

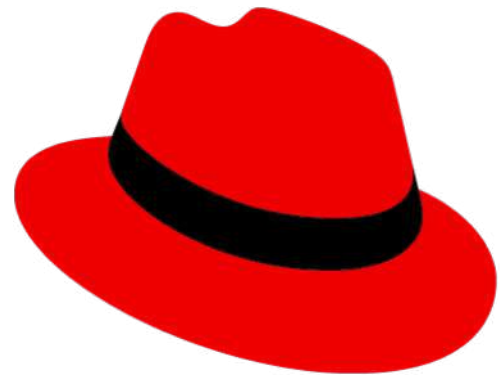


Red Hat

RED HAT FORUM | September 10 2019

HOW TO MOVE TO OPENSIFT 4

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Simon Reber, Principal Technical Account Manager,
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Red Hat



Your journey to OpenShift 4

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Senior Architect

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Principal Technical Account Manager

Chris Eberle
Principal Solution Architect

Why are we here?



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

The history with OpenShift 3

Lesson Learned

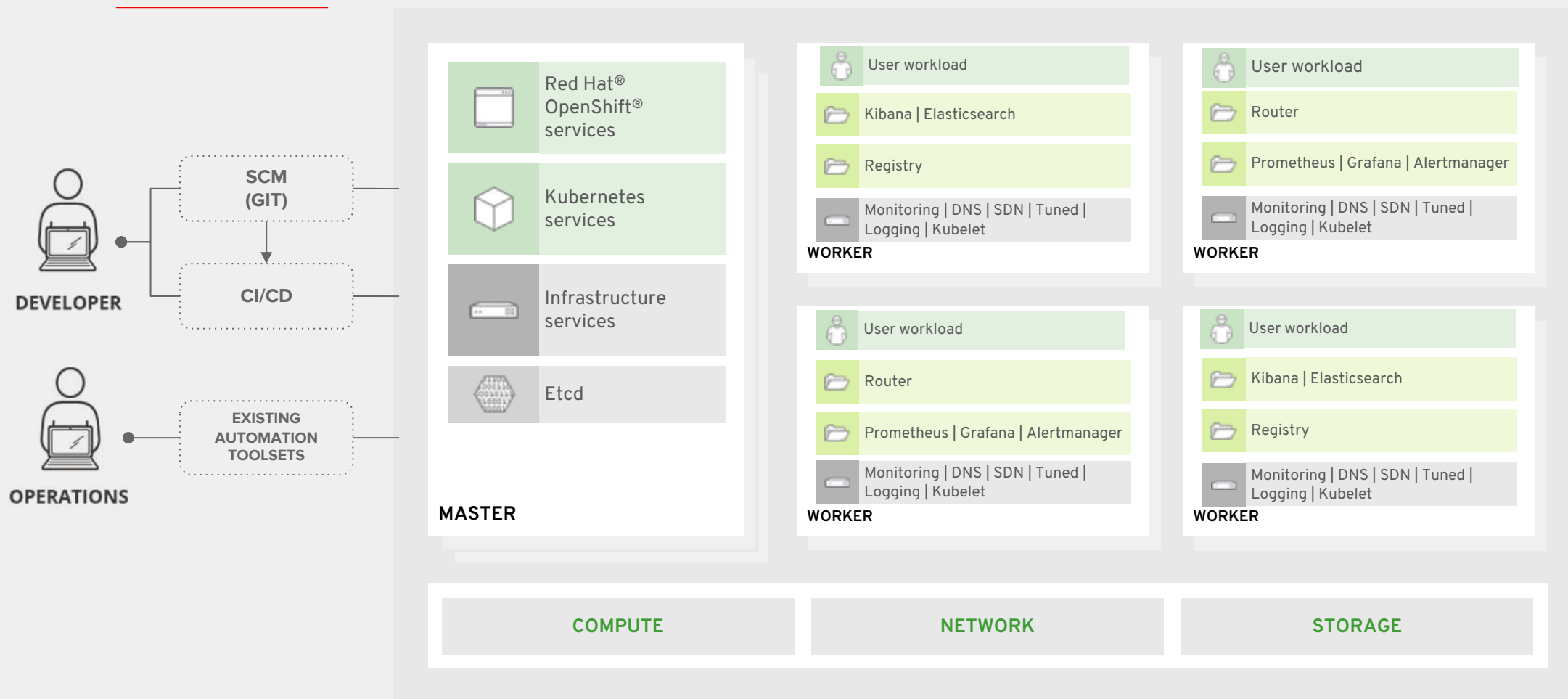
- Installation & configuration diversity
- Day 2 Operation challenges
- The right tool for the right task



