Red Hat OpenShift

OpenShift Roadmap Update

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SR. SPECIALIST SOLUTION ARCHITECT | OPENSHIFT
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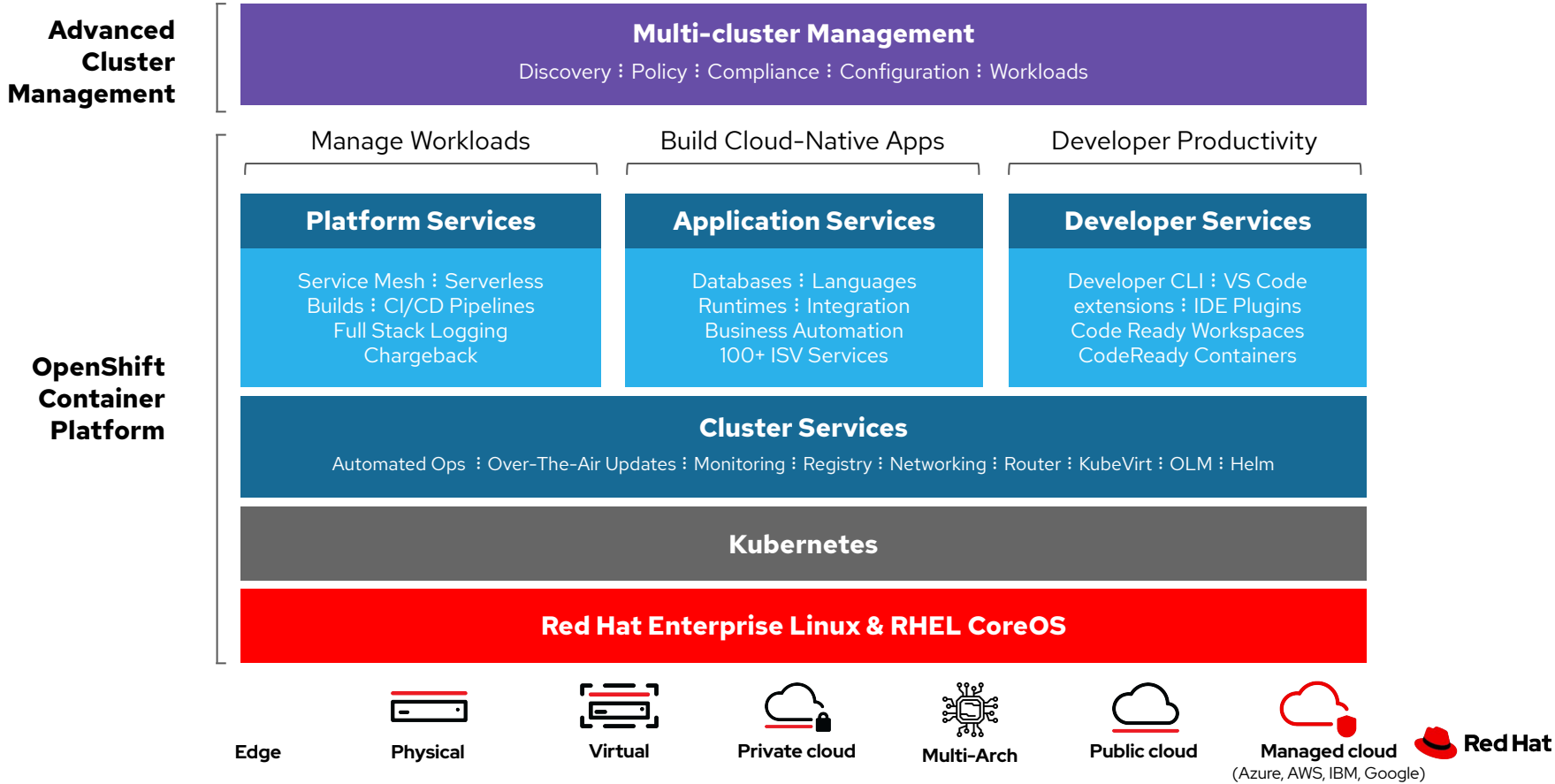
Red Hat

OpenShift Container Platform



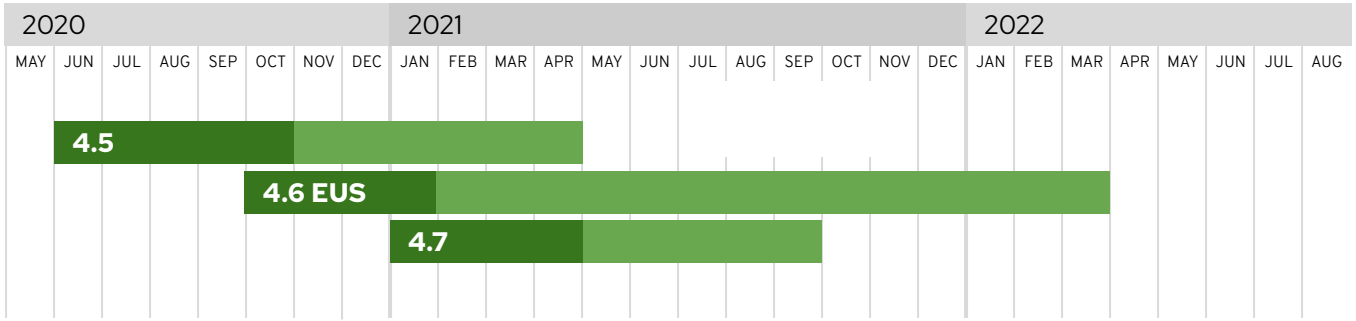
OpenShift 4.6 EUS

What is Extended Update Support (EUS) ?

- OCP with an extended timeframe for critical security and bug fixes
- Available to premium support customers
- Not available as an add-on for standard support

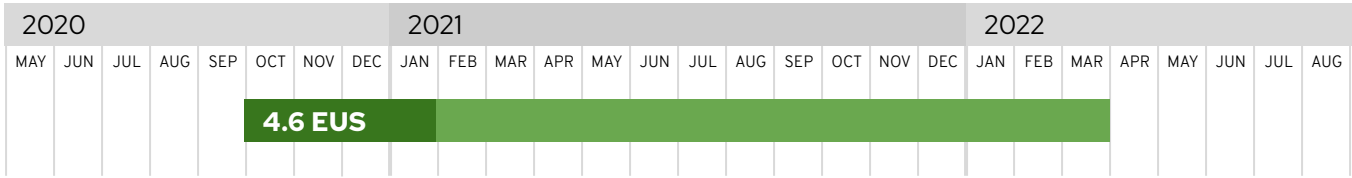
Goals for the 4.6 EUS

- Work within a customer's release management philosophies
- Provide a serial pathway to update between EUS releases
  - Customer might align more to CAM or ACM
- Aligned with RHEL 8.2 EUS



Red Hat

4.6 EUS for Layered Products/Add-ons



Complete "hands off" EUS

Remain on single supported version for the entire EUS period

OpenShift Logging
OpenShift Container Storage
Advanced Cluster Manager
Process Automation
OpenShift CNF
Jaeger

Mid-cycle refresh during EUS

The EUS cycles for these products refresh during the OpenShift EUS

LAYERED PRODUCT UPGRADE

Cluster Migration Tool
Red Hat SSO
JBoss EAP
Quarkus
Thorntail
Spring Boot
Vert.x
JWS (Tomcat)
DataGrid

Normal updates during EUS

Follows the normal support window for the add-on, shorter than EUS

LAYERED UPGRADE LAYERED UPGRADE LAYERED UPGRADE LAYERED UPGRADE LAYERED UPGRADE

OpenShift Virtualization
OpenShift Serverless
OpenShift Pipelines
OpenShift Service Mesh
CodeReady Containers
Red Hat Quay / CSO

Red Hat

ACM Roadmap

Near Term
(3-6 months)

ACM

- **GA Bare Metal and vSphere Cluster Lifecycle**
- Telemetry gathering for cluster health monitoring
- **Ansible integration into Application Lifecycle**
- **Multi-cluster monitoring with Observatorium and Thanos**
- Improved application subscription flow
- Leverage CCX Insights for improved cluster health

