

Robert Baumgartner
Senior Solution Architect



Creating value depends on your ability to deliver applications faster

Cloud-native applications



AI & machine learning



Analytics



Internet of Things

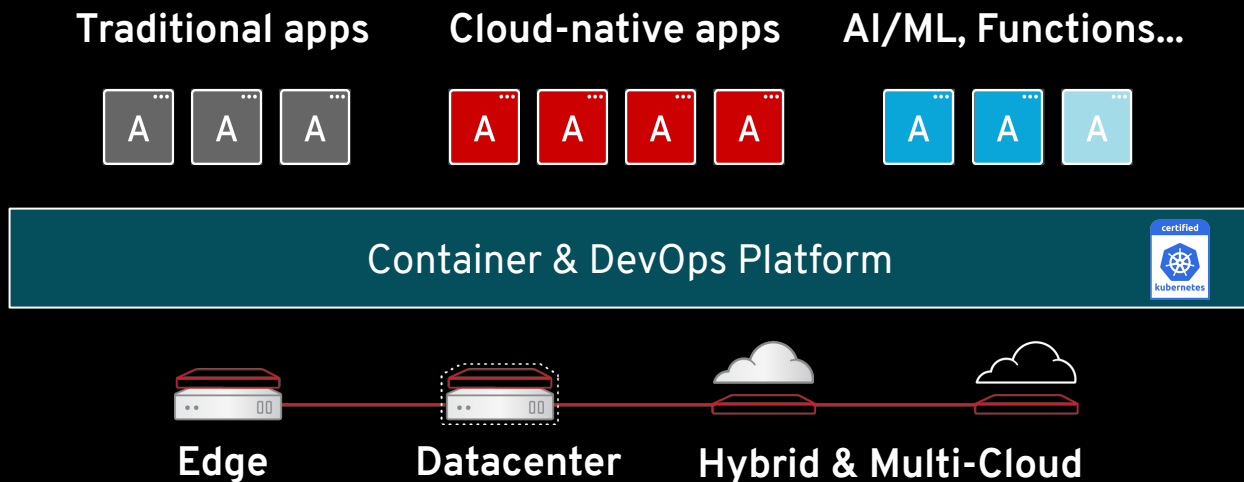


Innovation culture



Containers, Kubernetes, and hybrid cloud are key ingredients.
OpenShift is the best platform to deliver container-based applications.

With OpenShift you can deliver all your applications in a whole new way



More than 1,700 Red Hat OpenShift customers



MODERNIZE APPS



WEB APPS



CLOUD NATIVE DEV



MULTI-CLOUD



MOBILE



BIG DATA | ANALYTICS

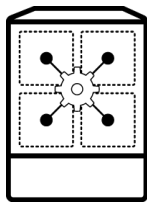


AI | ML



IOT

Why customers choose Red Hat OpenShift



Trusted enterprise
Kubernetes



OPENSIFT



Cloud-like experience
everywhere



Empowering
developers to
innovate



Open source innovation

CONTAINER CHALLENGES

Container security

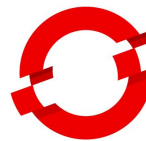
Image scanning, patching, and compliance

Day 2 management

Installations, upgrades, and maintenance
Integration of existing enterprise technology

Application delivery

Monitoring, metering, and management
Integration of existing developer tools



Red Hat OpenShift

Trusted enterprise Kubernetes

Continuous security, world-class support and services, and deep expertise to confidently run any application

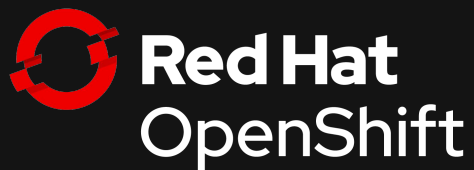
A cloud-like experience, everywhere

Full-stack automated operations on a consistent foundation across on-premises or hybrid cloud infrastructure

Empowerment for developers to innovate

Ability to get applications to production sooner with a wide range of technologies and streamlined workflows