The OpenShift 4 way

The Big Picture

OpenShift Architecture



The Container Runtime



A lightweight, OCI-compliant container runtime

Minimal and Secure
Architecture

Optimized for
Kubernetes

Runs any OCI-
compliant image
(including docker)

Installation

User Provisioned Infrastructure

Installer Provisioned Infrastructure

Installation Experiences

OPENSIFT CONTAINER PLATFORM

Full Stack Automated

Simplified opinionated “Best Practices” for cluster provisioning

Fully automated installation and updates including host container OS.



Pre-existing Infrastructure

Customer managed resources & infrastructure provisioning

Plug into existing DNS and security boundaries



HOSTED OPENSIFT

Azure Red Hat OpenShift

Deploy directly from the Azure console. Jointly managed by Red Hat and Microsoft Azure engineers.














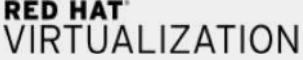



OpenShift Dedicated

Get a powerful cluster, fully Managed by Red Hat engineers and support.

Infrastructure Providers

Full Stack Automation

Pre-Existing Infrastructure

		  Bare Metal 
	   	
	  	  

RHEL CoreOS

Immutable OS

Built for OpenShift

Immutable Operating System

Red Hat Enterprise Linux CoreOS

- Red Hat Enterprise Linux 8 bits (4.18 kernel)
- Includes all packages required for OpenShift

Red Hat Enterprise Linux CoreOS is versioned with OpenShift

RHEL CoreOS is tested and shipped in conjunction with the platform. Red Hat runs thousands of tests against these configurations.

Red Hat Enterprise Linux CoreOS is managed by the cluster

The Operating system is operated as part of the cluster, with the config for components managed by Machine Config Operator:

- CRI-O config
- Kubelet config
- Authorized registries
- SSH config

→ Updating OpenShift includes updating CoreOS

RHEL CoreOS admins are responsible for:

Nothing.