Mid Term
(6-9 months)

ACM

- Lifecycle and portability for Stateful Applications HA/DR/Migration use cases
- Cluster Lifecycle for ARO, OSD, MOA
- Support notifications of alerts
- Scale OCP cluster sizes centrally from RHACM
- Add OPA engine violations into RHACM hub
- Integrate Compliance Operator with RHACM governance
- Open source core multi-cluster projects

Long Term
(9+ months)

ACM

- **Multi-cluster network configuration with Service Mesh and Submariner**
- **Management for OpenShift Virtualization**
- Integrate Cost Management from OCM for Chargeback and App Placement use cases
- RHACM to provide cluster health in the context of application actions

Product Manager: Jeff Brent, Scott Berens, Loic Avenel

Application Services

Near Term
(3-6 months)

Runtimes
- Runtimes on IBM Z, Power PC
- **Quarkus native compilation** w/Mandrel
- Red Hat NPM Registry
- Java Flight Recorder for OpenJDK 8
- Data Grid 8.1 (*Quarkified* Data Grid, Knative evt)
- Vert.x 4.0 (new reactive APIs)
- New SKUs for [App Services + OCP + OCS]

Integration

Apache Kafka
- GA Camel Apache Kafka Connect
- GA Cluster rebalancing

APIs
- Operator driven API config
- OpenAPI v3.x enhancements
- Support for Kafka REST endpoints
- Improved observability

Automation
- Containerized SpringBoot support for cloud deployments
- **Integration with Apache Kafka**
- Standalone BAM monitoring console (business metrics and dashboards)

Mid Term
(6-9 months)

Runtimes
- Quarkus Gradle support
- **Tekton Pipeline Tasks for Quarkus**
- EOL for Thorntail
- Knative Event Source for Red Hat SSO
- MicroProfile 4.0 (EAP XP, Quarkus, OL)
- Runtimes Operator

Integration

Camel-K Event Sources for Serverless
- AWS Kinesis, SNS Queue Services
- Azure Storage Blob & Queue Service
- Jira, SFDC, Slack and more

APIs
- Unified developer portal for REST APIs and Kafka topics
- API mgmt integration with Istio directly via Envoy

Automation
- Continue Kogito community development
- Customer requested enhancements to PAM and DM
- Tighter integration with Kafka and RH Integration
- Continue building Optaplanner ecosystem

Long Term
(9+ months)

Runtimes
- Red Hat SSO based on Quarkus
- Runtimes Serverless maturity
- Runtimes Dev Experience maturity
- Transition to App Managed Services

Integration
- Managed Apache Kafka
- API Gateway Integration with Knative and OpenShift Ingress
- API Management support for multi-schema traffic inc. GraphQL, gRPC, Async API

Automation
- Process and Decision Managed Services
- Tighter integration with Serverless, Quarkus, SSO, RH Runtimes

Service Mesh Timing Update

Release 2.0 is coming early in Q4 (roughly aligned with OCP 4.6)

- We chose “2.0” instead of “1.2” because upstream Istio had (more or less) a complete redesign.

OPENSHIFT SERVICE MESH

Near Term
(3-6 months)

ISTIO

- Update to Istio 1.7
  - Update to new control plane format
  - Auto enable mutual TLS
- Enable the Secret Discovery Service (SDS)
- Installation speed up
- Introduce support for v2 Telemetry
- **Enable PowerPC and Z-Series hardware**

KIALI

- **OpenShift Developer Console Integration**
- Validation Support for Istio Security Objects
- Creation of Security Objects from Kiali (Context and Namespace Driven)
- Improve Filtering Capabilities
- Improve Tracing View

JAEGER

- OpenTelemetry (Tech Preview)
- **Disconnected Installation**
- **Support for Kafka**
- Jaeger Operator Phase 4: Deep Insights

Mid Term
(6-9 months)

ISTIO

- **Initial Integration with Advanced Cluster Manager**
- Evaluation of **new filters for Envoy**
  - Kafka
  - MongoDB

KIALI

- More correlation with Tracing
- Istio Health Detection
- Graph Replay

JAEGER

- OpenShift Developer Console Integration
- Collector and Injester Autoscaling
- Composite Context Propagation in Jaeger Client

Long Term
(9+ months)

- Introduction of "Istio Workspaces"
- Istio Multi-Cluster Support
- JBoss and OpenLiberty Dashboard
- Iter8
- Continuation of adding **more filters** as they stabilize within **Envoy**:
  - PostgreSQL
  - MySQL
  - RocketMQ
  - Thrift(*)
  - Dubbo(*)

(*) Input from teams in APAC would be greatly appreciated.

Product Manager: Brian "RedBeard" Harrington and Mauricio "Maltron" Leal

OPENSHIFT SERVERLESS

Near Term
(3-6 months)

CORE

- **Eventing General Availability**
- Tracing support with Jaeger
- Service Mesh Integration
  - *Side-cars, tracing, Kiali, multi-mesh*
- Knative 0.15, 0.16 and 0.17
- gRPC support with OCP 4.6

CONSOLE & DX

Admin Monitoring for Serving

Eventing User Experience

- Channels, Brokers and Triggers
- Custom Event sources

- **Camel-K** Event sources
- **Ceph** Event source

FUNCTIONS

Developer Preview

- Runtimes for Quarkus , Node.js, Go
- **Buildpacks** based builds
- Orchestration
- CLI plugin to build, test and deploy

Mid Term
(6-9 months)

CORE

- Prometheus Alerts through Operator
- Operand Telemetry data
- 3scale API Management Integration
- KEDA Integration
- Event Registry for Discovery

CONSOLE & DX

- Catalog Experience for Event Sources
- Serverless Application Monitoring
- Admin experience for Eventing
- Expose configuration in Cluster Settings
- VS Code plugin
- *odo* support for Knative

FUNCTIONS

Technology Preview

- More Runtimes
  - Spring Boot
  - Vert.x
  - Python
- Local developer experience
- Support for DevFiles

Long Term
(9+ months)

