

OpenShift is a leading hybrid cloud, enterprise Kubernetes application platform, trusted by Many organizations.

Why OpenShift



Accelerate Application Delivery & DevOps

OpenShift helps organizations accelerate development & deployment of critical applications and services.

Customer Momentum

Every day more and more customers are looking into OpenShift. With customers spanning across 14 different industries, it's no surprise OpenShift is gaining traction.

Open Source Innovation Leaders

Red Hat is driving innovation in OpenShift and upstream communities like Docker, Kubernetes, ProjectAtomic & more.

Enterprise Ready

OpenShift provides a complete, enterprise-ready solution. From the operating system, to middleware, to a truly open hybrid cloud. All of which come from a vendor you can trust.

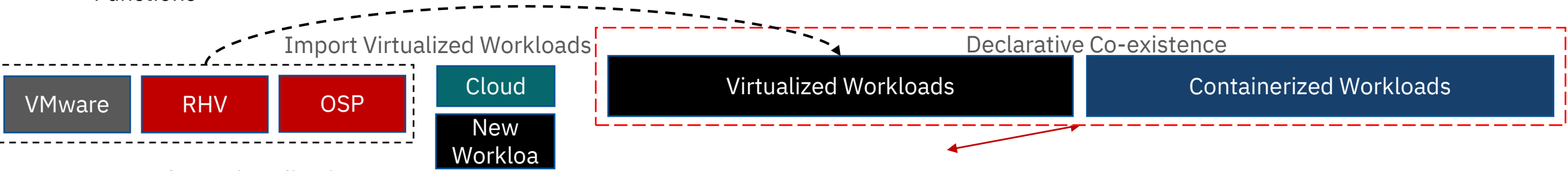
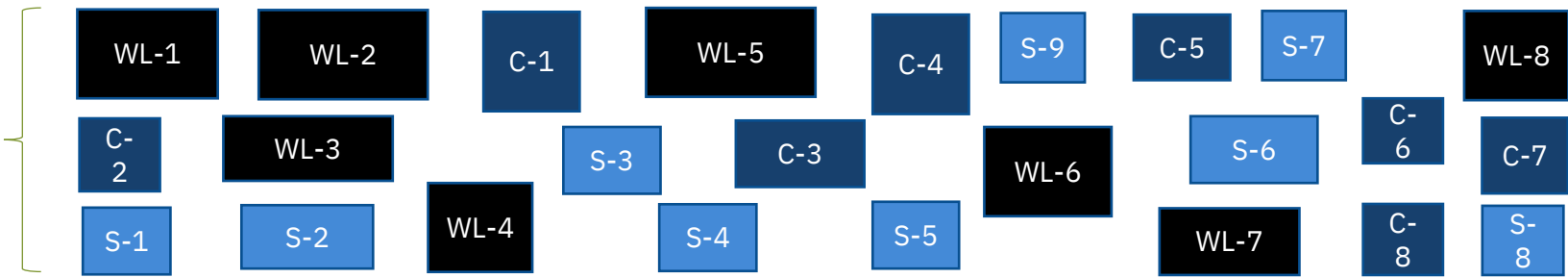
Running Red Hat OpenShift in your organization enables faster time to market, innovation, and enabled DevSecOps

Red Hat OpenShift Common platform for DevOps; Supports legacy and cloud native				
BENEFITS	Developer	Operations	Hybrid multicloud management and portability	Security and controls
	<ul style="list-style-type: none">▶ Choice of IDEs▶ Choice of frameworks▶ Choice of programming languages▶ Build and deploy pipelines▶ Nothing for developers to install	<ul style="list-style-type: none">▶ Automated provisioning▶ Automated installations/upgrades▶ Autoscaling▶ Wide range of workloads<ul style="list-style-type: none">- 'Stateless' applications- 'Stateful' applications (e.g., DBs)- Containerize applications- VMs (Lift & Shift)	<ul style="list-style-type: none">▶ Elastic infrastructure▶ Choice of IaaS▶ True application portability	<ul style="list-style-type: none">▶ Clients controls implemented and audited▶ Minimizing the attack potential▶ Security scanning for vulnerabilities▶ Encryption everywhere
TYPICAL RESULTS	<ul style="list-style-type: none">▶ 20-30% reduction in time app teams spend patching IDE and middleware stack▶ New developer productive in minutes vs. weeks▶ Build pipeline 10x faster than current	<ul style="list-style-type: none">▶ Create and provision complete, usable, containerized middleware (app servers, MQ, Kafka) in minutes versus days▶ Upgrade OpenShift Clusters in 2 hours with no user impact▶ Auto-scaling applications in 3 seconds▶ Dynamic allocation of storage to containers across all middleware	<ul style="list-style-type: none">▶ Single pane of glass enables workloads to move across clouds with ease and no-recompiling▶ Configurable management console and dashboards, with consolidated logging	<ul style="list-style-type: none">▶ Security controls automated on-prem and in the cloud▶ Applications deployed to multi-clusters/Multiclouds while maintaining strict security posture