v4.1.6



v4.1.6

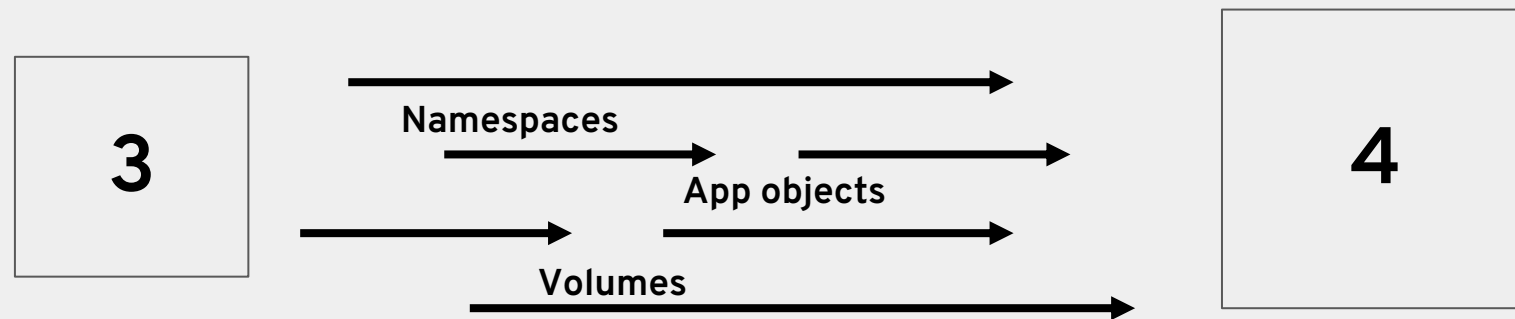
Upgrades

OpenShift 3 -> 4

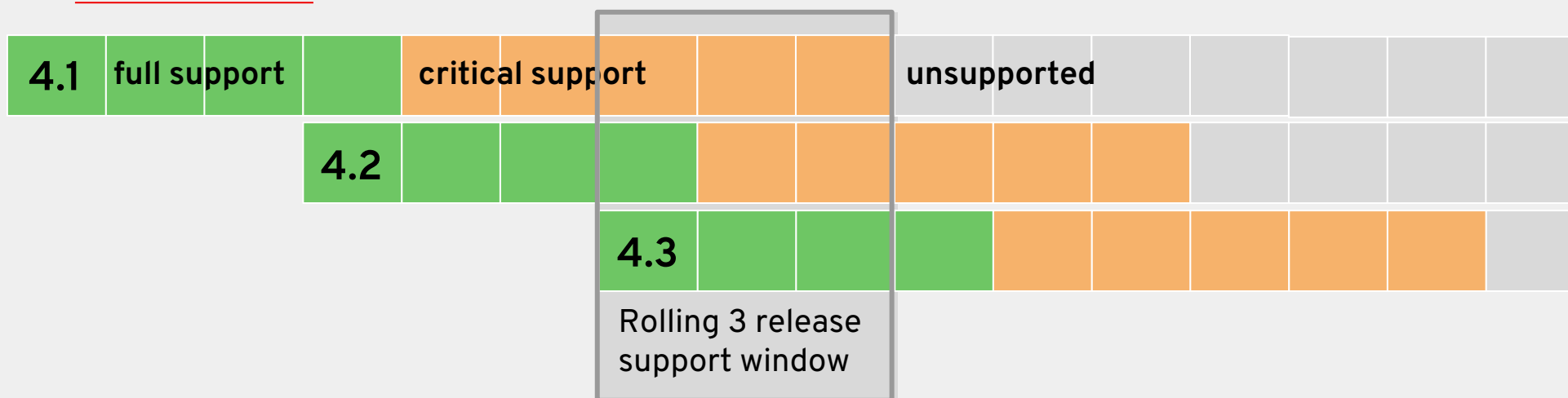
OpenShift 4 -> 4

OpenShift 3.x to 4.x

- No upgrade path
- Migrate applications from 3.x Cluster to 4.x Cluster
- Start building new clusters and shrink / tear-down 3.x clusters
- Supported & automated through tooling



OpenShift 4 Lifecycle



New model

Release based, not date based. Rolling three release window for support.

The overall 4 series will be supported for at least three years

- Minimum two years full support (likely more)
- One year maintenance past the end of full support

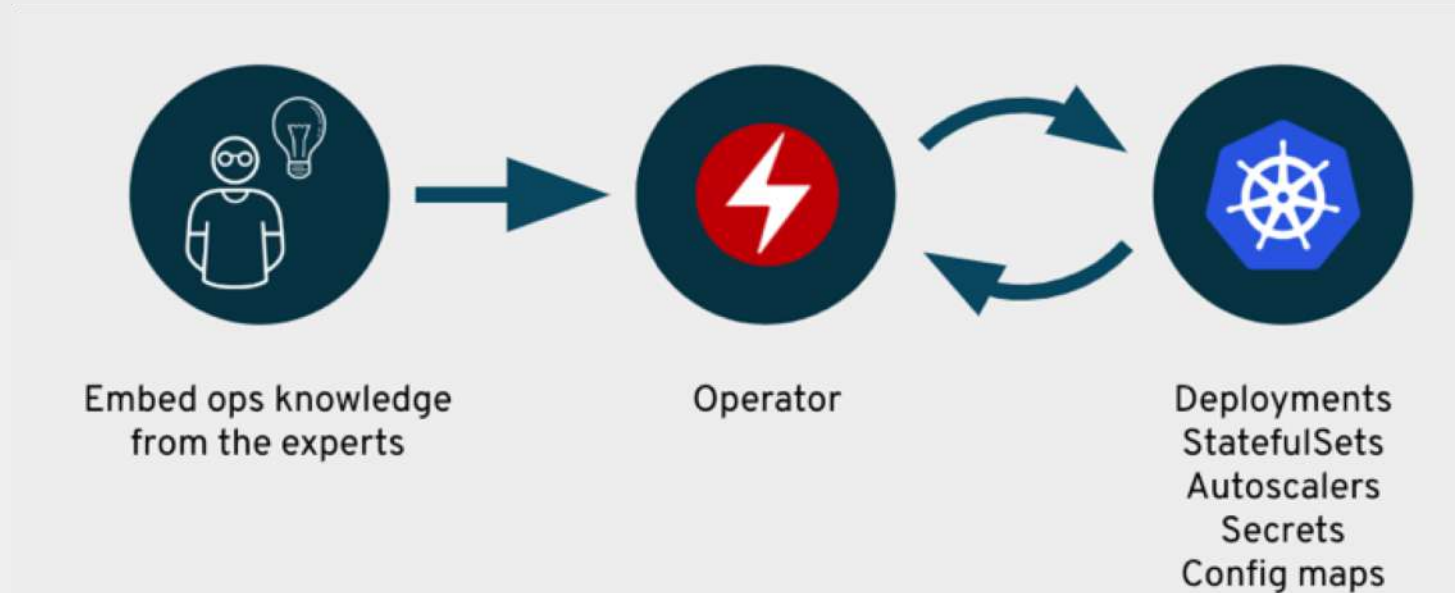
Extended Update Support (EUS) release planned