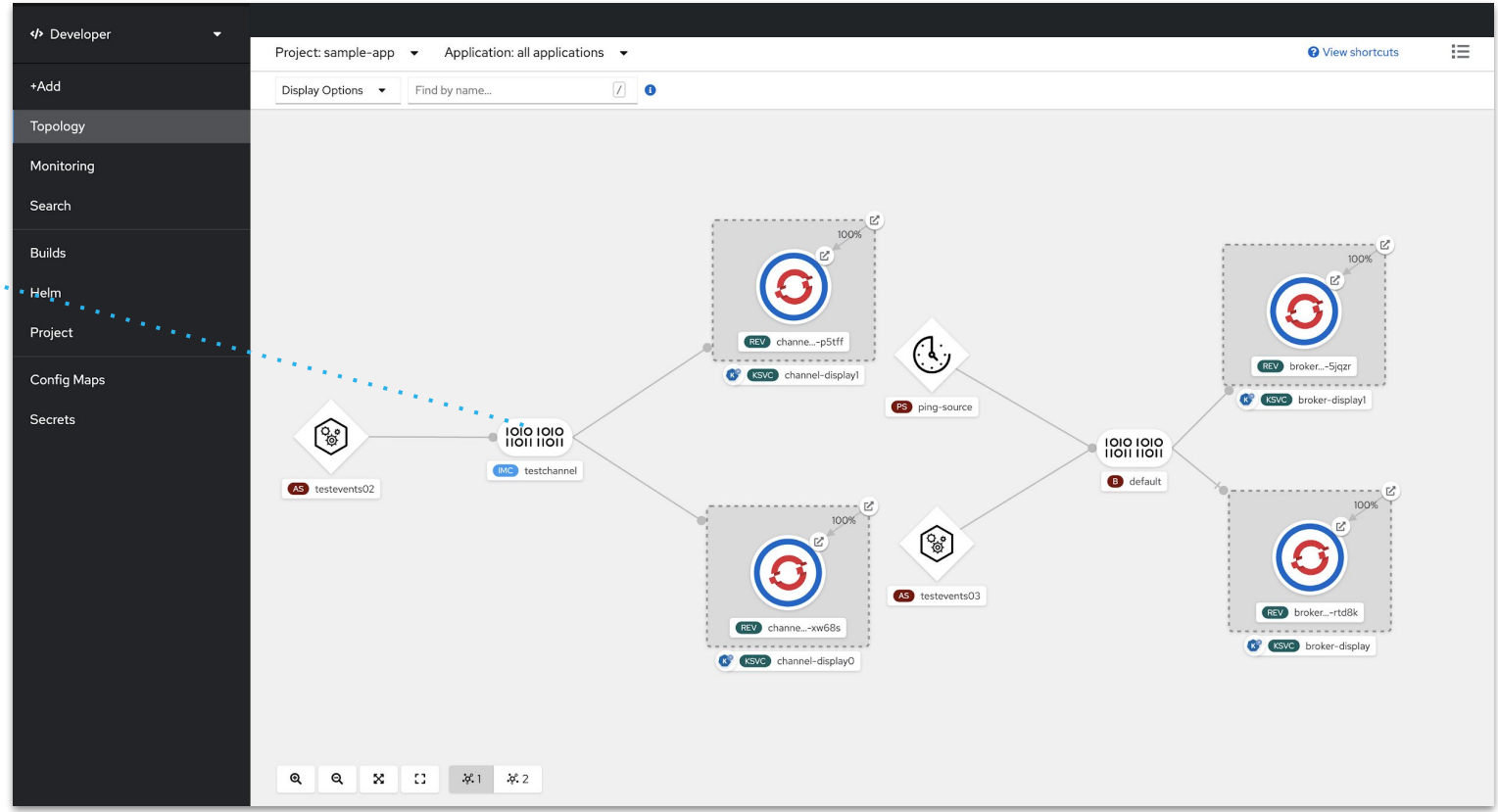
- Streaming Support
- Sequences and Workflows
- Project Contour support
- Red Hat Event sources
  - Keycloak
  - Data Grid
  - Satellite
  - Tower/Ansible
- Predictive tuning for Applications
- Kogito Integration
- Cold start improvements
- More function runtimes
- Stateful Functions

Product Manager: William Markito & Naina Singh

OPENSHIFT SERVERLESS

Channels & Brokers
Connect Event Sources to multiple applications reliably with support for fan-out, redelivery.

Channels and Brokers can be in **In-memory** or backed by **Apache Kafka.**



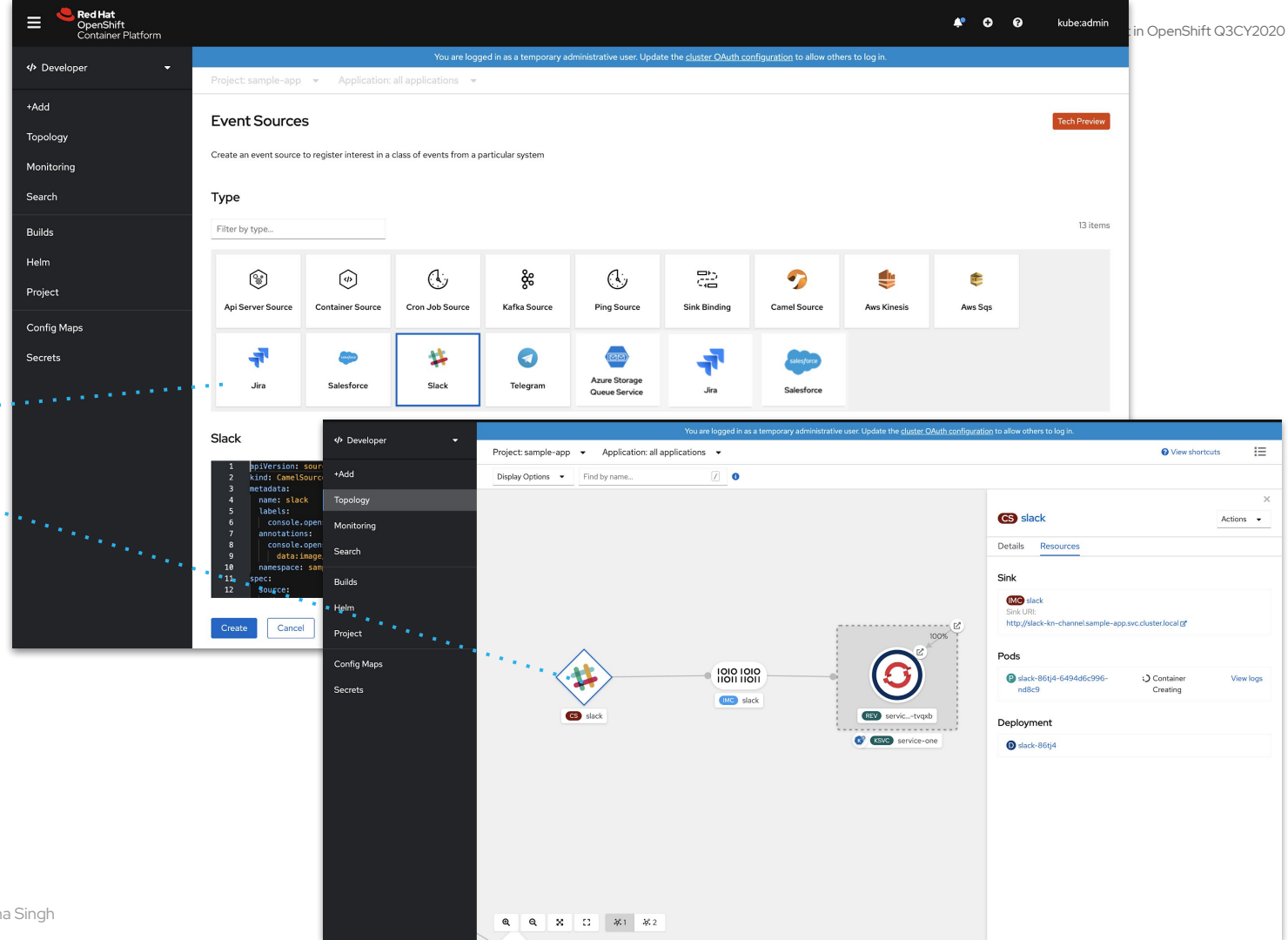
Product Manager: William Markito & Naina Singh

Red Hat

More event sources powered by Camel-K

- AWS Kinesis
- AWS SNS Queue Services
- Azure Storage Blob Service
- Azure Storage Queue Service
- Jira
- Salesforce
- Telegram
- Slack

Connect your application with SaaS and on-premise systems.



OpenShift Builds

- Build lean images from application source code and binary using Kubernetes tools on OpenShift
- Use Kubernetes build tools
(e.g. buildah, S2I, CNB1, Kaniko, etc)
- Build slim runtime images without the build dependencies
- Extensible and customizable
- Portable builds to any Kubernetes platform

```yaml
kind: Build
metadata:
  name: myapp-cnb-build
spec:
  source:
    url: https://github.com/myorg/myapp
  strategy:
    name: buildpacks-v3
  builder:
    image: heroku/buildpacks:18
  output:
    image: quay.io/myorg/myapp:v1
```


Product Manager: Siamak Sadeghianfar

OPENSHIFT BUILDS

Near Term
(3-6 months)

CORE
- OpenShift Builds v2 TP (buildah, S2I, CNB1, Kaniko, etc)
- Binary build strategy
- Image stream support
- Build from local directory

UX
- Build CLI

Mid Term
(6-9 months)

CORE
- Disconnected clusters
- Proxy support
- Build metrics
- Logging stack integration
- RHEL entitlements in builds

UX
- Builds v2 in Console

Long Term
(9+ months)