OpenShift Container Platform and OpenShift Virtualization

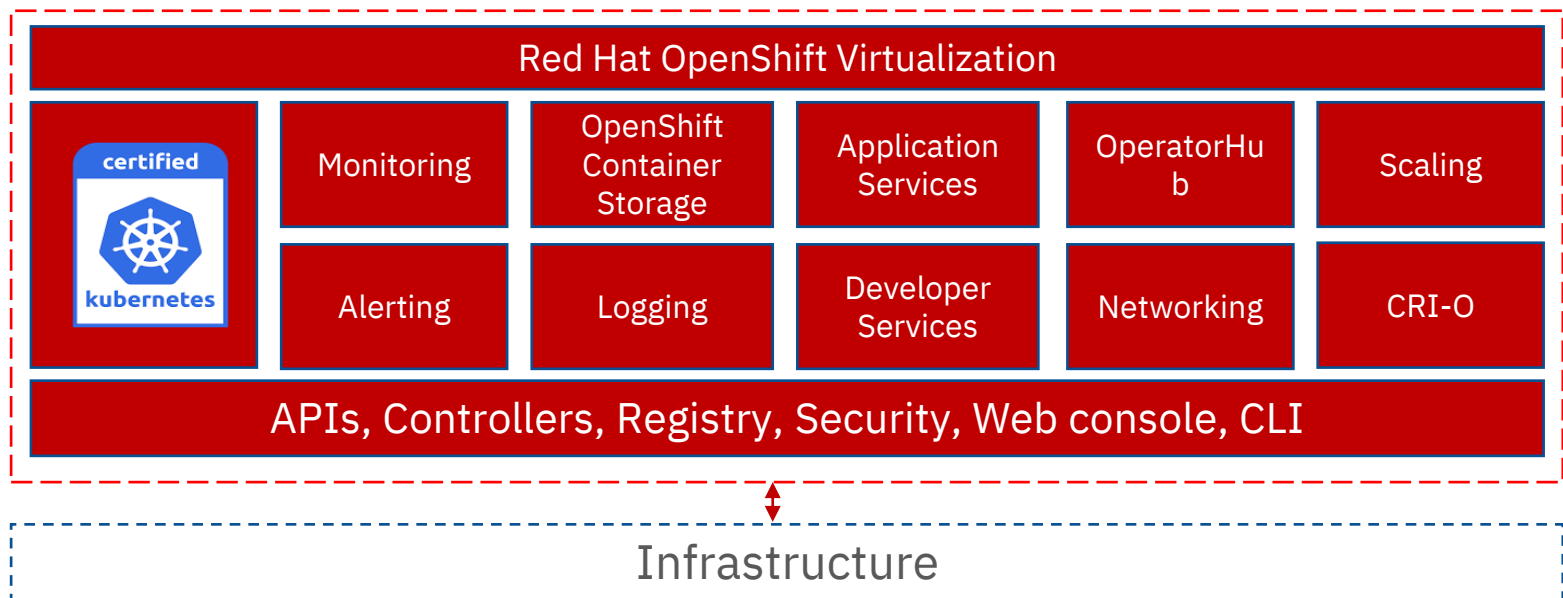
Workloads Types:

- WL** Virtualized Workload
- C** Containerized Workload
- S** Serverless Functions



RHV: Red Hat Virtualization
OSP: OpenStack Platform

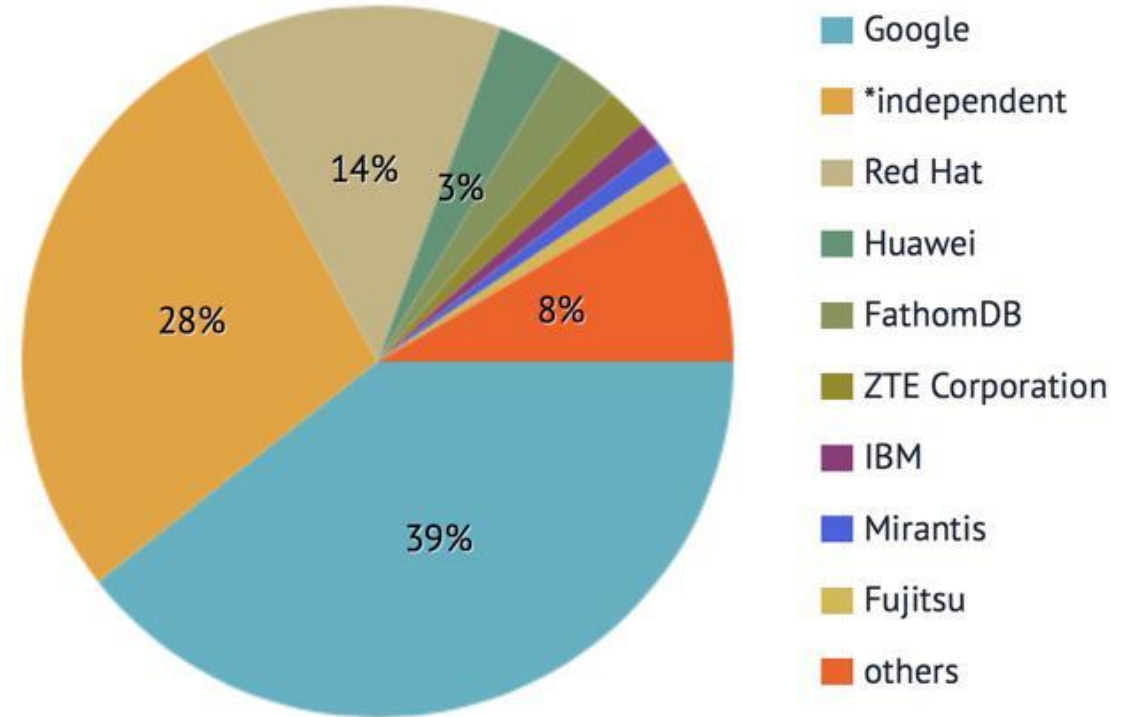
Virtualized Workloads,
Containers and Serverless on a
single platform