Supported for 14 months of critical bug and critical security fixes instead of the normal 5 months. If you stay on the EUS for its entire life, you must use the application migration tooling to move to a new cluster

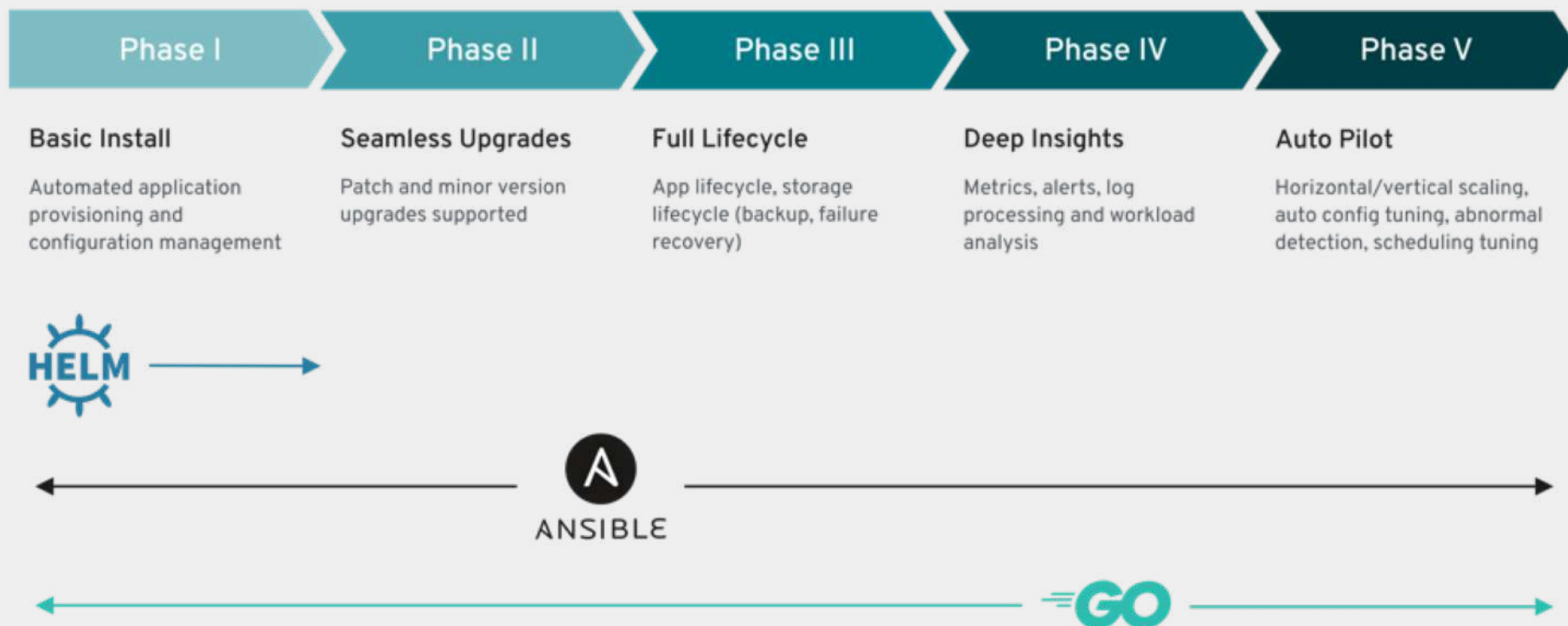
Operators

Cloud native
management

An Operator is a Site Reliability Engineer implemented in software in a Kubernetes-native way