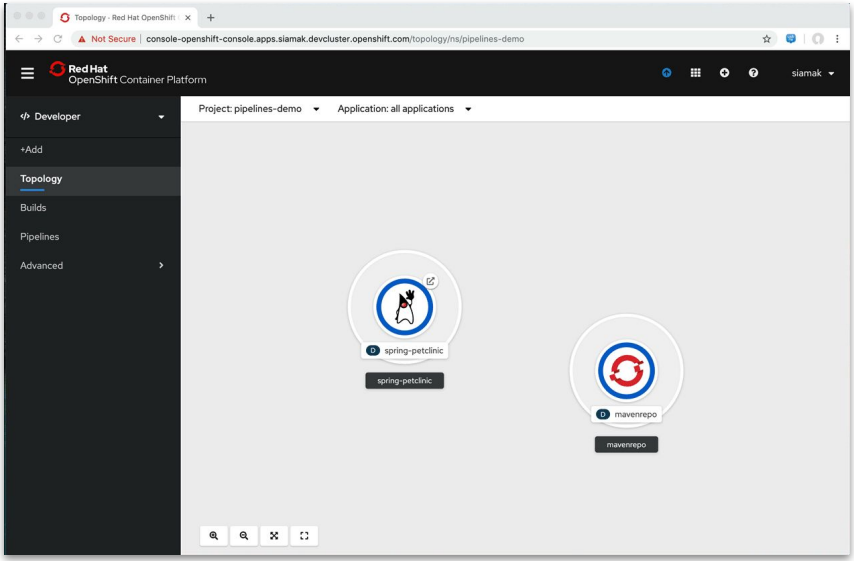
CORE
- OpenShift Builds v2 GA
- Auto-pruning pipeline runs
- Dependency caching
- Build v1 to Build v2 migration guide
- De-emphasize BuildConfigs

UX
- Builds v2 metrics in Console

Product Manager: Siamak Sadeghianfar

OpenShift Pipelines

- Kubernetes-native declarative Pipelines with Tekton
- Serverless CI/CD with no server to maintain
- Run pipelines on-demand in containers
- Standard and portable to any Kubernetes platform
- Web, CLI, and Visual Studio Code and IDE plugins



Product Manager: Siamak Sadeghianfar

CD.FOUNDATION

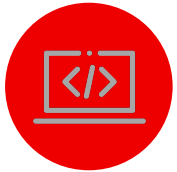
TEKTON

Red Hat

OpenShift Pipelines Themes

Make Tekton the standard CI/CD for Kubernetes

- Operator
- Triggers
- Workspaces
- Proxy & Airgapped
- ...more



Provide Best Developer Experience for Tekton

- Console
- CLI
- VS Code
- IntelliJ
- Code Ready Workspaces
- ...more

Bootstrap the Ecosystem of Tekton Tasks

- Task Catalog
- Tekton Hub
- Seed Tasks
- ISV Tasks
- ...more

Product Manager: Siamak Sadeghianfar

OPENSHIFT PIPELINES

Near Term
(3-6 months)

CORE
- **OpenShift Pipelines GA**
- Disconnected clusters (air-gapped)
- Proxy support
- Pipeline as code
- Unprivileged pipelines
- Pipeline logs in OpenShift logging stack

UX
- Console pages for all Tekton resources
- Console displays additional pipeline metadata
- Console contains Pipelines guided tour
- **Start pipeline wizard in VS Code**
- Enhanced validation in VS Code
- **Tekton Hub integration in VS Code**
- **CLI integration for Tekton Hub**
- Tekton extension for CodeReady Workspaces

ECOSYSTEM
- **Tekton Hub launch**
- Tekton community catalog in Hub
- Multi-catalog support in Hub
- Additional Tekton tasks
- Improved S2I Tekton Tasks

Mid Term
(6-9 months)

CORE
- Unprivileged pipelines
- Auto-pruning pipeline runs and task runs
- Pipeline admin metrics in Prometheus
- In-cluster Tekton catalog and hub
- Jenkins migration guide
- Deployment pattern custom tasks

UX
- Enhance pipeline builder in Console
- Expose Pipeline Dev metrics in Console
- Add Advanced pipeline templates in Console
- IntelliJ integration with Tekton Hub
- IntelliJ gains Pipeline diagram

ECOSYSTEM
- Additional official Tekton catalogs
- App Services (MW) Tasks
- Community-contributions
- **OCI artifacts for task distribution**
- Additional Tekton resource types in Hub

Long Term
(9+ months)

CORE
- Pipeline pause and resume
- Partial pipeline execution
- Notifications
- Git provider PR status integration
- Argo CD integrations

UX
- Expose Pipeline Admin metrics in Console
- Enhanced pipeline visualization in Console
- Console integration with Tekton Hub

ECOSYSTEM
- ISV Tasks in Catalog
- OCI Tekton artifact support in OpenShift
- Quality indicators in Tekton Hub

Product Manager: Siamak Sadeghianfar

Argo CD on OpenShift

- Declarative GitOps operator for continuous delivery on Kubernetes
- Git as the single source of truth in sync with Kubernetes clusters with drift detection
- Red Hat joins Argo steering committee together with Intuit, BlackRock and Alibaba (announcement at KubeCon EU)
- Tekton and Argo CD as the basis of developer GitOps workflow

Argo CD and Developer GitOps Workflow

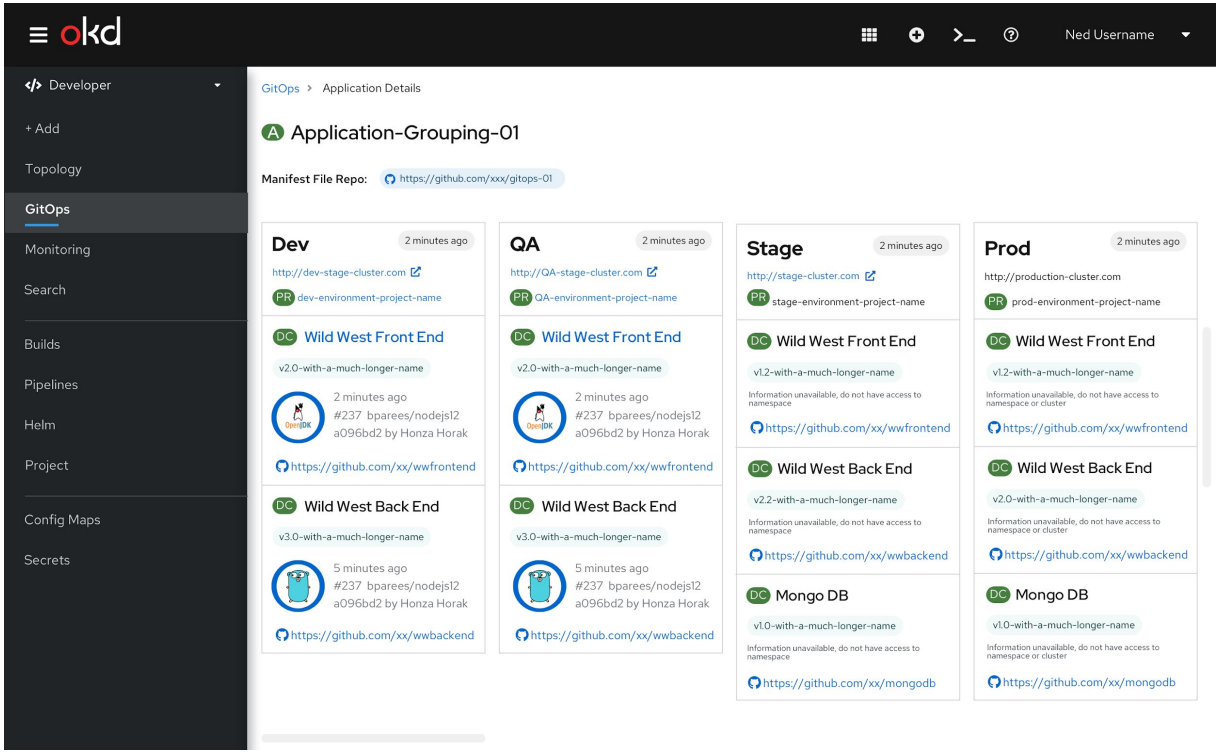
	Near Term (3-6 months)	Mid Term (6-9 months)	Long Term (9+ months)
Argo CD	• Argo CD Tech Preview in OperatorHub	• Argo CD GA • Argo CD Auth integration with OpenShift • Application sets • Argo CD and Tekton integrations	• ACM Collaborations
BOOTSTRAP	• GitOps-based project bootstrapping with Tekton, Argo CD, kustomize • Dev Preview of bootstrapping with odo	• Helm support • Gitlab support • Application promotion between environments • Tech preview of bootstrapping with odo	• GA of bootstrapping with odo • Bootstrapping MW apps • Bootstrapping based on devfile
CONSOLE	• Dashboard for multi-cluster deployment environments	• Argo CD integration	