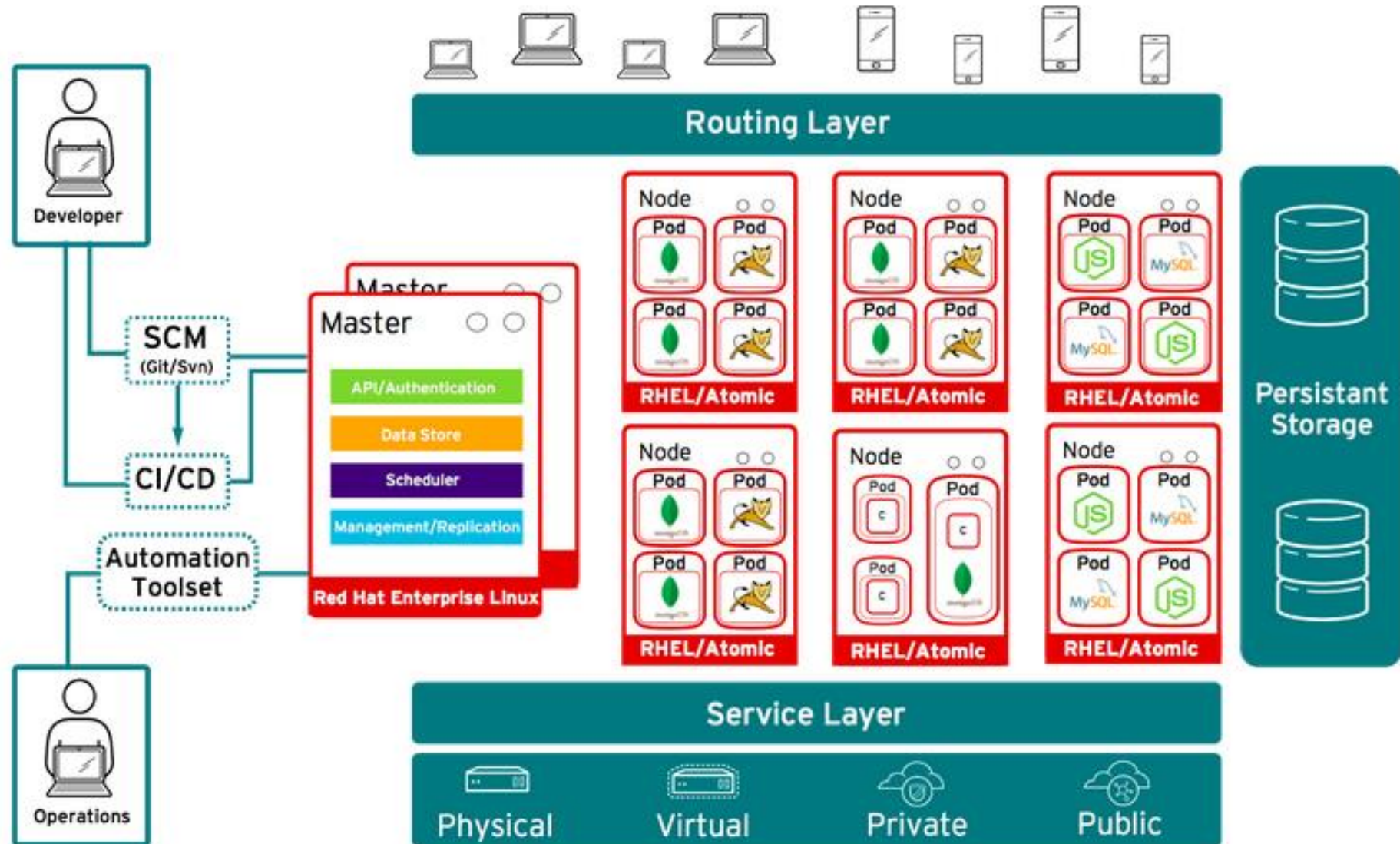
Openshift Deployed

Business benefits found by the companies:

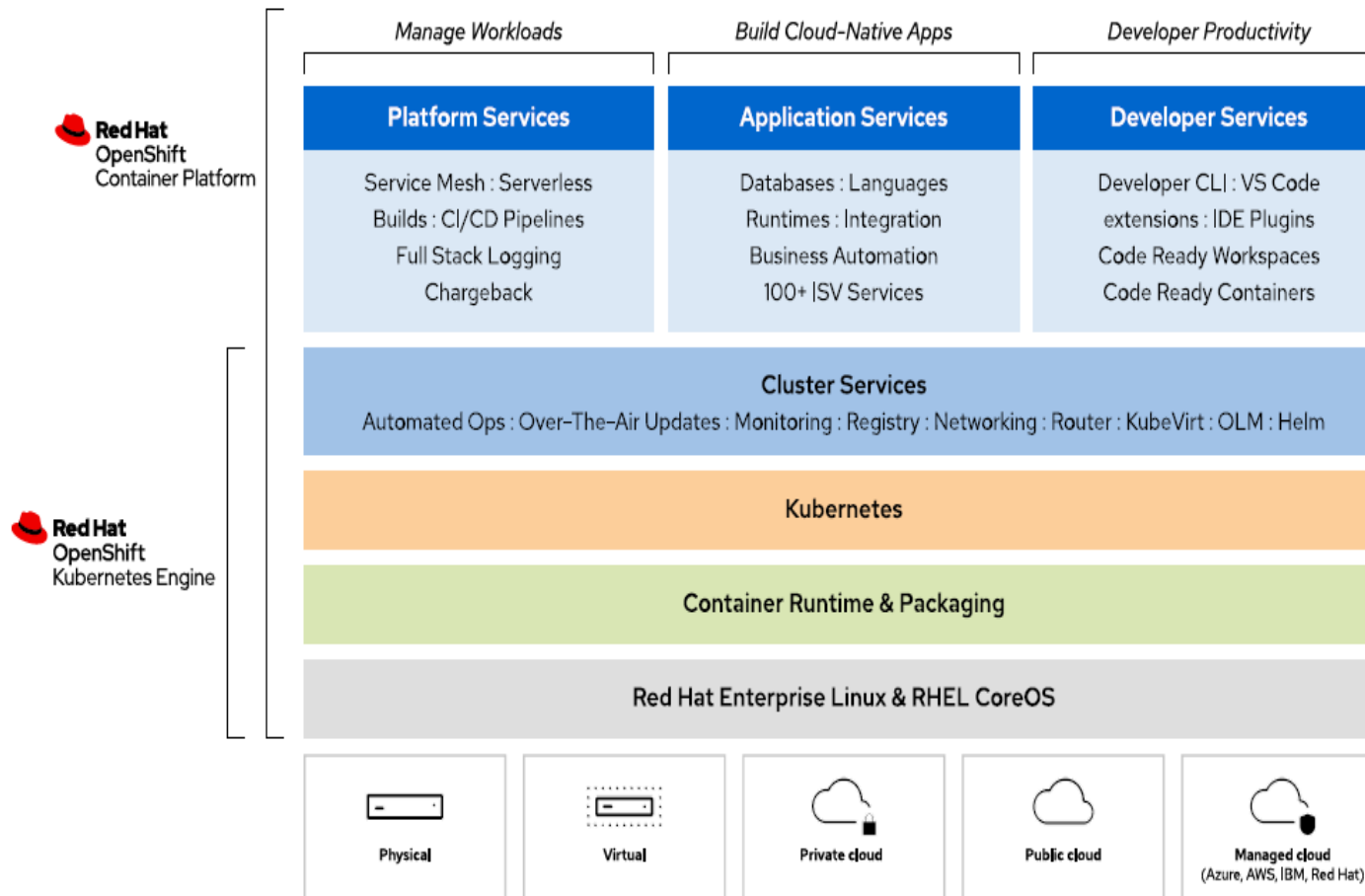
- 531%** of the mean **ROI** in 5 years
- 66% increase** in application development lifecycle **velocity**
- 35% reduction in time** for each application developed
- 35% reduction in costs** of the development platform and the IT infrastructure for each application



