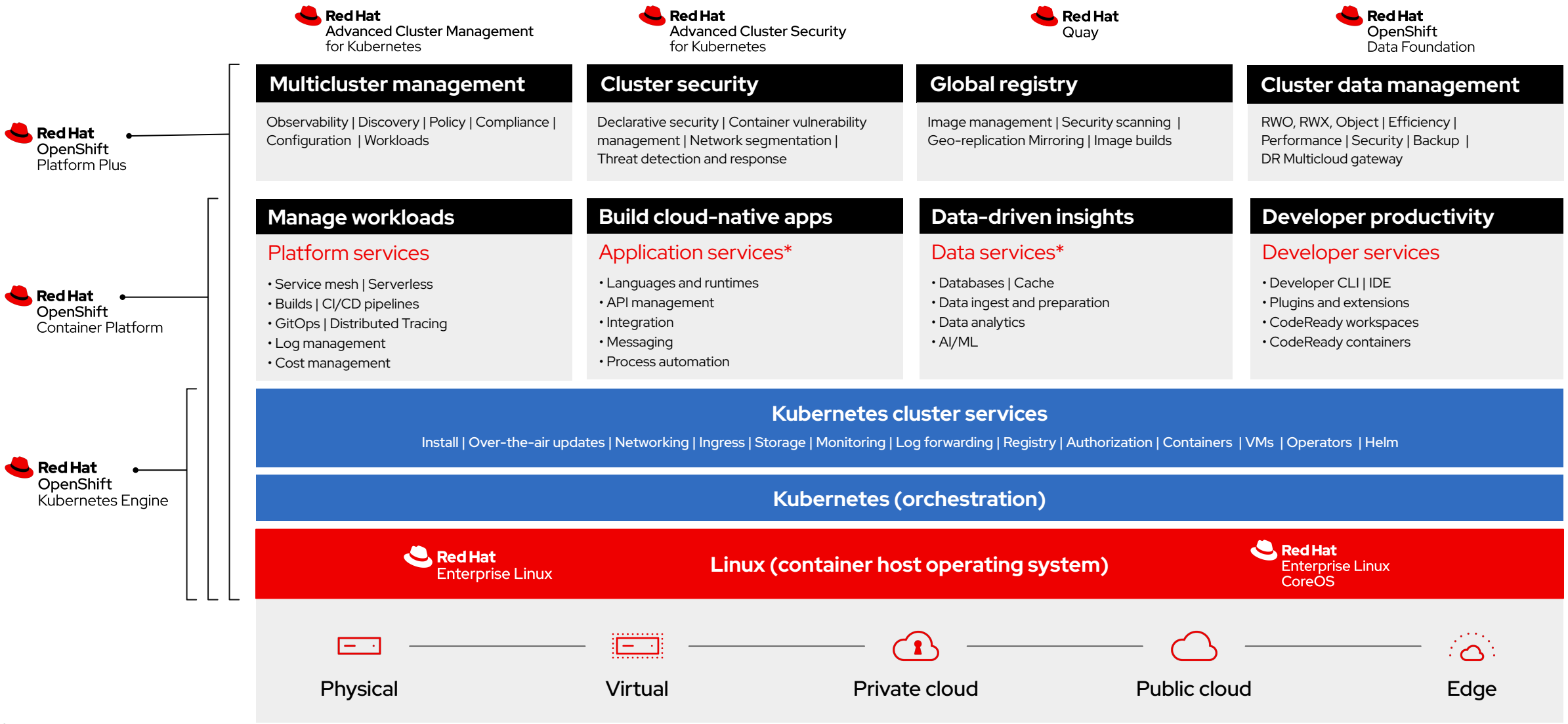
Red Hat OpenShift

What's New in OpenShift 4.10

OpenShift Product Management

Red Hat

Red Hat open hybrid cloud platform



* Red Hat OpenShift® includes supported runtimes for popular languages/frameworks/databases. Additional capabilities listed are from the Red Hat Application Services and Red Hat Data Services portfolios.

** Disaster recovery, volume and multicloud encryption, key management service, and support for multiple clusters and off-cluster workloads requires OpenShift Data Foundation Advanced

OpenShift 4.10

INSTALLER FLEXIBILITY

- IBM Cloud (IPI) is GA
- Azure Stack Hub (IPI) is GA
- Alibaba Cloud (IPI) is Tech Preview
- AWS on ARM is GA
- Pre-install OCP at factory for OEMs

AUTOMATED OPERATIONS

- Reduce worker reboots on EUS→EUS
- Conditional cluster updates based on risk
- New Mirror Registry for disconnected
- Improved mirroring CLI workflow

WORKLOAD EXTENSIBILITY

- New Compliance Operator profiles
- Sandboxed Containers are GA
- Virtualization supports Service Mesh
- MetalLB with BGP for external services

Kubernetes 1.23

Major Themes and Features

- Clusters default to Dual Stack networking
  - Feature gate is removed, meaning IPv4 and IPv6 is default
  - In OpenShift, dual-stack has been GA since 4.8
- PodSecurity graduates to Beta
  - Red Hat is making upstream contributions here
  - OpenShift will introduce pod security admission (~4.11) and fully support it in the future along with SCCs side by side
- CSI Migration
  - Replacement of existing in-tree storage plugins with a corresponding CSI driver
  - OpenShift will seamlessly migrate in the future
- Software Supply Chain
  - SLSA Level 1 Compliance in the Kubernetes Release Process

CRI-O 1.23

Kubernetes 1.23

OpenShift 4.10

Blog: https://kubernetes.io/blog/2021/12/07/kubernetes-1-23-release-announcement/

OpenShift Roadmap

Q1 2022

DEV
- Unprivileged builds in OpenShift Pipelines
- Custom Tekton Hub on OpenShift
- Automatic pull of RHEL entitlements GA
- BuildConfig CSI volume mounts
- Tekton Chains (sigstore) TP
- OpenShift sandboxed containers GA

APP
- Dynamic Plugins TP
- Unified Console(ACM +OCP) TP
- Serverless:Knative Kafka Broker and Sink TP
- Operator SDK: Hybrid Helm Operator plugin TP
- Operator SDK: Digest-based bundle (disconn.)

PLATFORM
- Alibaba Cloud (IPI) technology preview
- IBM Cloud & Azure Stack Hub (IPI)
- OpenShift on ARM (AWS and Bare Metal)
- Zero Touch Provisioning and Central infrastructure Management in ACM is GA
- External Control Planes with HyperShift in ACM TP
- MetalLB BGP support
- ExternalDNS technology preview
- Disconnected mirroring simplification
- Service Mesh on VMs

HOSTED
- ROSA: Cluster manager UI for ROSA provisioning
- ROSA/OSD: Cluster hibernation
- OCM: Updated OSD cluster creation UI
- OSD: PrivateLink
- ROSA: Cluster-wide proxy

Q2 2022

DEV
- Private Preview of App Studio, a hosted dev exp
- OpenShift Serverless Functions IDE Experience
- OpenShift Dev CLI (odo onboarding & more)
- GitOps ApplicationSets GA
- OpenShift Pipelines on Arm
- Extended pipeline history
- Custom Argo CD plugins support

APP
- OpenShift Serverless Functions GA
- Encryption pf inflight data natively in Serverless
- Serverless:workflow orchestration TP
- Serverless: Knative Kafka Broker and Sink GA
- Operator Maturity increase via SDK
- OLM operator update retries

PLATFORM
- Nutanix (UPI/IPI)
- SRO manages third party special devices
- Additional capabilities for Windows containers: health management, 3rd party CNI (like Calico)
- NetFlow/sFlow/IPFIX Collector
- Introduce Gateway API

HOSTED
- ROSA/OSD: FedRAMP High on AWS GovCloud
- ROSA/OSD/ARO: GPU Support
- ROSA/OSD: ISO27017+ISO27018
- ROSA/OSD: Additional instance types
- ARO: Upgrades through cluster manager
- Cost management understands IBM Cloud IaaS

H2 2022+

DEV
- OpenShift Builds v2 & Buildpacks GA
- Shared Resource CSI Driver GA
- Image build cache
- Pipelines: Manual approval, pipeline-as-code GA
- Reusable Pipelines & concurrency control
- GitOps on Power

APP
- File-based operator catalog management
- Operator SDK for Java/Quarkus TP
- Integration of Knative(Serverless) with KEDA
- Multi Tenancy for Serverless
- Serverless Cost Management

PLATFORM
- Azure China
- Utilize cgroups v2
- Expand cloud providers for OpenShift on ARM
- Enable user namespaces
- Windows Containers: CSI proxy, improved monitoring/logging & more platforms supported
- Gateway API / Ingress Controller support
- Network Topology and Analysis Tooling
- SmartNIC Integrations
- eBPF Support
- Network Policy v2 & OVN no-overlay option
- BGP Advertised Services (FRR)
- SigStore style image signature verification

HOSTED
- Cost mgmt integration to Subs Watch, ACM
- Detailed Quota Usage in cluster manager
- ROSA/OSD: AWS Dedicated instances
- ROSA/OSD: Terraform provider

Notable Top RFE's and Components

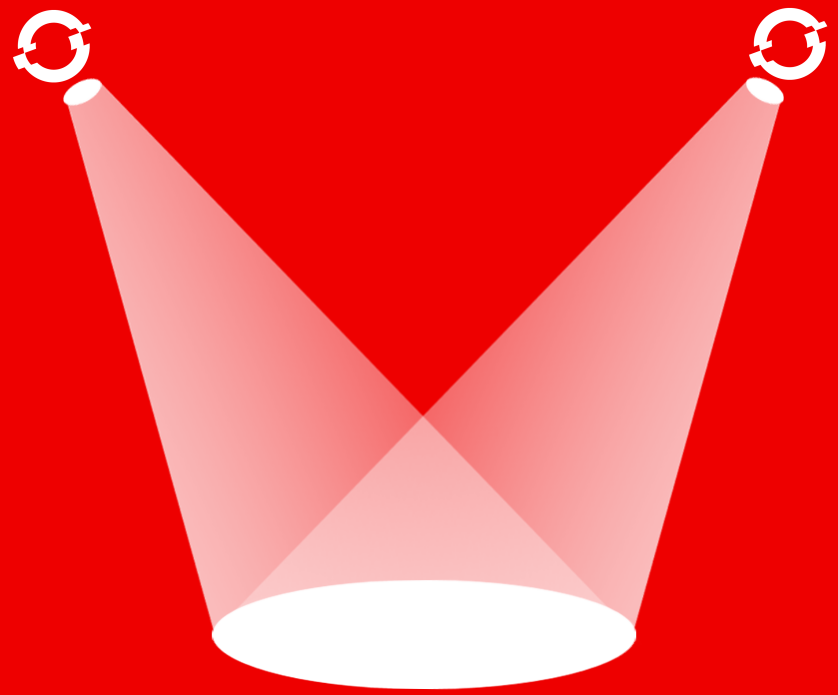
Top Requests for Enhancement (RFEs)

- Support for Day-2 changes in static network configuration
  - Static network configuration can become obsolete and need to be updated after cluster deployment.
- Capture MachineConfigDaemon Events in the Operator Events
  - Provides a way to check configuration regularly so admins know about potential problems sooner.
- Force write MachineConfig to Node
  - A way to align nodes configurations back to the rendered one in case the files monitored by MCO become misconfigured on UPI installations.
- Support for AvailabilitySets in MachineSets for Azure
  - Some Azure Regions do not support multiple zones, high availability can be achieved to some extent by using AvailablitySets.
- Ability to change MTU of openshift-sdn post installation
  - Gives a way to adapt cluster setting to the environment on Day-2.

45 RFEs

shipped in **OpenShift 4.10** for customers

OpenShift 4.10 Spotlight Features



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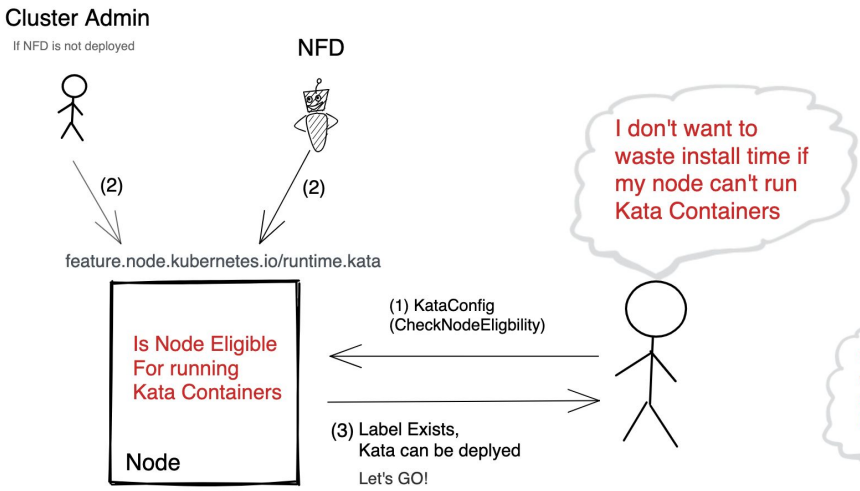
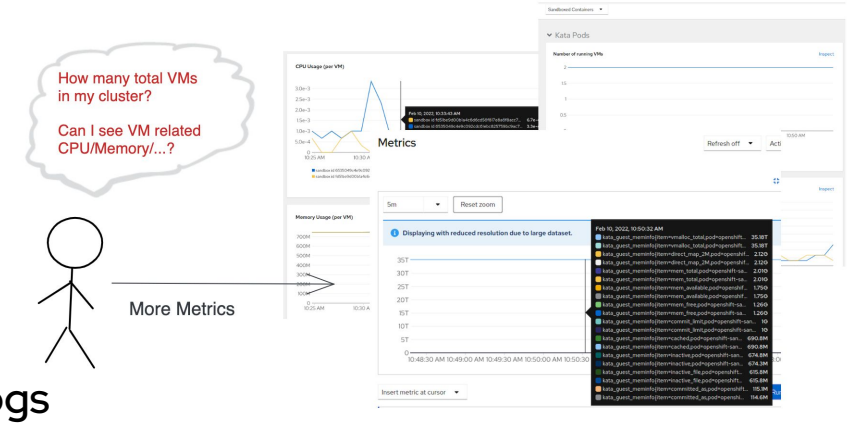
OpenShift sandboxed containers

Graduated from *Tech Preview* to **GA**

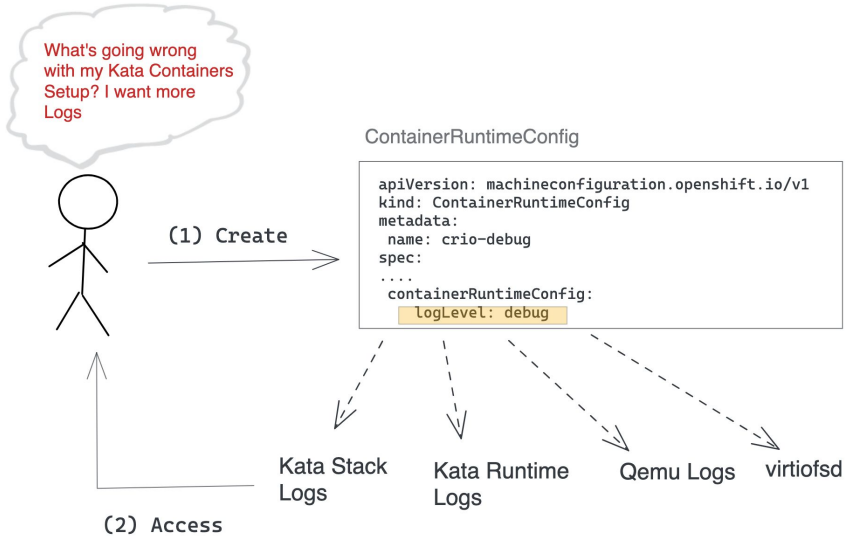
1. Pre-install checks for Node eligibility to run sandboxed containers



2. Added additional metrics



3. Increased debuggability -> more logs



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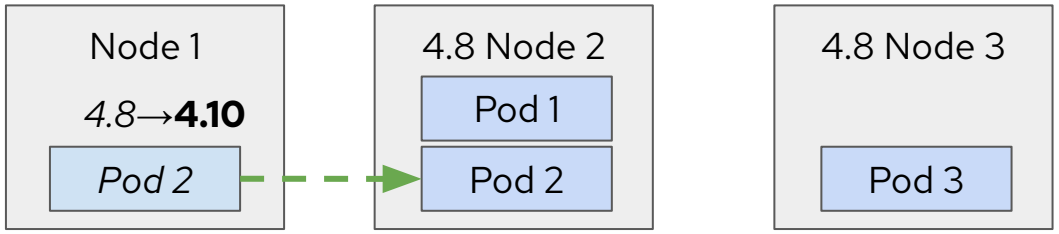
EUS to EUS Upgrade Experience

Quicker, Safer upgrades and less disruptions to workloads

EUS-aware Scheduler

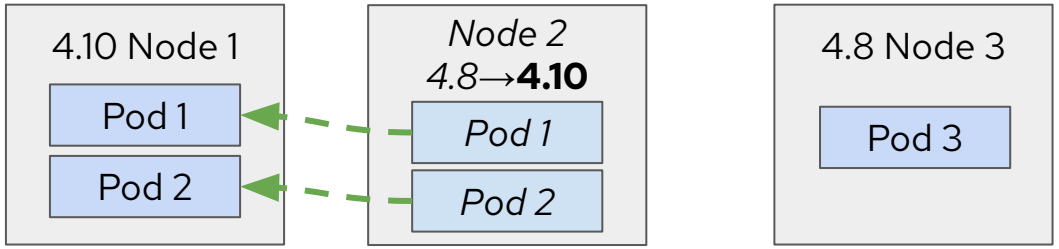
- EUS-to-EUS upgrade from 4.8.14+ to 4.10 incurs **single reboot** of non-master nodes
- **Upgrade-aware** scheduler steers rescheduled Pods to updated Nodes
- Pods restart **less frequently**

Upgrade drains Node1. Pod 1 moves from Node 1 to Node 2.



Pods relocate from Node 2 to Node 1.

Node 3 is ready to upgrade and will get new workloads afterwards.