Product Manager: Siamak Sadeghianfar

Dedicated GitOps View

Empower developers with visibility of their application across all environments

- Dedicated GitOps view
- View all app groupings
- Drill into app grouping details to get visibility into the composition and status of the applications/workloads deployed across environments
- Link out to Argo CD
- Eventually powered by Argo CD



Product Manager: Serena Nichols

Red Hat

CodeReady Workspaces

Near Term
(3-6 months)

CORE SOLUTION
- Available in OSD via Add-ons
- Performance metrics to cluster monitoring

IDE & UI
- Improved Getting Started
- **Support for Firefox**

WORKSPACES
- **Faster workspace loading**
- Easier troubleshooting of workspace starts
- Support for devfile 2.0 specifications

Mid Term
(6-9 months)

CORE SOLUTION
- Admin/Team capabilities CLI
- Usage telemetry
- Support for Z and Power platforms

IDE & UI
- Build, run, push container images directly from IDE
- Developer experience improvements

WORKSPACES
- **CRD-based workspaces**

Long Term
(9+ months)

CORE SOLUTION
- **Resource optimizations**

IDE & UI
- Co-editing and team collaboration
- Integration with OpenShift Pipelines and Serverless
- Support choice of IDE Editors

WORKSPACES
- Save and recreate workspaces using devfiles

Product Manager: Parag Dave (acting)

Developer Tools

OpenShift Developer Sandbox

- Need a quicker/better way to get developers going quickly with OpenShift and associated developer tooling
- Katacoda is nice for some scenarios but expires after an hour, no good place to transition developers
- Look to provide guided developer flows from openshift.com/try
- CodeReady Containers requirements are too high for most desktops

Product Manager: Parag Dave

Red Hat

CodeReady Containers

OpenShift Sandbox on Developer's Laptop

Near Term
(3-6 months)

CORE

- Updates to include 4.5 z-streams
- R&D profile work for app consumption
- R&D single node installer work

EXPERIENCE

- System tray for Mac & Windows
- Podman for Mac & Windows

Mid Term
(6-9 months)

CORE

- Updates to include 4.6/7 GA bits
- Improved consumption for podman/RHEL minimal guest image
- Apply single node installer support to drive better support and reduced resource requirements

EXPERIENCE

- Podman/RHEL minimal guest image
- Integrations with IDEs
- Better telemetry/metrics around downloads and usage

Long Term
(9+ months)

CORE

- Update mechanism for crc binary
- Update mechanism for embedded image
- Further operator enablement of single node case, further resource consumption improvements

EXPERIENCE

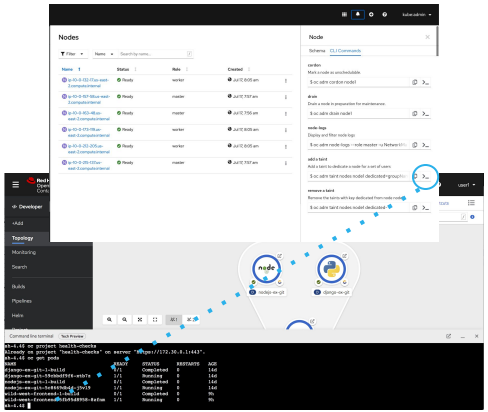
- Podman improvements
- Further integration of system tray into other developer tools and services

Product Manager: Steve Speicher

OpenShift Console Themes

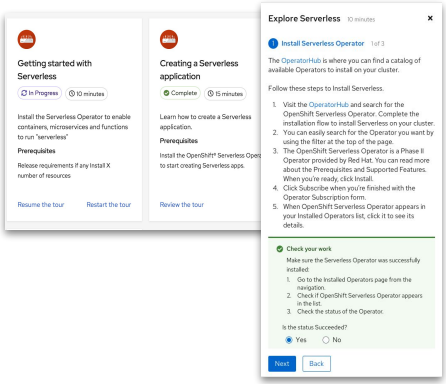
Developing on Kubernetes

- Application Monitoring
- Serverless Eventing (Camel-K + Custom)
- GitOps Dashboard



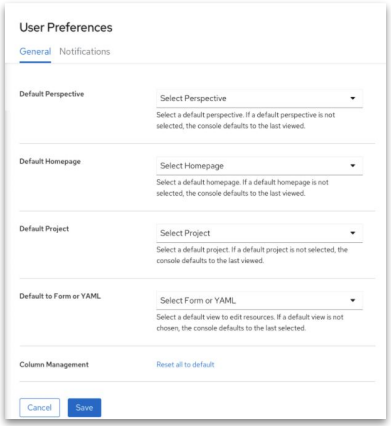
LEARNING Kubernetes

- Quick Starts
- Admin Checklist
- CLI Shortcuts + Web Terminal



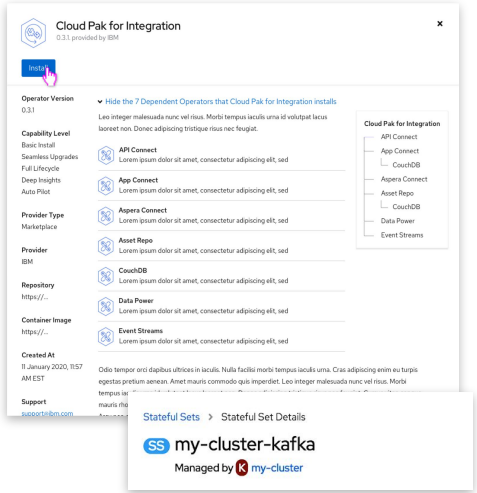
MANAGING Kubernetes

- Column Management
- User Preferences
- Internationalization (I18N), Accessibility (A11Y) Support



EXTENDING Kubernetes

- Dynamic Plugin Support
- Quick Starts Extensions (CRD)
- Declarative Operator UI