Openshift Architecture



OpenShift Features



High Availability
Lightweight Operating System
Load Balancing
Automating Scaling
Logging and Monitoring
Services Discovery
Storage
Application Management
Cluster Extensibility

Figure 1.2: Feature comparison between OpenShift Container Platform and OpenShift Kubernetes Engine

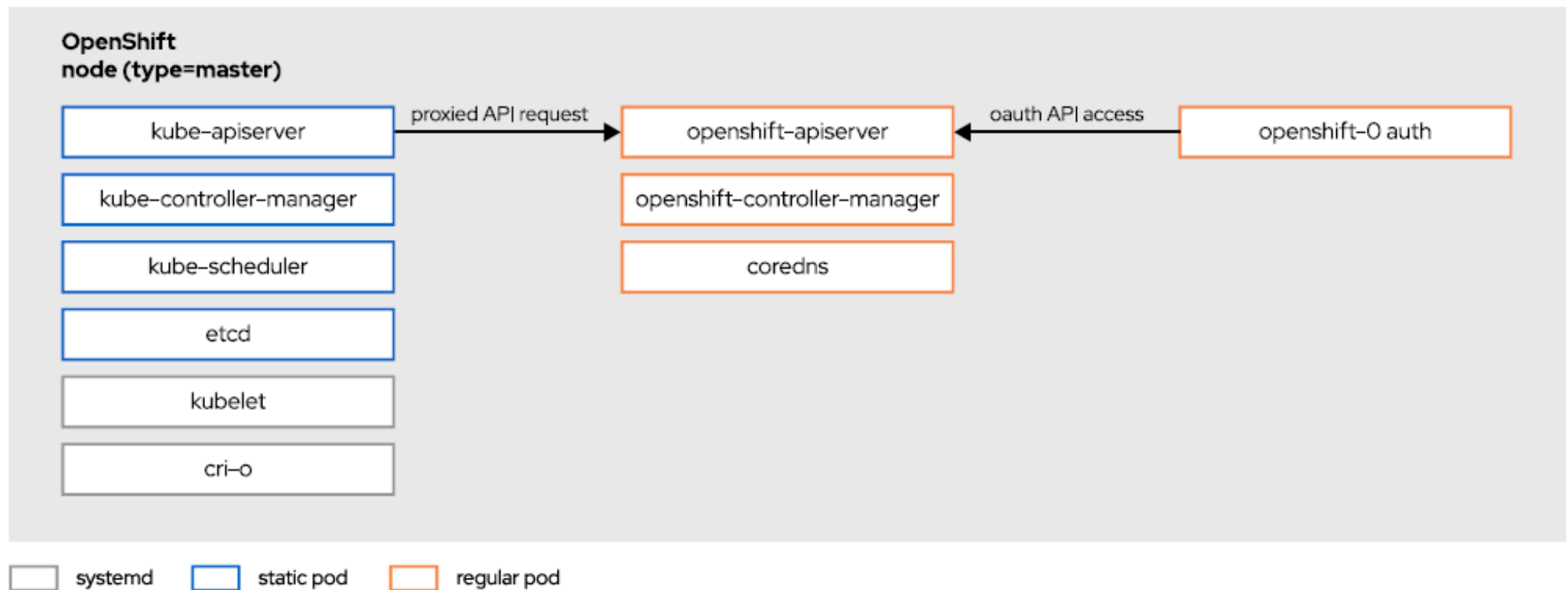


Figure 1.3: Architecture of an OpenShift control plane node

How Openshift Looks Like .. Live Demo

OPENSIFT ORIGIN

developer

Browse Catalog

Deploy Image Import YAML / JSON Select from Project

[All](#) Languages Databases Middleware CI/CD Other

Filter ▾

20 Items

.NET Core Builder Images

Apache HTTP Server (httpd)

CakePHP + MySQL

Dancer + MySQL

Django + PostgreSQL

Jenkins

MariaDB

MongoDB

MySQL

Nginx HTTP server and a reverse proxy (nginx)

Node.js

Node.js + MongoDB

Perl

PHP

Pipeline Build Example

My Projects

Create Project

1 of 1 Projects [View All](#)

[My Project](#)