Trusted enterprise Kubernetes



Trusted host, content,
platform

Full-stack automated
installation

Seamless updates

Kubernetes **done right** is hard

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

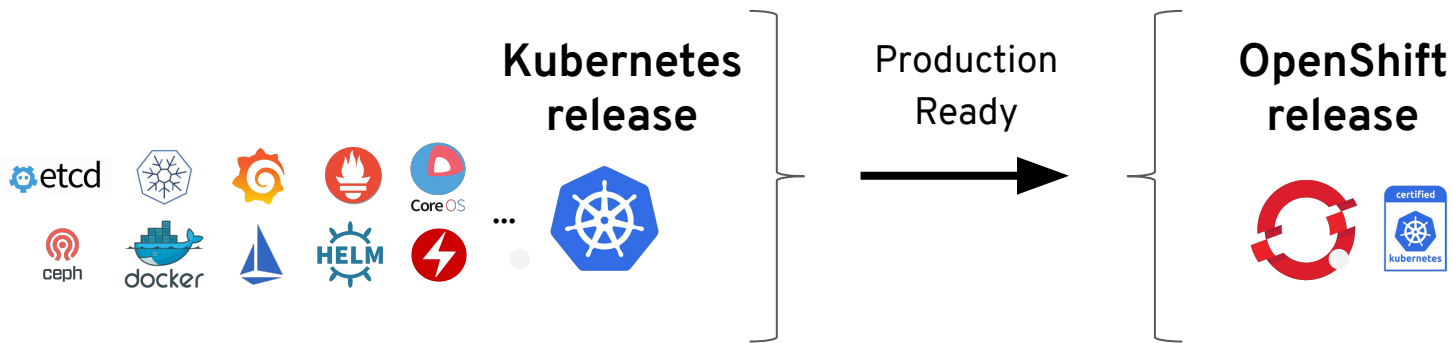


75%

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

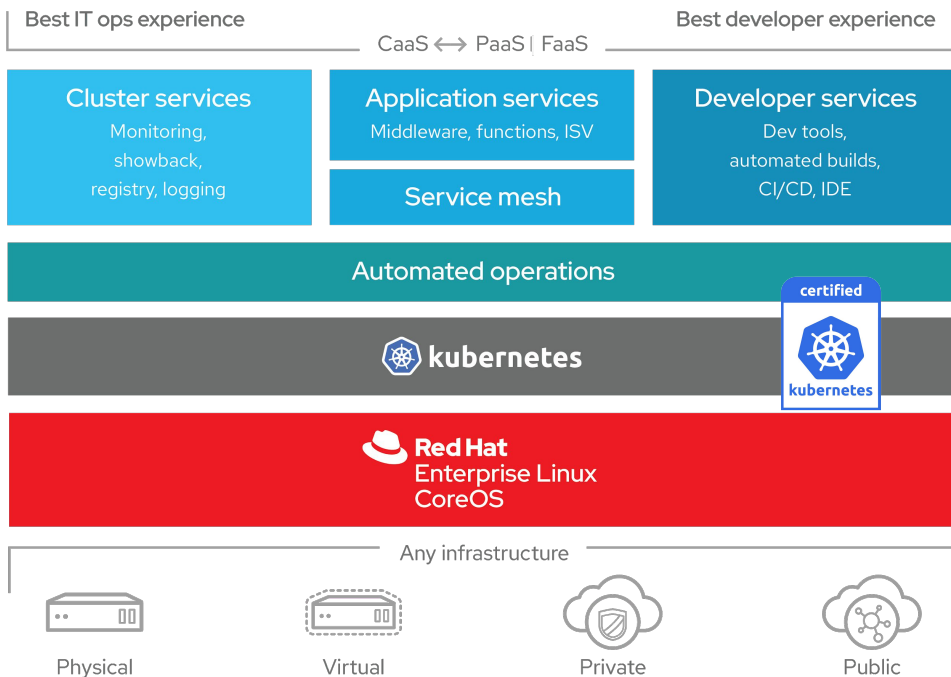
Source: The New Stack. *The State of the Kubernetes Ecosystem*, August 2017.

OpenShift is trusted enterprise Kubernetes



- Hundreds of defect and performance fixes
- 200+ validated integrations
- Certified container ecosystem
- 9-year enterprise life-cycle management
- Red Hat is a leading Kubernetes contributor since day 1

OpenShift 4 - A smarter Kubernetes platform



Automated, full-stack installation from the container host to application services

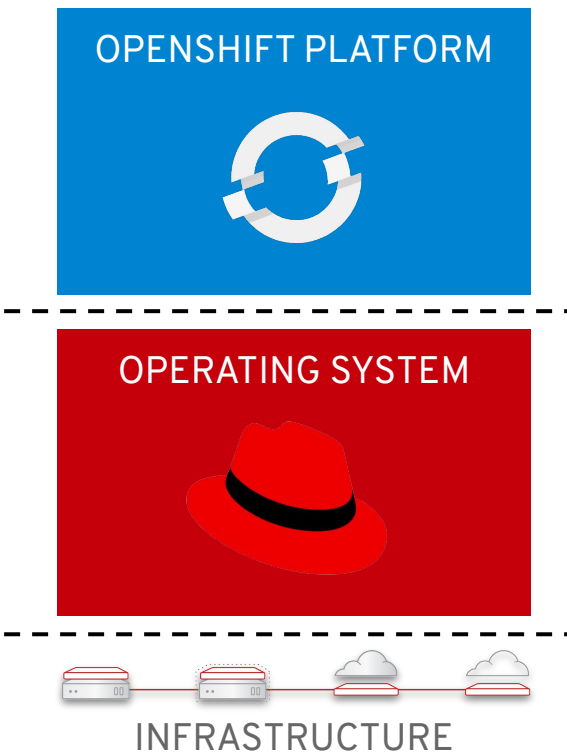
Seamless Kubernetes deployment to any cloud or on-premises environment