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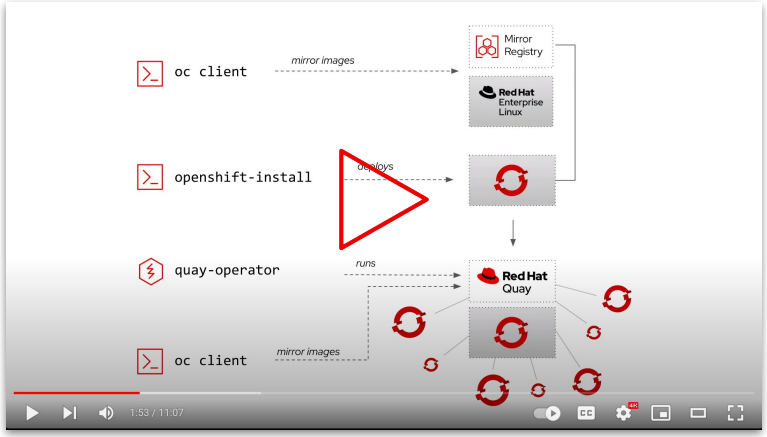
OpenShift Disconnected

New: Single command to get a registry



- Local all-in-one Quay instance on RHEL 8 to get customers a supported mirror registry at no additional cost for their first cluster
- More details: Technical Enablement Deck
- Next up (past 4.10 GA): Update support

New: Single command to mirror content

Tech Preview

- A single CLI tool to mirror all OCP content (images, operators, helm charts): `oc mirror`
- Smart: maintains update paths of OCP & operators
- Declarative: config to filter for particular OCP & operator catalogs / releases / channels
- Fast: Incremental mirroring

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Three new Compliance Operator profiles

Customers will be able to Scan, Report and Remediate Compliance issues using the following profiles

PCI-DSS

The Payment Card Industry Data Security Standard (PCI DSS) is a set of security standards designed to ensure that ALL companies that accept, process, store or transmit credit card information maintain a secure environment.

FedRAMP Moderate

FedRAMP moderate impact level is the standard for cloud computing security for controlled unclassified information across federal government agencies. The moderate impact level is appropriate for CSPs that will handle government data that is not publicly available.

NERC CIP

NERC Critical Infrastructure Protection (NERC CIP) is *a set of requirements designed to secure the assets required for operating North America's bulk electric system* to protect critical cyber assets and minimize risk and manipulation by bad actors seeking to cause damage.

OpenShift on Arm

- Announcing GA of support for OpenShift on Arm platforms
  - AWS Full Stack Automation (IPI)
  - Bare Metal Pre-existing Infrastructure(UPI)
- It's about choice, run on the architectures that best suit your workloads
- OpenShift "core" parts for this release
  - Logging
  - ACM
  - Storage: EBS, NFS only
- Hardware support
  - What RHEL supports
  - Certified systems on HCL for best experience but …
  - Also systems that meet Arm SystemReady/ServerReady specification*

Fully Automated Installers (IPI)	✓
Customizable Installers (UPI)	✓
RHEL or CoreOS entitlement	✓
CRIO Runtime	✓
Over the Air Smart Upgrades	✓
Operating System (CoreOS) Management	✓
Enterprise Secured Kubernetes	✓
Kubectl and oc automated command line	✓
Auth Integrations	✓
Operator Lifecycle Manager (OLM)	✓
Administrator Web console	✓
Node Feature Discovery	✓
Embedded OperatorHub	✓
Embedded Marketplace	✓
Embedded Registry	✓
Helm	✓

Cluster Monitoring	✓
Log Forwarding	✓
Telemeter and Insights	✓
OVS and OVN SDN	✓
HAProxy Ingress Controller	✓
Ingress Cluster Wide Firewall	✓
Egress Pod	✓
Ingress Non-Standard Ports	✓
Network Policies	✓
IPv6 Single and Dual Stack	✓
CNI Plugin ISV Compatibility	✓
CSI Plugin ISV Compatibility	✓
Service Binding Operator	✓
Platform Logging	✓
OpenShift Elasticsearch Operator	✓
Developer Web Console	✓

* May be subject to 3rd Party support policy

MetalLB BGP Support

- MetalLB has two modes to announce reachability information for load balancer IP addresses:
  - Layer 2 (4.9)
  - BGP (4.10)
- BGP (FRR) mode: Traffic can target multiple nodes – routers can perform load balancing across the cluster using ECMP
  - Active / Active configuration handled by the external routers
  - Extra configuration required to establish BGP sessions
  - BFD Support
  - Refusing incoming routes
  - BGP Peer node selector
  - iBGP and eBGP, single and multihop

```
apiVersion: metallb.io/v1beta1
kind: AddressPool
metadata:
  name: addresspool-sample1
  namespace: metallb-system
spec:
  protocol: bgp
  addresses:
    - 172.18.0.100-172.18.0.255
```

```
apiVersion: metallb.io/v1beta1
kind: BGPPeer
metadata:
  name: peer-sample1
  namespace: metallb-system
spec:
  peerAddress: 10.0.0.1
  peerASN: 64501
  myASN: 64500
  peerPort: 179
  holdTime: "180s"
  keepaliveTime: "180s"
  password: "test"
```

RHEL entitlement management for image builds

Pull entitlements

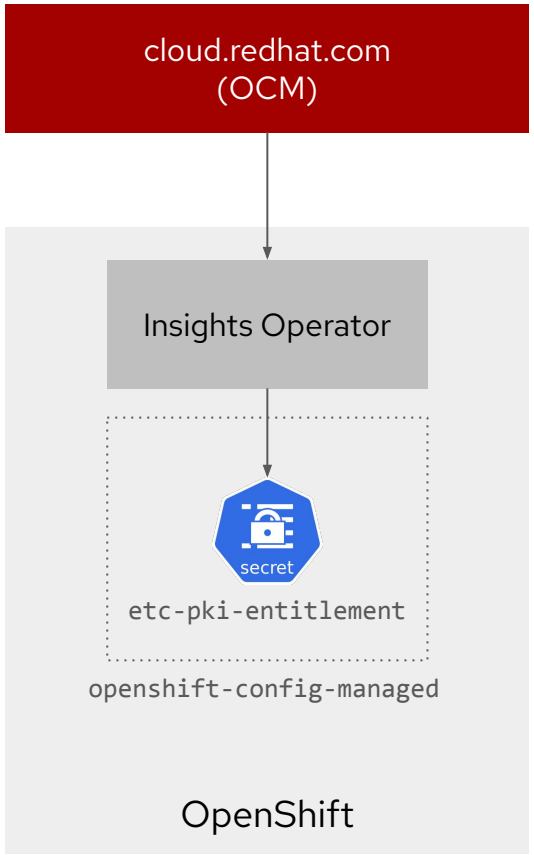
- Insights Operator manages and refreshes cluster entitlements **(GA)**
- Simple Content Access (SCA) must be enabled on customer's account
- NOT available for OSD/ROSA/ARO

Manage access

- Shared Resource CSI Driver (Tech Preview)
- Provide tenants access to entitlements without sharing certificates

Use entitlements

- Mount shared entitlements in BuildConfigs (Tech Preview)
- Mount entitlement secret in BuildConfigs, Pipelines, Pods, etc **(GA)**



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Console

Multi-Cluster Focused

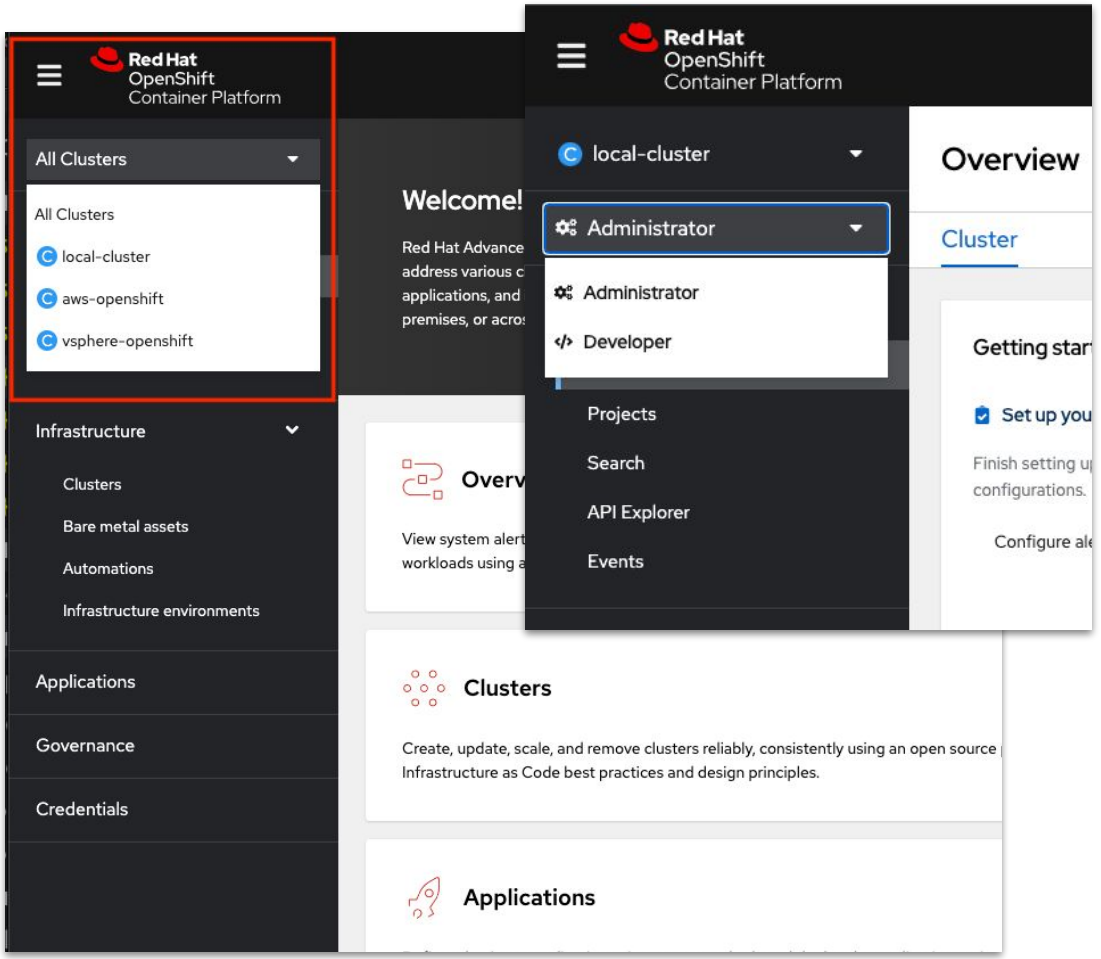
Selectable Cluster Inventory

Tech Preview

What is this console integration?

Experience allows users to select clusters across their company as they enter the hub cluster's OCP console! Bringing together 3 tools into one UX:

- OpenShift Console (OCP) - main user experience for all individual clusters
- Multicluster Engine (MCE) - offers basic cluster inventory/create/update/destroy
- Advanced Cluster Management (ACM) - full multi-cluster management



Moving from single cluster to a fleet of OpenShift:

1. Start deploying apps on a single OpenShift cluster
2. Use the Multicluster Engine to create more clusters and enable RBAC controlled multi-cluster views
3. Upgrade with Advanced Cluster Management to simplify multi-cluster configuration, application deployment, observability, networking, and more.

All OCP customers get MCE included in their subscription

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Console Extensibility

Dynamic Plugins

Tech Preview

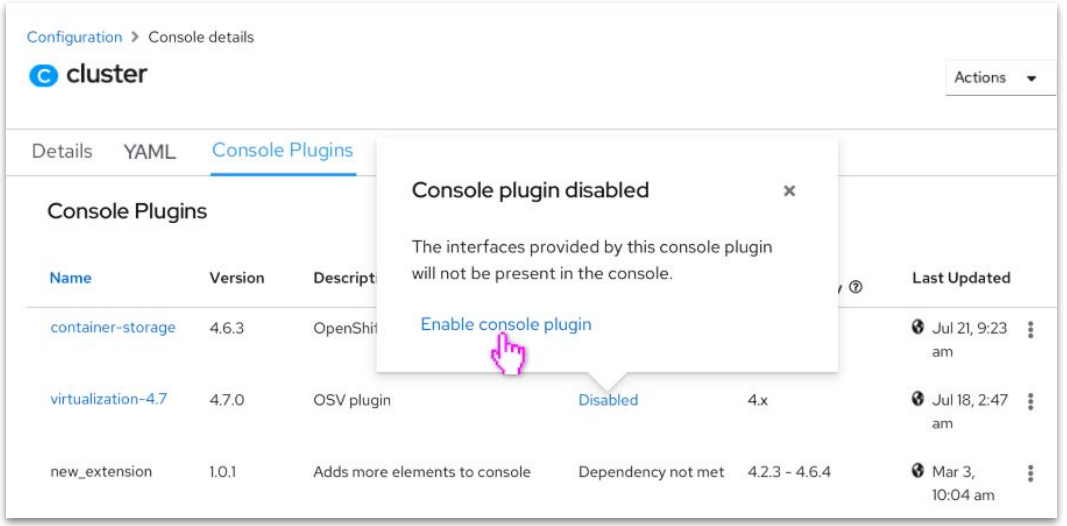
What is a dynamic plugin?

- Dynamic Plugin enables partners & customers to build high quality, unique user experiences ***natively*** in the OCP Console !
  - Update existing perspectives
    - Add new flows, pages, actions, …. to either the Admin or Dev perspectives
  - Add new perspectives
    - Create persona or task based perspectives based on your needs

Dynamic Plugin Technical Details

How does it work?

- Based on webpack 5 module federation
- Built with PatternFly 4 components
- Plugins are dynamically loaded at runtime & dis/enabled via Console UI
- Plugins can be updated independently of the host application
- Plugins provide extension points or whole perspectives
- ACM is built with Dynamic Plugins and will give us the ability to extend the Multi Cluster view.

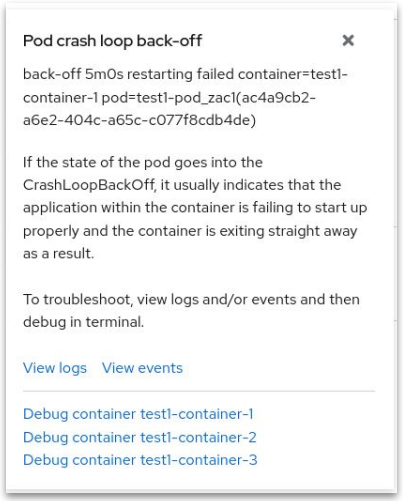


Common Console Updates

Pod Debug Mode

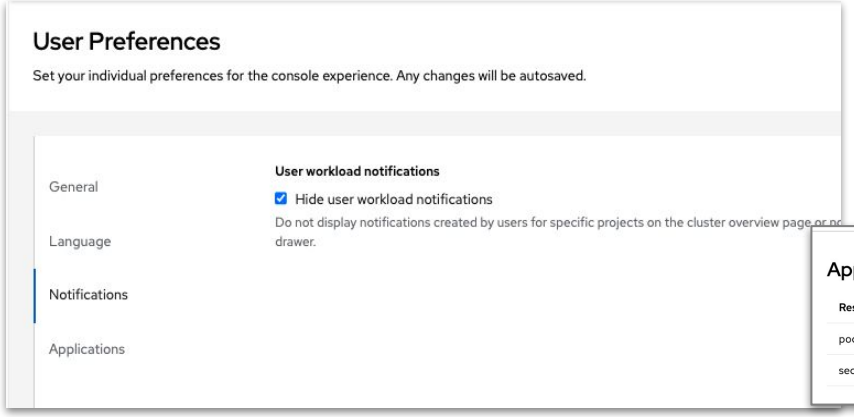
How do I debug a application that fails on startup?

- Quickly troubleshoot miss behaving pods from the UI CrashLoopBackOff
  - Same as running oc debug pod
  - Starts each container in a interactive shell
    - Stops the pod from CrashLooping
    - Check environment variables, config files, …
    - Access to logs & events

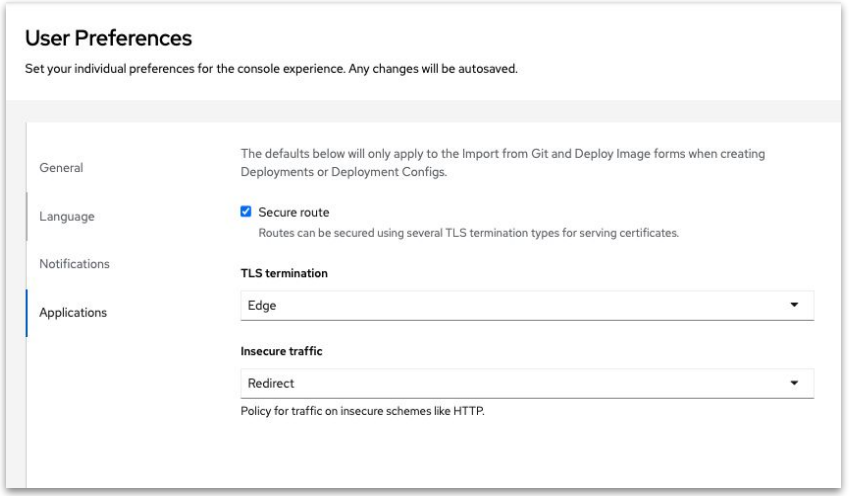


User Preferences updates

How do I hide user workload notifications?



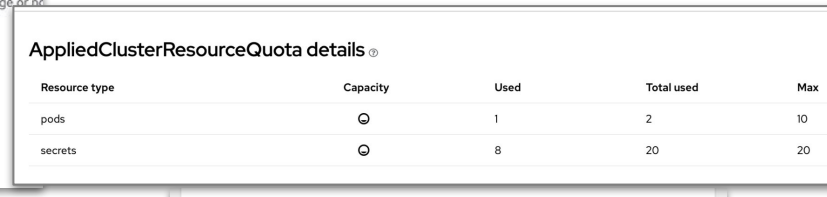
Change your defaults for route creation in creation flows!

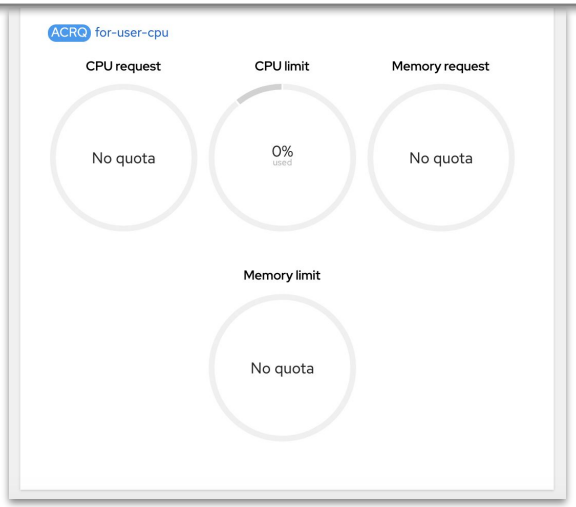


Improved Quota Visibility

How do I see how much quota is left?