myproject – created by developer 3 minutes ago

Initial developer project

Getting Started






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Pipeline Build Example

How Openshift Looks Like .. Live Demo

```
Terminal Console     
```

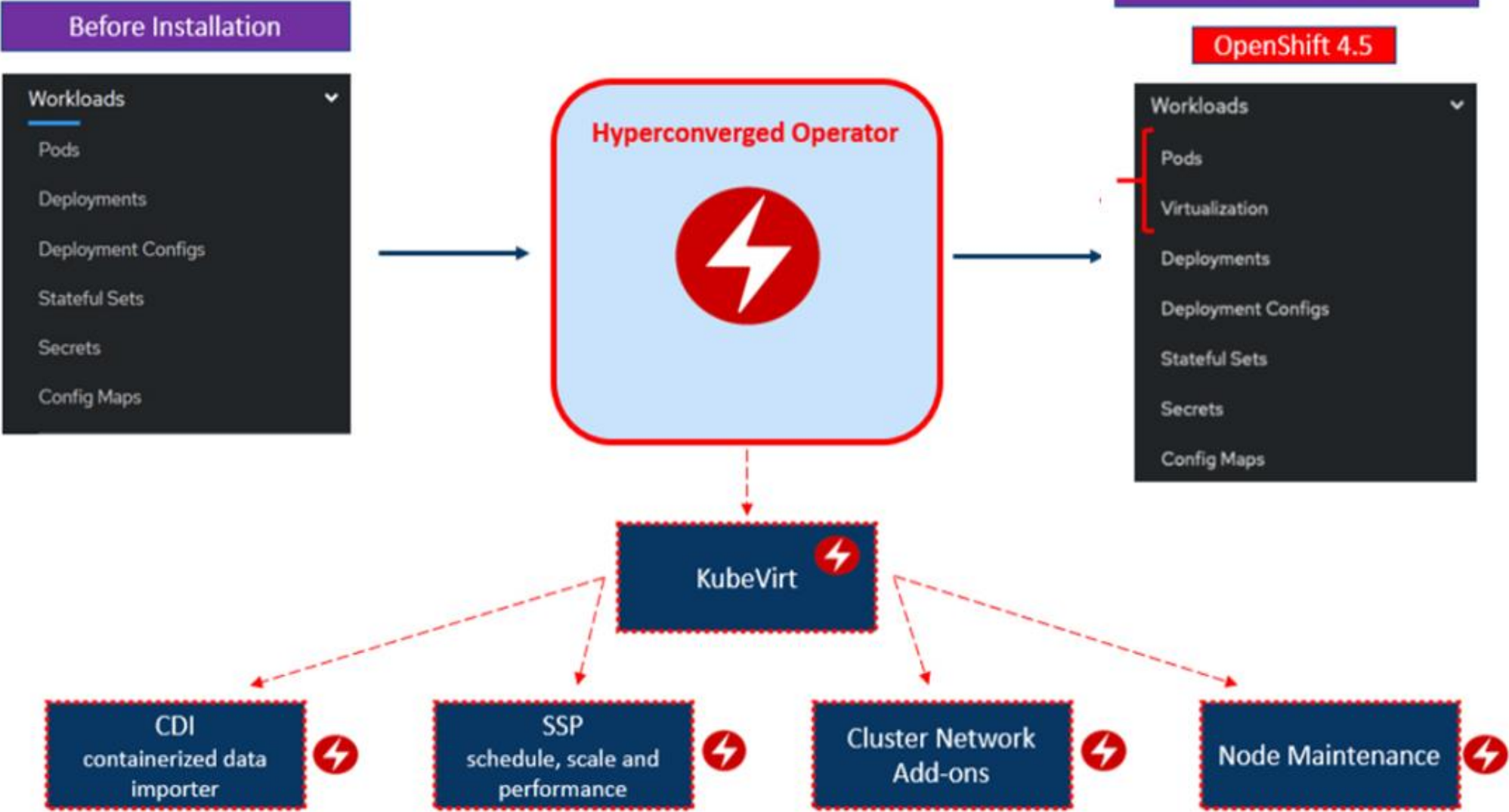
```
$ oc status
In project default on server https://openshift:6443

svc/openshift - kubernetes.default.svc.cluster.local
svc/kubernetes - 172.30.0.1:443 -> 6443

View details with 'oc describe <resource>/<name>' or list everything with 'oc get all'.
$ oc whoami
admin
$ oc get projects
```

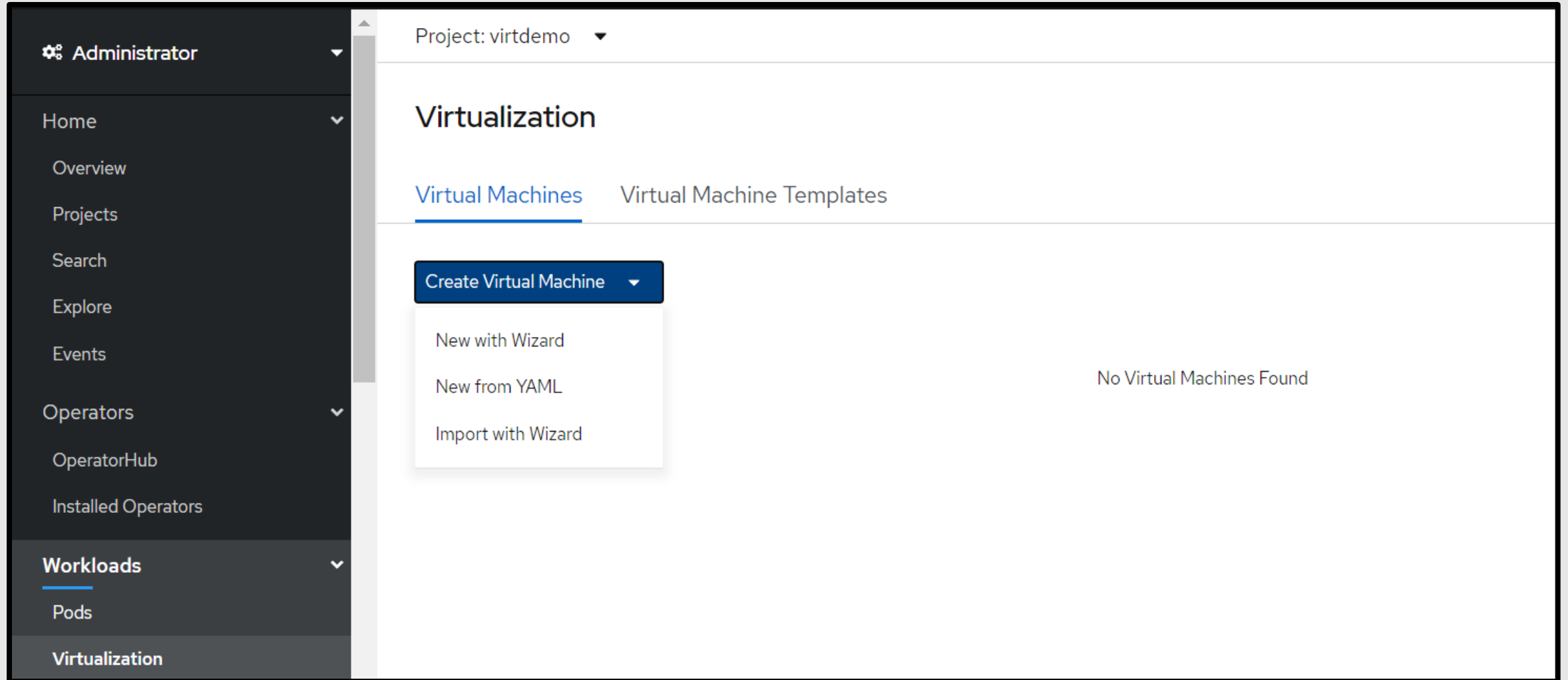
NAME	DISPLAY NAME	STATUS
default		Active
kube-node-lease		Active
kube-public		Active
kube-system		Active
openshift		Active
openshift-apiserver		Active
openshift-apiserver-operator		Active
openshift-authentication		Active
openshift-authentication-operator		Active
openshift-cloud-credential-operator		Active
openshift-cluster-machine-approver		Active
openshift-cluster-node-tuning-operator		Active
openshift-cluster-samples-operator		Active
openshift-cluster-storage-operator		Active
openshift-cluster-version		Active
openshift-config		Active
openshift-config-managed		Active
openshift-console		Active
openshift-console-operator		Active
openshift-controller-manager		Active
openshift-controller-manager-operator		Active
openshift-dns		Active
openshift-dns-operator		Active
openshift-etcd		Active