Autoscaling of cloud resources

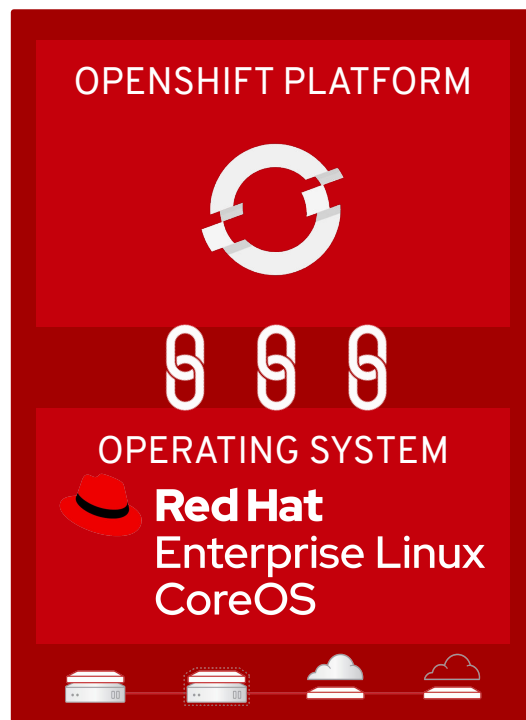
One-click updates for platform, services, and applications

Full-stack automated install

OPENSHIFT 3 & 4

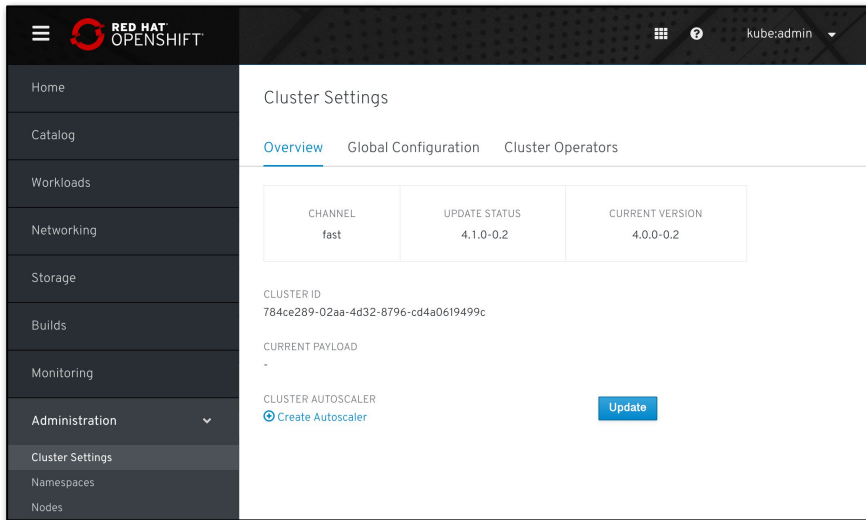


OPENSHIFT 4 (only)



Over the Air (OTA) Updates

- OpenShift retrieves the list of available updates
- Admin selects the target version
- OpenShift is updated over the air
- Auto-update support



Comprehensive **container security**



CONTROL

Application
security

Container content

CI/CD pipeline

Container registry

Deployment policies



DEFEND

Infrastructure

Container platform

Container host multi-tenancy

Network isolation

Storage

Audit & logging

API management



EXTEND

Security ecosystem

A cloud-like experience, everywhere



Operator Framework

Operator Hub &
ISV ecosystem

Multicluster
management

A consistent container application platform

FROM YOUR DATACENTER TO THE CLOUD



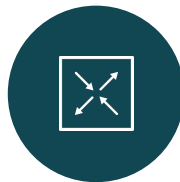
Automated
operations



Multi-tenant



Secure by
default



Network
traffic control



Over-the-air
updates



Monitoring
& chargeback



Pluggable
architecture



Bare metal, VMware vSphere, Red Hat Virtualization, Red Hat OpenStack Platform,
Amazon Web Services, Microsoft Azure, Google

Automated container operations

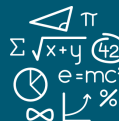
FULLY AUTOMATED DAY-1 AND DAY-2 OPERATIONS

INSTALL	DEPLOY	HARDEN	OPERATE
AUTOMATED OPERATIONS			
Infra provisioning	Full-stack deployment	Secure defaults	Multicluster aware
Embedded OS	On-premises and cloud	Network isolation	Monitoring and alerts
	Unified experience	Audit and logs	Full-stack patch & upgrade
		Signing and policies	Zero-downtime upgrades
			Vulnerability scanning