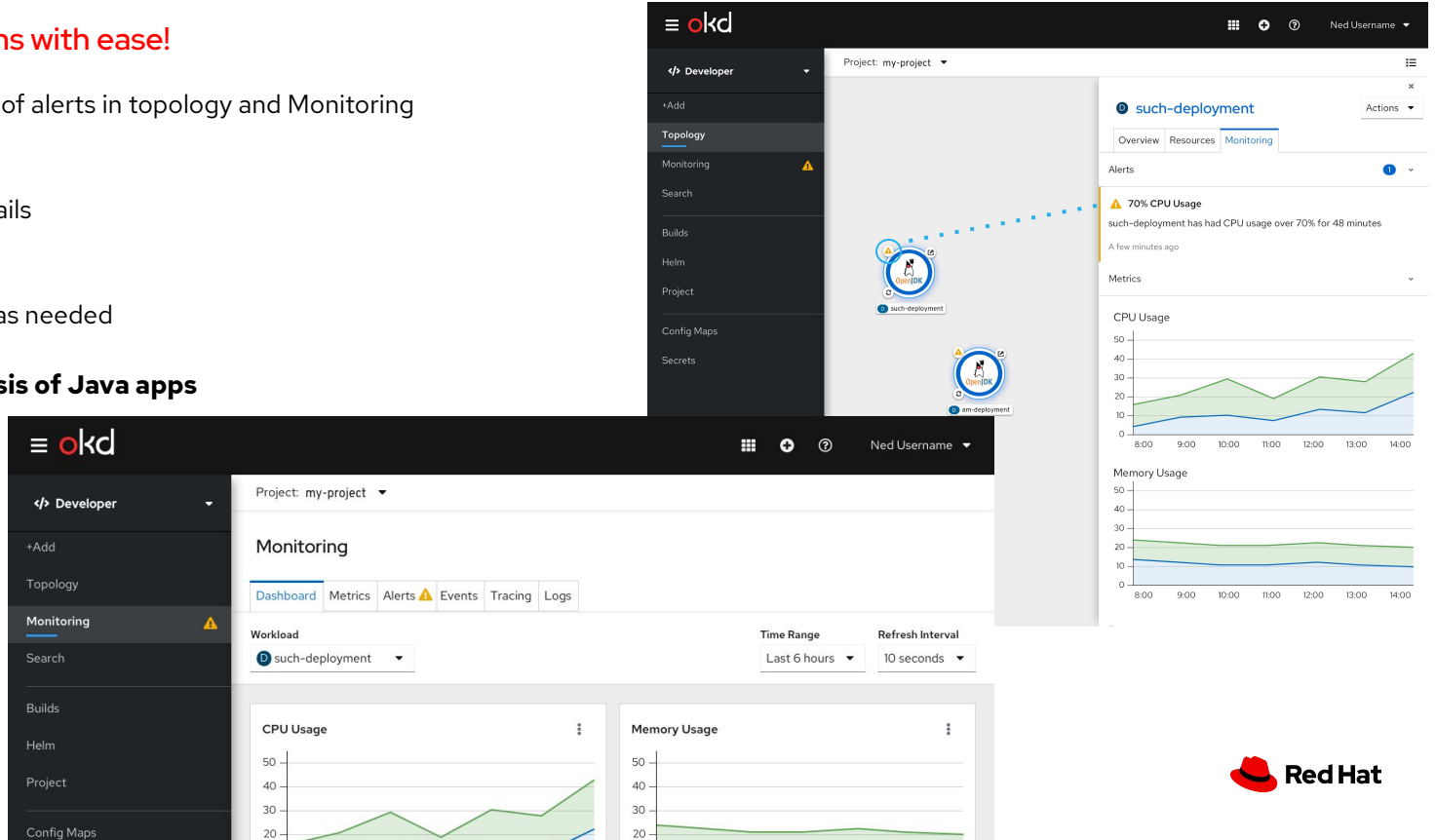


Product Manager: Serena Nichols, Ali Mobrem, Tony Wu

Application Monitoring & Troubleshooting

Monitor your applications with ease!

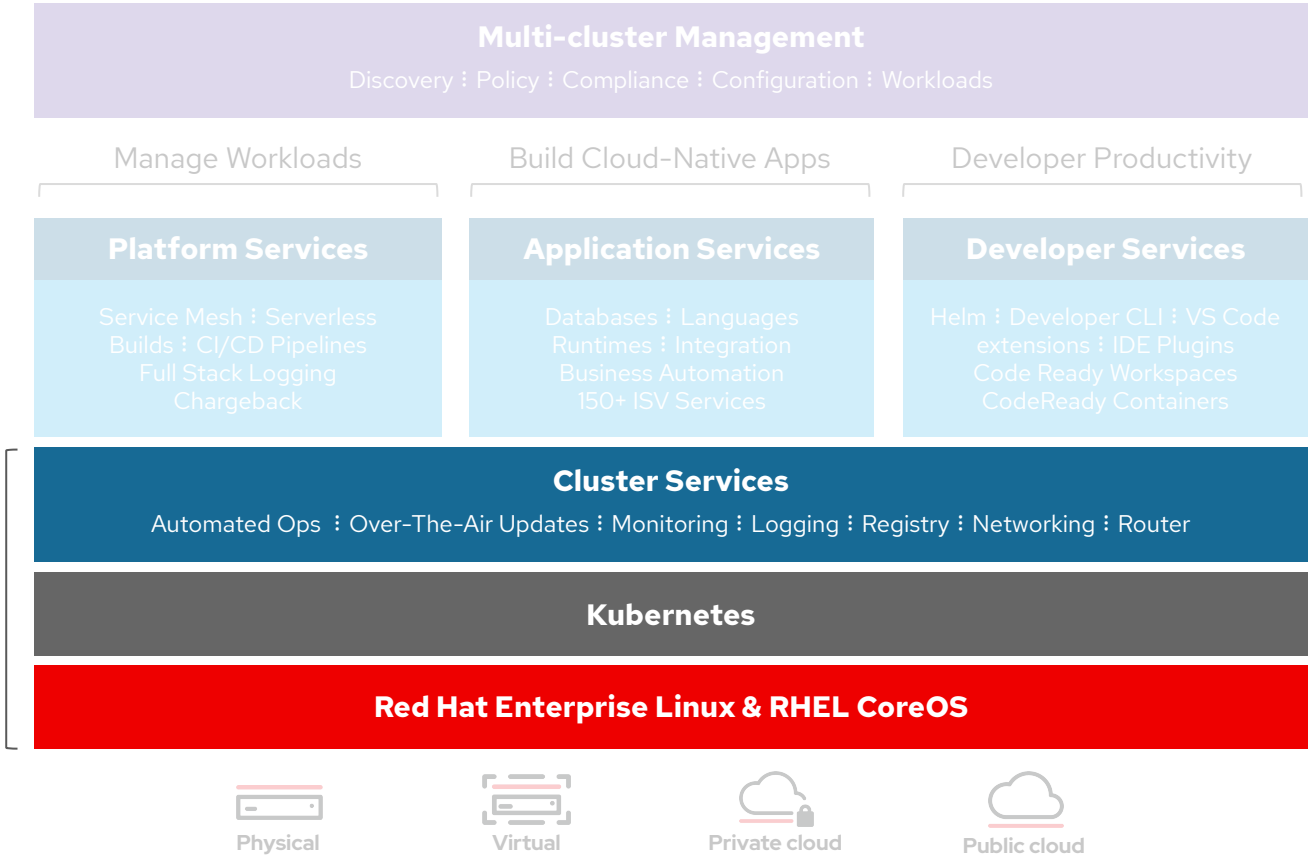
- Improved discoverability of alerts in topology and Monitoring
- Workload monitoring
- Manage alerting rules
- Easy access to Alert Details
- One stop shop to view
  - Custom metrics
  - View alerts & silence as needed
  - Tracing information
  - **Performance analysis of Java apps**
  - Log Access



Product Manager: Serena Nichols

Red Hat

OpenShift Container Platform



Operate Kubernetes

Red Hat

Install / Upgrades Roadmap

Near Term (4.6)

(3-6 months)

PROVIDERS

AWS:

- Allow credentials to be manually provided
- Disable credential checking at install-time
- Removal of root credentials from cluster on Day 2
- Custom endpoints allowing deployment to more regions
- Support for new regions
  - AWS GovCloud, C2S

Azure:

- User-defined routing support allowing fully private OpenShift endpoints (no-public IPs)
- Documenting of SP pass-through
- Support for new regions
  - Azure Government (MAG)

VMware vSphere:

- Support for deploying to VMware vSphere 7.0
- VMware Cloud (VMC) on AWS support via VVD

GENERAL

Upgrades:

- On-premise OpenShift Update Service (OSUS)

Mid Term (4.7)

(6-9 months)

PROVIDERS

AWS: Support for AWS China regions

Azure:

- Document restricted network installation
- Document explicit Service Principal permissions for Day 1 & Day 2
- Support for custom endpoints allowing deployment to more regions
- User-managed keys with Azure Disk Encryption Sets
- Deploy OpenShift to a user-created, empty Resource Group using IPI workflow

Azure Stack Hub *(on-premise)*:

- Installer-provisioned & User-provisioned infrastructure support:

GENERAL

Upgrades:

- Preflight checking of update payloads.