Operator View



The diagram here shows the Operator view of the Red Hat OCP console.

Web Console Interface - Virtualization



Web Console Interface - Pods

Operators

OperatorHub

Installed Operators

Workloads

Pods

Virtualization

Deployments

Deployment Configs

Stateful Sets

Secrets

Project: demo













Pods

Create Pod

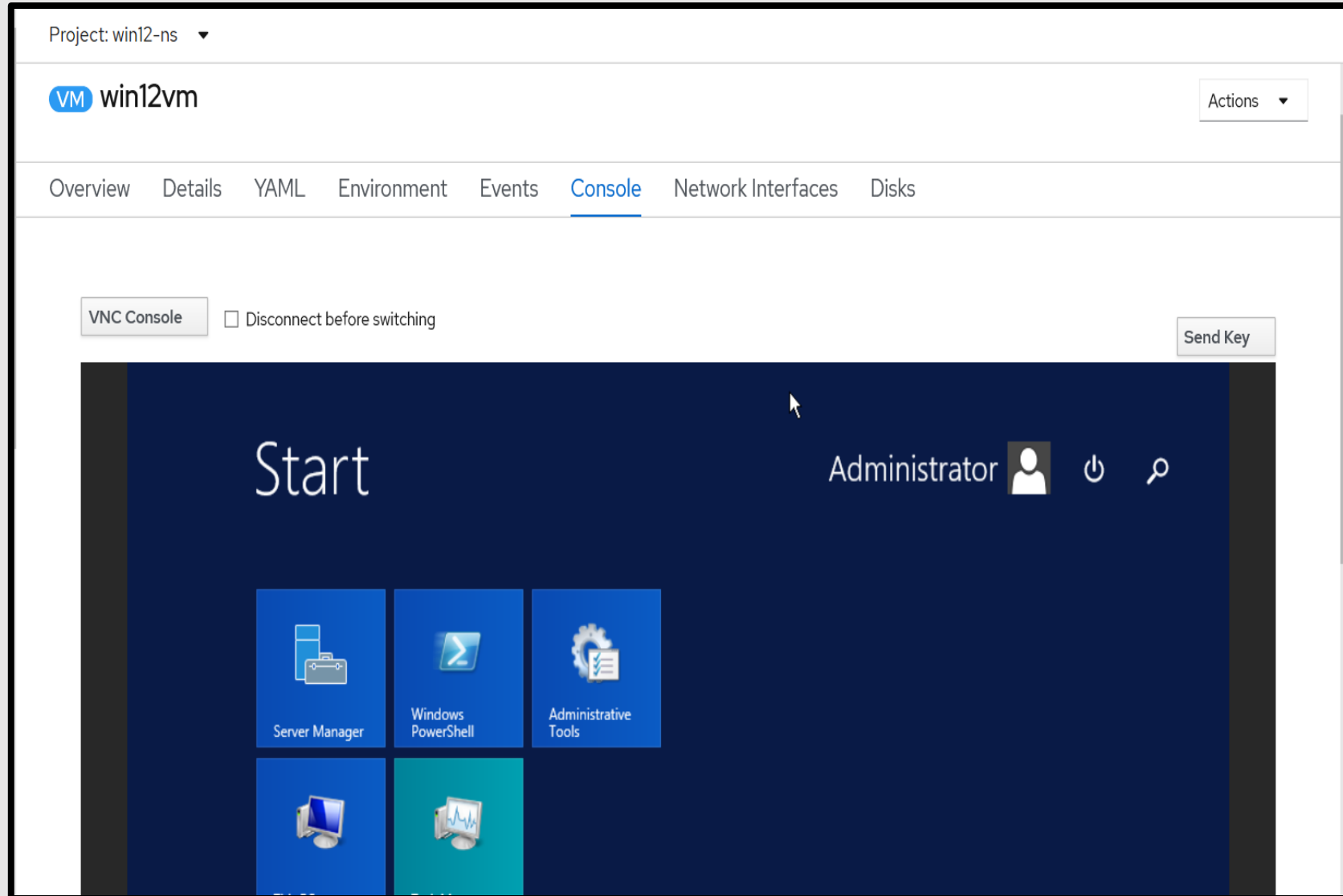
Filter

Name