- Non admin users can now see their usage of the AppliedClusterResourceQuota





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Platform Services

OpenShift Builds

Classic Builds

- Shared Resource CSI Driver (Tech Preview)
  - Share secrets/configmaps (e.g. entitlement certs, git credentials, and registry credentials)
    across namespaces for use by tenants
  - Control access to shared secrets (e.g. tenants can consume but not see content)
- Mount CSI volumes in BuildConfigs (Tech Preview)
  - Mount a shared secret/configmap in BuildConfig for use during image build

Shipwright Builds

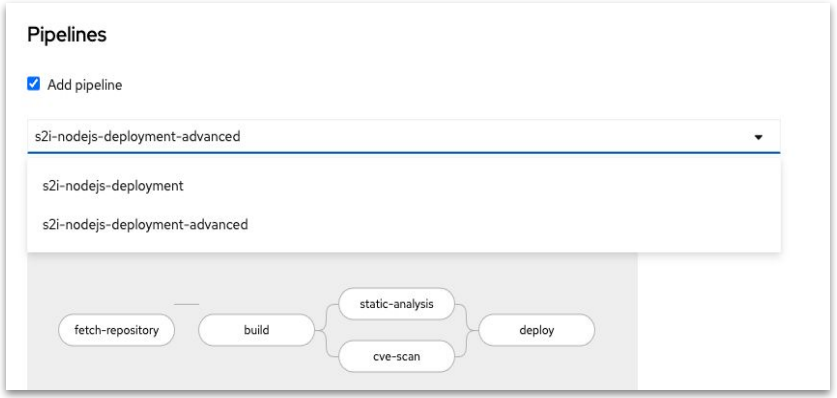
- Build images from source code in local directory

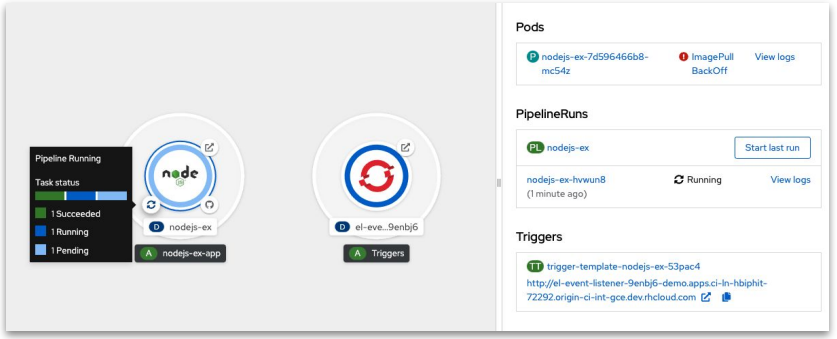
```
myapp$> shp build upload myapp-build
```

- Custom annotations on output images
- Volume support

OpenShift Pipelines

- OpenShift Pipelines 1.7
- Pipeline as code (Tech Preview)
- TaskRun and image signing with Tekton Chains (Tech Preview)
- In-cluster Tekton Hub for custom Task curations (Tech Preview)
- Run Tasks in kernel user namespace
  (root in container, non-root on host)
- Unprivileged Dockerfile and S2I image builds
- Triggers emit events in the user namespace to simply debugging
- OpenShift sandboxed containers verified runtime for pipelines
- Pipeline UI enhancements in Dev Console
  - Support for multiple pipeline templates per runtime
  - Webhooks created when importing apps from Git
  - Tasks in Tasks selector within pipeline builder link to docs in Tekton Hub






```yaml
apiVersion: tekton.dev/v1beta1
kind: PipelineRun
metadata:
 generateName: build-deploy-run-
spec:
 pipelineRef:
   name: build-deploy
 podTemplate:
   runtimeClassName: kata
```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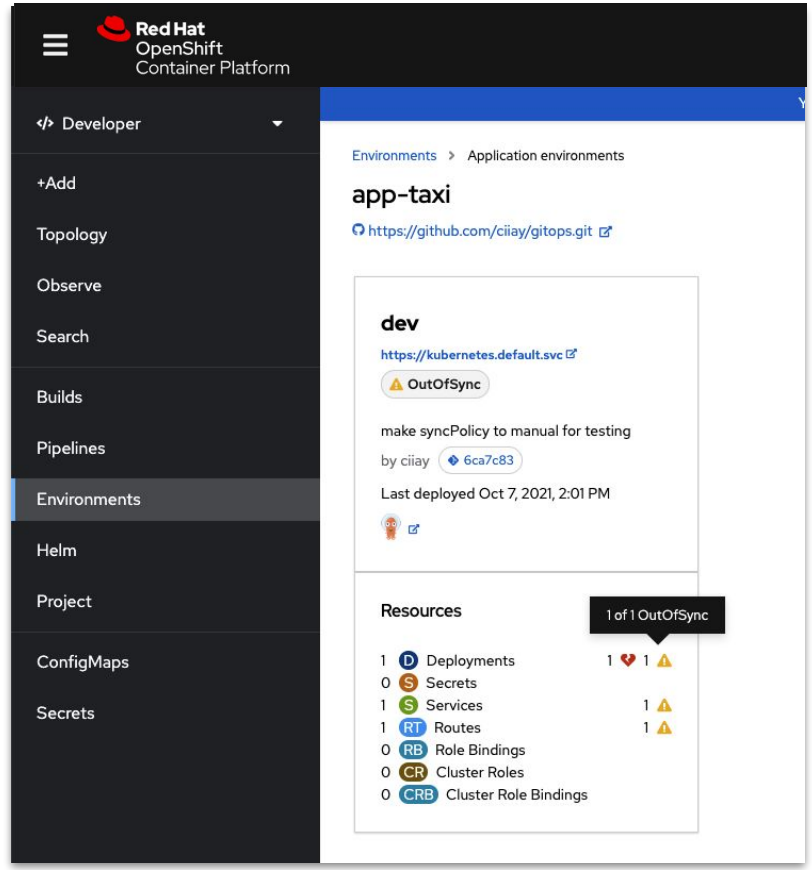
OpenShift GitOps

- OpenShift GitOps 1.5
- Provides Argo CD 2.3
- New generators in ApplicationSets
  - Generate Application for pull requests
  - Merge result of multiple generators
- Support for ignoring managed fields by specific managers
- Respects “ignore differences” setup during sync for objects and fields owned or mutated by operators
- [Dev Console] Health status for resources added



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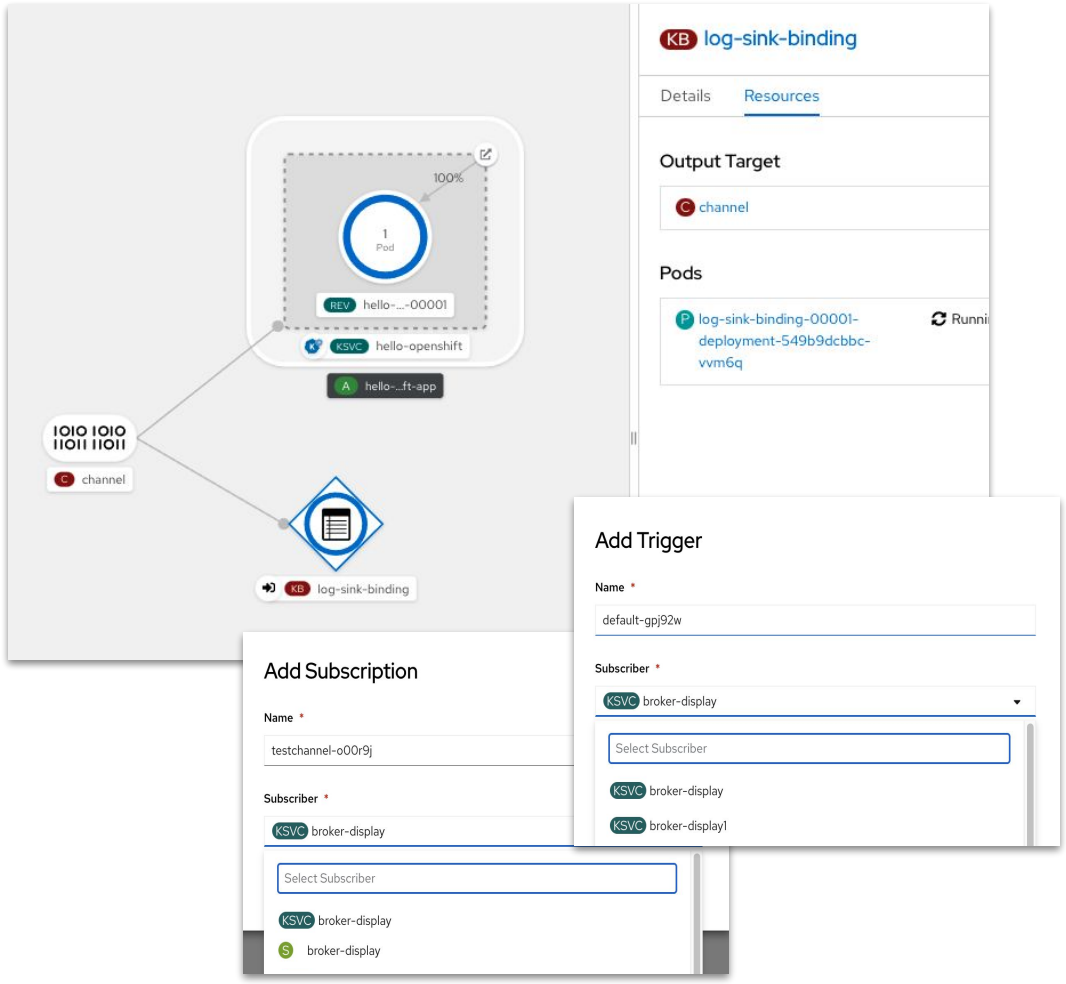
OpenShift Serverless

Key Features & Updates

- Update to Knative 1.0
- Apache Kafka based Knative Broker (Tech Preview)
  - Maximises Kafka performance and avoids events duplications
  - Prevents tight coupling with Kafka and eliminated the use of Kafka client by event producers
- Knative Kafka Sink (Tech Preview)
  - Recieve CloudEvents from Source/Subscription/Trigger on a Kafka topic, without writing custom code
- Developer Experience:
  - Support for developing, debugging and testing EDA applications by sending CloudEvents via the kn CLI (Tech Preview)
  - Visualization of Event Sink on Dev Console
- Functions (Tech Preview)
  - Node.js,TypeScript, Quarkus, Python, Rust, Go & Spring Boot
  - Available on MacOS , RHEL, Windows with Docker and/or Podman
  - Local Development and Testing for quick iteration

Event Sink & Event Source visualization



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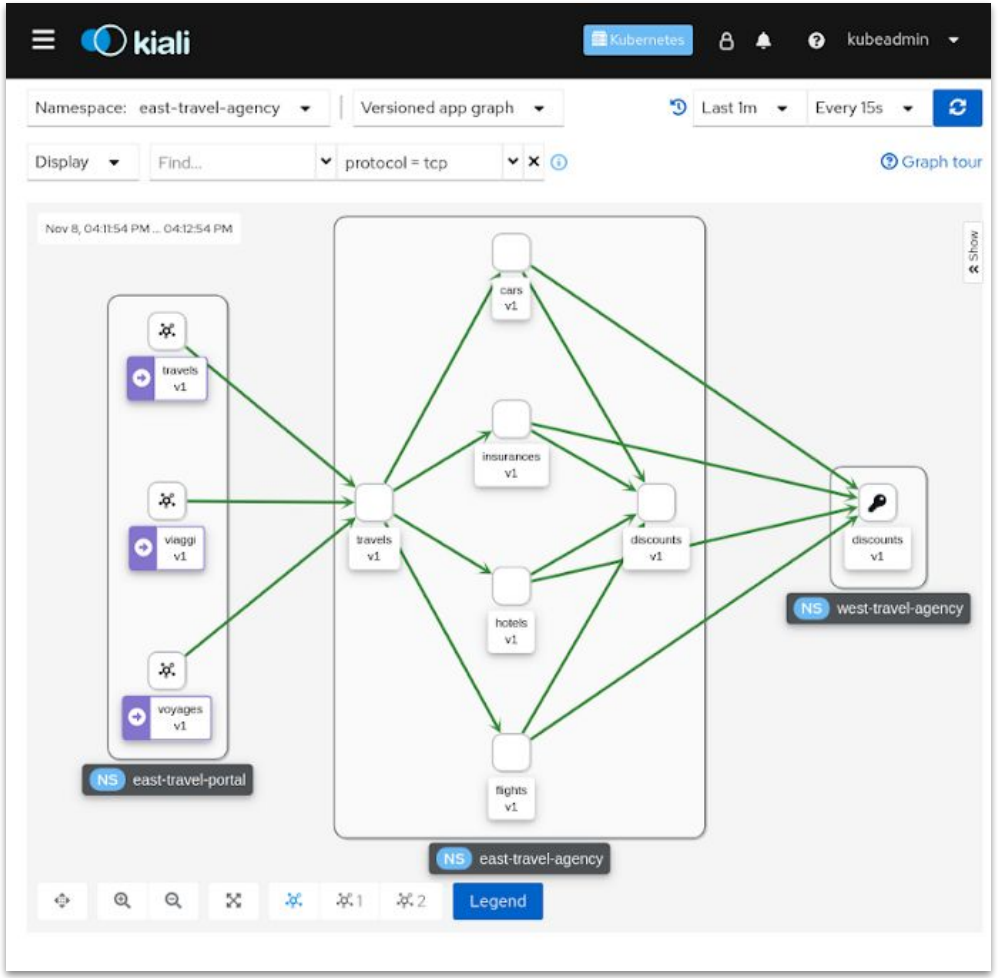
OpenShift Service Mesh

- OpenShift Service Mesh 2.2 (ETA: April 2022) will be based on **Istio 1.12** and **Kiali 1.47+**.
- Istio 1.12 introduces **WasmPlugin** API which will deprecate the ServiceMeshExtensions API introduced in 2.0.
- Service Mesh 2.1.1+ and 2.2 allows users to override and **customize Kubernetes NetworkPolicy creation**.
- Kiai updates in Service Mesh 2.2:
  - Enhancements to improve viewing and navigating large service meshes
  - View internal certificate information
  - Set Envoy proxy log levels
  - New Service Mesh Federation demo



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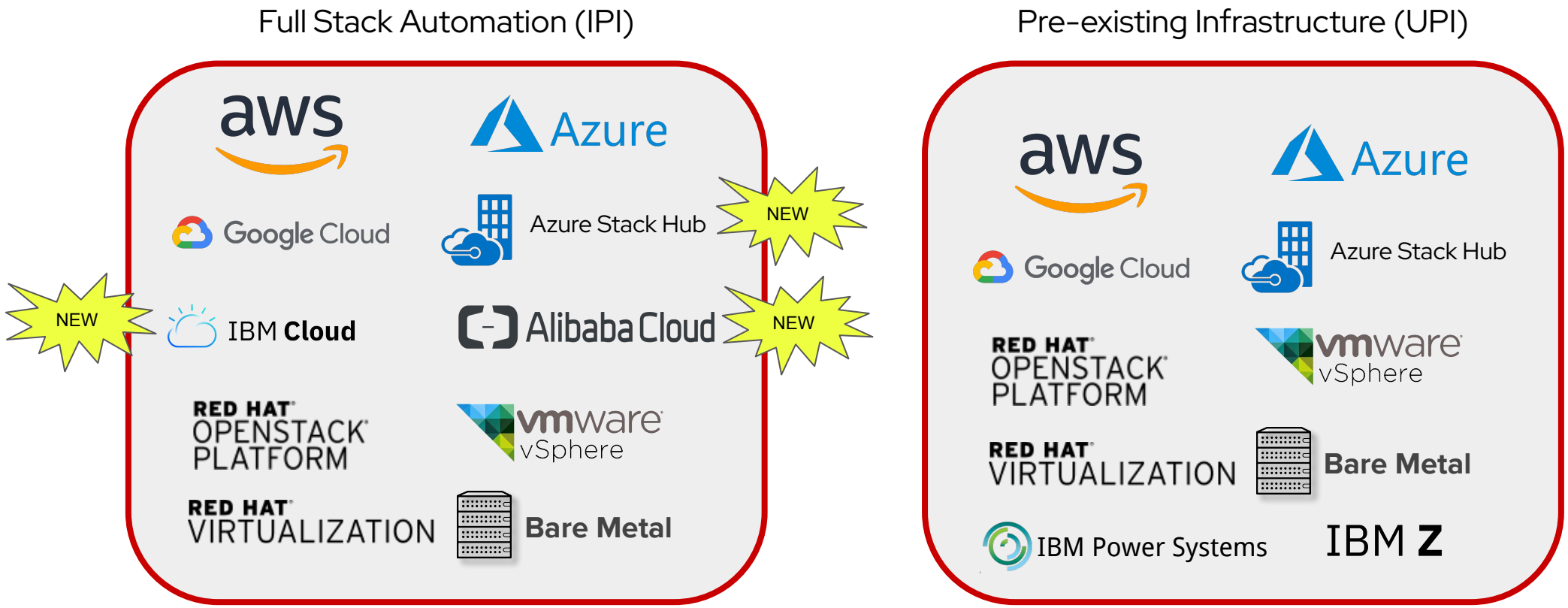
Installer Flexibility

4.10 Supported Providers



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Deploy OpenShift on IBM Cloud

IBM Cloud

Installing a cluster using installer-provisioned infrastructure (IPI) on IBM Cloud

- Allows an OpenShift cluster to be deployed using **installer-provisioned infrastructure** on IBM Cloud VPC infrastructure
- Support to public clusters only with CIS (Cloud Internet Services DNS)
- **Private and disconnected** deployments available once IBM Cloud DNS Services are integrated in **future releases**

```
apiVersion: v1
baseDomain: example.com
controlPlane:
 hyperthreading: Enabled
 name: master
 platform:
   ibm-cloud: {}
 replicas: 3
compute:
- hyperthreading: Enabled
 name: worker
 platform:
   ibmcloud: {}
 replicas: 3
metadata:
 name: test-cluster
networking:
 clusterNetwork:
 - cidr: 10.128.0.0/14
   hostPrefix: 23
 machineNetwork:
 - cidr: 10.0.0.0/16
 networkType: OpenShiftSDN
 serviceNetwork:
 - 172.30.0.0/16
platform:
 ibmcloud:
   region: us-south
credentialsMode: Manual
publish: External
pullSecret: '{"auths": ...}'
fips: false
sshKey: ssh-ed25519 AAAA...
```


Generally Available

Red Hat

Deploy OpenShift on Azure Stack Hub

Azure Stack Hub

Installing a cluster using installer-provisioned infrastructure (IPI) on Azure Stack Hub