Kubernetes-native day 2 management



Flexible app
architectures



No reinvention
of core concepts



Uniform deploy
and debug



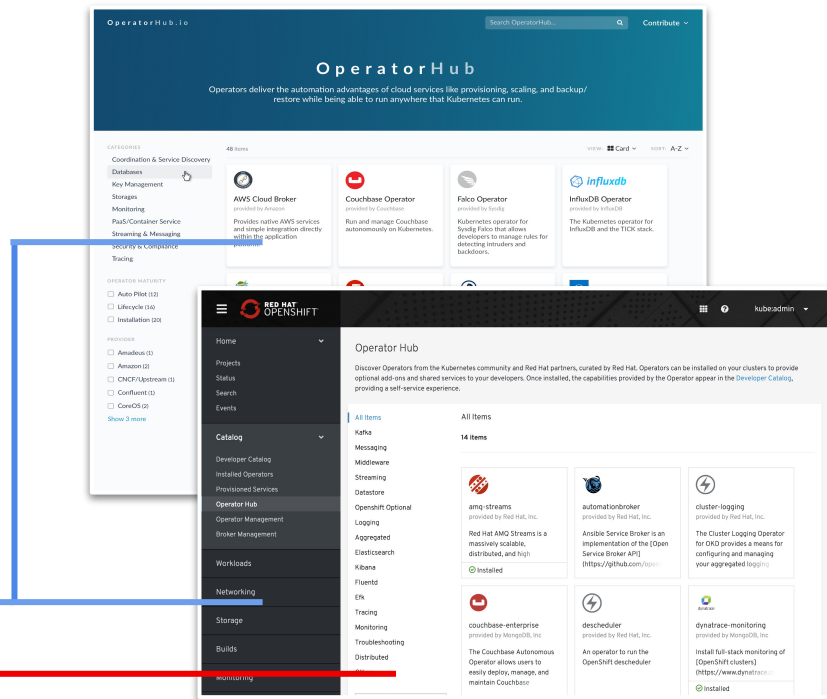
Truly hybrid

Operators codify operational knowledge and workflows to automate life-cycle management of containerized applications with Kubernetes

OperatorHub and certified Operators

- OperatorHub.io launched by Red Hat, AWS, Microsoft and Google
- OpenShift Operator Certification
- OperatorHub integrated into OpenShift 4

COMMUNITY OPERATORS
OPENSHIFT CERTIFIED OPERATORS



Full control for administrators

The screenshot displays the Red Hat OpenShift Container Platform interface. On the left is a dark sidebar with navigation links: Home, Catalog (expanded), OperatorHub (selected), Operator Management, Workloads (expanded), and various workload types like Pods, Deployments, etc. The main content area shows the 'OperatorHub' page with a 'Project: all projects' dropdown and a list of categories on the left (AI/Machine Learning, Application Monitoring, Big Data, Database, Developer Tools, Integration & Delivery, Logging & Tracing, Monitoring, Networking, OpenShift Optional, Security, Storage, Streaming & Messaging, Other). The 'All Items' section shows a grid of operators. The 'AMQ Streams' operator is highlighted, showing its icon, name, provider (Red Hat, Inc.), description, and a green 'Installed' status. Other operators visible include 'AppDynamics Cluster' and 'Automation Broker Operator'. A modal window titled 'Create Operator Subscription' is overlaid on the right. It contains instructions to keep services up to date by selecting a channel and approval strategy. The 'Installation Mode' section has two radio buttons: 'All namespaces on the cluster (default)' (selected) and 'A specific namespace on the cluster'. The 'Update Channel' section has a radio button for 'preview'. The 'Approval Strategy' section has two radio buttons: 'Automatic' (selected) and 'Manual'. At the bottom of the modal are 'Subscribe' and 'Cancel' buttons.

RED HAT OPENSIFT
Container Platform

Home

Catalog

- Developer Catalog
- Installed Operators
- OperatorHub**
- Operator Management

Workloads

- Pods
- Deployments
- Deployment Configs
- Stateful Sets
- Secrets
- Config Maps
- Cron Jobs
- Jobs
- Daemon Sets
- Replica Sets

Project: all projects ▾

OperatorHub

All Items

AI/Machine Learning

Application Monitoring

Big Data

Database

Developer Tools

Integration & Delivery

Logging & Tracing

Monitoring

Networking

OpenShift Optional

Security

Storage

Streaming & Messaging

Other

AMQ Streams
provided by Red Hat, Inc.

Red Hat AMQ Streams is a massively scalable, distributed, and high

✓ Installed

AppDynamics Cluster
provided by AppDynamics

End to end monitoring of applications on Kubernetes and OpenShift clusters

Automation Broker Operator
provided by Red Hat, Inc.

AppDynamics Cluster
provided by AppDynamics

End to end monitoring of applications on Kubernetes and OpenShift clusters

Automation Broker Operator
provided by Red Hat, Inc.

Create Operator Subscription

Keep your service up to date by selecting a channel and approval

Installation Mode *

- ☒ All namespaces on the cluster (default)
Operator will be available in all namespaces.
- ☐ A specific namespace on the cluster
Operator will be available in a single namespace only.

Update Channel *

- ☒ preview

Approval Strategy *

- ☒ Automatic
- ☐ Manual

Subscribe **Cancel**

Self-service for developers

Red Hat OpenShift Container Platform

Project: production-api-backend ▾

amqstreams.v1.1.0 > Kafka Details

production-api-kafka

Overview YAML **Resources**

NAME ↑	TYPE	STATUS
production-api-kafka-clients-ca	Secret	Created
production-api-kafka-clients-ca-cert	Secret	Created
production-api-kafka-cluster-ca	Secret	Created
production-api-kafka-cluster-ca-cert	Secret	Created
production-api-kafka-cluster-operator-certs	Secret	Created
production-api-kafka-entity-operator	Deployment	Created
production-api-kafka-entity-operator-6d499d47db	ReplicaSet	Created
production-api-kafka-entity-operator-6d499d47db-82xll	Pod	Running

MongoDB Replica Set

Provided by MongoDB, Inc.