Long Term (4.8/4.9+)

(9+ months)

PROVIDERS

AWS: Support for AssumeRole like workflows

Azure: Support for Azure China region

GCP:

- User defined network tags
- User-managed keys for disk encryption
- Document explicit credential permissions for Day 1 & Day 2

VMware vSphere:

- Support for deploying to Resource Pool

Alibaba Cloud, IBM Cloud, & Packet:

- Installer-provisioned & User-provisioned infrastructure support:

Hyper-V:

- User-provisioned infrastructure support:

GENERAL

Upgrades: OSUS Console Integration

Installer appliance

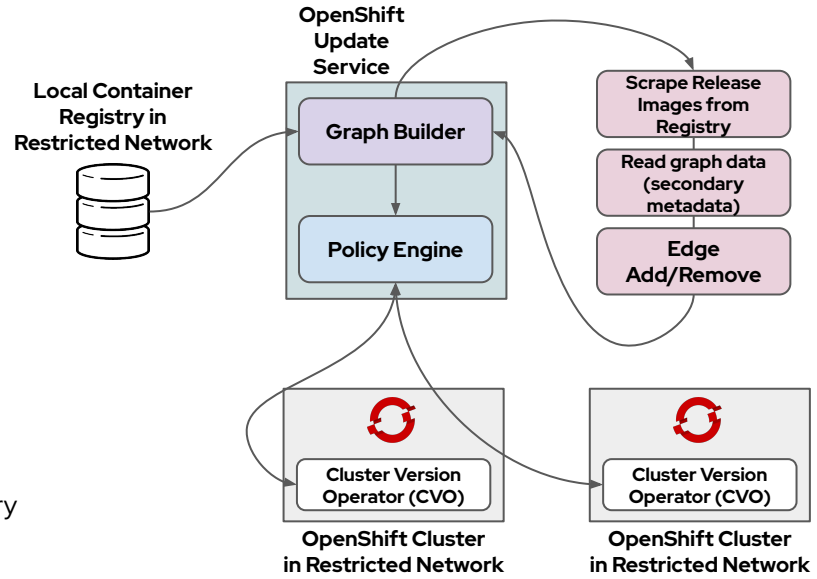
MachineSet-managed control plane

PMs: Katherine Dubé (AWS, Azure, GCP), Maria Bracho (VMware), Peter Lauterbach (RHV), Ramon Acedo Rodriguez (OSP, BM), Duncan Hardie (IBM Z & Power)

OpenShift Update Service

Update manager for your clusters in restricted networks

- OpenShift Update Service (OSUS) is the on-premise release of Red Hat's hosted update service
- Supports the publishing of upgrade graph information to clusters in restricted networks
- Provides clusters with a list of next recommended update versions based on the current version installed on the cluster
- Comprised of two services:
  - **Graph Builder:** Fetches OpenShift release payload information (primary metadata) from any container registry (compatible with Docker registry V2 API) and builds a directed acyclic graph (DAG) representing valid upgrade edges
  - **Policy Engine:** Responsible for selectively serving updates to every cluster by altering a client's view of the graph with a set of filters
- GA release planned for post-4.6 and will be distributed on Operator Hub as an optional add-on operator
- Blog post announcing OpenShift Update Service



Cluster Infrastructure

Near Term
(3-6 months)

API

- Enable Machine Health Check in OpenShift Dedicated out of the box
- Autoscaler rebase to 1.19
- Stronger validation and defaults for the providers machine API

PROVIDERS

- **GCP:** Preemptible VMs
- **Azure:** spot instances
- **AWS:** support of more than one block device

Mid Term
(6-9 months)

API

- **Control Plane compute as MachineSets**
- Automatically spread across Availability Zones

PROVIDERS

- **Out of tree cloud providers**
- **AWS:** add "tenancy dedicated"
- **vSphere:** scaling to/from zero

Long Term
(9+ months)

API

- **Control Plane compute vertical rolling upgrades**
- **Automatic Control Plane compute autoscaling**
- Multi-architecture support
- Native scaling groups
- Telemetry
- Improved Logging

PROVIDERS

- Alibaba cloud

Product Manager: Duncan Hardie

Red Hat

OpenShift Multi-Architecture (IBM Z and Power)

Near Term
(3-6 months)

IBM POWER
- Red Hat Runtimes
- Service Mesh / Serverless
- CodeReady Workspaces
- Local Storage Operator
- iSCSI
- odo: dev-focused CLI
- Pipelines

IBM Z
- Service Mesh / Serverless
- CodeReady Workspaces
- Local Storage Operator
- iSCSI
- odo: dev-focused CLI
- Pipelines

GENERAL
- **Release parity with x86**

Mid Term
(6-9 months)

IBM POWER
- OpenShift Container Storage
- Multus plugins
- Nvidia GPU support

IBM Z
- OpenShift Container Storage
- OpenShift on KVM on Z (UPI)
- Multus plugins

GENERAL
- **ARM Support** (Homogeneous cluster, bare metal and AWS)

Long Term
(9+ months)

IBM POWER
- Red Hat Virtualization (IPI)
- OpenStack (IPI/UPI)

IBM Z
- IBM Cloud Infrastructure Control integration (IPI)

GENERAL
- Heterogeneous clusters (Multi-Architecture support)

Product Manager: Duncan Hardie

Red Hat

RHEL CoreOS & Container Engines Roadmap

Near Term
(3-6 months)

RUNTIMES

- CRI-O remains stable and tied to version of Kubernetes
- Better CRI-O integration with partners using conf.d directory & integration with MCO
- Podman 1.9.6

Mid Term
(6-9 months)

RUNTIMES

- Generally available container images for Buildah & Skopeo
- Tech Preview container image for podman (podman in CRI-O)
- Podman 2.0 (in RHEL 8.3) with Docker compatible API
- Hardware-assisted kernel isolated containers using Kata - useful isolating for super privileged containers

kata containers

virtio-fs

Long Term
(9+ months)

RUNTIMES

- Kernel-separated containers to enable workload expansion on OpenShift - aiming for parity with anything that can run on RHEL
- Full user namespace support

udica

CRIU

Product Manager: Scott McCarty

Red Hat

RHEL CoreOS & MCO Roadmap

Near Term
(3-6 months)

RHEL CoreOS

- **Ignition spec v3 support**
- New CoreOS installer with improved Static Networking UX
- CoreOS extension system
- CoreOS extensions: USBGuard
- Preserve existing data partitions on node redeploy

Machine Config Op.

- Ignition spec v3 support
- Ignition v2 spec upconversion for existing machine configs

Mid Term
(6-9 months)

RHEL CoreOS

- Disk enhancements: RAID devices and multiple LUKS devices
- CoreOS extension: kexec-tools (kdump) for diagnosing kernel crashes

Machine Config Op.

- User tooling to make rendering Ignition files easier
- Improved MachineConfig documentation with more examples
- Removing reboots for certain configuration changes
- Updated boot images for faster cluster auto-scaling

Long Term
(9+ months)