- Azure's solution to run applications in an **on-premises** environment and deliver **Azure services** in your data center
- Allows an OpenShift cluster to be deployed using **installer-provisioned infrastructure** on Azure Stack Hub
- Document enhancements to support deployments using **custom CAs**

```
apiVersion: v1
baseDomain: example.com
controlPlane:
  name: master
  replicas: 3
compute:
- name: worker
  platform: {}
  replicas: 0
metadata:
  name: ash-cluster
networking:
  clusterNetwork:
  - cidr: 10.128.0.0/14
    hostPrefix: 23
  machineNetwork:
  - cidr: 10.0.0.0/16
  networkType: OpenShiftSDN
  serviceNetwork:
  - 172.30.0.0/16
platform:
  azure:
    armEndpoint: azurestack_arm_endpoint
    baseDomainResourceGroupName: resource_group
    region: azure_stack_local_region
    resourceGroupName: existing_resource_group
    outboundType: Loadbalancer
    cloudName: AzureStackCloud
pullSecret: '{"auths": ...}'
fips: false
sshKey: ssh-ed25519 AAAA...
```


Generally Available

Red Hat

Deploy OpenShift on Alibaba Cloud

Alibaba Cloud

Installing a cluster using installer-provisioned infrastructure (IPI) on Alibaba Cloud

- International portal includes world and china mainland
  - IPI does not support cn-nanjing (China (Nanjing) and UAE (Dubai)
- Fully connected installation with new and existing VPC

```
apiVersion: v1
controlPlane:
  architecture: amd64
  hyperthreading: Enabled
  name: master
  platform:
    alibabacloud:
      instanceType: ecs.g6.xlarge
  replicas: 3
compute:
- architecture: amd64
  hyperthreading: Enabled
  name: worker
  platform:
    alibabacloud:
      instanceType: ecs.g6.large
  replicas: 3
metadata:
  name: openshift-on-alibaba
platform:
  alibabacloud:
    region: us-east-1
    resourceGroupID: rg-aek2wky7lxk4f5y
    vpcID: vpc-0xi6h9s2713tmqc5bpyhc
    vswitchIDs:
    - vsw-0xi183q0g3xqdmkhpgc93
    - vsw-0xi3nk4nu9366f623vtb9
pullSecret: HIDDEN
networking:
  clusterNetwork:
  - cidr: 10.128.0.0/14
    hostPrefix: 23
  serviceNetwork:
  - 172.30.0.0/16
  machineNetwork:
  - cidr: 10.0.0.0/16
  networkType: OpenShiftSDN
publish: Internal
```


Technology Preview

Red Hat

Thin provisioning support on VMware

Support for thin provisioned OS disks for OCP VMs in VMware vSphere IPI deployments

- Disk provisioning method for primary disks now includes '**thin**' in addition to 'thick' or 'eagerZeroedThick' using **installer-provisioned infrastructure (IPI)** on vSphere
- Thin provisioning only consumes space needed and grows over time based on demand
- NFS datastore is always thin

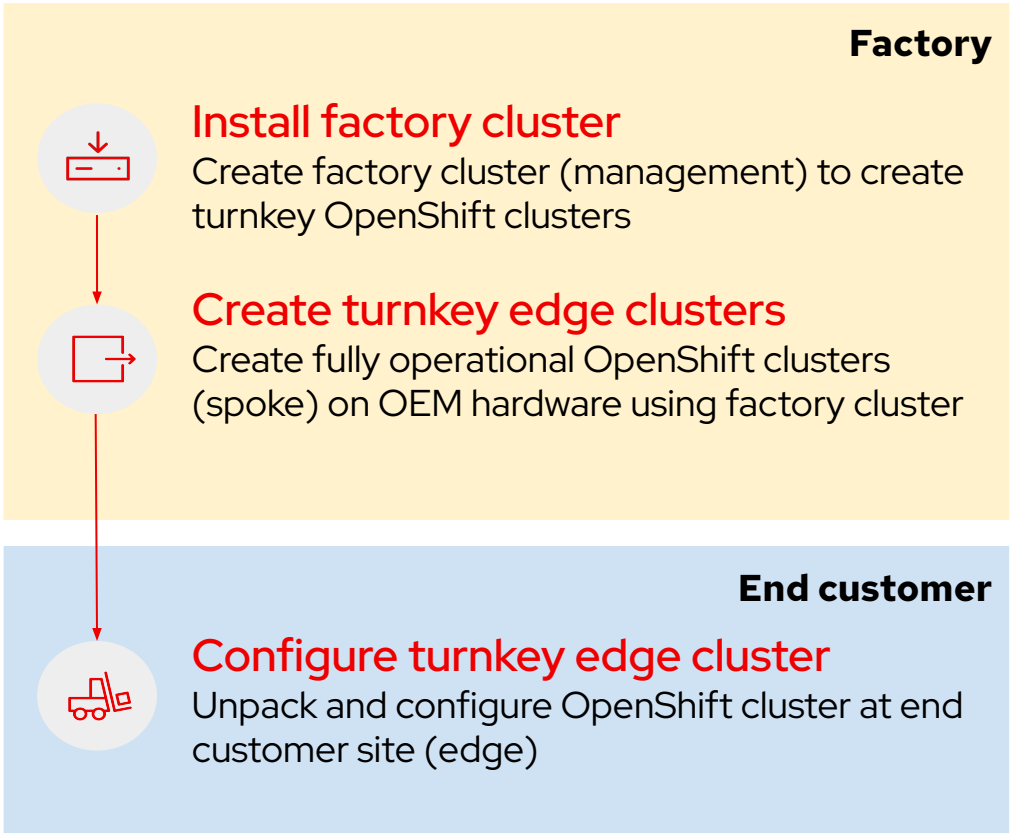
```
...
...

metadata:
  name: cluster
platform:
  vsphere:
       vcenter: your.vcenter.server
       username: username
       password: password
       datacenter: datacenter
       defaultDatastore: datastore
       folder: folder
       diskType: thin
       network: VM_Network
       cluster: vsphere_cluster_name
       apiVIP: api_vip
       ingressVIP: ingress_vip
fips: false
pullSecret: '{"auths": ...}'
sshKey: 'ssh-ed25519 AAAA...'
```


Generally Available

Pre-install OpenShift at the Factory for OEMs

Build turnkey solutions with OpenShift

- Build **turnkey edge** solutions with OpenShift **pre-installed** on OEM hardware
- Leverages Zero Touch Provisioning (ZTP) to build a **factory pipeline** to deploy self-contained OpenShift clusters that can be **relocated** for edge deployments
- Document enhancements on how to deploy factory cluster (management cluster) and turnkey edge clusters



Red Hat

Bare Metal Configuration

Advanced Host Network Configuration at Install with IPI

- Insert config in install-config.yaml
- Per host “networkConfig” field,
- Configure static IP addresses, Bonds, VLANs
- DHCP not required

```
[...]
    hosts:
      - name: openshift-master-0
        networkConfig:
          routes:
            config:
            - destination: 0.0.0.0/0
              next-hop-address: 192.168.123.1
              next-hop-interface: enp0s4
          dns-resolver:
            config:
              server:
              - 192.168.123.1
          interfaces:
          - name: enp0s4
            type: ethernet
```

Kubernetes NMState Operator is promoted to GA for bare metal

- Supported with OpenShift 4.10 for the bare metal platform
- Apply network changes on nodes on Day 2

```
apiVersion: nmstate.io/v1beta1
kind: NodeNetworkConfigurationPolicy
metadata:
  name: enp0s3-dns-policy
spec:
  nodeSelector:
    kubernetes.io/hostname: worker-0
  desiredState:
    dns-resolver:
      config:
        search:
        - example.com
        server:
        - 8.8.8.8
    interfaces:
    - name: enp0s3
```

Both use NMState syntax: nmstate.io/examples.html

Update your hosts BIOS Settings

- New “hardware firmware settings” (hfs) and “firmwareschema” CRDs
- Retrieve available BIOS attributes from your bare metal hosts (bmh)
- Update BIOS attributes on Day 2

```
$ oc edit hfs/ostest-worker-0 -n
openshift-machine-api -o yaml
apiVersion: metal3.io/v1alpha1
kind: HostFirmwareSettings
[...]
spec:
  settings: {}
    EmbeddedSata: Ata
    ProcTurboMode: Enabled
[...]
```

Control Plane Updates

Conditional Updates

Evaluate risk before updating

- Update Service declares **conditionally recommended updates** associated with known risks
- Cluster Version Operator (CVO) **continually evaluates known risks** associated with updates
- Update recommended when no risks found

```
# View description of the update when it is not
recommended because a risk might apply.

$ oc adm upgrade --include-not-recommended



# Evaluate for potential known risks and decide if
acceptable for current cluster, then waive safety guards
and proceed the update.
# <version> is the supported but not recommended update
version you obtained from the output of the previous
command.

$ oc adm upgrade --allow-not-recommended --to <version>
```

Syncing group membership from identity providers

Connect Groups to RBAC

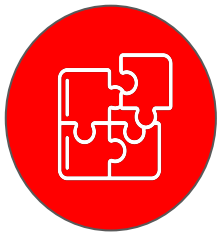
- 4.10 release introduces support for synchronizing group membership from an OpenID Connect provider to OpenShift Container Platform upon user login.
- You can enable this by configuring the groups claim in the OpenShift Container Platform OpenID Connect identity provider configuration.

```
apiVersion: config.openshift.io/v1
kind: OAuth
metadata:
  name: cluster
spec:
  identityProviders:
  - name: oidcidp
    mappingMethod: claim
    type: OpenID
    openID:
      clientID: ...
      clientSecret:
        name: idp-secret
      claims:
        preferredUsername:
        - preferred_username
        name:
        - name
        groups:
        - groups
      issuer: https://www.idp-issuer.com
```

Management & Security

Red Hat streamlines Kubernetes Security programs

Red Hat Advanced Cluster Security



Developer workflows

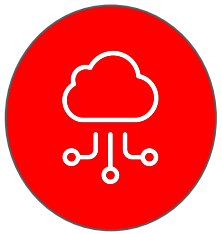
1 **Enable developers to streamline risk management** by marking vulnerabilities as false positives or accept risk with an in product request and approval workflow.

2 **Simplified issue prioritization and remediation in CI** with additional vulnerability output and summaries of policies responsible for breaking builds.

Security Notifications

3 **Shorten feedback loops** with automated, scheduled reporting of vulnerabilities to the remediation stakeholders.

4 **Runtime notification enhancements** send additional details to system notifiers and SIEMs about the timelines of runtime policy violations and risks.



5 **Simplify administration of OpenShift Platform Plus** by allowing the re-use of OpenShift OAuth authentication for ACS users.

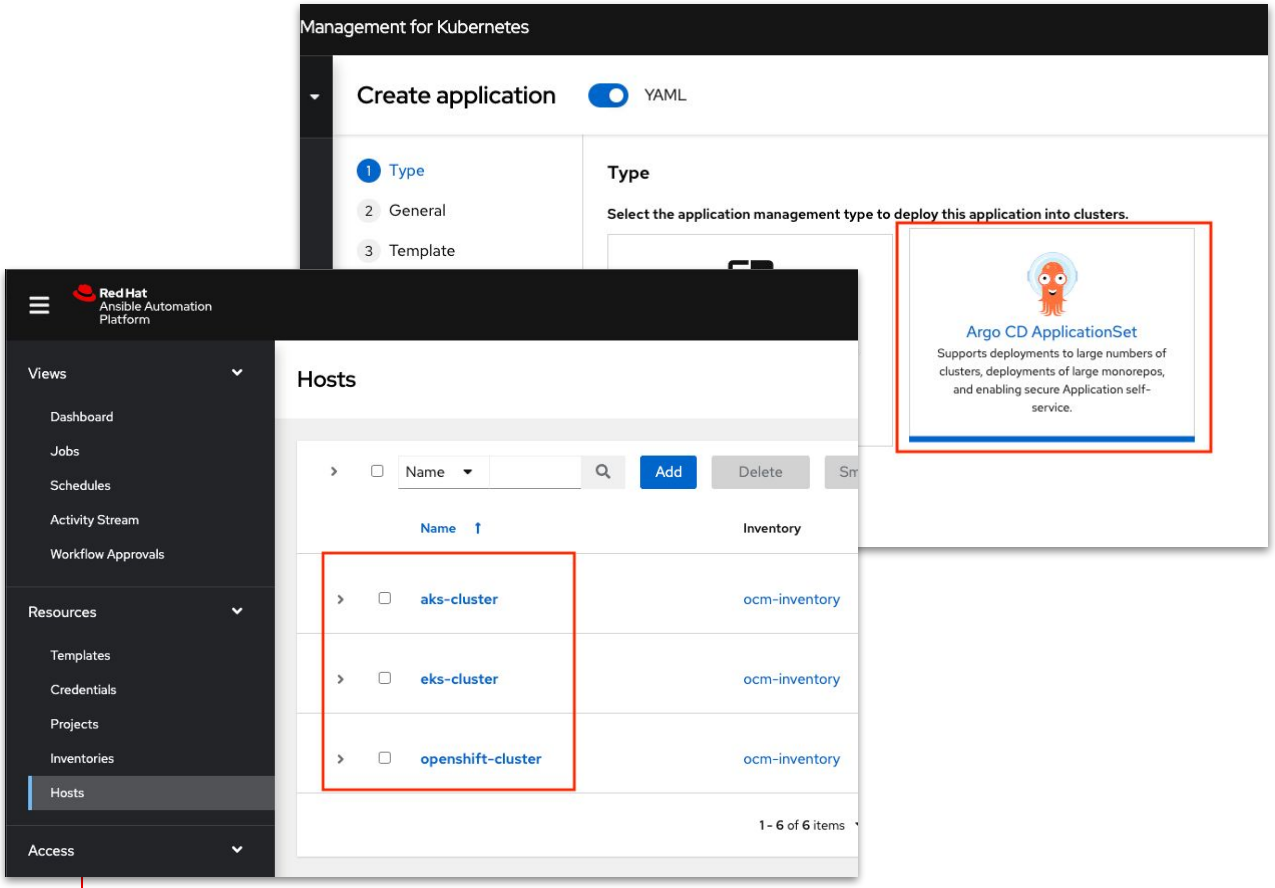
6 **Enable scalable registry integration** with Amazon Elastic Container Registry by leveraging IAM *AssumeRole* for authorization at scale.

Red Hat Advanced Cluster Management for Kubernetes

What's new in RHACM 2.5

Better Together

Red Hat Advanced Cluster Management brings together Ansible and OpenShift Platform Plus, including OpenShift GitOps, Red Hat Advanced Cluster Security, Red Hat OpenShift Data Foundation across cloud vendors all from a single-pane of glass.



- **RHACM cluster inventory available in Ansible Automation Platform (Dev Preview):** Access ACM functionality, such as cluster creation, directly from Ansible Automation Platform using the Ansible collections.
- **Support for OpenShift GitOps ApplicationSets:** Easily create ArgoCD ApplicationSets directly from RHACM.
- **Stronger security:** Gatekeeper Mutating Webhooks can change resources upon admission, while variable templating provides improved secrets management integration.
- **RHACS Integration:** Provide PolicySets for ACS and OpenShift+ Integration

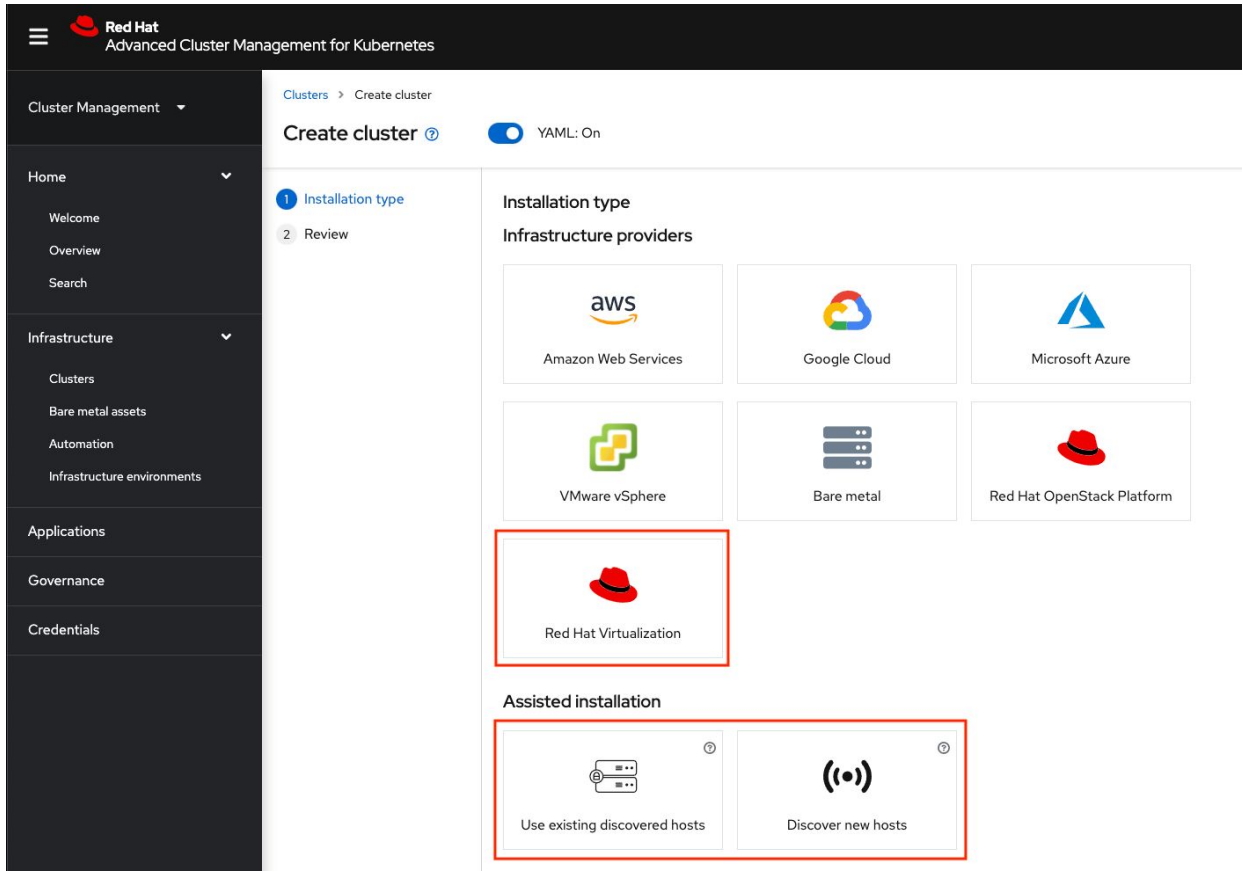
Red Hat

Red Hat Advanced Cluster Management for Kubernetes

What's new in RHACM 2.5

Manage OpenShift Everywhere

Meeting the needs of customers across all sectors, whether on premise with Red Hat Virtualization, bare metal, or in the cloud with AWS GovCloud (US).