Create MongoDB Replica Set Deployment

PROVIDER: MongoDB, Inc.
CREATED AT: Apr 29, 2:50 pm

This resource is provided by MongoDB, a Kubernetes Operator enable
Documentation
<https://docs.opsmanager.mongodb.com/current/tutorial/install-k8s->

```
apiVersion: mongodb.com/v1
kind: MongoDBReplicaSet
metadata:
  name: example
  namespace: production
spec:
  members: 3
  version: 4.0.2
  persistent: false
  project: example
  credentials: my-secret
```


Why OpenShift for hybrid and multi-cloud deployments?

IDC Research: The Business Value of OpenShift on AWS

“““

Our developers say that OpenShift on AWS is very easy to use, and they are definitely more productive as a result ... seeing **60-70 percent increases in productivity levels.**

Financial Services

“““

We have a **multi-cloud environment** and OpenShift on AWS has features that make it **easier to be agile.**

Pharmaceutical

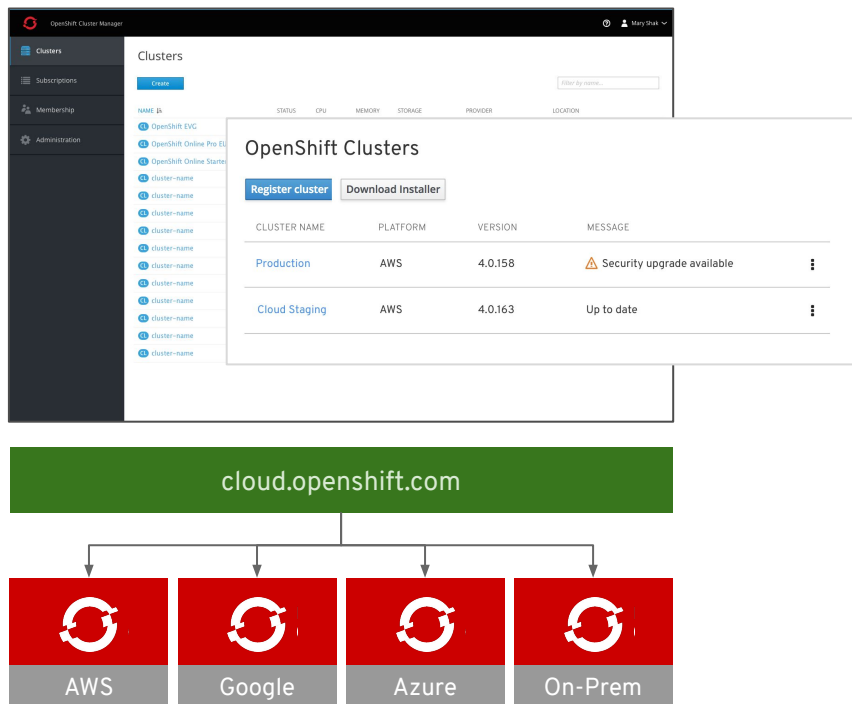
“““

OpenShift on AWS has really helped us improve our reservation system and contributed to up to **15 percent more revenue, worth tens of millions of dollars per year.**

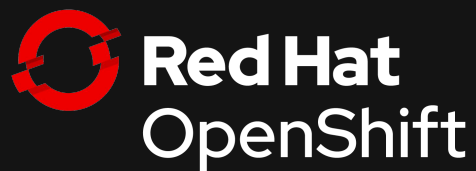
Hospitality

Unified Hybrid Cloud

- Cloud-based multicluster management
 - New clusters on AWS, Azure, Google, vSphere, OpenStack, and bare metal
 - Register existing clusters
 - Including OpenShift Dedicated
- Management operations
 - Install new clusters
 - View all registered clusters
 - Update clusters



Empowering developers to innovate



Service mesh

Serverless

Red Hat CodeReady
Workspaces &
developer tooling

Infrastructure

 New Relic.

The diagram illustrates the Logstash ecosystem with various input and output plugins. The central 'Logstash' box is connected to several other components:

- Inputs (Left):**
 - elastic:** Represented by a multi-colored flower icon.
 - loggly:** Represented by a red rectangular icon.
 - sumologic:** Represented by a blue square icon with a white 'S'.
 - graylog:** Represented by a gray rectangular icon.
 - papertrail:** Represented by a blue rectangular icon.
- Outputs (Right):**
 - fluentd:** Represented by a blue bird icon inside a green rounded rectangle.
 - splunk:** Represented by the word 'splunk' in black with a green greater-than sign.
 - loom:** Represented by a blue circular icon with a white 'L' and the text 'loom systems'.
 - logz.io:** Represented by a blue hexagonal icon with a white 'Z' and the text 'logz.io'.

CNCF Projects

github.com/cncf/landscape

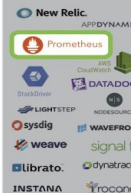
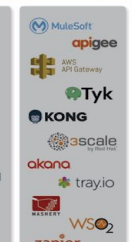
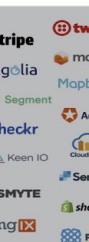
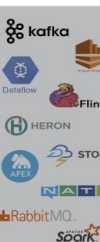


