



OpenShift 4.0

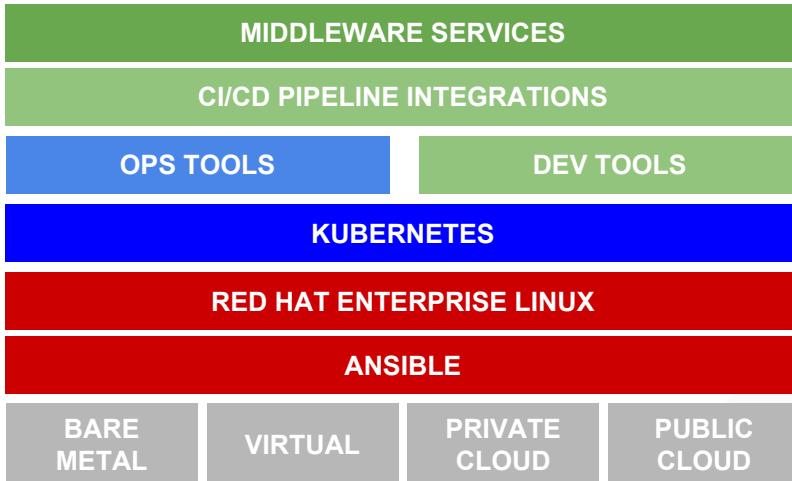
Ali Mobrem
Product Management
OpenShift

OpenShift Commons Briefing

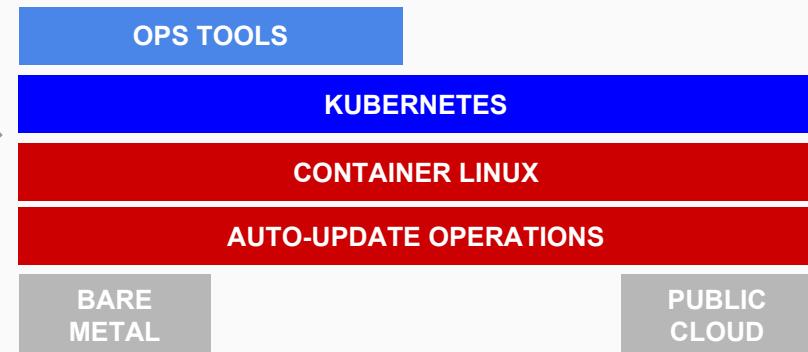
ROADMAP: OPENSHIFT and CoreOS TECTONIC

EVOLVING TO THE UNIFIED OPENSHIFT PLATFORM (Version 4)

RED HAT OPENSHIFT



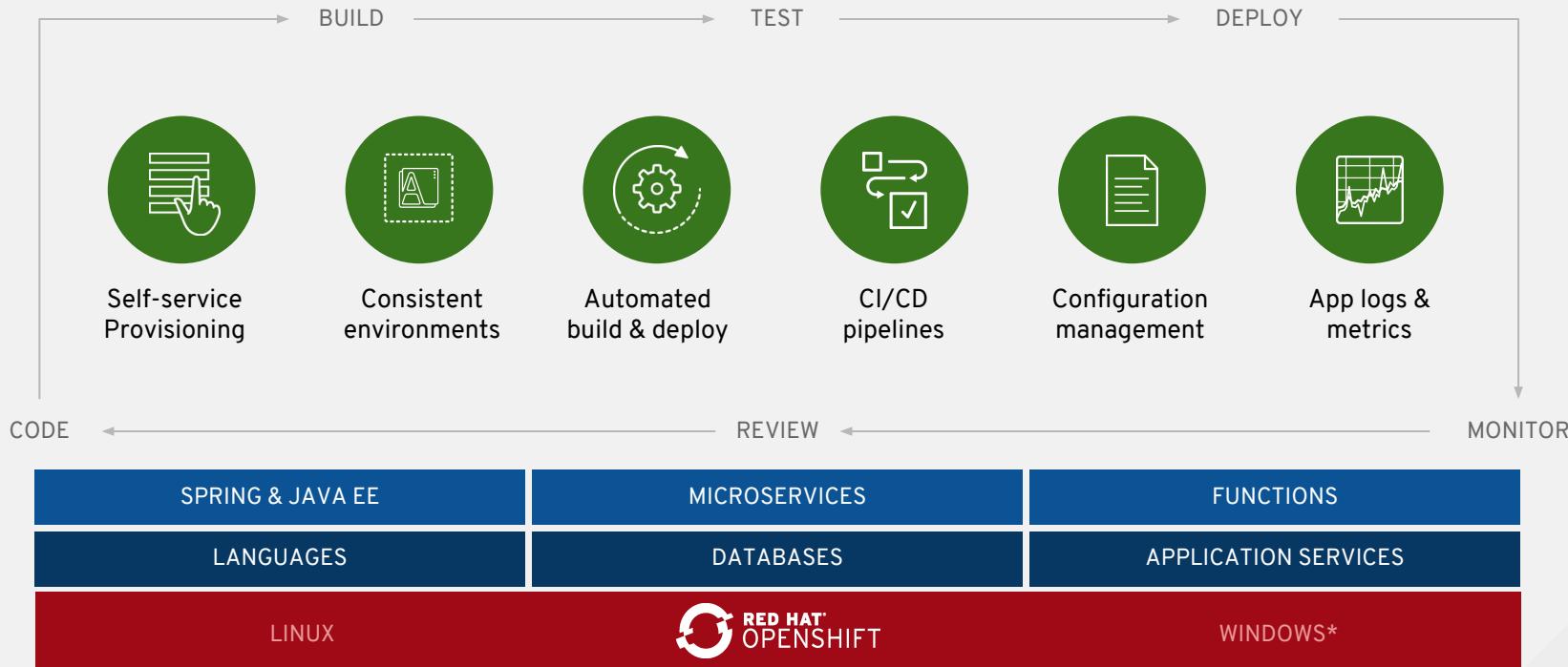
CoreOS TECTONIC



- DEEP KUBERNETES EXPERTISE
- MULTI-CLOUD DEPLOYMENTS
- INTEGRATED RED HAT TECH (RHEL, ANSIBLE, CF)
- MORE DEVELOPER FOCUS
- ENTERPRISE SECURITY FOCUS

- DEEP KUBERNETES EXPERTISE
- PRIMARILY PUBLIC CLOUD DEPLOYMENTS
- FOCUS ON AUTOMATED OPERATIONS
- MORE OPERATOR FOCUS

HOW OPENSHIFT ENABLES DEVELOPER PRODUCTIVITY



THE POWER OF THE OPENSHIFT ECOSYSTEM

RED HAT PORTFOLIO

Optimized for Containers

RED HAT[®]
OPENSHIFT
Application Runtimes

RED HAT[®]
JBoss[®]
WEB SERVER

RED HAT[®]
JBoss[®]
ENTERPRISE
APPLICATION PLATFORM

RED HAT[®]
DATA GRID

RED HAT[®]
AMQ
RED HAT[®]
FUSE

RED HAT[®]
MOBILE

RED HAT[®]
ANSIBLE[®]
Engine

RED HAT[®]
QUAY
CONTAINER
REGISTRY

RED HAT[®]
DECISION
MANAGER

RED HAT[®]
PROCESS AUTOMATION
MANAGER

RED HAT[®]
API MANAGEMENT

RED HAT[®]
OPENSHIFT
Container Storage

THIRD-PARTY ISV

Red Hat Container Catalog (100s certified)



CLOUD SERVICES

Open Service Broker



Microsoft Azure



Google Cloud



RED HAT ENTERPRISE LINUX ECOSYSTEM

Hardware, Virtualization, Cloud and Service Provider Certifications

GENERAL DISTRIBUTION



OpenShift Roadmap

OpenShift Container Platform 4.1 (May/June)

- Kubernetes 1.13
- Installer UPI: vSphere, Bare Metal, AWS
- Disconnected Installer
- OVN Tech Preview
- Operator ISV Eco-System
- Metering and ChargeBack GA
- Knative Tech Preview

OpenShift Online, Dedicated, and Azure

- Consumption-based billing for Dedicated
- OpenShift Online Pro Upgrade to 4.X

Q2 CY2019

Q3 CY2019

Q4 CY2019

OpenShift Container Platform 4.0 (April)

- Kubernetes 1.12 and CRI-O default
- Full Stack Automated Installer for AWS
- Red Hat CoreOS as immutable host
- Over-The-Air Updates
- RHCC integrated experience
- UHC Subscription Onboarding
- HPA custom metrics (Tech Preview)
- FIPS mode for golang (Dev preview)
- Multus (Kubernetes Multi-Network)