Operator maturity model



OperatorHub data sources

Requires an online cluster

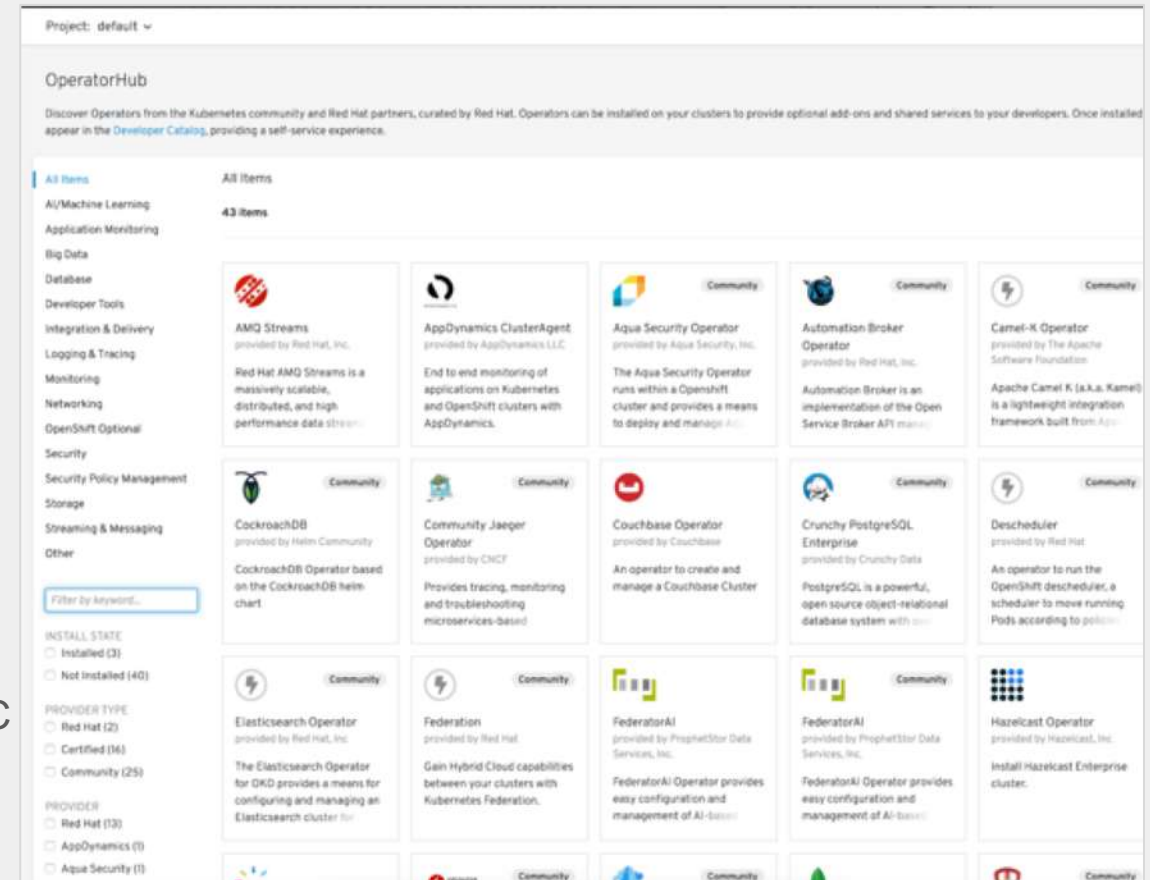
- For 4.1, the cluster must have connectivity to the internet
- Later 4.x releases will add offline capabilities

Operator Metadata

- Stored in quay.io
- Fetches channels and available versions for each Operator

Container Images

- Red Hat products and certified partners come from RHCC
- Community content comes from a variety of registries



Cluster & Subscription Management

Cluster Management
and Provisioning
Subscription
Management
Telemetry

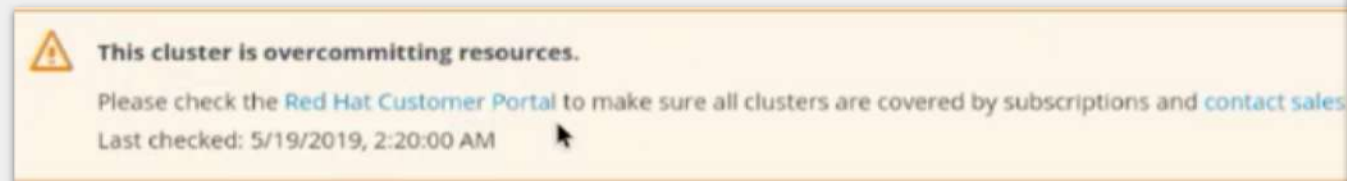
OpenShift Subscription Management

Moves from node management to cluster management

Entitle clusters and not nodes. Nodes too dynamic. We do not block on usage. Requires telemeter Opt-In.