- **Cluster lifecycle:** New provider support for OCP on Red Hat Virtualization and AWS GovCloud (US).
- **Arm architecture (Tech Preview):** Deploy an ACM hub on Arm, as well as import and manage OpenShift clusters leveraging Arm for low power consumption.
- **HyperShift (Tech Preview):** Host and provision containerized OpenShift control planes at scale, reducing cost, hardware footprint, and time to provision.
- **Central Infrastructure Management (GA):** Provides a self-service model that easily allows infrastructure owners to enable developers access to bare metal hosts for OCP cluster provisioning.

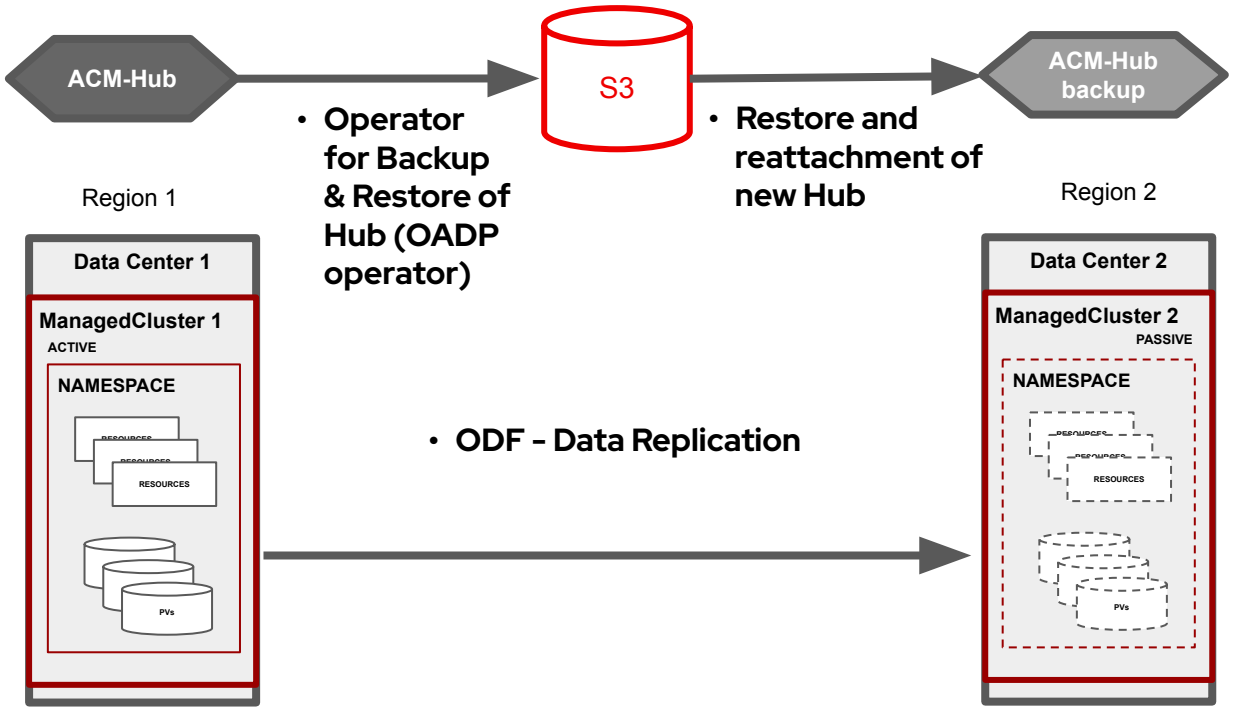
Red Hat

Red Hat Advanced Cluster Management for Kubernetes

What's new in RHACM 2.5

Business Continuity

Users expect centralized management to provide support for disaster recovery scenarios, without the need for additional tooling.



- **Hub backup and restore (GA):** Using OpenShift API for Data Protection (OADP operator), managed cluster configurations can be backed up and restored to a different hub cluster.
- **Application DR (Tech Preview):** Application Disaster Recovery capabilities using Red Hat OpenShift Data Foundation (ODF) across two distinct OCP clusters separated by distance.

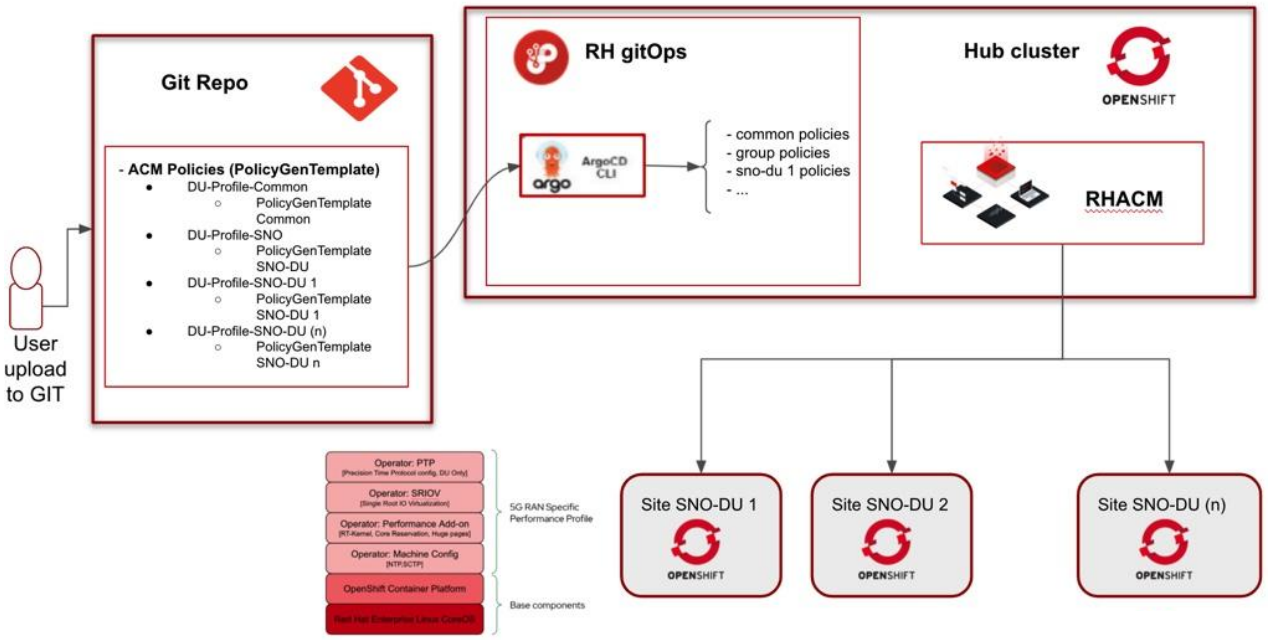
Red Hat

Red Hat Advanced Cluster Management for Kubernetes

What's new in RHACM 2.5

Manage At the Edge

At Red Hat, we see edge computing as an opportunity to extend the open hybrid cloud all the way to the data sources and end users. Edge is a strategy to deliver insights and experiences at the moment they're needed.



- **Deploy & manage 2000 SNO (GA):** Support DU profile delivery with ACM in IPv6 connected and disconnected scenarios.
- **Export hub collected metrics to external tools:** Operations teams can integrate metrics collected from their Kubernetes clusters with metrics collected from other IT sources for a holistic view in their preferred tooling.
- **Policy Enhancements:** The PolicyGenerator simplifies distribution of Kubernetes resource objects to managed clusters, while improvements in the policy user experience help users perform fleet compliance.

Red Hat

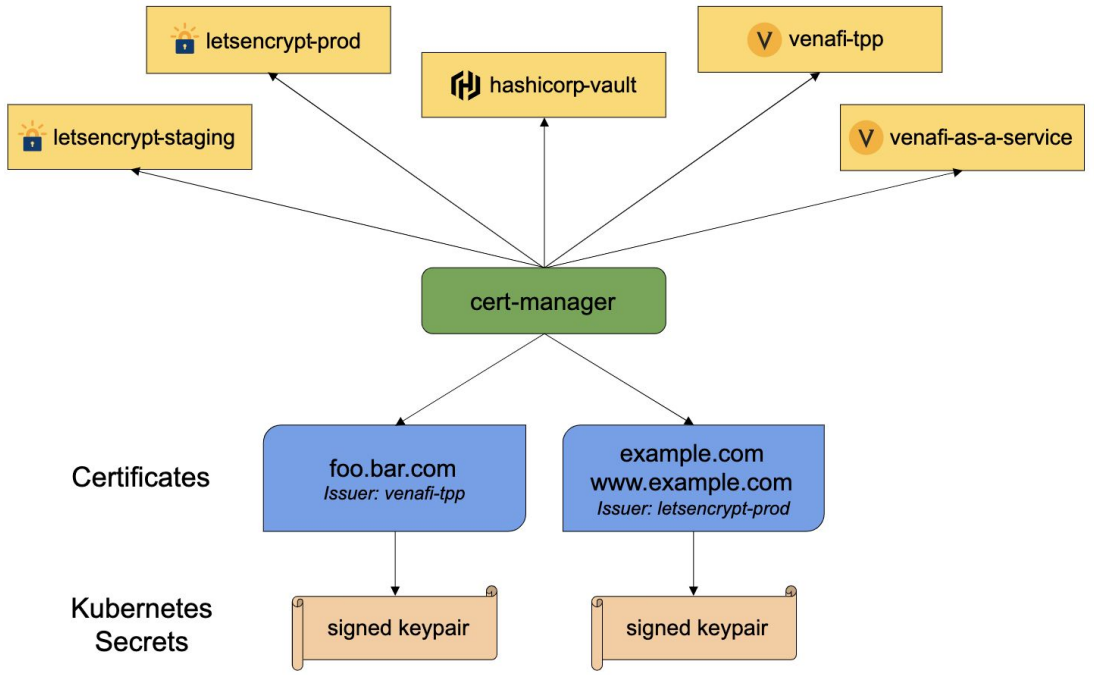
cert-manager (Tech Preview)

Automate certificate management in cloud native environments

cert-manager builds on top of Kubernetes, introducing certificate authorities and certificates as first-class resource types in the Kubernetes API. This makes it possible to provide 'certificates as a service' to developers working within your Kubernetes cluster.

Use Cases

- Provide easy to use tools to manage certificates.
- A standardised API for interacting with multiple certificate authorities (CAs).
- Gives security teams the confidence to allow developers to self-serve certificates.
- Support for ACME (Let's Encrypt), HashiCorp Vault, Venafi, self signed and internal certificate authorities.
- Extensible to support custom, internal or otherwise unsupported CAs.



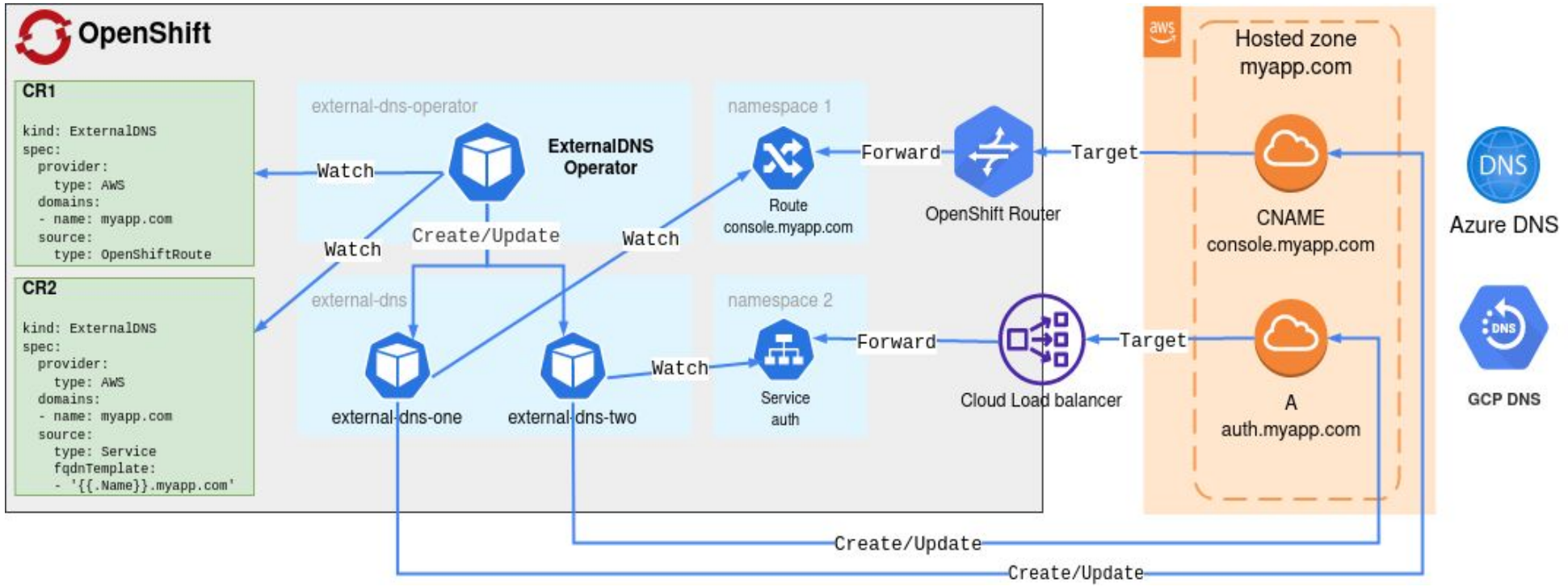
Latest Release (v1.7.1): https://github.com/cert-manager/cert-manager/releases/tag/v1.7.1

Red Hat

Networking & Routing

External DNS Operator (Tech Preview)

- Provide the ability to dynamically control DNS records of an external DNS server via Kubernetes resources in a DNS provider-agnostic way.
- The feature makes use of an operator that will be deployed via the OperatorHub to manage the upstream external-dns functionality
- Supported cloud providers include AWS, GCP and Azure (Tech Preview)



Red Hat

General Networking Enhancements

Egress traffic steering

Egress IP address support for clusters installed on public clouds

- For OVN-K and OpenShift SDN cluster network providers on
  - Amazon Web services
  - Google Cloud Platform
  - Microsoft Azure

```
IP capacity = public cloud default capacity -
              sum(current IP assignments)
```

MTU

Modify Cluster Network MTU post installation

```
oc patch Network.operator.openshift.io cluster
--type=merge --patch \
  '{"spec": { "migration": null, "defaultNetwork":{
"ovnKubernetesConfig": { "mtu": <mtu> }}}}'
```

Hardware Enablement

SR-IOV support for

- Intel Columbiaville E810
  - E810-CQDA2
  - E810-2CQDA2
  - E810-XXVDA2
  - E810-XXVDA4
- Broadcom
  - BCM57414 & BCM57508

Red Hat

Virtualization

OpenShift Virtualization

Modernized workloads, support composite applications with VMs, containers, and serverless

Enhanced Data Protection

- VM backup and restore built into OADP
- Disaster recovery workflows coordinated through ACM

Additional Deployment Options

- Small footprint in resource constrained deployments e.g. SNO
- IBM Public Cloud Bare Metal (Tech Preview)

Operational Enhancements

- Composite applications (container & VM) in same Service Mesh
- Enhanced Virtual Machine Workflow Management

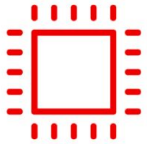
Workload Acceleration

- Accelerate compute and 3D apps with shared vGPU resources

"Red Hat technology stands out from the competition in terms of its ability to run virtualized workloads and container workloads in a streamlined and well-integrated manner. Red Hat allows us to deliver value to our users more quickly, minimizing time to market and accelerating the software development lifecycle."

Gökhan Ergül
CTO,
sahibinden.com

sahibinden.com



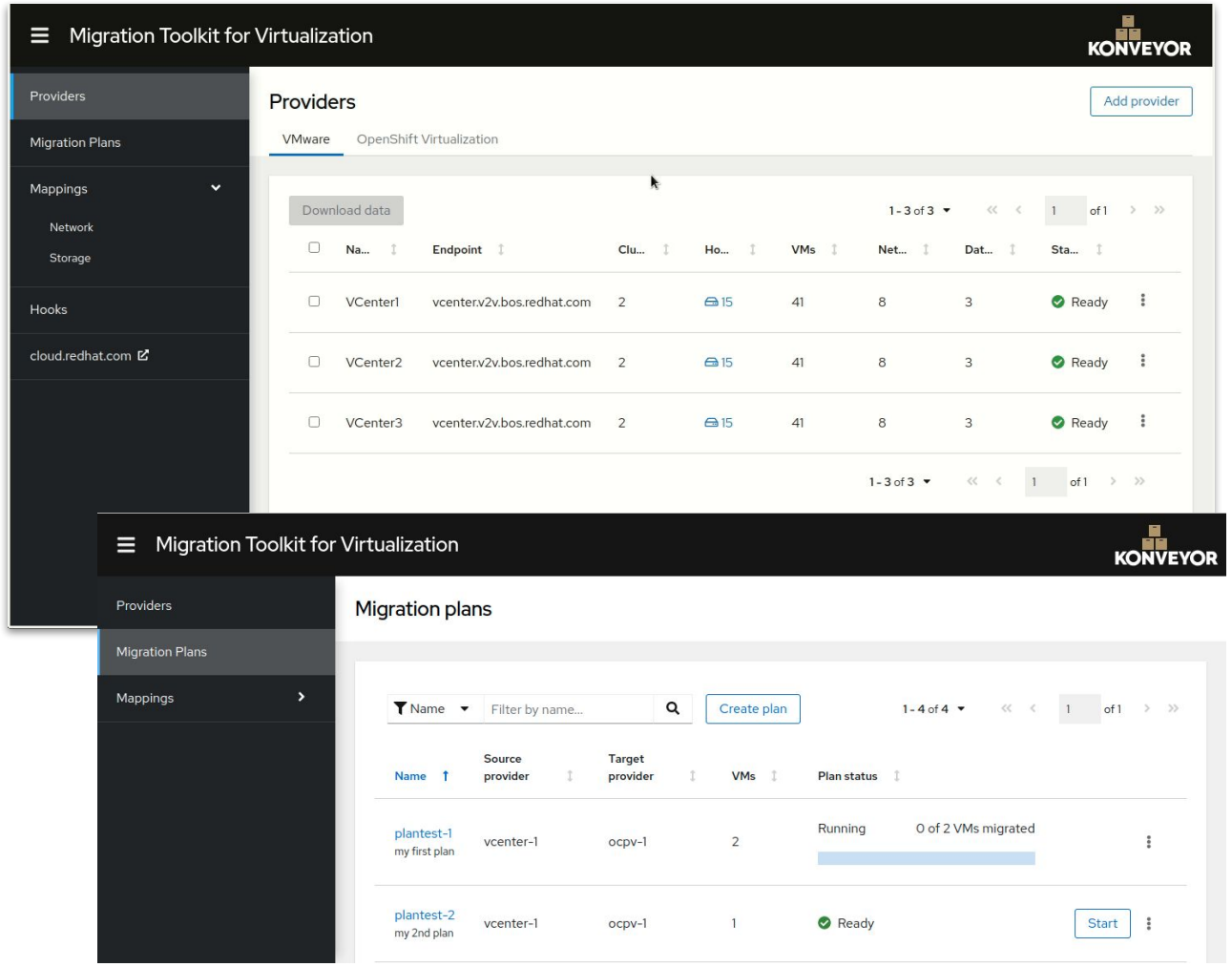
Red Hat

VM lift-and-shift to OpenShift

Migration Toolkit for Virtualization 2.3

MTV 2.3 is adding **warm migration** capabilities for both VMware and RHV to OpenShift Virtualization

Warm migration reduced the amount of downtime by pre-copying the data from disks before the final shutdown and reboot of your VM on the destination platform.