OpenShift Online, Dedicated, and Azure

- OpenShift on Azure General Availability
- OpenShift Dedicated self-service in UHC

Q2 CY2019

- OperatorHub
- Istio GA
- Metering and ChargeBack (Tech Preview)
- CodeReady Workspaces
- Knative (Dev Preview)

OpenShift Container Platform 4.2 (Aug/Sept)

- Kubernetes 1.14
- Installer IPI: RH OSP, Azure, GCP, Bare Metal (on RHHI)
- OVN GA
- Windows Container Tech Preview
- Knative Tech Preview

OpenShift Online, Dedicated, and Azure

- OpenShift on Azure upgrade to 4.X
- OpenShift Online included in UHC

*These are only target dates.



try.openshift.com

Sneak Peak Developer Preview on AWS

Feedback welcome

OPENSHIFT 2019 THEMES

UNIFIED HYBRID CLOUD



Multi-cluster awareness across on-premise and public-cloud OpenShift clusters via SaaS portal

DAY-2 OPERATIONS



Automated operations and deep insights into the cluster via centralized logging, monitoring, chargeback, autoscaling, machine automations, operator framework components and applications

OperatorHub



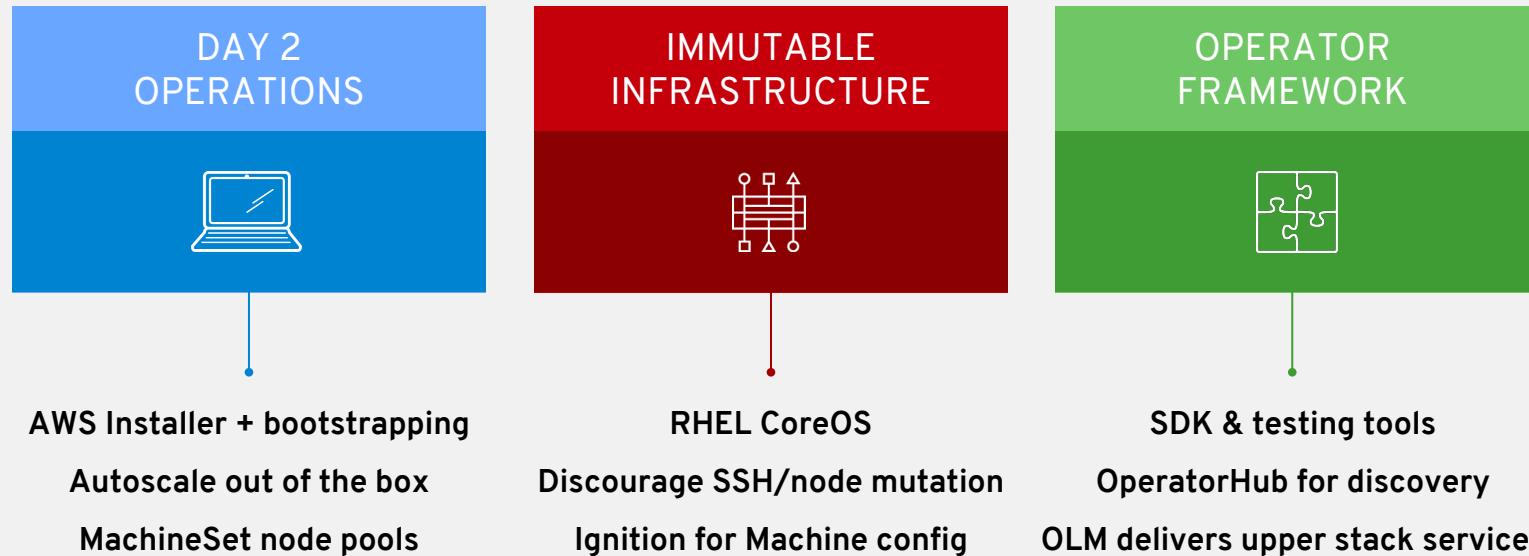
Active ecosystem of Operator-enabled partners, ISVs and community products

MGT FOR OPENSIFT



Self-Service Portal, Analytics, Ansible Automation and Cost Management

OPENSHIFT 4.0 WORKSTREAMS



AUTOMATED CONTAINER OPERATIONS

Fully automated day-1 and day-2 operations

INSTALL

DEPLOY

HARDEN

OPERATE

AUTOMATED OPERATIONS

Infra provisioning

Full-stack deployment

Secure defaults

Multi-cluster aware

Embedded OS

On-premises and cloud

Network isolation

Monitoring and alerts

Unified experience

Audit and logs

Full-stack patch & upgrade

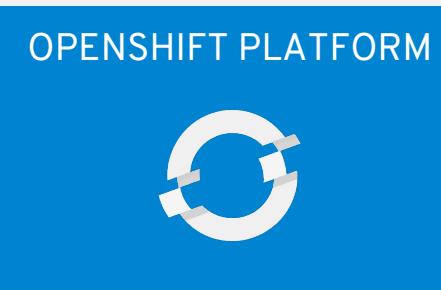
Signing and policies

Zero downtime upgrades

Vulnerability scanning

IMMUTABLE INFRASTRUCTURE

OPENShift 3

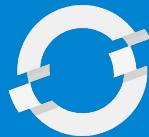


- Manually provision RHEL, bring to cluster
- Rely on admin to correctly configure OS
- Configuration drift over time
- Upgrades control the platform and limited parts of the node

IMMUTABLE INFRASTRUCTURE

OPENSHIFT 3

OPENSHIFT PLATFORM



OPERATING SYSTEM



OPENSHIFT 4

CONTROL PLANE

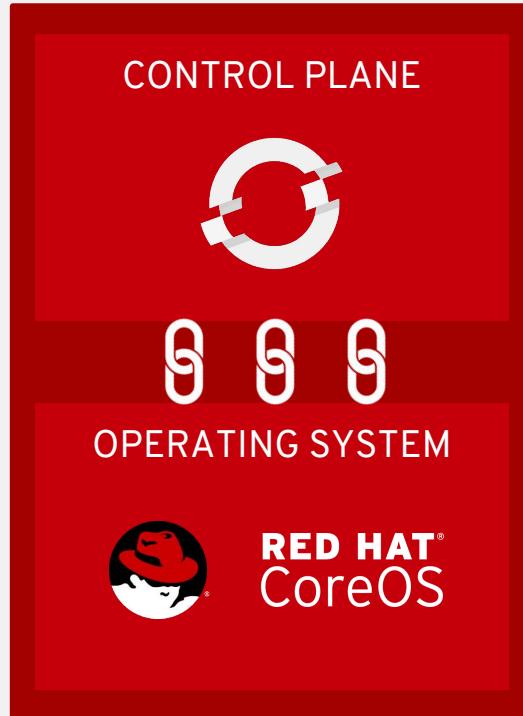


OPERATING SYSTEM



RED HAT®
CoreOS

IMMUTABLE INFRASTRUCTURE



For Day 2 management, the cluster needs full control over the nodes.

IMMUTABLE INFRASTRUCTURE



For Day 2 management, the cluster needs full control over the nodes.

Immutability ≡ repeatability

Immutability ≡ auditability

IMMUTABLE INFRASTRUCTURE



For Day 2 management, the cluster needs full control over the nodes.