Dynamically adds and removes nodes

UHC will dynamically add and remove nodes from your subscription allocations to the cluster in 24 hour intervals. This will move to instantaneous across the next several releases.

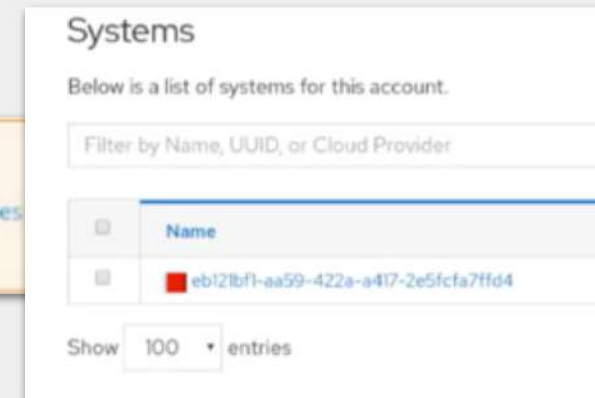


Connected to the same backend as Subscription Portal and Satellite

Allocation numbers you see at cloud.redhat.com for OCP can be also seen on the subscription portal at access.redhat.com

Removes OpenShift Infrastructure from the count

UHC will figure out which pods are your OCP infra pods and subtract out their usage from your core count so you are not charged.



OpenShift Cluster Migration

Application Migration

Application migration experience

Using open source tooling based on Velero
Velero is an upstream project previously known as Ark.

What's moved during a migration

- Namespaces
- Persistent Volumes (move or copy)
- All important resource objects (Deployments, StatefulSets, etc)

The screenshot displays the 'Migration Plan Wizard' interface. The top section, titled 'Migration Plan Wizard' with the subtitle 'Create a migration plan', shows a progress bar with five steps: 1 General, 2 Migration Source (active), 3 Persistent Volumes, 4 Migration Targets, and 5 Results. In the 'Migration Source' step, the 'Source Cluster' is set to 'Summit Demo Source Cluster'. Below this, a table titled 'Select projects to be migrated:' lists two projects: 'robot-shop' (checked) and 'sandbox' (unchecked). The bottom section, titled 'Migration Plans', shows a table with two migration plans, both of which have been migrated successfully.

Name	Migrations	Source	Target	Repository	Persistent Volumes	Last Status
demo plan	2	Summit Demo Source Cluster	Target cluster	mydemobucket	2	Migrated Successfully
demo2	2	Summit Demo Source Cluster	Target cluster	mydemobucket	2	Migrated Successfully

OpenShift 4 Outlook

OpenShift 4 - Roadmap Highlights

Q3 CY 2019 OpenShift 4.2		Q4 CY 2019/Q1 CY 2020 OpenShift 4.3	
DEV	<ul style="list-style-type: none"> • Developer Console GA • CodeReady Containers GA • Developer CLI (odo) GA 	DEV	<ul style="list-style-type: none"> • OpenShift Serverless (Knative) - GA • OpenShift Pipelines (Tekton) GA
APP	<ul style="list-style-type: none"> • Application Binding with Operators • Application Migration Console 	APP	<ul style="list-style-type: none"> • Metering for Services • Windows Containers
PLATFORM	<ul style="list-style-type: none"> • Kubernetes 1.14 w/ CRI-O runtime • Disconnected Install and Update • Automated Installer for Azure, OSP, GCP • OpenShift Container Storage 4.2 	PLATFORM	<ul style="list-style-type: none"> • Kubernetes 1.15 w/ CRI-O runtime • Automated Installer for IBM Cloud, Alibaba, RHV, Bare Metal Hardware Appliance • OVN GA w/ Windows Networking Integration
HOSTED	<ul style="list-style-type: none"> • cloud.redhat.com - Multi-Cluster Deployment 	HOSTED	<ul style="list-style-type: none"> • cloud.redhat.com - Subscription Mgmt Consumption Improvements