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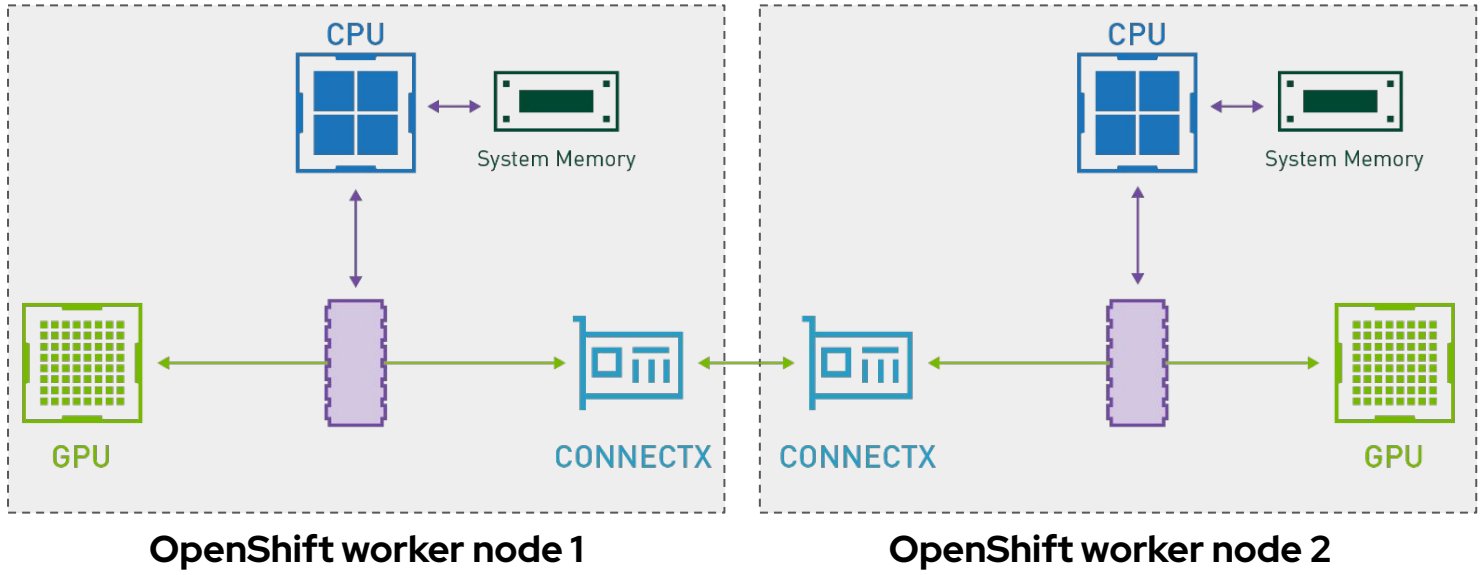
Specialized Workloads

Distributed deep learning training with GPUs

- NVIDIA DGX A100 server: OpenShift deployment and NVIDIA GPU operator enablement
- GPU utilization in the OpenShift Console
- vGPUs simplified enablement with the Driver Toolkit
- Distributed deep learning training enabled by the NVIDIA Network Operator and GPUDirect RDMA (Tech Preview)
- OpenShift NVIDIA GPU Operator on ARM systems (Tech Preview)
- OpenShift Virtualization vGPU enablement (Tech Preview)



NVIDIA GPUDirect RDMA enabled by the NVIDIA Network Operator

Multi-architecture: IBM Power and IBM Z

Security

- Enhance data security from email communications to website access, transparently, with no changes to you applications
- Describe compliance state and provide an overview of gaps and remediation

---

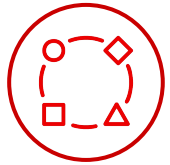
- OVNKube IPSec support
- Compliance Operator

Networking

- More tools/options in your networking stack so you can meet your user and workflow needs

---

- Multus Plugins
  - IPVLAN
  - Host Device
  - Bridge
  - Static IPAM



Flexibility

- Respond to rise and fall in demand automatically, be agile and improve end user experience

---

- Vertical Pod Autoscaler
- Horizontal Pod Memory Autoscaling (Tech Preview)

Operator Framework

Operator SDK Enhancements

Operator Maturity increased via custom Helm reconciler, exposing metrics, and advanced capabilities

Hybrid Helm Operator SDK plugin (Tech Preview)

- Jump start an Operator with **Helm Chart** and add advanced / event-based Ops logics to Helm reconciler in **Go**.
- Continue adding new **APIs/CRDs** in the same project in **Go**.

```
$ operator-sdk init --plugins hybrid.helm.sdk.operatorframework.io \
  --project-version="3" --repo github.com/example/memcached-operator

$ operator-sdk create api --plugins helm.sdk.operatorframework.io/v1 \
  --group cache --version v1alpha1 --kind Memcached

$ operator-sdk create api --plugins=go/v3 \
  --group cache --version v1 --kind MemcachedBackup --resource --controller
```

Digest-based bundle (for disconnected env)

- Easily package Operator project into an Operator bundle that works in the **disconnected environment** with the OLM.

```
$ make bundle USE_IMAGE_DIGESTS=true
```

Resource pruning for Operator created objects

- A common library that helps enable Operators to prune/delete cluster objects in GVK per customized strategies or hooks.

```
cfg = Config {
    log:            logf.Log.WithName("prune"),
    DryRun:         false,
    Clientset:      client,
    LabelSelector: "app=churro",
    Resources: []schema.GroupVersionKind {
        {Group: "", Version: "", Kind: JobKind},
    },
    Namespaces: []string {"churro-namespace"},
    Strategy: StrategyConfig {
        Mode:            MaxCountStrategy,
        MaxCountSetting: 10,
    },
    PreDeleteHook: myhook,
}
```

Enable Ansible Operator insight (capability level IV)

- Ansible Operator SDK supports exposing custom metrics, emitting k8s events, and better logging.

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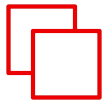
Operator Lifecycle Management Enhancements



Support for Hypershift

OLM components including the catalogs run entirely on the Hypershift-managed control plane and doesn't incur any cost to tenants on worker nodes.

Support for extremely dense clusters

Operator availability projection (CSV copying) can become resource intensive on clusters with large number of namespaces (>1000). There is now a switch to disable that.

Fine-grained dependencies

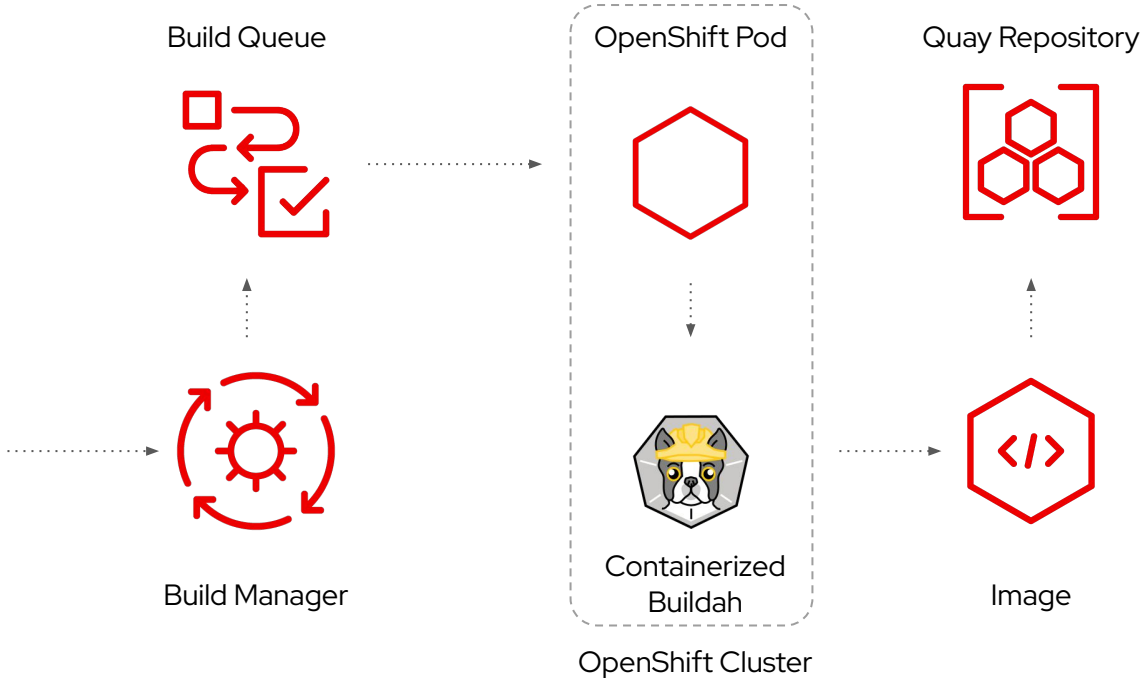
Operators with very specific dependency needs can now use complex constraints / requirements expressions

```
schema: olm.bundle
name: baz.v1.0.0
properties:
- type: olm.constraint
  value:
    failureMessage: All are required for Baz because...
    all:
      constraints:
      - failureMessage: Package bar is needed for...
        package:
          name: bar
          versionRange: '>=1.0.0'
      - failureMessage: GVK Buf/v1 is needed for...
        gvk:
          group: bufs.example.com
          version: v1
          kind: Buf
```

Quay

Quay Builds via podman

Builds on OCP clusters



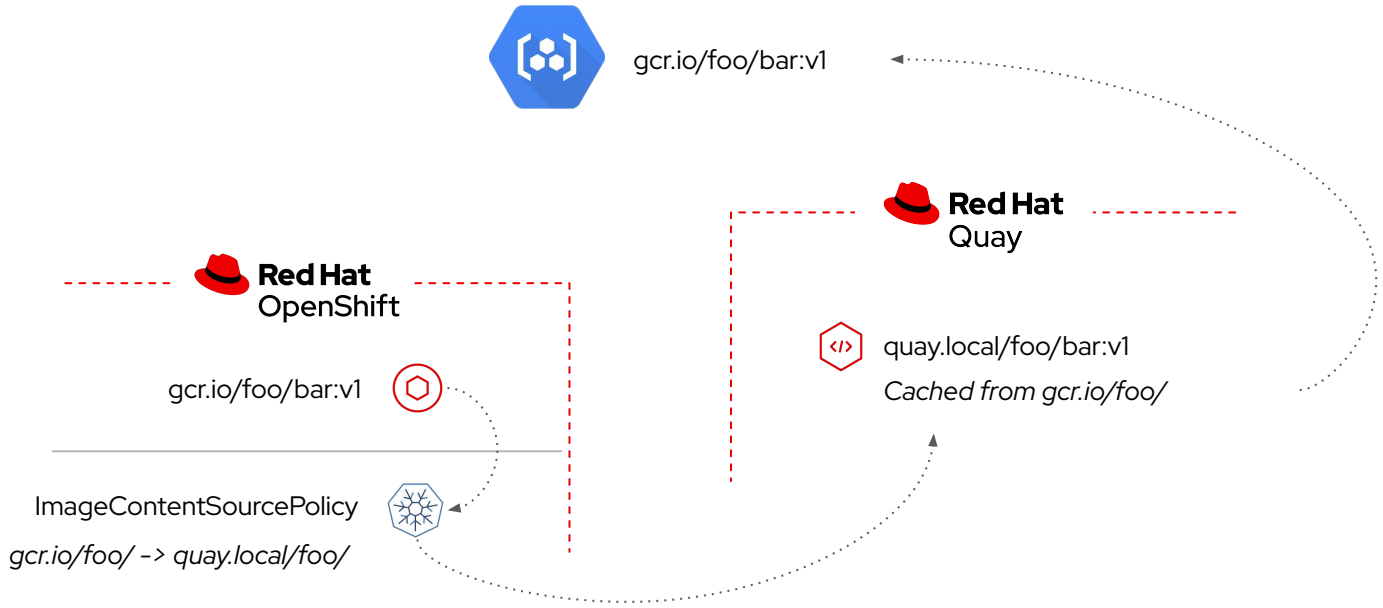
- Builds images triggered by code commits, avoid credential leakage in external CI
- Quay container builds trigger containerized build jobs, no qemu usage anymore (<= Quay 3.6)
- Builds execute on the same OCP cluster Quay is running on or a remote cluster, no external VMs or OCP on bare-metal required
- 3.7: configured via the Quay config file
- 3.8: managed by the Quay Operator
- *Future*:
  - multi-arch builds
  - Builds using OpenShift Pipelines

Red Hat

Quay Pull-Through Cache Proxy

Serving multiple organizations and multiple cluster switch efficiency

- Transparent pull-thru caching for all registry clients
- Central Quay instance acts as a pull-cache for upstream registries
- Selectively enabled in Quay and OpenShift, allows to disable direct access to untrusted public registries
- Moderates and accelerates access to trusted upstream registries
- Cache size will be configurable



This workflow describes future state and depends on OpenShift support coming around 4.12 (OCPNODE-521)

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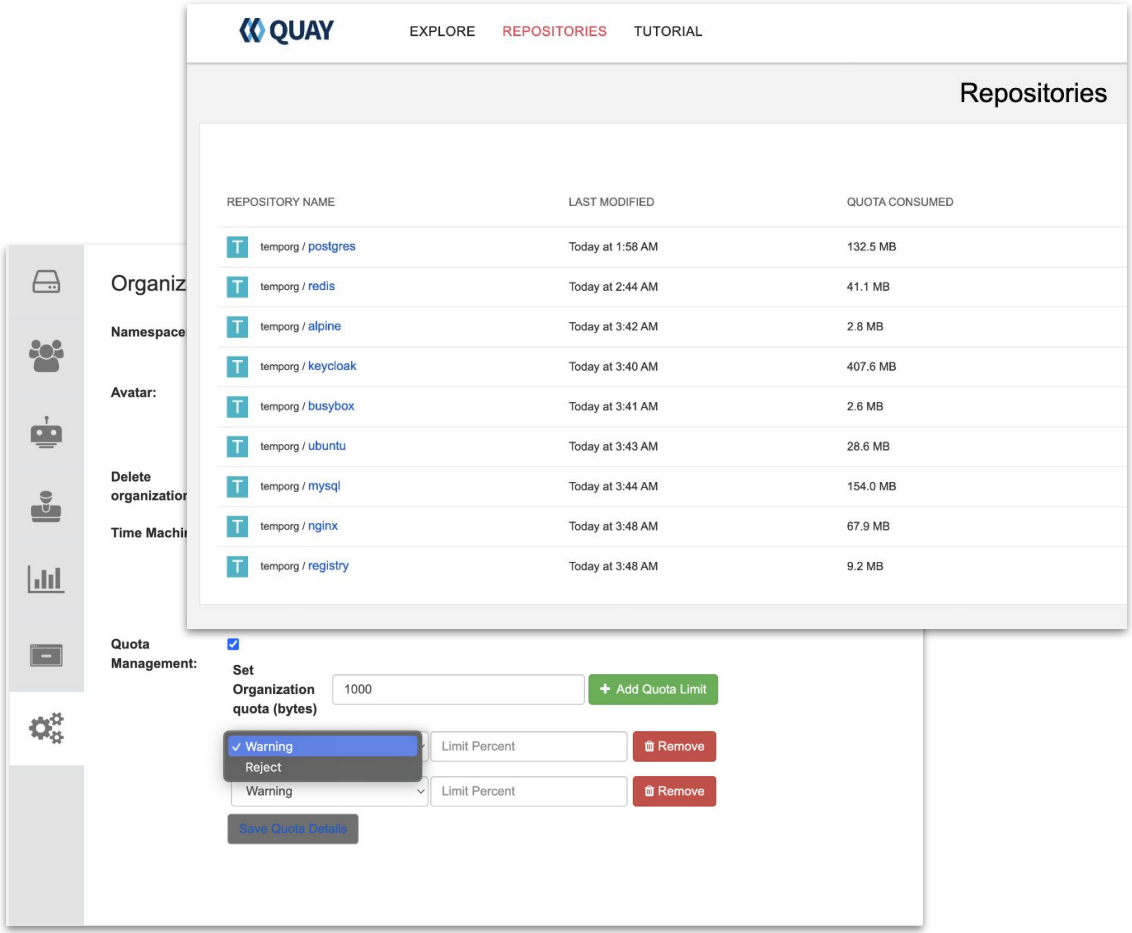
Quay Quota Management

Manage storage consumption growth by setting limits



- Prevents unbound storage growth in multi-tenant registries
- Image Storage Quota for organizations in Quay
- Customizable threshold behavior
  - Soft quota: warning messages
  - Hard quota: pushes are rejected
- Cluster-wide default quota for all new organizations enforceable by administrators
- Organization-level consumption tracking by tenants
- Registry-level consumption tracking by administrators

Red Hat

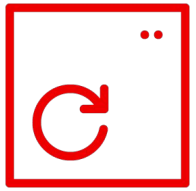
Storage

OpenShift Storage - Journey to CSI

- CSI Operators - plugable, built-in upgrade, storage integration
  - vSphere (GA)
  - AWS EFS (GA)
  - IBM Cloud (GA)
  - AliCloud disk (GA)
  - Azure Disk (GA)
  - Azure File (Tech Preview)
- CSI Migration - allow easy move from using existing intree drivers to new CSI drivers
  - vSphere (Tech Preview)
  - Azure File (Tech Preview)
- Operator/CSI are automatically deployed at installation or after upgrades
- In-tree storage class remains **default** until CSI migration goes GA

CSI Operators		
Operator target	**Migration**	**Driver**
AliCloud Disk	n/a	GA (New in 4.10)
AWS EBS	Tech Preview	GA
AWS EFS	n/a	GA (New in 4.10)
Azure Disk	Tech Preview	GA (New in 4.10)
Azure File	Tech Preview	Tech Preview
Azure Stack Hub	n/a	GA
GCE Disk	Tech Preview	GA
IBM Cloud	n/a	GA (New in 4,.10)
RH-OSP Cinder	Tech Preview	GA
vSphere	Tech Preview	GA (New in 4.10)

OCP 4.10 vSphere CSI Journey



VM Hardware version 15

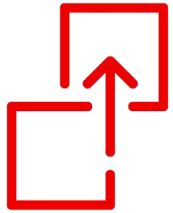
vSphere CSI requires VMware **Virtual Machine hardware version 15**.