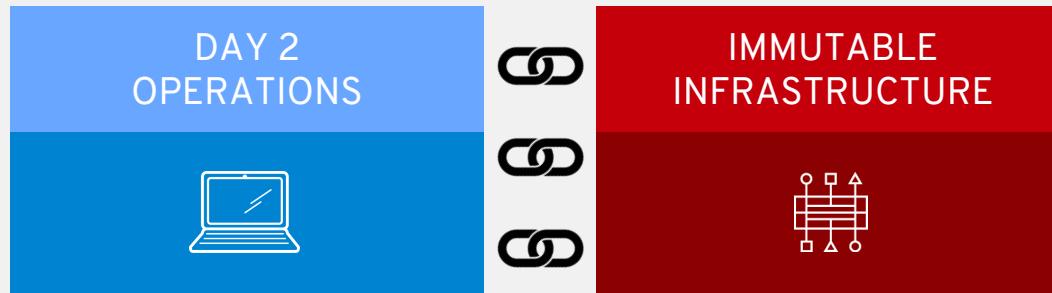
Immutability \equiv repeatability

Immutability \equiv auditability

Immutability \neq static clusters

Immutability \neq no config changes

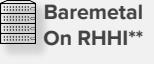
OPENSHIFT 4.0 THEMES



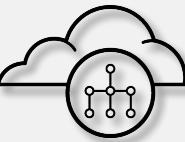
INFRASTRUCTURE PROVISIONING

| | OpenShift 3 | OpenShift 4 |
|--------------------------------------|----------------|----------------|
| User Provisioned Infrastructure | Default | Optional |
| Installer Provisioned Infrastructure | not possible | Default |

Provider Roadmap for OpenShift 4

| | Installer Provisioned Infrastructure (IPI) | User Provisioned Infrastructure (UPI) |
|--------------------------|---|--|
| OPENSHIFT by Red Hat 4.0 |  | — |
| OPENSHIFT by Red Hat 4.1 | — |    |
| OPENSHIFT by Red Hat 4.2 |  Microsoft Azure  Google Cloud Platform  RED HAT OPENSTACK PLATFORM  Baremetal On RHPI** | — |
| OPENSHIFT by Red Hat 4.3 |  Alibaba Cloud |  Microsoft Azure  Google Cloud Platform  RED HAT OPENSTACK PLATFORM |

** On qualified hardware stack



New Installation Process

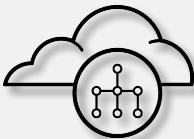
via openshift-install

- OpenShift 4 introduces a new CLI-based installer designed to easily provision of a “best practices” OpenShift cluster on RH CoreOS immutable infrastructure
 - Control plane must be deployed on RH CoreOS nodes
 - Support for adding RHEL infra/worker nodes coming in 4.1
- Simplified cluster creation with an interactive guided workflow
 - Allows for customization at each step
 - <https://github.com/openshift/installer/blob/master/docs/user/customization.md>
- Quickly download installer client (& token) from <https://cloud.openshift.com> and run from anywhere
- Non-essential installation config options are now handled post-install via component operator CRD’s
- Used new installations of OpenShift 4 only!
 - *Does NOT support installing or upgrading of OCP 3.x clusters!*

*openshift-install is downloadable
from <https://cloud.openshift.com>!*

```
$ ./openshift-install create cluster
? SSH Public Key /Users/<userid>/.ssh/id_rsa.pub
? Platform aws
? Region us-west-2
? Base Domain openshift.com
? Cluster Name ocp
? Pull Secret [? for help]
*****
INFO Creating cluster...
INFO Waiting up to 30m0s for the Kubernetes API...
INFO API v1.11.0+c69f926354 up
INFO Waiting up to 30m0s for the bootstrap-complete event...
INFO Destroying the bootstrap resources...
INFO Waiting up to 10m0s for the openshift-console route to be created...
INFO Install complete!
INFO Run 'export KUBECONFIG=<your working directory>/auth/kubeconfig' to manage the cluster with 'oc', the OpenShift CLI.
INFO The cluster is ready when 'oc login -u kubeadmin -p <provided>' succeeds (wait a few minutes).
INFO Access the OpenShift web-console here: https://console-openshift-console.apps.ocp.openshift.com
INFO Login to the console with user: kubeadmin, password: <provided>
```

Documentation: <https://github.com/openshift/training/>

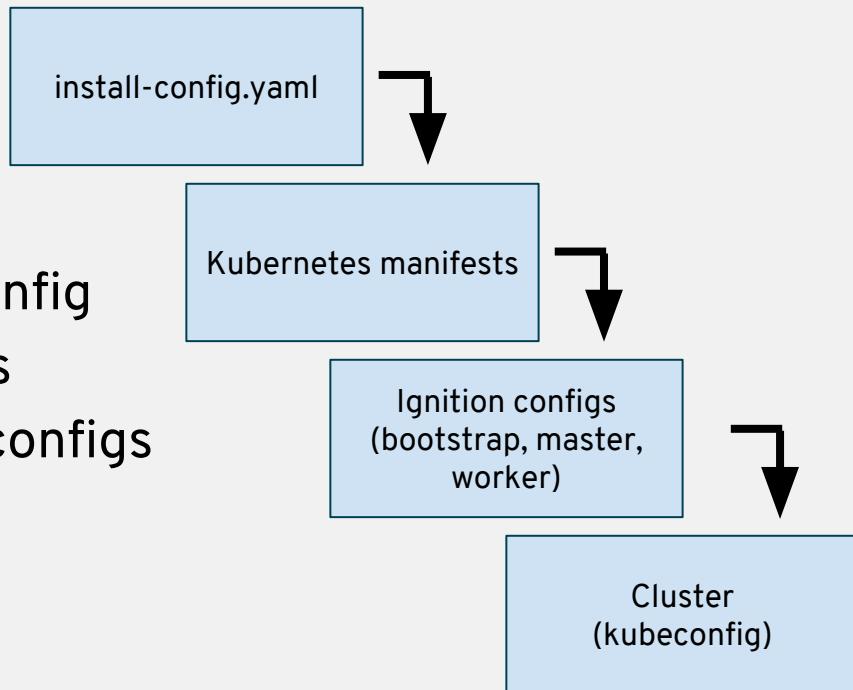


NEW INSTALL EXPERIENCE

(IPI) BOOTSTRAP A SELF-MANAGED CLUSTER

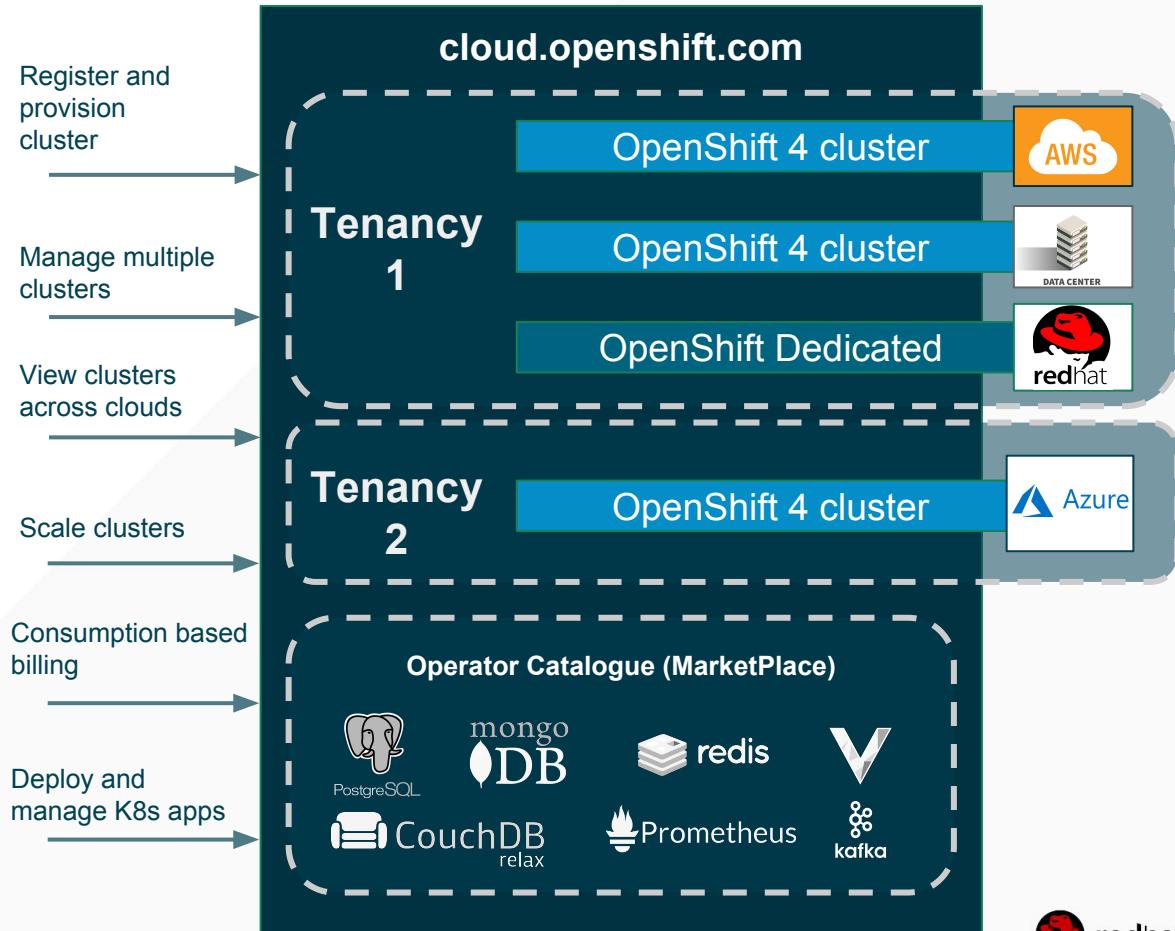
Download at try.openshift.com

```
$ openshift-install --help  
$ openshift-install create install-config  
$ openshift-install create manifests  
$ openshift-install create ignition-configs  
$ openshift-install create cluster  
$ openshift-install destroy cluster
```