RHEL CoreOS

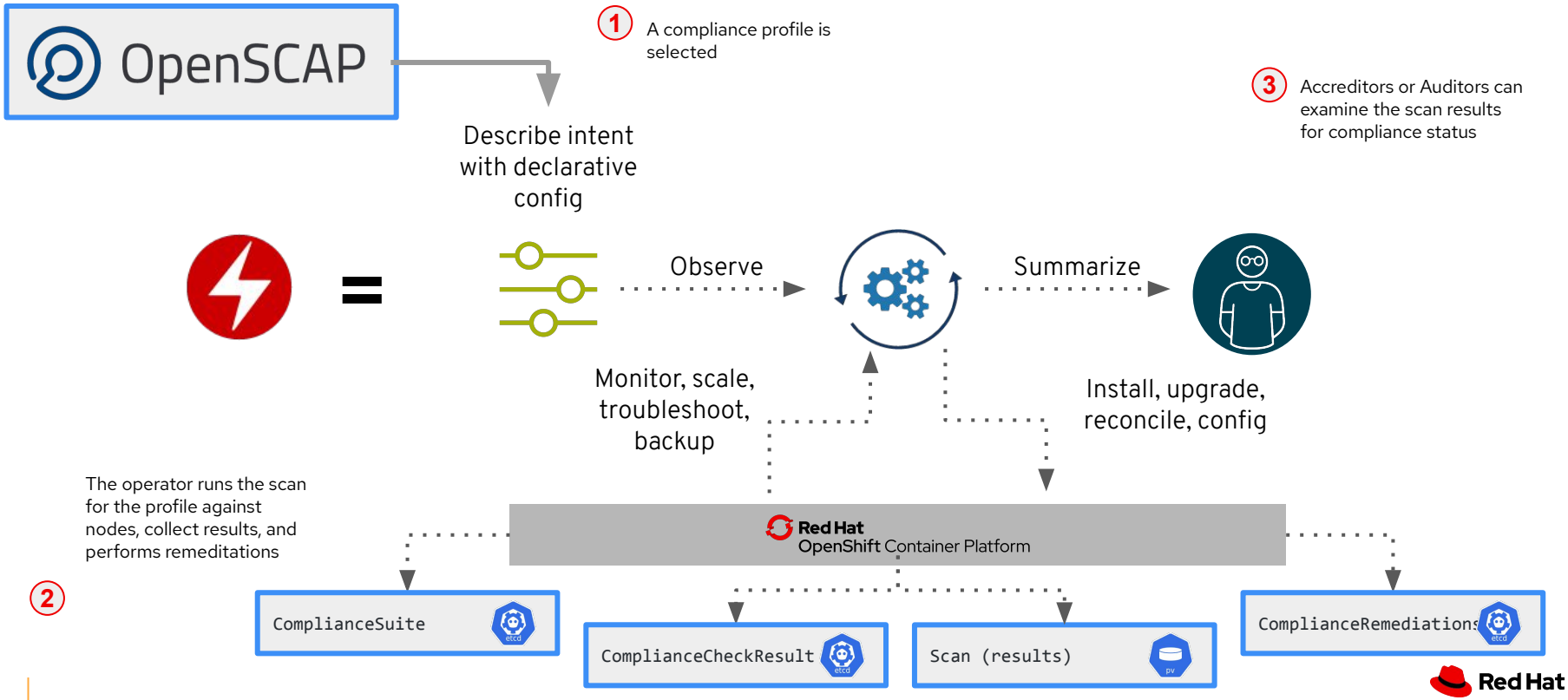
- 3rd party driver enablement for devices needed in early boot

Machine Config Op.

- Machine-config abstractions & improved UX for custom configuration

Product Manager: Mark Russell

Openshift Compliance Operator: Declarative **Security** Compliance



OpenShift Networking Roadmap Highlights

Near Term
(3-6 months = 4.6/4.7)

SDN + Network Edge + Telco Enablement

- OVN GA (non-default)
- **SDN Migration Tool**
- **Switch to System OVS**
- OVS Hardware Offload
- **IPv6 Single/Dual Stack on Control Plane**
- OVN Egress IP/Router/Firewall
- RDMA InfiniBand Support
- **IPSec Support**
- External DNS management
- Ingress Traffic Mirroring/Splitting
- HTTP/2 Edge Terminated Routes
- HAProxy Customizations
- Real-time workloads for vRAN
- FPGA Support
- ...

Mid Term
(6-9 months)

SDN + Network Edge + Telco Enablement

- **OVN GA (default)**
- Kubernetes Services for 2ndary Interfaces
- Improved metrics, telemetry & alerting
- SmartNIC Integrations
- GA Userspace Interface API & Library
- Ingress v2
- Contour
- HAProxy 2.2
- WAF API
- Unification of Ingress v2/Routes
- Latency-sensitive workload enhancements
- Multi-NIC Support
- Adv Features for CNF/5G (eg SR-IOV bonding)
- Routable IPs for Pods
- **MetalLB Support**
- ...

Long Term
(9+ months)

SDN + Network Edge + Telco Enablement

- UI: Network Topology and Analysis Tooling
- Far Edge Cluster Footprint Support
- Bandwidth-Aware Scheduler (QoS)
- OVN No-overlay + BGP Support
- OVN VXLAN option(?)
- Network Policy v2
- ...

Product Manager: Marc Curry

OPERATOR METERING

Near Term
(3-6 months)

Monitoring

- Move the operator into its own lifecycle to better align features and development
- Reduced memory and CPU footprint
- Storage management
- Simplified installation

Mid Term
(6-9 months)

Monitoring

- Documentation improvements and examples
- Additional capabilities for operator lifecycle
- Air-gapped exporting solution
- Simplified requirements for storage
- Application Monitoring

Long Term
(9+ months)

Monitoring

- Additional clouds support for chargeback
- Integration to Grafana for visualization
- Query helper
- Data source correlation
- Correlation of labels and annotations

Product Manager: Sergio Ocón-Cárdenas

Full stack automation installation on Bare Metal

Deploying Red Hat OpenShift on Bare Metal with Installer-Provisioned Infrastructure

Bare Metal Management
Powered by Metal[3] and OpenStack Ironic under the hood

Host Power Management
Redfish, IPMI, iDrac, iLo.

Provisioning over the network
Installation over DHCP/PXE or Virtual Media

Disconnected Installations
RHCOS image cache and disconnected registry

Metal[3]

OpenStack Ironic

```
apiVersion: v1
basedomain: <domain>
metadata:
  name: <cluster-name>
networking:
  machineCIDR: <public-cidr>
  networkType: OVNKubernetes
compute:
- name: worker
  replicas: 2
controlPlane:
  name: master
  replicas: 3
  platform:
    baremetal: {}
```

```
platform:
  baremetal:
    apiVIP: <api-ip>
    ingressVIP: <wildcard-ip>
    provisioningNetworkInterface: <NIC1>
    provisioningNetworkCIDR: <CIDR>
    hosts:
      - name: openshift-master-0
        role: master
        bmc:
          address: ipmi://<out-of-band-ip>
          username: <user>
          password: <password>
        bootMACAddress: <NIC1-mac-address>
        hardwareProfile: default
      - name: openshift-master-1
        role: master
        bmc:
          address: ipmi://<out-of-band-ip>
          username: <user>
          password: <password>
        bootMACAddress: <NIC1-mac-address>
        hardwareProfile: default
```

https://openshift-kni.github.io/baremetal-deploy

PM: Ramon Acedo Rodriguez

Assisted installer

4.6 Tech-Preview

Full stack automation
Cluster managed LB/DNS
Simplified flow - UI support
Hosted on OCM cloud.redhat.com

Minimum prerequisites
No dedicated bootstrap node
3 nodes cluster (M/W)
No DHCP hostname allocation
Jumpstart DNS (POC)
Jumpstart VIPs allocation
Host call home model (simplified network model)

Pre-install Validations
Minimum host requirements
Network connectivity/address matrix
...

Smart defaults
Auto CIDR generation (based on available networks)
Auto node role assignment

Progress monitor and error handling

[Deploying Red Hat OpenShift on Bare Metal is easy..]

PM: Moran Goldboim/Ramon Acedo Rodriguez

https://github.com/openshift/assisted-installer

EDGE ARCHITECTURES

R

Small footprint device edge

Definition

A small footprint deployment with long-life release support. Key building blocks are Red Hat Enterprise Linux and a container runtime.

Examples

Red Hat Enterprise Linux

- Memory-constrained edge servers and gateways
- Intermittently connected IoT / data collection gateways
- uCPE (customer premise equipment)
- Autonomous vehicles

S

Single node edge servers

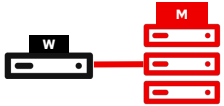
Definition

Red Hat OpenShift deployment on a single box (master + worker) with resources to run full Kubernetes cluster as well as application workloads.

Examples

Red Hat OpenShift Container Platform

- Telco 5G far edge - RAN
- Telco 5G in-vehicle field operations
- Telco 5G sparsely populated areas
- Asset monitoring



W

Remote worker nodes

Definition

Red Hat OpenShift masters reside in a central location, with reliably-connected workers distributed at edge sites sharing a control plane.

Examples

Red Hat OpenShift Container Platform

- Telco 5G far edge - RAN
- IoT / data collection gateways

3

Edge clusters (3+ node HA)

Definition

Red Hat OpenShift masters and workers reside on the same node. High Availability (HA) setup with 3 servers.

Examples

Red Hat OpenShift Container Platform

- Telco 5G near edge and MEC
- Edge AI & data pipelining
- Smart manufacturing
- Remote office
- Disconnected clusters

Single node

3+ node HA

Thank you

linkedin.com/company/red-hat

youtube.com/user/RedHatVideos

Red Hat is here to help

Responding to COVID-19 requires collaboration, transparency, and the free exchange of expertise.

Ways to contact us

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