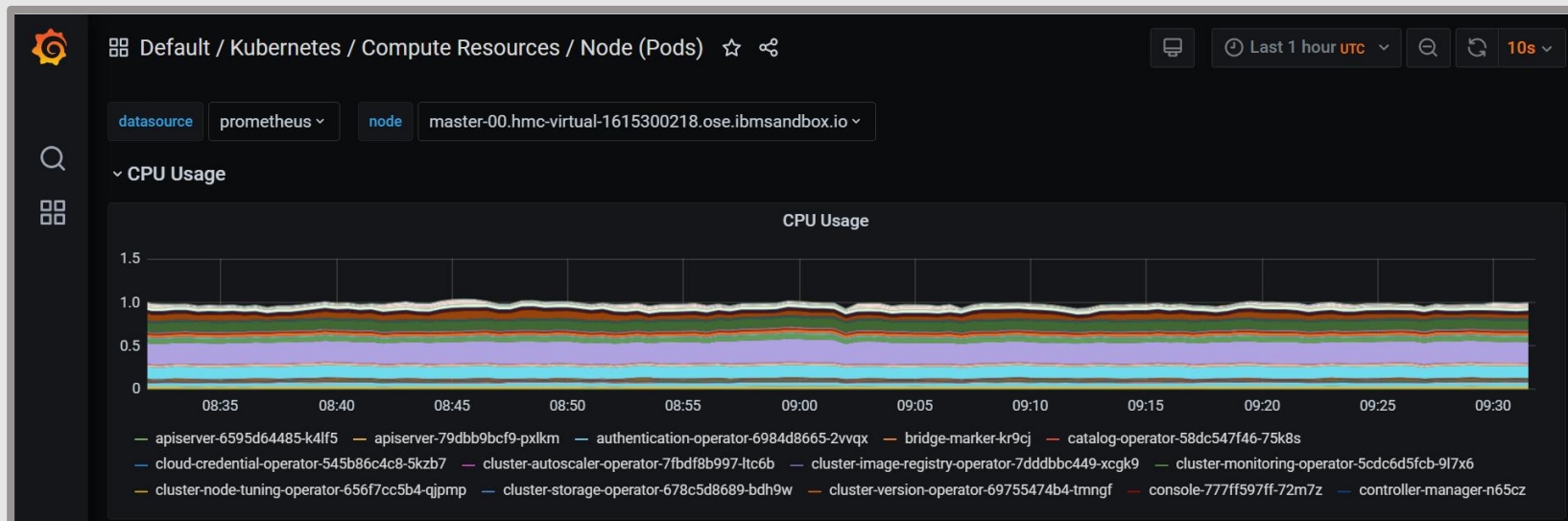
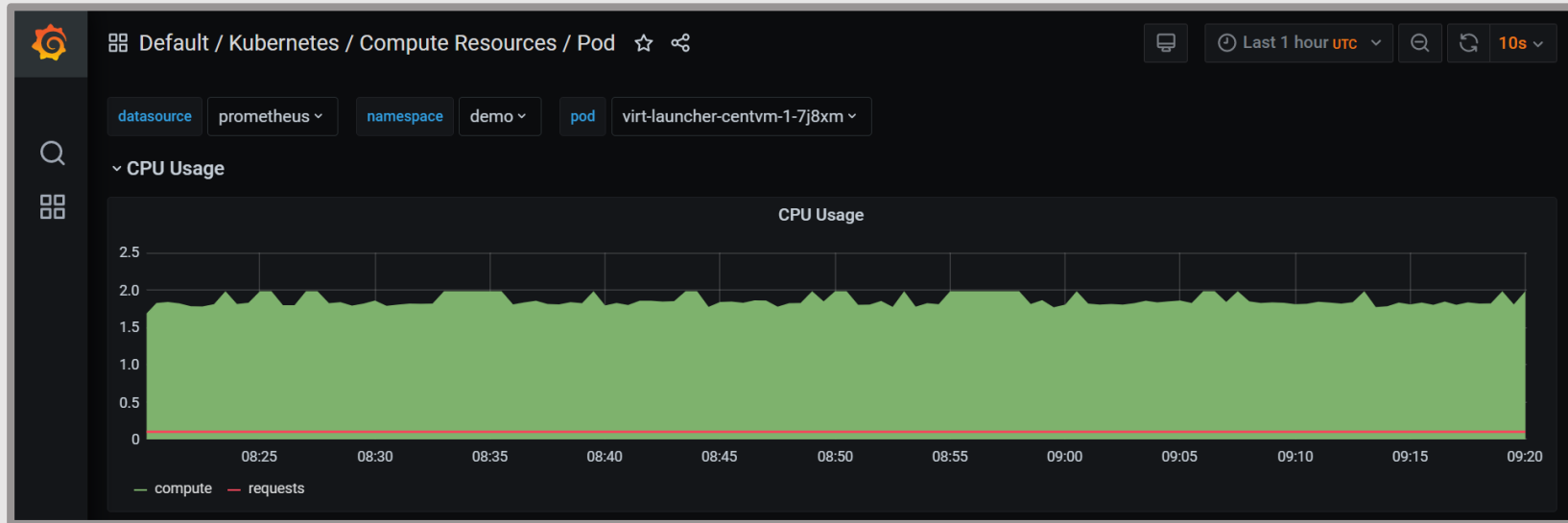
Search by name...

Name	Status	Ready	Restarts	Owner	Memory	CPU	
 v2v-vmware-6cdd8db7dc-6hfvr	 Running	1/1	0	 v2v-vmware-6cdd8db7dc	25.5 MiB	0.003 cores	
 virt-launcher-centvm-1-7j8xm	 Running	1/1	0	 centvm-1	4,186.6 MiB	1.984 cores	
 virt-launcher-winvm-1-q8gxj	 Running	2/2	0	 winvm-1	8,391.0 MiB	0.024 cores	