Unified Hybrid Cloud

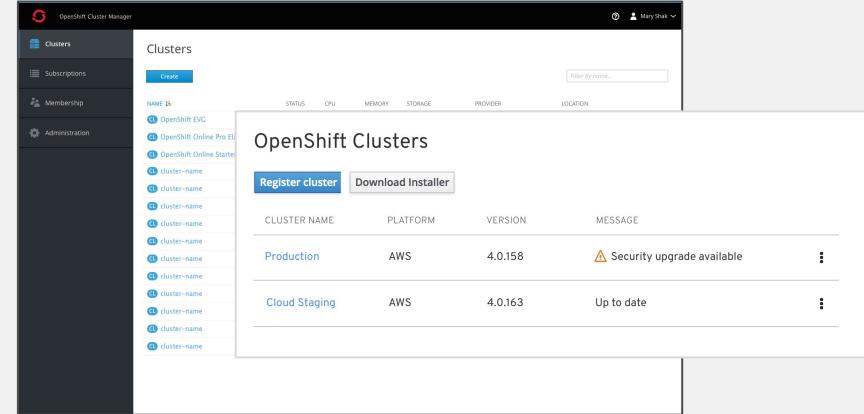
- Manage clusters across all infrastructure - On-prem or across cloud providers
- Deploy true hybrid services
 - behave like a cloud with full portability
- Pay based on consumption
 - with option to separate cloud bill
- Optionally choose fully managed (dedicated)



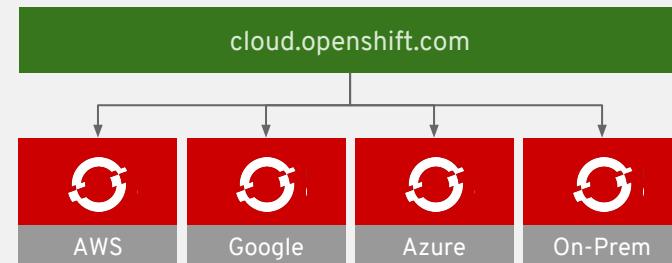


UNIFIED HYBRID CLOUD INSTALLER

- Cloud-based multi-cluster management
 - New clusters on AWS, OCP, OSP, Azure and bare-metal
 - View existing clusters
 - Including OpenShift Dedicated
- Management operations
 - Install new clusters
 - View all registered clusters
 - Update clusters

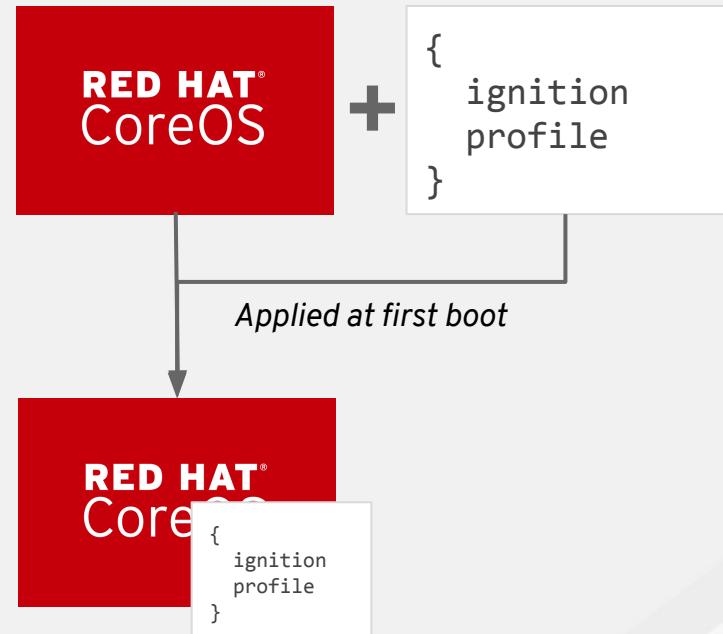


The screenshot shows the OpenShift Cluster Manager interface. On the left is a sidebar with 'Clusters' (selected), 'Subscriptions', 'Membership', and 'Administration'. The main area is titled 'Clusters' with a 'Create' button. A table lists 'OpenShift Clusters' with columns: CLUSTER NAME, PLATFORM, VERSION, and MESSAGE. Two entries are shown: 'Production' (AWS, 4.0.158, Security upgrade available) and 'Cloud Staging' (AWS, 4.0.163, Up to date).



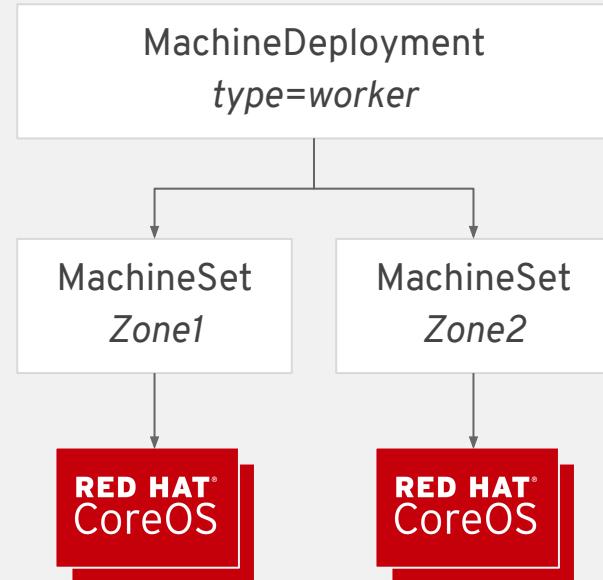
MACHINE CONFIGURATION

- Red Hat CoreOS uses Ignition for configuration
- Ignition only runs once, on the first boot
- Ignition runs before systemd starts
 - Configure networking
 - Provision disks/RAID



CLUSTER API OBJECTS

- New API objects to declaratively manage the cluster
 - MachineDeployment
 - MachineSet
 - Machine



CLUSTER API - MACHINES

The screenshot shows the Red Hat OpenShift web console interface. The left sidebar has a dark theme with the following navigation items:

- Persistent Volumes
- Persistent Volume Claims
- Storage Classes
- Builds (selected)
- Build Configs
- Builds
- Image Streams
- Monitoring (selected)
- Alerts
- Silences
- Metrics
- Dashboards
- Machines (selected)
- Machines
- Machine Sets
- Machine Deployments

The main content area displays the "Machines" list. At the top, there is a message: "You are logged in as a temporary administrative user." Below it, a dropdown menu shows "Project: all projects" and a "Add" button. A search bar on the right says "Filter Machines by name...". The table lists six machines with the following details:

| NAME ↑ | NAMESPACE | REGION | AVAILABILITY ZONE |
|---|-----------------------|-----------|-------------------|
| ci-in-v0kim12-703b0-master-0 | openshift-machine-api | us-east-1 | us-east-1a |
| ci-in-v0kim12-703b0-master-1 | openshift-machine-api | us-east-1 | us-east-1b |
| ci-in-v0kim12-703b0-worker-2 | openshift-machine-api | us-east-1 | us-east-1c |
| ci-in-v0kim12-703b0-worker-us-east-1a-bhrlb | openshift-machine-api | us-east-1 | us-east-1a |
| ci-in-v0kim12-703b0-worker-us-east-1b-6nnzp | openshift-machine-api | us-east-1 | us-east-1b |
| ci-in-v0kim12-703b0-worker-us-east-1c-sfxg | openshift-machine-api | us-east-1 | us-east-1c |