Make sure the OCP VMs are running HW version 15 or greater.

vSphere >= v6.7U3

Virtual Machine Hardware v15 depends on **vSphere v6.7U3 or greater.**

Make sure the cluster is running on a vSphere version that supports VM Hardware version 15.



Third Party CSI

OCP **can't run two versions of the CSI driver** at the same time.

If another vSphere CSI driver is present, remove it from the cluster after upgrading to 4.10.

(Red Hat vSphere CSI installation will automatically resume with no dataplane downtime nor dataloss)

OCP 4.10 clusters that don't meet these requirements **will be marked unupgradable.**
Fix the issue to automatically resume the CSI driver deployment.

Red Hat

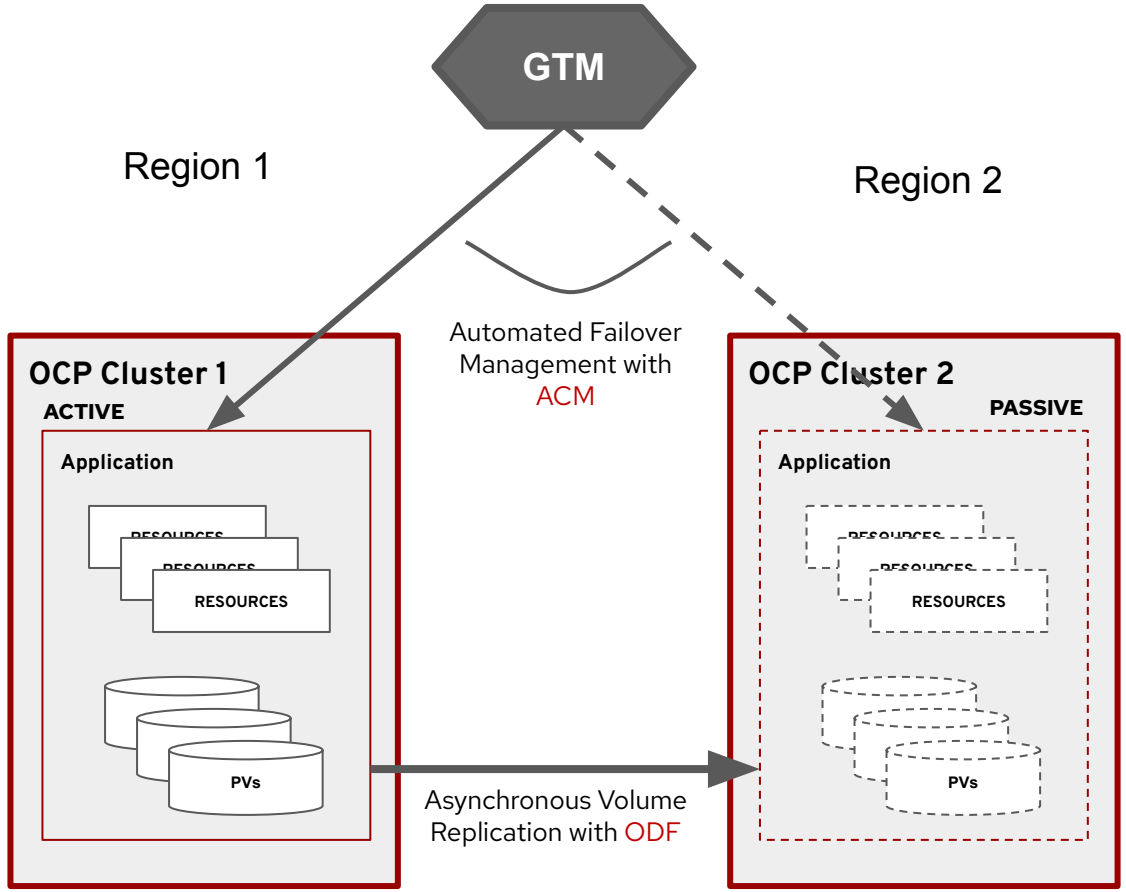
Regional-DR

RPO – Mins
RTO – Mins

ODF 4.10 and ACM 2.5 - Regional-DR with Failover

Protection against Geographic Scale Disasters

Automation



- Asynchronous Volume Replication => low RPO
  - ODF enables cross cluster replication of data volumes with replication intervals as low as 1 min
  - ODF Storage operators synchronizes both App data PVs and Cluster metadata
- Automated Failover Management => low RTO
  - ACM Multi-Cluster manager enables failover and failback automation at application granularity
- Both clusters remain active with Apps distributed and protected among them

Red Hat

Other OpenShift Data Foundation 4.10 updates

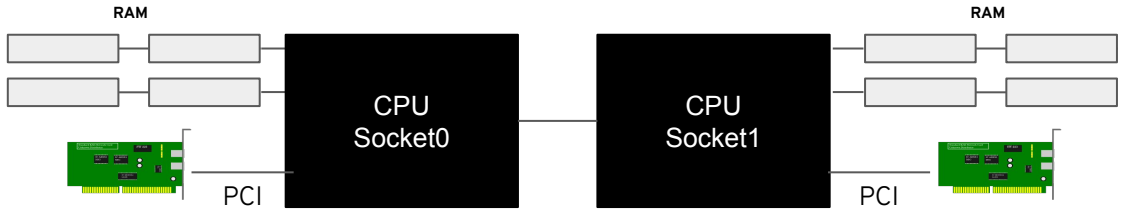
- Cluster wide encryption with Service Account
- AWS gp3/gp2 csi support as backing storage
- MCG support for namespace on top of filesystem
- Tech Preview
    - Dynamic storage for Single Node OpenShift, initial target is Telco RAN

Out of the box support	
Block, File, Object	
Platforms	
AWS/Azure	Google Cloud (Tech Preview)
ARO - Self managed OCS	IBM ROKS & Satellite - Managed ODF (GA)
RHV	OSP (Tech Preview)
Bare metal/IBM Z/Power	VMWare Thin/Thick IPI/UPI
Deployment modes	
Disconnected environment and Proxied environments	

Telco 5G

NUMA/Topology Aware Scheduling (Tech Preview)

Dual socket worker node



Cluster scheduling view **before** this feature

Worker available/unused resources:

- 86 Gb of RAM
- 8 SR-IOV VFs
- 20 CPUs

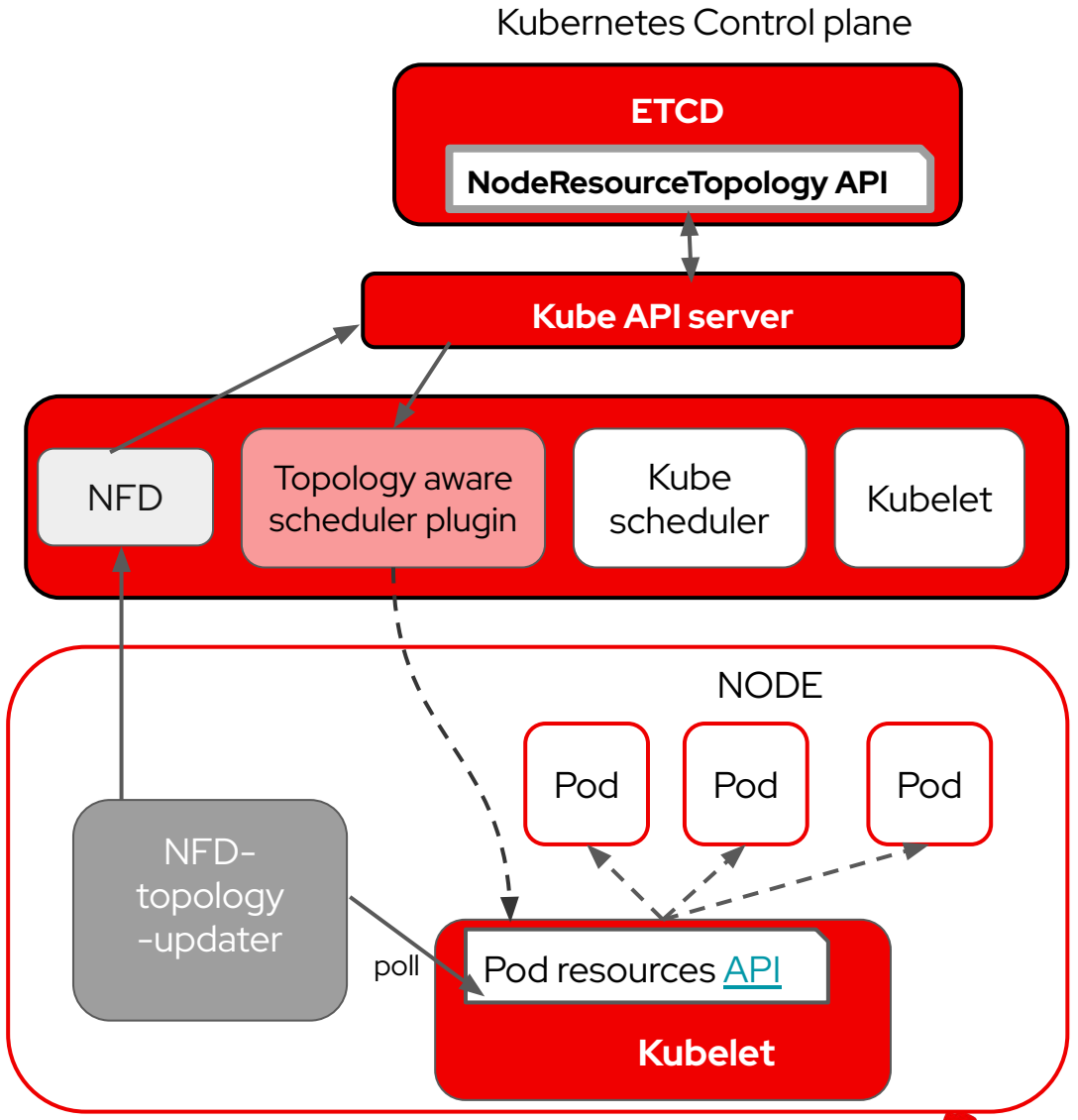
Cluster scheduling view **with** this feature

socket0:

- 82 Gb of RAM
- 3 SR-IOV VFs
- 8 CPUs

socket1:

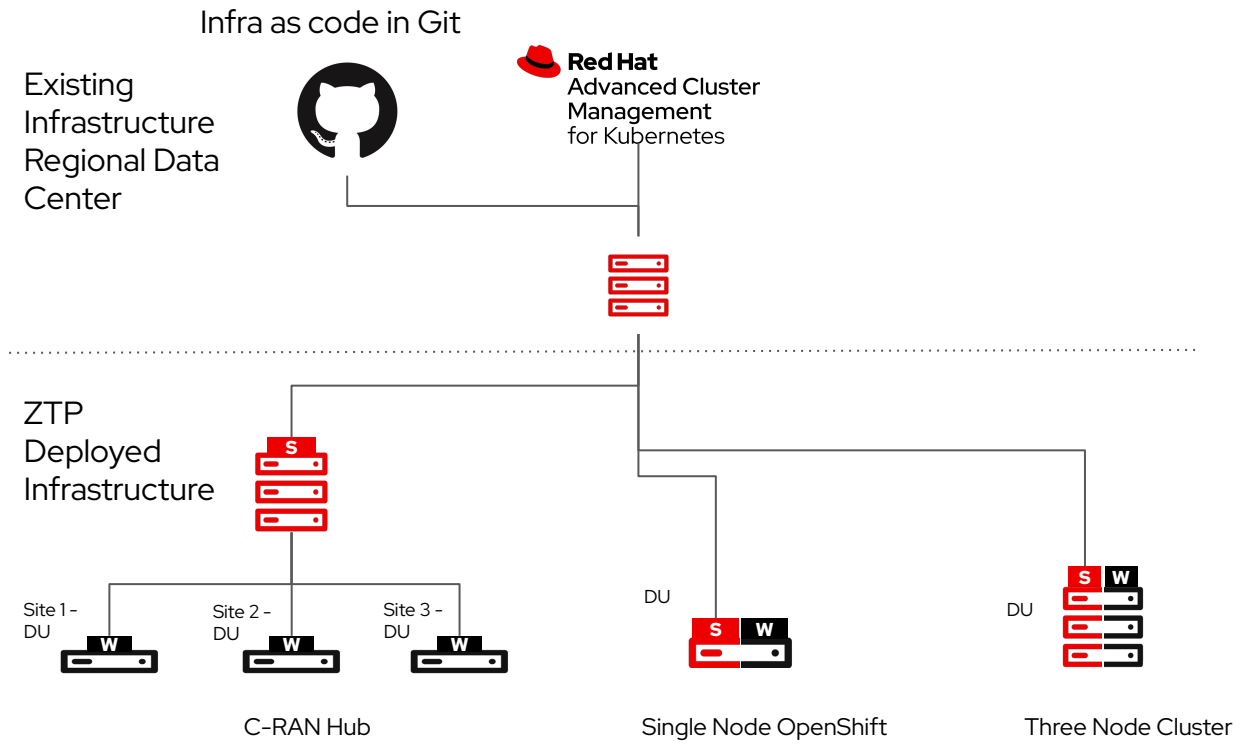
- 4 Gb of RAM
- 5 SR-IOV VFs
- 12 CPUs



Red Hat

Zero Touch Provisioning Enhancements for Far Edge Telco Workloads

- **ZTP of a C-RAN Hub** (DUs on a traditional cluster and compact three node cluster)
- ***ztp-done* label** applied to clusters when the platform configuration is applied and fully reconciled
- ZTP **tight integration with the Topology Aware Lifecycle Operator** to allow smooth transition from ZTP to eventual cluster upgrades
- Installation flexibility is improved with **support for custom manifests provided via GitOps**
- **Policy-driven multi-cluster upgrades via RHACM** (Tech Preview)
- Integration with Talo provides the ability to **sequence multiple SNO provisioning across an ACM instance**
- Reduced DU downtime by **pre-caching images and artefacts prior to update/upgrade**



ZTP - Zero Touch Provisioning
DU - Distributed Unit (5G RAN)