Web Console Interface - VM



Monitoring



Alerting

—

namespace="demo" +

9 alerts

14:47:16, 2021-03-12 (UTC) + Info

Source

Silence

alertname="PodDisruptionBudgetLimit" +

poddisruptionbudget="kubevirt-disruption-budget-49z24" +

prometheus="openshift-monitoring/k8s" +

severity="critical" +

14:47:16, 2021-03-12 (UTC) + Info

Source

Silence

alertname="PodDisruptionBudgetLimit" +

poddisruptionbudget="kubevirt-disruption-budget-7fp77" +

prometheus="openshift-monitoring/k8s" +

severity="critical" +

14:47:16, 2021-03-12 (UTC) + Info

Source

Silence

alertname="PodDisruptionBudgetLimit" +

poddisruptionbudget="kubevirt-disruption-budget-86kts" +

prometheus="openshift-monitoring/k8s" +

severity="critical" +

14:47:16, 2021-03-12 (UTC) + Info

Source

Silence

alertname="PodDisruptionBudgetLimit" +

poddisruptionbudget="kubevirt-disruption-budget-95mvx" +

prometheus="openshift-monitoring/k8s" +

severity="critical" +

14:47:16, 2021-03-12 (UTC) + Info

Source

Silence

alertname="PodDisruptionBudgetLimit" +

poddisruptionbudget="kubevirt-disruption-budget-97dzh" +

prometheus="openshift-monitoring/k8s" +

severity="critical" +

Monitoring - Pods

Workloads

Pods

Virtualization

Deployments

Deployment Configs

Stateful Sets

Secrets

Config Maps

Cron Jobs

Jobs

Daemon Sets

Replica Sets

Replication Controllers

Horizontal Pod Autoscalers

Networking

Storage

Builds

Monitoring

Alerting

Metrics

Dashboards

Compute

User Management

Project: openshift-monitoring

Pods

Create Pod

Filter

Name

Search by name...

Filter icon

Name	Status	Ready	Restarts	Owner	Memory	CPU	Created
alertmanager-main-0	Running	5/5	0	alertmanager-main	88.2 MiB	0.005 cores	Mar 12, 8:01 pm
alertmanager-main-1	Running	5/5	0	alertmanager-main	92.1 MiB	0.006 cores	Mar 12, 8:01 pm
alertmanager-main-2	Running	5/5	0	alertmanager-main	93.8 MiB	0.003 cores	Mar 12, 8:01 pm
cluster-monitoring-operator-5cdc6d5fcb-9l7x6	Running	2/2	3	cluster-monitoring-operator-5cdc6d5fcb	87.2 MiB	0.005 cores	Mar 9, 8:49 pm
grafana-86765b6dcf-pd5ck	Running	2/2	0	grafana-86765b6dcf	65.6 MiB	0.003 cores	Mar 12, 8:00 pm
kube-state-metrics-56c8dc648c-bxp4m	Running	3/3	0	kube-state-metrics-56c8dc648c	77.8 MiB	0.002 cores	Mar 12, 8:00 pm
node-exporter-6r86l	Running	2/2	0	node-exporter	82.2 MiB	0.009 cores	Mar 9, 9:35 pm
node-exporter-8swpz	Running	2/2	0	node-exporter	39.0 MiB	0.010 cores	Mar 9, 9:05 pm
node-exporter-lx8tp	Running	2/2	0	node-exporter	41.2 MiB	0.009 cores	Mar 9, 8:54 pm
node-exporter-mg6xf	Running	2/2	0	node-exporter	52.4 MiB	0.011 cores	Mar 9, 9:35 pm
node-exporter-vclqg	Running	2/2	0	node-exporter	53.2 MiB	0.025 cores	Mar 9, 8:52 pm
node-exporter-zcc9d	Running	2/2	0	node-exporter	45.9 MiB	0.025 cores	Mar 9, 9:35 pm
openshift-state-metrics-6d5cf65975-5jz2v	Running	3/3	0	openshift-state-metrics-6d5cf65975	58.0 MiB	0.000 cores	Mar 12, 8:00 pm
prometheus-adapter-7d5b49b7d5-899dz	Running	1/1	0	prometheus-adapter-7d5b49b7d5	40.3 MiB	0.003 cores	Mar 12, 8:00 pm
prometheus-adapter-7d5b49b7d5-c2ktx	Running	1/1	0	prometheus-adapter-7d5b49b7d5	40.2 MiB	0.001 cores	Mar 12, 8:00 pm
prometheus-k8s-0	Running	6/6	1	prometheus-k8s	1,526.6 MiB	0.256 cores	Mar 12, 8:03 pm
prometheus-k8s-1	Running	6/6	1	prometheus-k8s	1,340.6 MiB	0.325 cores	Mar 12, 8:01 pm
prometheus-operator-685c77f497-49drz	Running	2/2	0	prometheus-operator-685c77f497	69.5 MiB	0.002 cores	Mar 10, 12:21 pm
telemeter-client-547dcb9869-qkktb	Running	3/3	0	telemeter-client-547dcb9869	58.1 MiB	0.000 cores	Mar 12, 8:00 pm

Value Proposition on a page – 15 seconds pitch

**MANAGEMENT
CONSISTENCY**

**OPERATIONAL
EFFICIENCY**

**DEVELOPMENT
CONSISTENCY**

**LEGACY WITH
MODERNIZATION FIRST
APPROACH**

**FUTURE-PROOF SKILLSET
MODERNIZATION**

IN-BROWSER IDE

Kubernetes and OpenShift

Kubernetes Terminology

Term	Definition
Node	A server that hosts applications in a Kubernetes cluster.
Master Node	A node server that manages the control plane in a Kubernetes cluster. Master nodes provide basic cluster services such as APIs or controllers.
Worker Node	Also named compute Node , worker nodes execute workloads for the cluster. Application pods are scheduled onto worker nodes.
Resource	Resources are any kind of component definition managed by Kubernetes. Resources contain the configuration of the managed component (for example, the role assigned to a node), and the current state of the component (for example, if the node is available).
Controller	A controller is a Kubernetes process that watches resources and makes changes attempting to move the current state towards the desired state.
Label	A key-value pair that can be assigned to any Kubernetes resource. Selectors use labels to filter eligible resources for scheduling and other operations.
Namespace	A scope for Kubernetes resources and processes, so that resources with the same name can be used in different boundaries.

OpenShift Terminology

Term	Definition
Infra Node	A node server containing infrastructure services like monitoring, logging, or external routing.
Console	A web UI provided by the RHOC cluster that allows developers and administrators to interact with cluster resources.
Project	OpenShift's extension of Kubernetes' namespaces. Allows the definition of user access control (UAC) to resources.