CLUSTER API - MACHINE SETS

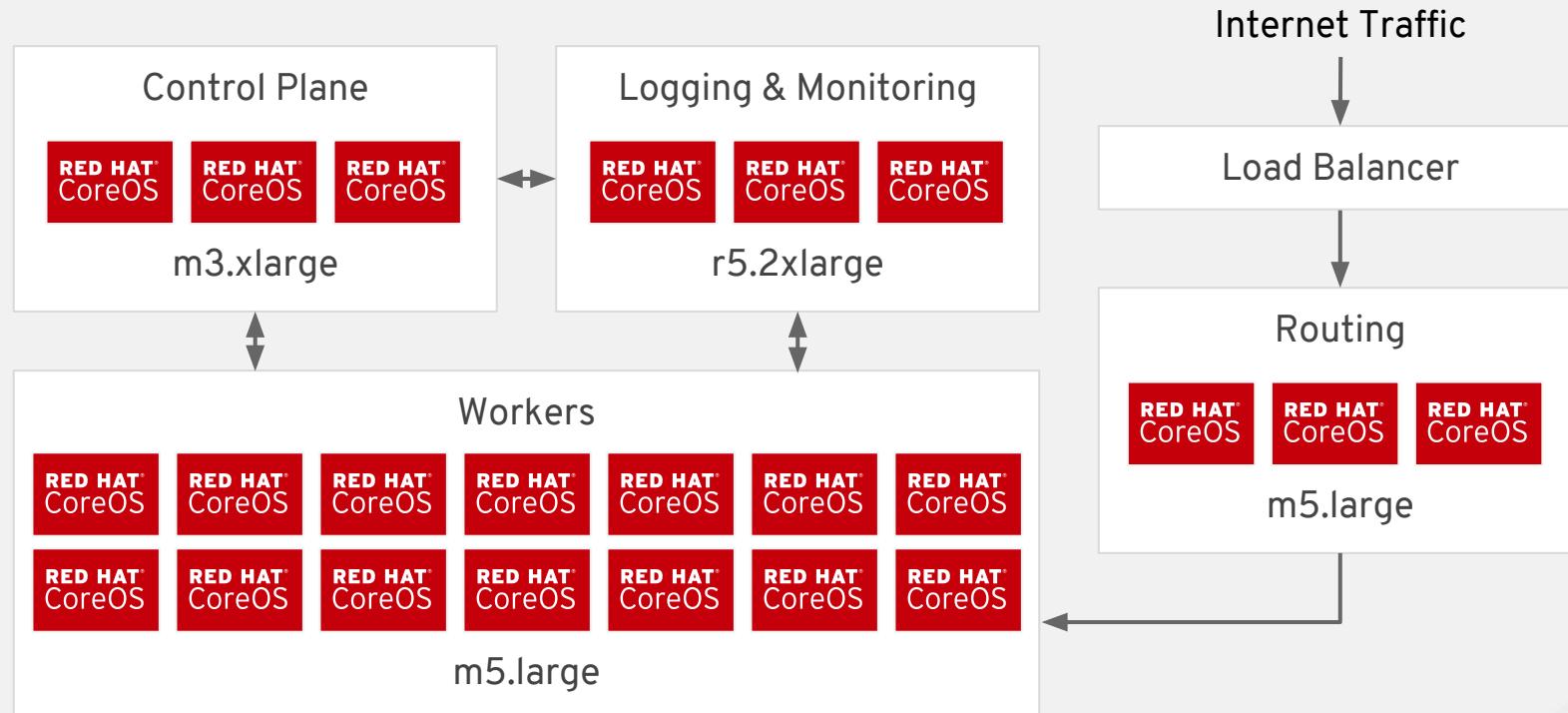
The screenshot shows the Red Hat OpenShift web interface. The left sidebar has a dark theme with the Red Hat OpenShift logo at the top. The navigation menu includes Persistent Volumes, Persistent Volume Claims, Storage Classes under the Builds category, Build Configs, Builds, Image Streams, Monitoring (Alerts, Silences, Metrics), and Machines (Machines, Machine Sets, Machine Deployments). The 'Machine Sets' option is currently selected and highlighted with a blue bar at the bottom of the sidebar.

The main content area has a header bar with the message "You are logged in as a temporary administrative user." and a "kube:admin" dropdown. Below this is a search bar with the placeholder "Filter Machine Sets by name..." and a "Create Machine Set" button.

The main table displays the following data:

| NAME ↑ | NAMESPACE | MACHINES |
|--|-----------------------|-----------------|
| MS ci-in-v0kim12-703b0-worker-us-east-1a | openshift-machine-api | 1 of 1 machines |
| MS ci-in-v0kim12-703b0-worker-us-east-1b | openshift-machine-api | 1 of 1 machines |
| MS ci-in-v0kim12-703b0-worker-us-east-1c | openshift-machine-api | 1 of 1 machines |
| MS ci-in-v0kim12-703b0-worker-us-east-1d | openshift-machine-api | 0 of 0 machines |
| MS ci-in-v0kim12-703b0-worker-us-east-1e | openshift-machine-api | 0 of 0 machines |
| MS ci-in-v0kim12-703b0-worker-us-east-1f | openshift-machine-api | 0 of 0 machines |

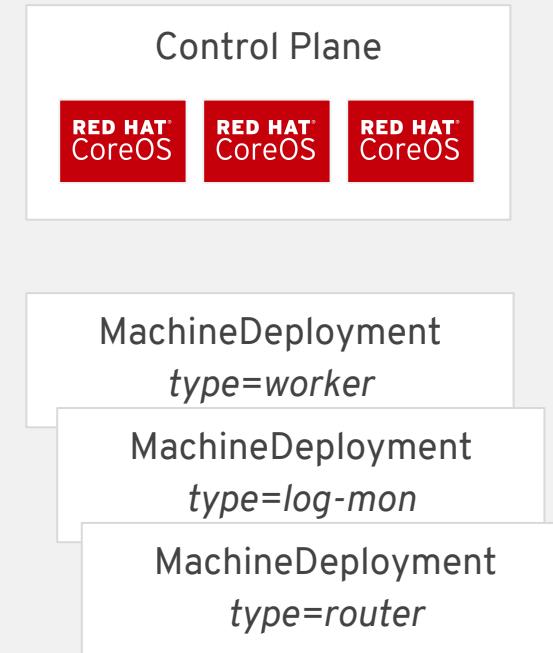
POSSIBLE CLUSTER ARCHITECTURE



CLUSTER ARCHITECTURE

- Scale Deployments independently
- Desired state managed by cluster
- Autoscale is no effort at all
- Rolling Machine config updates

Special GPU \equiv MachineDeployment
Special security \equiv MachineDeployment
Special \$anything \equiv MachineDeployment



Over-the-air Updates

The screenshot shows the Red Hat OpenShift Cluster Console interface. On the left, there's a navigation sidebar with various options like Home, Catalog, Workloads, Networking, Storage, Builds, Monitoring, Administration (which is currently selected), and more. The main content area has tabs for Overview, Global Configuration, and Cluster Operators. Under the Overview tab, there's a message stating "Cluster updates are not supported in beta 1." Below this is a table showing cluster settings: CHANNEL (fast), UPDATE STATUS (-), and DESIRED VERSION (4.0.0-0.1). Further down, it shows CLUSTER ID (7691a2f6-90a7-4822-be8d-f19fdd9492d3), DESIRED PAYLOAD (quay.io/openshift-release-dev/ocp-release@sha256:66ceef7428ba0d3cb983bd2a437e576b2289ef7d5abaf070256200a5408b266), and a CLUSTER AUTOSCALER section with a "Create Autoscaler" button. At the bottom, there's an Update History table with one entry: VERSION (4.0.0-0.1), STATE (Completed), STARTED (Jan 16, 7:32 pm), COMPLETED (Jan 16, 7:23 pm), and PAYLOAD (quay.io/openshift-release-dev/ocp-re...). A modal dialog box titled "Update Channel" is open over the main content. It has a "Channel" dropdown menu where "fast" is selected. Other options in the dropdown are "nightly" and "production". At the bottom right of the modal are "Cancel" and "Update" buttons.

- “Over-the-air” updates can be performed from either OpenShift Cluster Console: “Administration→Cluster Settings” menu or Red Hat Cloud web interface at <https://cloud.openshift.com>
- Updates images are comprised of top level controller manifests, roles, and other resources necessary to update a cluster to a particular version
 - Bundled as a container image to avoid the need for a separate content delivery mechanism

Cluster Settings

The screenshot shows the Red Hat OpenShift web console interface. The left sidebar is dark-themed with white text, showing navigation links like Home, Projects, Status, Search, Events, Catalog, Workloads, Networking, Storage, Builds, Monitoring, Administration, Cluster Settings (which is currently selected), Namespaces, Nodes, Machine Deployments, and Machine Sets. The main content area has a light blue header bar with the text "You are logged in as a temporary administrative user." Below this, the title "Cluster Settings" is displayed above three tabs: Overview, Global Configuration (which is underlined in blue, indicating it is active), and Cluster Operators. A sub-section titled "Edit the following resources to manage the configuration of your cluster." lists several configuration resources with "Edit YAML" buttons to their right. These resources are grouped into sections: Authentication, DNS, Image, Infrastructure, Ingress, and OAuth.