Cloud-Native Network



Secure Images





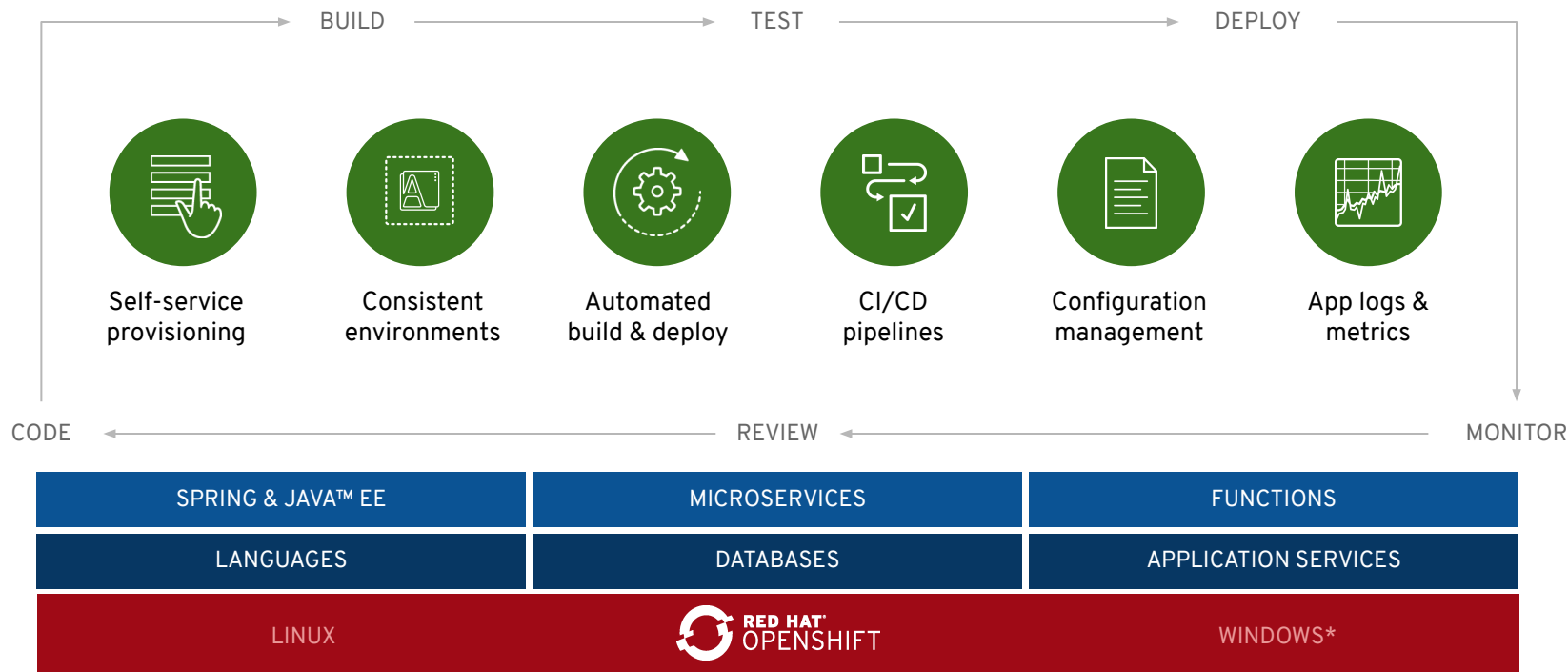
THE CLOUD-NATIVE APP DEV CHALLENGE



CNCF Projects

github.com/cncf/landscape

OpenShift enables developer productivity



* coming soon

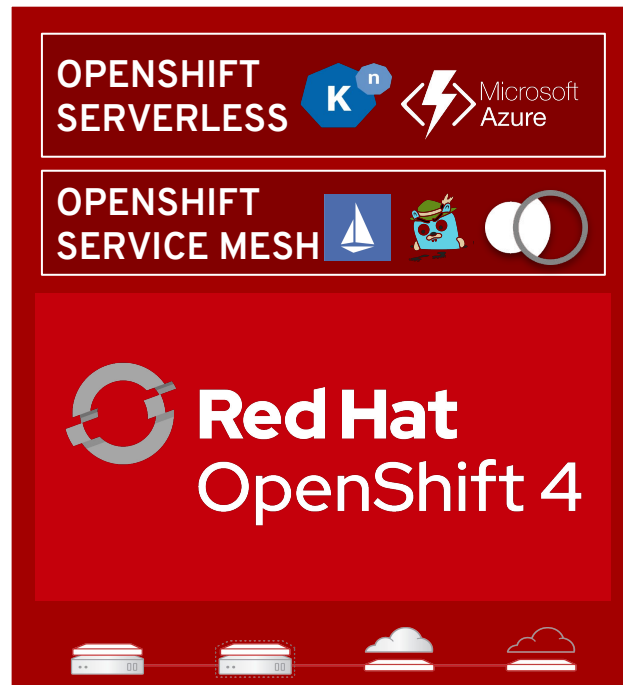
Building next-gen applications

OpenShift Service Mesh

- Integrated Service Mesh for enhanced security and network segmentation of microservices applications. Combines Istio, Kiali (UI), and Jaeger (Tracing) projects.