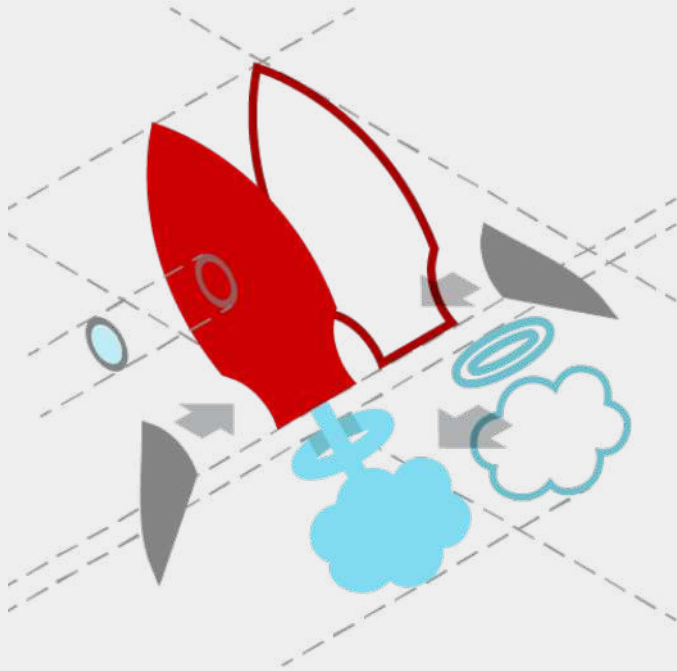
Your way to OpenShift 4

Reconsider your Architecture & Processes

- Overall Topology
- Day 2 Operations
- Workload should be portable



Approach



- OpenShift as appliance
→ Organisational and Process implications?
- Prefer IPI over UPI
- Hosting strategy?
- Internal Roadmap and Migration Strategy
- Everything as Code
- Continuous updates

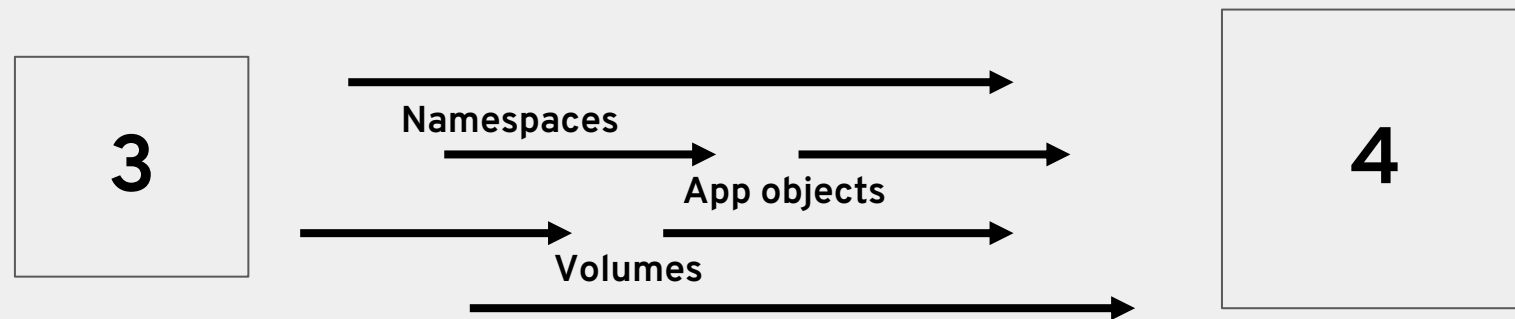
Operators



- Cluster is managed like workload
- Embrace them
- Take advantage of the operator ecosystem
- Write your own!

Moving workload

- Take advantage of Operators
- Location of Artifacts
- Persistent data
- Traffic steering, A/B Deployments
- Attract workload to new clusters



Plan the future

- Start now / Reserve resources
- Build your vision
- Align with Red Hat Product Roadmap
- Advertise your roadmap internally
- Consult internal stakeholders
- Build up know how



We are here to support you

- Consulting / Technical Account Manager / Solution Architects
- Training
- Reference architectures
- Assessments and reviews
- Design, architecture, migration support



Q & A / Feedback

How do you approach the journey?

Thank you

Red Hat is the world's leading provider of
enterprise open source software solutions.
Award-winning support, training, and consulting
services make
Red Hat a trusted adviser to the Fortune 500.



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**Wrap up
by Leonard Bodmer
@Mainstage**