You are logged in as a temporary administrative user.

Cluster Settings

Overview Global Configuration Cluster Operators

Edit the following resources to manage the configuration of your cluster.

CONFIGURATION RESOURCE

| | |
|----------------|-----------|
| Authentication | Edit YAML |
| DNS | Edit YAML |
| Image | Edit YAML |
| Infrastructure | Edit YAML |
| Ingress | Edit YAML |
| OAuth | Edit YAML |

Cluster Operators

The screenshot shows the Red Hat OpenShift web console interface. The left sidebar is titled "RED HAT OPENSHIFT" and includes links for Home, Projects, Status, Search, Events, Catalog, Workloads, Networking, Storage, Builds, Monitoring, Administration (with sub-links for Cluster Settings, Namespaces, Nodes, Machine Deployments, and Machine Sets), and Help.

The main content area has a header "Cluster Settings" with tabs for Overview, Global Configuration, and Cluster Operators. The Cluster Operators tab is selected. A message at the top states, "You are logged in as a temporary administrative user." Below the tabs is a search bar labeled "Filter Cluster Operators by name..." and a row of status filters: Available (12), Updating (0), Failing (0), Unknown (0), and "Select All Filters". To the right of these filters is a total count of "12 Items".

The main table displays the following data:

| NAME ↑ | STATUS | MESSAGE | VERSION |
|---|-----------|---|----------------------------|
| cluster-autoscaler-operator | Available | - | v4.0.0-0.139.0.0-dirty |
| cluster-image-registry-operator | Available | deployment has minimum availability | v4.0.0-0.136.0-dirty |
| kube-controller-manager | Available | 3 of 3 nodes are at revision 2 | Unknown |
| machine-api-operator | Available | cluster-api ready | v4.0.0-0.139.0.0-dirty |
| machine-config-operator | Available | - | 4.0.0-0.139.0.0-dirty |
| openshift-apiserver | Available | - | Unknown |
| openshift-cluster-kube-scheduler-operator | Available | 3 of 3 nodes are at revision 1 | Unknown |
| openshift-cluster-samples-operator | Available | Samples installation successful at v4.0.0-0.139.0.0-17aa1e7fd | v4.0.0-0.139.0.0-17aa1e7fd |

DAY 2 OPERATIONS



Machine Operators



Cluster Operators



Update Operators

Operators = Automated like the cloud

Your app...



automated like the cloud...



A screenshot of the AWS CloudFormation interface. The top navigation bar includes 'aws' logo, 'Services' dropdown, 'Resource Groups' dropdown, and a search bar. The left sidebar lists 'History', 'EC2', 'Route 53', 'Console Home', 'EKS', 'CloudFormation', and 'IAM'. The main content area shows categories: 'Compute' (EC2, Lightsail, Elastic Container Service, EKS, Lambda, Batch, Elastic Beanstalk), 'Developer Tools' (CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, Cloud9, X-Ray), 'Storage' (S3, EFS, Glacier, Storage Gateway), and 'Management Tools' (CloudWatch, AWS Auto Scaling, CloudFormation, CloudTrail). A red dot is placed on the 'Storage Gateway' link.

but runs on...



KUBERNETES OPERATOR FRAMEWORK

AN INNOVATIVE, MORE EFFICIENT WAY TO MANAGE CONTAINERIZED APPLICATIONS AT SCALE

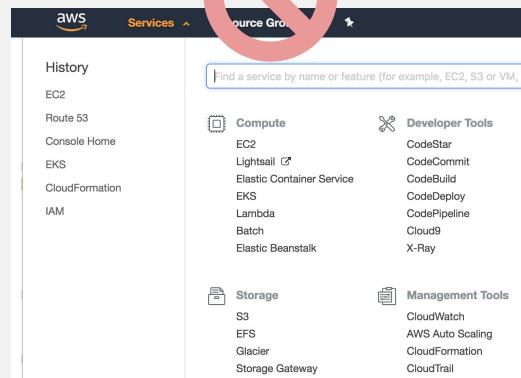
AUTOMATED LIFECYCLE MANAGEMENT



Operators codify operational knowledge and workflows to automate lifecycle management of containerized applications with Kubernetes

Operators = Native Kubernetes experience

Can't register your internal service with Amazon



Your app...

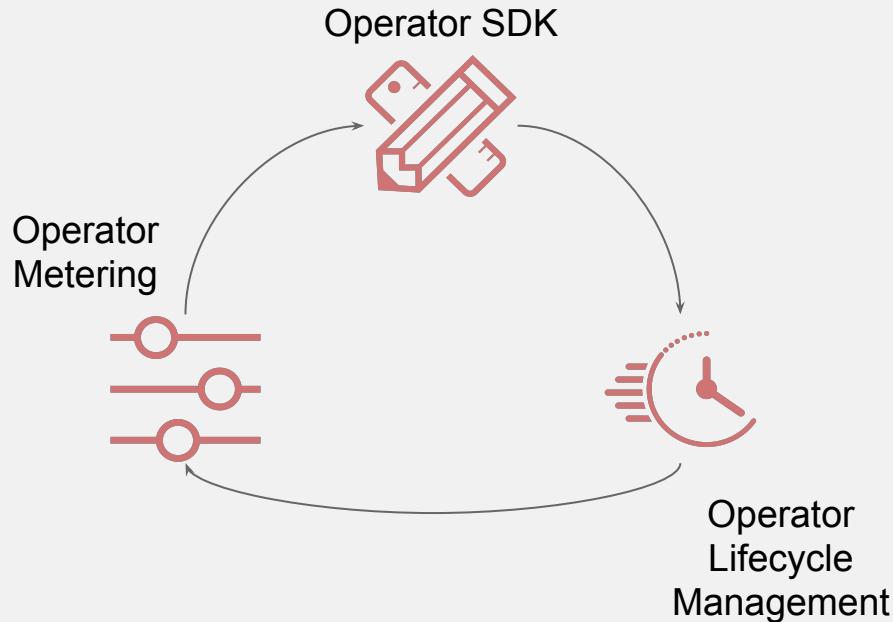


Can have native support in OpenShift, including the CLI

The screenshot shows the OpenShift Container Platform interface with the 'Operators' section selected. It lists several operators: etcd (provided by Red Hat, version 0.9.2 alpha) and Prometheus (provided by Red Hat, version 0.22.2 alpha). A red arrow points from the 'etcd' entry to a terminal window below.

```
$ oc get mongodbs  
$ oc scale --replicas=3 mongodb/example
```

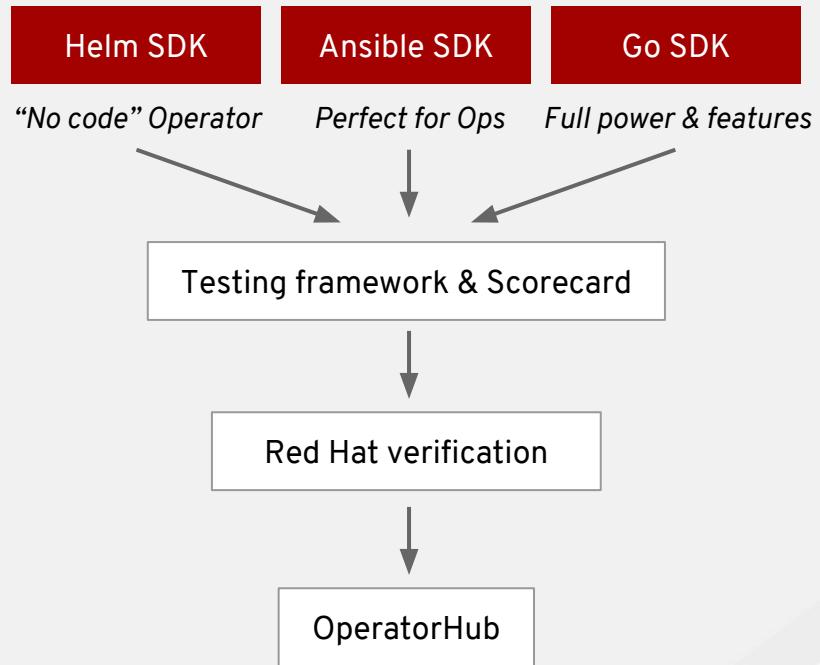
OPERATOR FRAMEWORK



Operator Framework is an open source toolkit to manage application instances on Kubernetes in an effective, automated and scalable way.