OpenShift Serverless

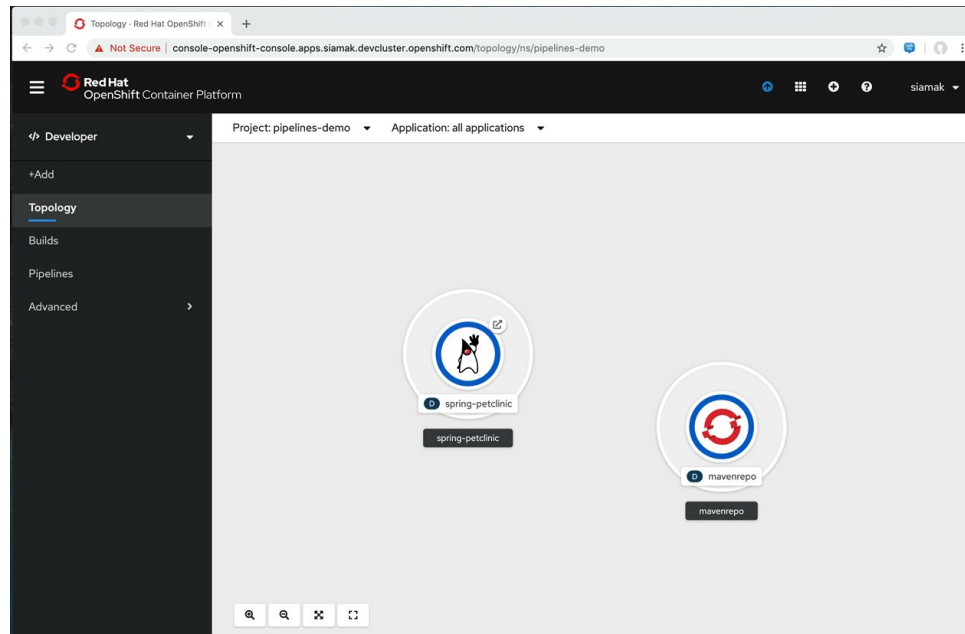
- Integrated serverless, enabling scale-to-zero FaaS services and event sources - built on the Knative framework.
- Support for Azure Functions
- Integrated with Camel-k for rich set of initial event sources: HTTP, Kafka, AMQP





OpenShift Pipelines

- OpenShift Pipelines 1.0 Tech Preview
- Authoring pipelines with Pipeline builder
- Share data between tasks in pipeline
 - Workspaces for sharing artifacts
 - Results for small data e.g. commit sha
- Webhooks
 - Default GitHub TriggerBinding
 - Filtering on payload (event, files, etc)
 - Add to payload with CEL expressions
 - Custom processing with interceptors
- Proxy support for git repositories



Enabling greater developer productivity

CodeReady Workspaces

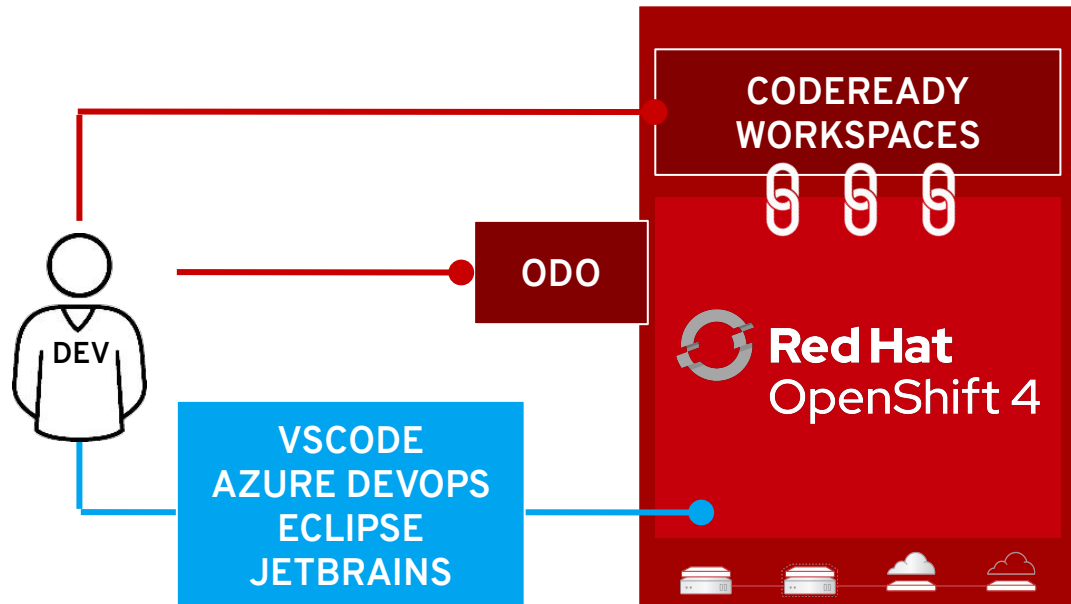
Web-Based IDE (Eclipse Che),
Collaborative Development,
integrated with CI/CD.