OPERATOR SDK

- “No code” improvements to Helm SDK user experience
 - `operator-sdk new memcached-operator --type=helm --helm-chart=stable/memcached`
- Testing is extremely important for Operators, now we have a testing framework built in
- SDK includes a “scorecard” to ensure your Operator is technically correct
- Support new RHEL universal base image



OPERATOR MATURITY MODEL

AVAILABLE NOW

Phase I

Phase II

Phase III

Phase IV

Phase V

Basic Install

Automated application provisioning and configuration management

Seamless Upgrades

Patch and minor version upgrades supported

Full Lifecycle

App lifecycle, storage lifecycle (backup, failure recovery)

Deep Insights

Metrics, alerts, log processing and workload analysis

Auto Pilot

Horizontal/vertical scaling, auto config tuning, abnormal detection, scheduling tuning

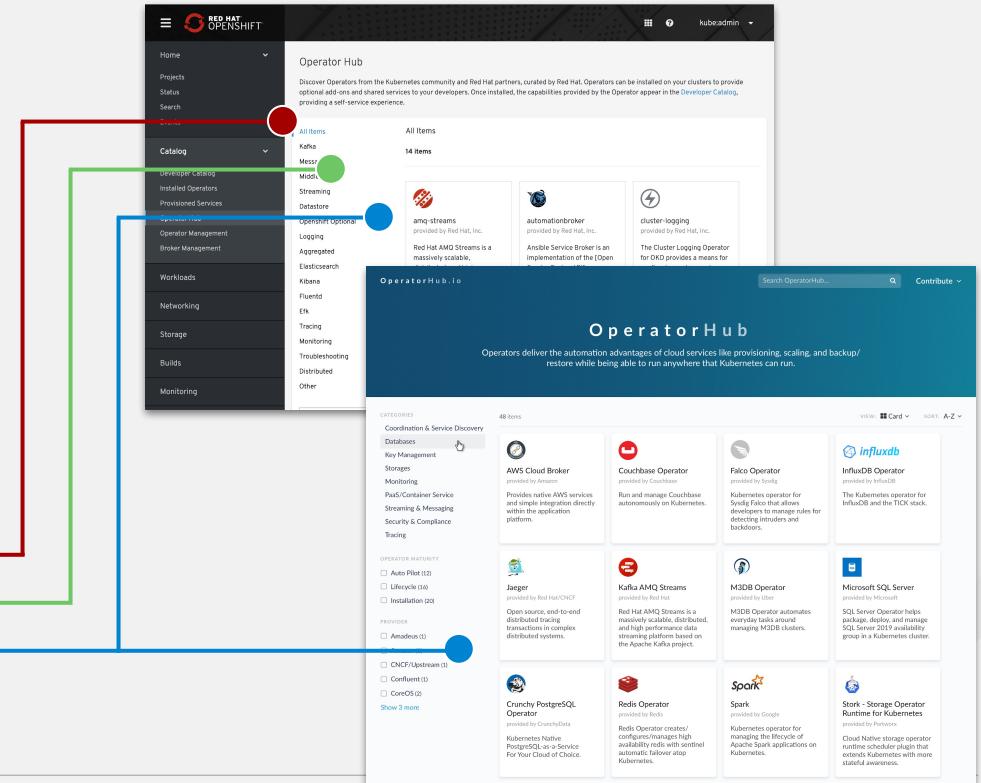


OPERATORHUB

- Accessible to admins only
- Discovery/install of all optional components and apps
- Upstream and downstream content
- ISV partners will support their Operators

TYPES OF OPERATORS

Red Hat Products
ISV Partners
Community



Extending the Platform

A slimmer default install, with incremental feature buy-in

BASE INSTALL

CONFIRMED FOR 4.0

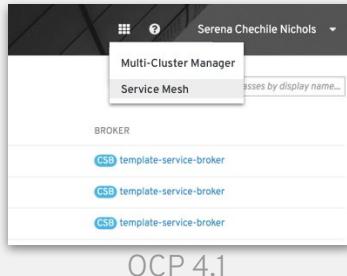
| | NEW INSTALLER | OPERATORHUB |
|---------------------------|---------------|-------------|
| Console & Auth | ● | — |
| Monitoring | ● | — |
| Over-the-air Updates | ● | — |
| Machine Management | ● | — |
| Optional Service Brokers | — | ● |
| Optional OCP Components | — | ● |
| Red Hat Product Operators | — | ● |
| ISV/Partner Operators | — | ● |
| Community Operators | — | ● |

Operator Powered UI Extensions

Native Experience

External Application Launcher

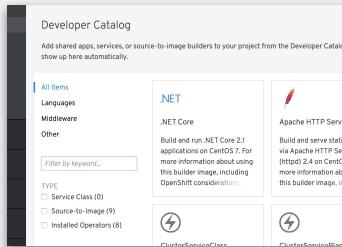
SERVICE MESH



OCP 4.1

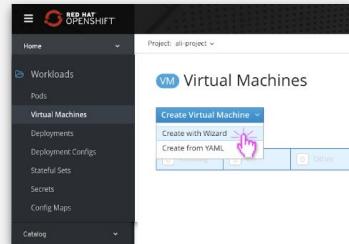
Dev. Catalog

OPERATOR & BROKER APPS



OCP 4.0

CNV



OCP 4.1

Native + External Links

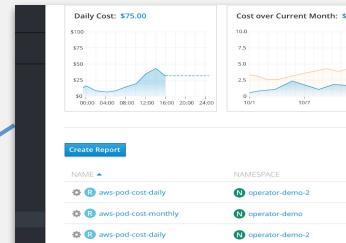
MONITORING

| STATE | SEVERITY |
|----------|----------|
| Silenced | Warning |
| Pending | Warning |
| Firing | None |

OCP 4.0

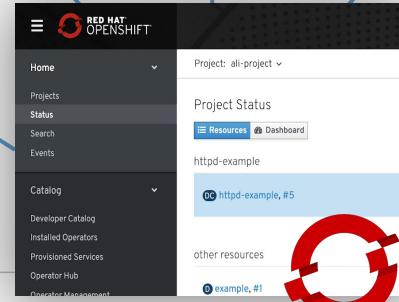
Native Experience

METERING & CHARGEBACK



OCP 4.1

Core Platform



DEVELOPER CATALOG

CONFIRMED FOR 4.0

- Entry point for a developer to access all services available to them
- Merges all capabilities from Operators, Service Catalog, Brokers, and S2I

The screenshot shows the Red Hat OpenShift web interface. On the left, a sidebar menu includes options like Home, Catalog (selected), Developer Catalog (highlighted in blue), Installed Operators, Provisioned Services, Operator Hub, Operator Management, Broker Management, Workloads, Networking, Storage, and Events. The main content area is titled "Developer Catalog" and displays a message: "Add shared apps, services, or source-to-image builders to your project from the Developer Catalog. Cluster admins can show up here automatically." Below this, there are filters for "All Items", "Languages" (17 items), "Middleware", and "Other". A search bar says "Filter by keyword...". To the right, a modal window titled "Create Source-to-Image Application" is open. It has fields for "Namespace *" (set to "PR kube-system"), "Version *" (set to "IST nginx:1.12"), "Name *" (empty), and "Git Repository *" (empty). It also includes a "Try Sample" button, a note about creating a "source secret" for private Git repos, and checkboxes for "Create route" (unchecked) and "Expose your application at a public URL" (unchecked). At the bottom of the modal are "Create" and "Cancel" buttons. The background shows a dark-themed developer catalog page with various application cards.

Create Source-to-Image Application

Namespace *

PR kube-system

Version *

IST nginx:1.12

Name *

Names the resources created for this application.

Git Repository *

Try Sample ↗

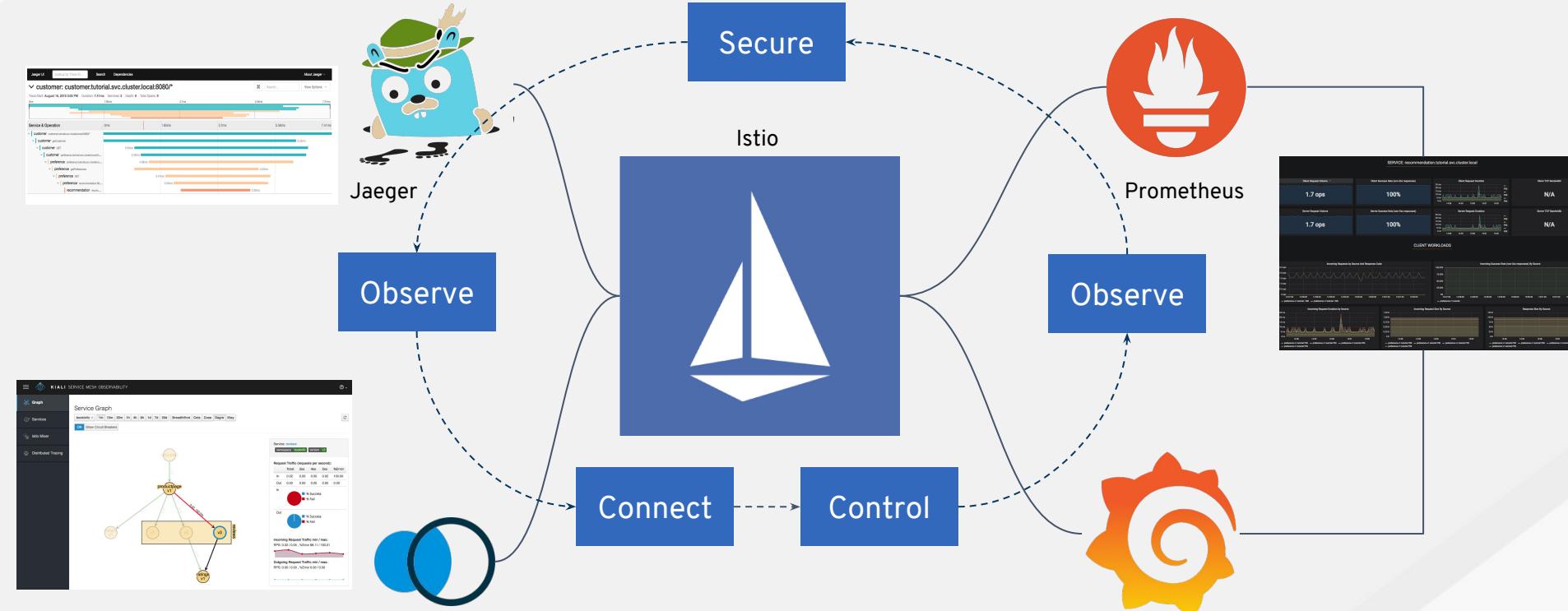
For private Git repositories, create a [source secret](#).

Create route

Expose your application at a public URL.

Create Cancel

SERVICE MESH



CONTAINER-NATIVE VIRTUALIZATION

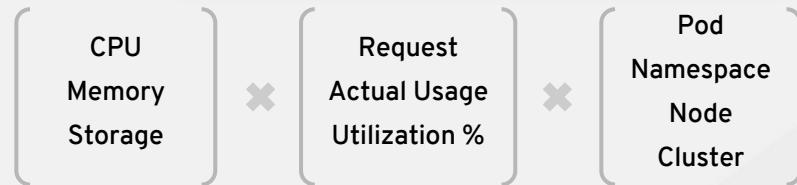
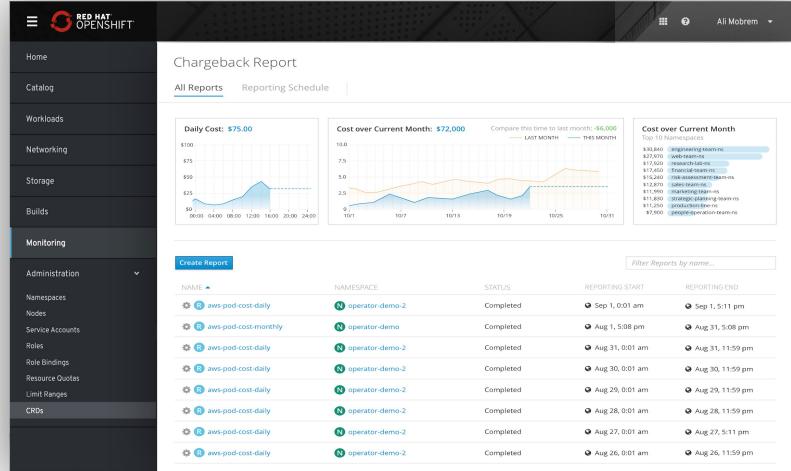
- [CNV 1.3 Tech Preview](#) (now)
- CNV 1.4 Tech Preview (soon)
 - Operators for KubeVirt,
Containerized data importer

The screenshot shows the CNV interface with the sidebar menu open. The 'Virtual Machines' option is selected under the 'Workloads' category. The main panel displays a list of virtual machines with columns for NAME, NAMESPACE, and STATE.

| NAME | NAMESPACE | STATE |
|------------|---------------|---------|
| fedora-vm | kubevirt-demo | Running |
| rhel-vm | kubevirt-demo | Off |
| windows-vm | kubevirt-demo | Running |

METERING/CHARGEBACK

- Testing a developer preview now
 - Install from OperatorHub
- Base functionality on all providers
- Tie into cloud providers for \$\$
- Included reports for 80% use-case
 - Customers can write custom reports and time periods
- Popular use-case: same teams over requesting RAM



Cluster Monitoring in 4.0

Provide a single, unified, and native experience for Cluster Admins to manage alerts and start troubleshooting.

The screenshot shows the 'Monitoring Alerts' section of the OpenShift Cluster Console. It includes a summary table with counts for Firing, Silenced, Pending, and Inactive alerts, and a detailed table listing specific alert rules with their names, states, and severities. The interface is clean and modern, designed for cluster administrators.

| NAME | STATE | SEVERITY |
|------------------------------|----------|----------|
| ALertmanagerDownOrMissing | Silenced | Warning |
| APIserverErrorsHigh | Pending | Warning |
| DeadMansSwitch | Firing | None |
| DeploymentReplicasNotUpdated | Firing | Warning |

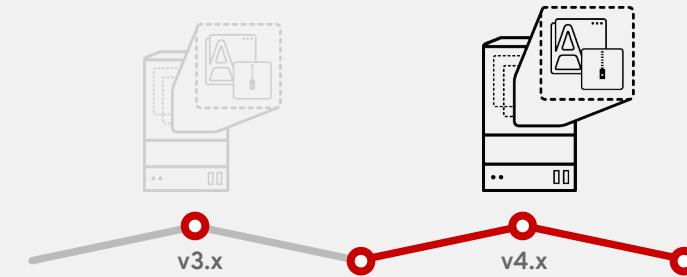
Provide a streamlined experience to setup app monitoring with Prometheus for tenants through the Operator Hub.

The screenshot shows the Red Hat Cluster Console interface. On the left, a sidebar lists various operator services like Operators, Cluster Service Versions, Catalog Sources, Subscriptions, Install Plans, Workloads, Networking, Storage, and Builds. The main area is titled 'Project: marketing' and shows the 'Prometheus Operator' service. A modal window is open under the 'Create New' dropdown, listing options such as Prometheus, Prometheus Rule, Service Monitor, and Alertmanager. Below the modal, a table displays existing Prometheus resources, including 'example' entries for Prometheus, ServiceMonitor, and Alertmanager, along with their labels, types, statuses, and versions.

| NAME | LABELS | TYPE | STATUS | VERSION |
|---------|------------------|----------------|---------|---------|
| example | prometheus=k8s | Prometheus | Unknown | v2.3.2 |
| example | k8s-app=frontend | ServiceMonitor | Unknown | Unknown |

UPGRADE PLAN

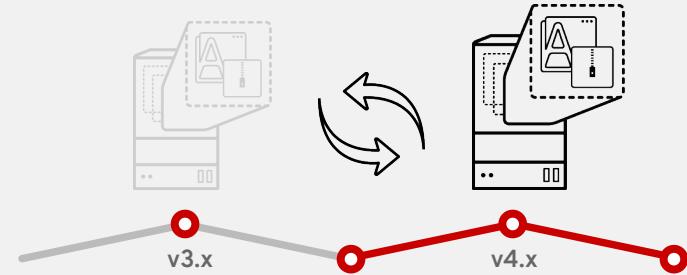
Customer requirements



- 1 - Customer don't like serial upgrades
- 2 - Customer would like a recovery process and automation in the event of cluster-wide failure
- 3 - Customer would like to able to migrate applications between clusters

UPGRADE PLAN

Migration targets



Focus on **migration utility** vs In-place upgrades

Utility will target:

- Cluster and project configuration
- Registry Content
- Application workloads

Goal is to migrate a cluster of OpenShift 3.x over to an OpenShift 4.x

Forecasting ability to demonstrate this by middle of the year*



THANK YOU

<http://openshift.com>