OpenShift ODO

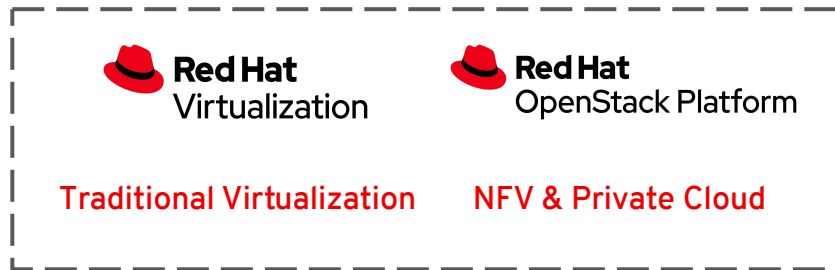
Advanced developer CLI

OpenShift Plugins

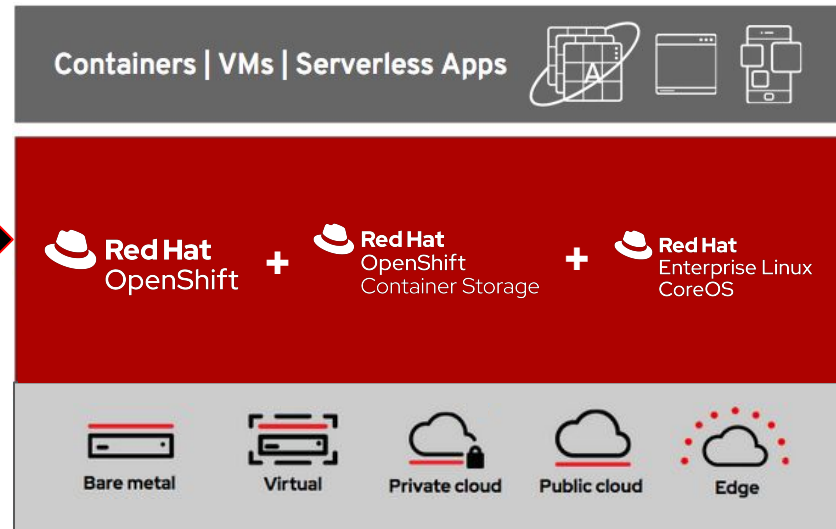
Integration plugins - VScode, Azure
DevOps, Eclipse IDE, JetBrains



Future of Virtualization from Red Hat



- Rock solid stability, performance and scale for current long life apps & migrations from VMw
- Provide customers with path, services, tooling to modernize current apps & workloads
 - To VMs and containers on OpenShift
- Integration with Red Hat OpenShift, OpenShift Virtualization



- Application modernization, zero technical debt migrations from VMw, RHV, RHOSP
- Strategy and roadmap for Virtualization from Red Hat across all footprints

Red Hat OpenShift business value



531%
5-year ROI

66%

Faster development
life cycle

36%

More applications
per year

8 MONTHS






Payback
period

US\$1.29M

Average annual
benefits per
100 developers

The Business Value of Red Hat OpenShift, IDC #US41845816, October 2017,
<https://www.redhat.com/en/resources/The-Business-Value-of-Red-Hat-OpenShift>.

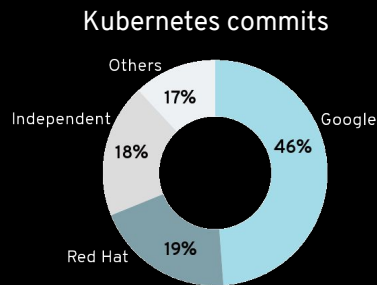
OpenShift offers the broadest set of hybrid cloud services

				
		 Google Cloud Platform	 IBM Cloud	On-premises
Red Hat OpenShift Dedicated <i>Managed By Red Hat</i>	Azure Red Hat OpenShift <i>Jointly Managed & Supported</i>	Red Hat OpenShift Dedicated <i>Managed By Red Hat</i>	Red Hat OpenShift on IBM Cloud <i>Jointly Engineered</i>	Customer Managed
or	or	or	or	
Customer Managed	Customer Managed	Customer Managed	Customer Managed (UPI)	

Why is Red Hat the best choice?

THE 4 C's

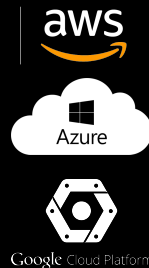
CODE



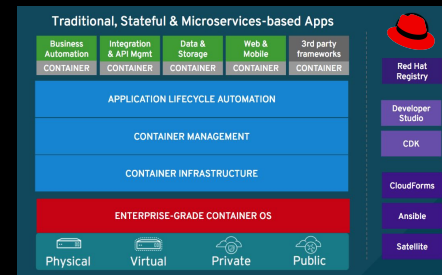
CUSTOMERS



CLOUD



COMPREHENSIVE



Red Hat is a leading Kubernetes developer & contributor with Google¹.

We make container development easy, reliable, & more secure.

1,000+ customers²

We have years of experience running OpenShift Online & OpenShift Dedicated services.

We have strong partnerships with cloud providers, ISVs, & CCSPs.

We have an extensive container catalog of certified partner images.

Our comprehensive portfolio of container products and services includes developer tools, security, application services, storage, & management.



Red Hat OpenShift 4

Trusted enterprise Kubernetes

- Trusted host, content, platform
- Full-stack automated install
- Seamless updates & day 2 management

A cloud-like experience, everywhere

- Operator Framework
- Operator Hub & certified ISVs
- Hybrid, multicluster management

Empowering developers to innovate

- OpenShift service mesh / Istio
- OpenShift serverless / Knative
- CodeReady Workspaces / Che

Thank You



linkedin.com/company/red-hat



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