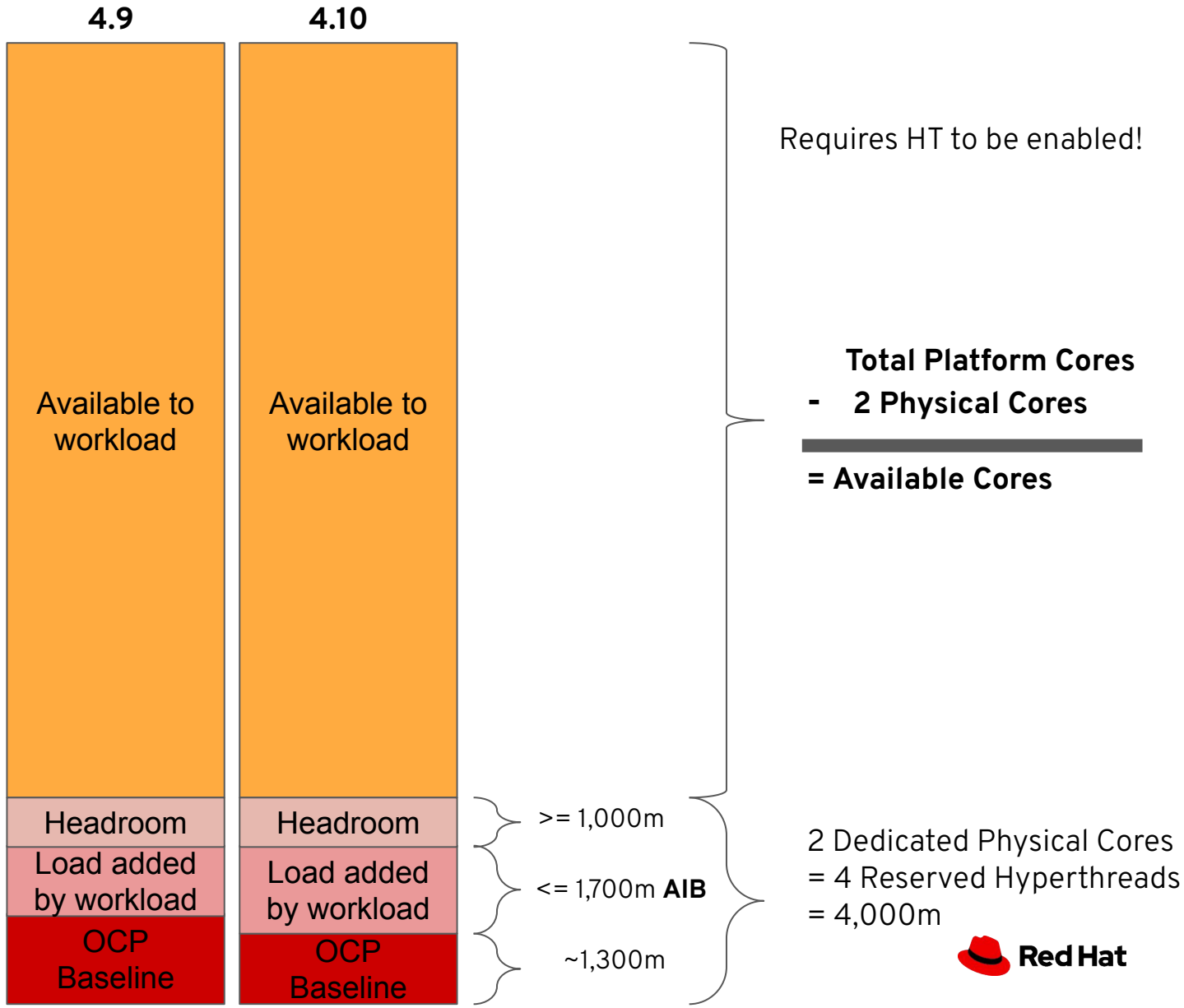
Red Hat

Single-Node OpenShift Operational Optimizations

4.10 Improvements

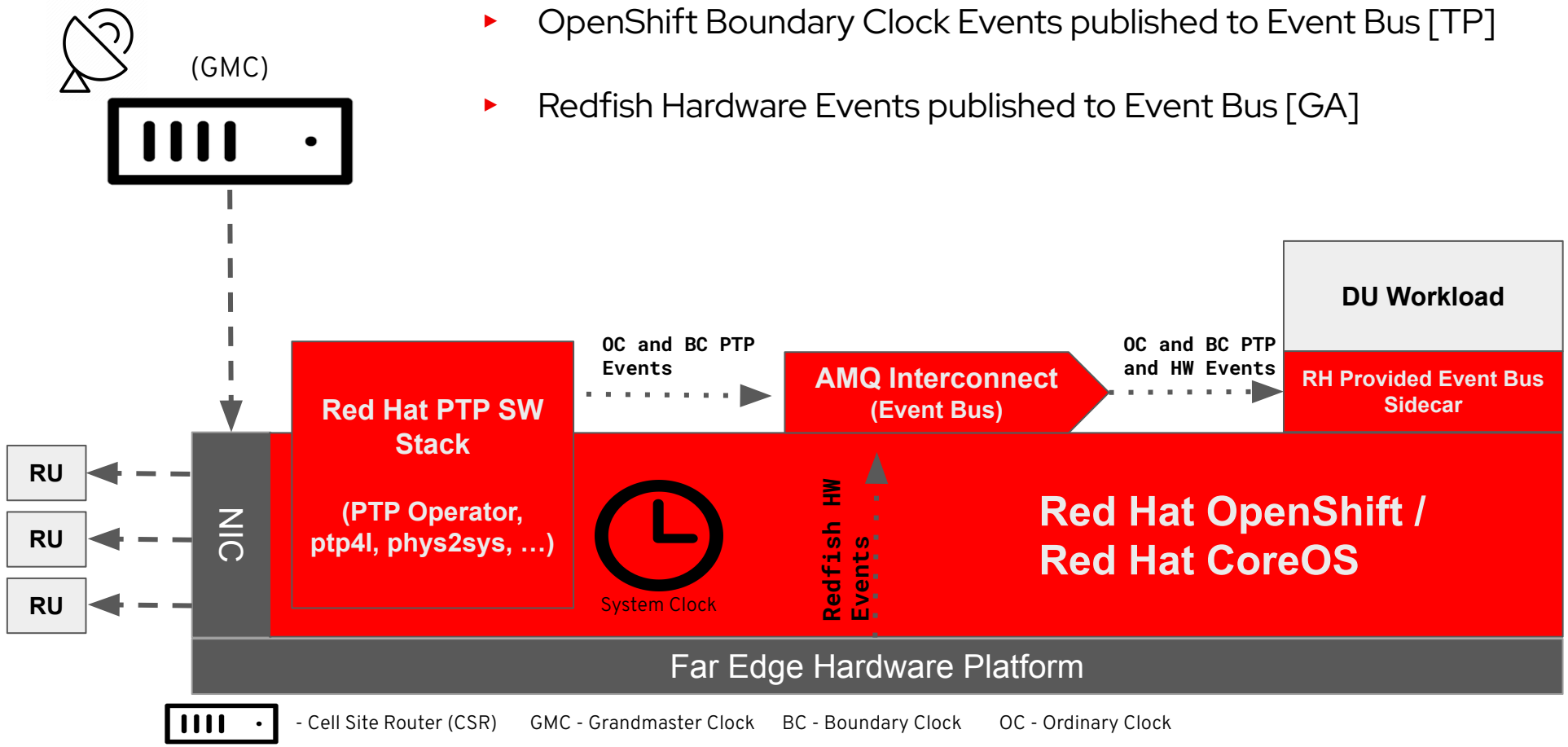
- Increased **Application's Infrastructure Budget (AIB)** (the load added to the platform compute needs, by the workload. e.g. pod count and probes)
  - runc 1.1 & GO 1.17
  - Reduce kube-apiserver CPU usage
  - Operator CPU overhead optimization
- Pod Recovery improvements

OCP Baseline determined with Workload Modelling on an Intel Ice Lake platform. Results may vary depending on hardware deployed.



OpenShift Event Bus Advancements for RAN Workloads

- OpenShift Boundary Clock Events published to Event Bus [TP]
- Redfish Hardware Events published to Event Bus [GA]



PTP Operating Modes: OpenShift Node as an Ordinary Clock [GA] and Boundary Clock [TP]

Red Hat

Observability

Summary Enhancement for OpenShift 4.10 Monitoring

Prometheus Audit Logging Enhancements

Updated OpenShift Audit Logging for Metrics:

- **New Support for enabling Audit Logging in Prometheus Adapter:**
  - Ability to Observe which component are requesting calling the metrics API
  - Enables customers to monitor and troubleshoot performance problems via API audit capability
- **Enable Query Logging in all Prometheus Instances:**
  - Platform Monitoring & User Workload Monitoring
  - Use ThanosQuerier to see which query is frequently executed and the impact to operations

The following profiles are provided which corresponds to Audit Log Levels

- Request
- RequestResponse
- None
- *Metadata* (the default audit profile)

User can pick any of the profile by modifying the CMO configmap as follows

```
apiVersion: v1
kind: ConfigMap
metadata:
  name: cluster-monitoring-config
  namespace: openshift-monitoring
data:
  config.yaml: |
    k8sPrometheusAdapter:
      audit:
        profile: Request
```

CMO picks up the change and (re)deploys `prometheus-adapter` with appropriate `--audit-` flags.

Summary Enhancement for OpenShift 4.10 Monitoring

Prometheus Logging & Certificate Capabilities - Improves the reliability of metrics collection

- **Client Certificate Authentication for Scraping Metics: (Enable Prometheus to use Client Authentication)**
  - For scraping metrics to reduce performance impacts on authentication APIs.
  - Provides consistency with Global OpenShift Security Configurations.
  - Prometheus is able to authenticate using TLS certificates instead of bearer tokens when scraping metrics.

```
# token=`oc sa get-token prometheus-k8s -n openshift-monitoring`
# oc -n openshift-monitoring exec -c prometheus prometheus-k8s-0 -- curl -k -H "Authorization: Bearer $token"
Unauthorized


# token=`oc -n openshift-user-workload-monitoring sa get-token prometheus-user-workload`
# oc -n openshift-monitoring exec -c prometheus prometheus-k8s-0 -- curl -k -H "Authorization: Bearer $token"
Unauthorized

# token=`oc sa get-token prometheus-k8s -n openshift-monitoring`
# oc -n openshift-monitoring exec -c prometheus prometheus-k8s-0 -- curl -k -H "Authorization: Bearer $token"
# HELP go_gc_duration_seconds A summary of the pause duration of garbage collection cycles.
# TYPE go_gc_duration_seconds summary
go_gc_duration_seconds{quantile="0"} 2.4802e-05
go_gc_duration_seconds{quantile="0.25"} 9.8683e-05
go_gc_duration_seconds{quantile="0.5"} 0.000125406
go_gc_duration_seconds{quantile="0.75"} 0.000145902
go_gc_duration_seconds{quantile="1"} 0.004148246
go_gc_duration_seconds_sum 0.035471605
go_gc_duration_seconds_count 201
```

- **OpenShift Monitoring Component Updates:**
  - Alertmanager 0.23.0
  - Grafana 8.3.4
  - kube-state-metrics v2.3.0
  - node-exporter 1.3.1
  - prom-label-proxy 0.4.0
  - Prometheus 2.32.1
  - Prometheus adapter 0.9.1
  - Prometheus operator 0.53.1
  - Thanos 0.23.1

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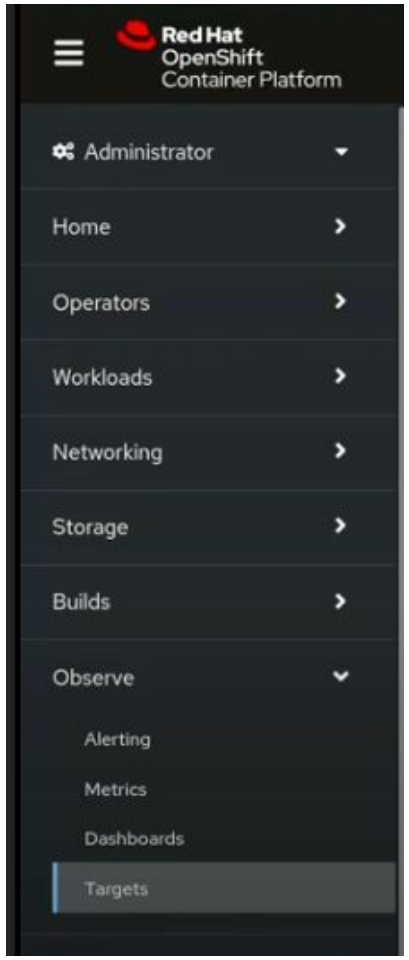
Improved OpenShift Monitoring UI Experience

New OpenShift Console Monitoring Experience:

- Console Monitoring User Interface Enhancements to Observe OpenShift:
  - Unification of Alertmanager within the OCP Console
  - Management of Thanos Prometheus instances built into the OCP Console

Note:
Thanos and Alertmanager user interfaces previously used for external management have been deprecated in OpenShift 4.10



- **Unified & Integrated Metrics:**
  - No Longer Required to Manage Thanos Prometheus through separate User Interface
- **Integrated Alerting with Alertmanager:**
  - Integrated Alerting into OpenShift Console User Interface.
- **Unified & Integrated Support:**
  - Simplifying the End-to-End Monitoring Experience with Red Hat Support vs. 3rd Party

Red Hat

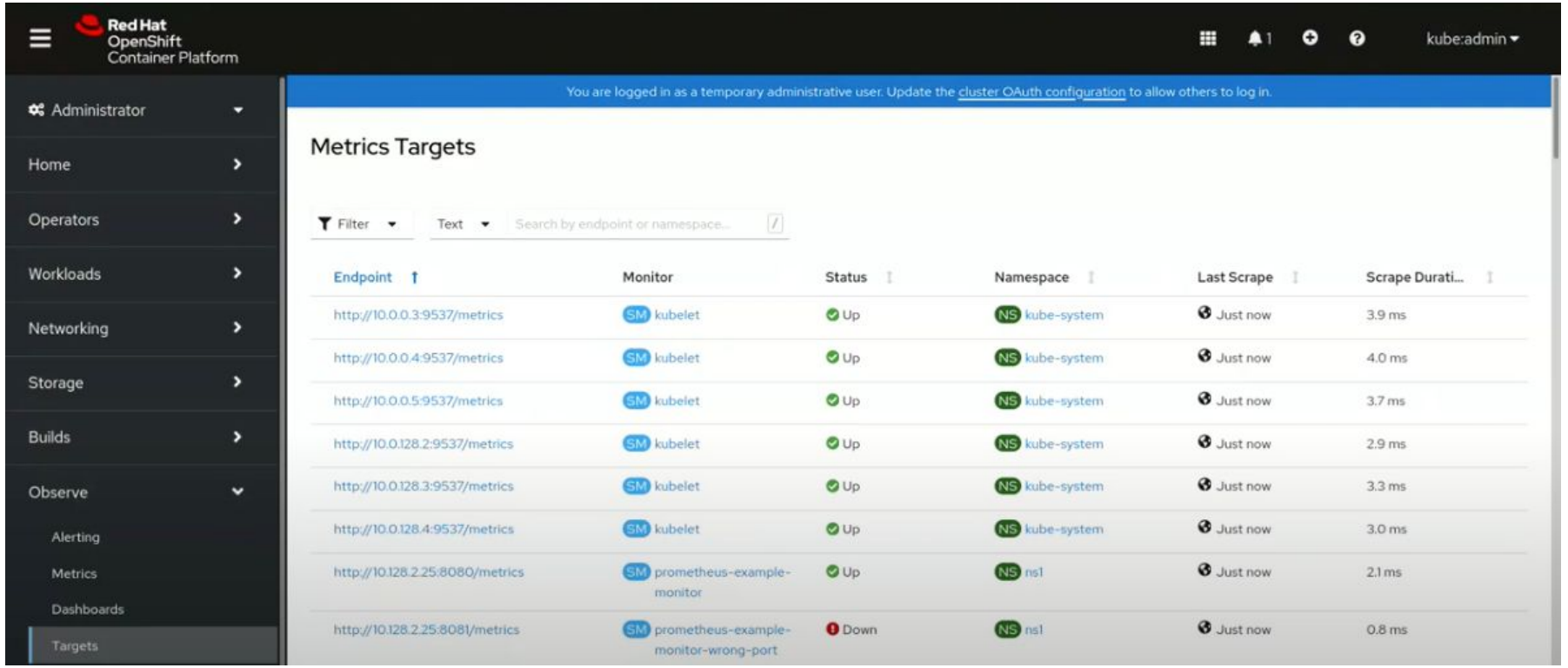
Improved OpenShift Monitoring UI Experience

New Prometheus Targets Endpoints Provided within the OpenShift Console:

- Ability to set "Target Endpoints" for monitoring and scaping metrics for infrastructure or services.
  - Single Administrative view and Management
  - Federated Targets API in Thanos + Allows both Platform and User Defined Workload Monitoring

Observe Menu
+
Alerting, Metrics, Dashboards, & Targets

Metrics Targets & Scrape Endpoints



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Logging 5.4 for OpenShift 4.10

Tech Preview

On-Demand Queries In Milliseconds

Interoperable with Elasticsearch

Log Exploration

Loki & OpenShift (Day 1) Experience:

- Ability to install, update, and manage a cluster with an alternative, scalable and performing log store
- Ability to deploy and manage Loki operator for OpenShift In-Cluster Log Configuration Management

Multi-Cloud Extensible Framework

Multi-Tenancy Log Aggregation

API Extensible Logging Architecture

Loki & OpenShift (Day 2) Experience:

- Substantial performance & scale over Elasticsearch Log Storage
- Loki is Highly Scalable and provides Multi-Tenancy Capability for evaluating OpenShift Multicluster Log Correlation & Exploration

Supported Operator Framework

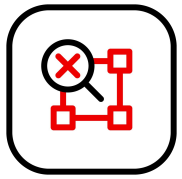
High Scale & Performance (Loki + Vector)

Red Hat Multi-Cloud Scalable Logging Stack Evolution (Elasticsearch to Loki Tech Preview Journey)

Red Hat

Distributed Tracing

Saving costs and time with Distributed Scenarios



Red Hat OpenShift

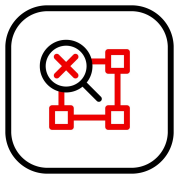
distributed tracing

(based on Jaeger)

Platform

- Based on Jaeger 1.29
- Added in-memory storage support for adaptive sampling
- Added OpenTelemetry Protocol (OLTP) to the Query Service
- Includes rolling updates to the documentation to support the name change and new features

Tech Preview



Red Hat OpenShift

distributed tracing

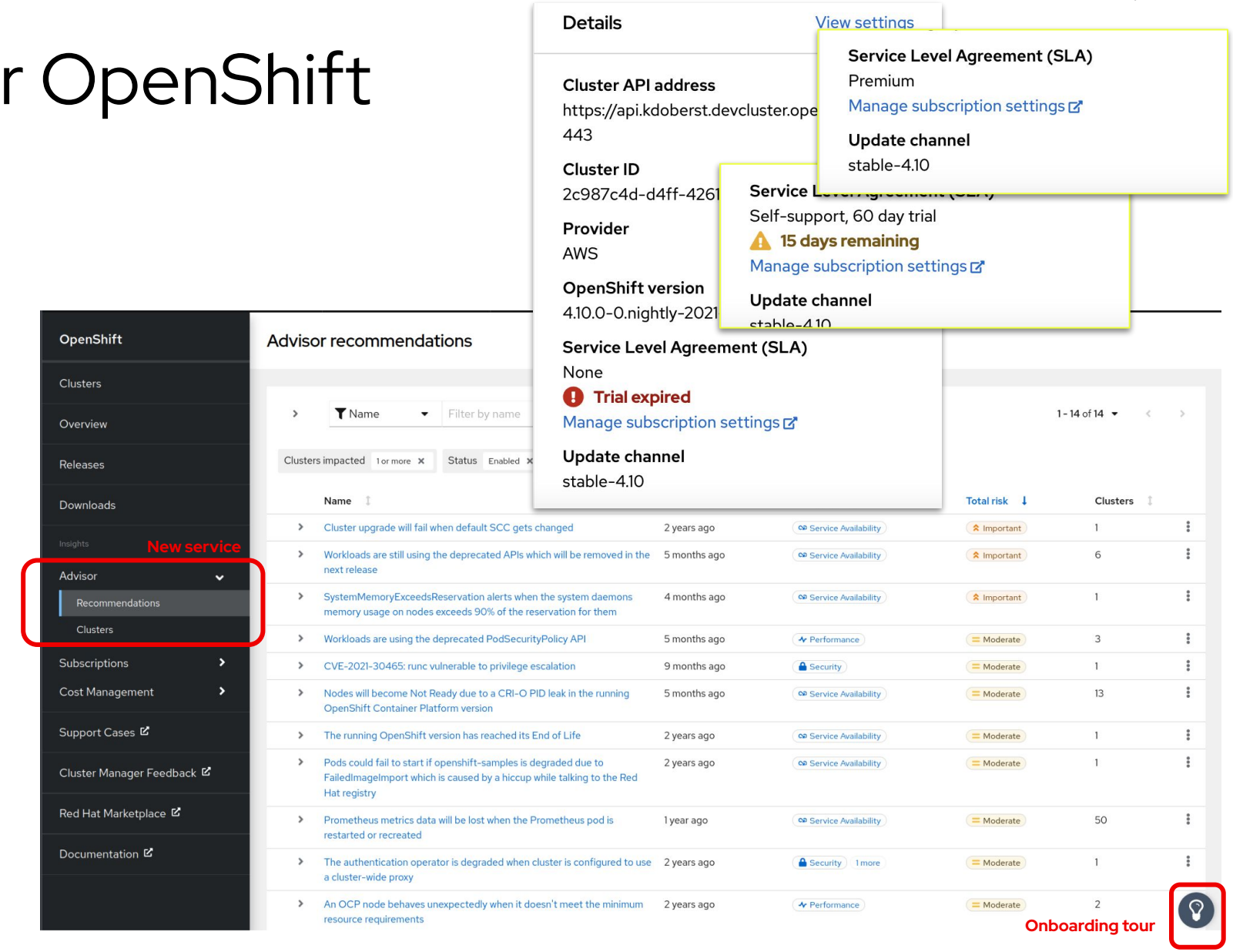
(based on OpenTelemetry Collector)

Data Collection

- Based on OpenTelemetry Collector 0.41
- Available through Red Hat distributed tracing Data Collection Operator
- It can act as an agent to work side-by-side with the application for offloading
- It can act as Gateway to connect applications with legacy instrumentation to different backends
- Capability to export telemetry data leveraging OpenTelemetry Protocol (OLTP)

Insights Advisor for OpenShift

- **New Insights Advisor!**
  - Account level view on all recommendations
  - Clusters affected by a recommendation
- **On-boarding tour** to walk you thru all new features (hit the ***bulb*** icon)
- Advisor **Recommendations** offered when **opening a support case**
- **Support Status**
  - Quickly identify the cluster support level
  - Eval Expiration Countdown
- **GA** of **Simple Content Access** (see other slides)



https://console.redhat.com/openshift/advisor
https://console.redhat.com/settings/notifications/openshift

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Cost management for OpenShift

AWS saving plans

- Customers with AWS saving plans now can select if they see amortized, blended and unblended costs.

90 days cost explorer

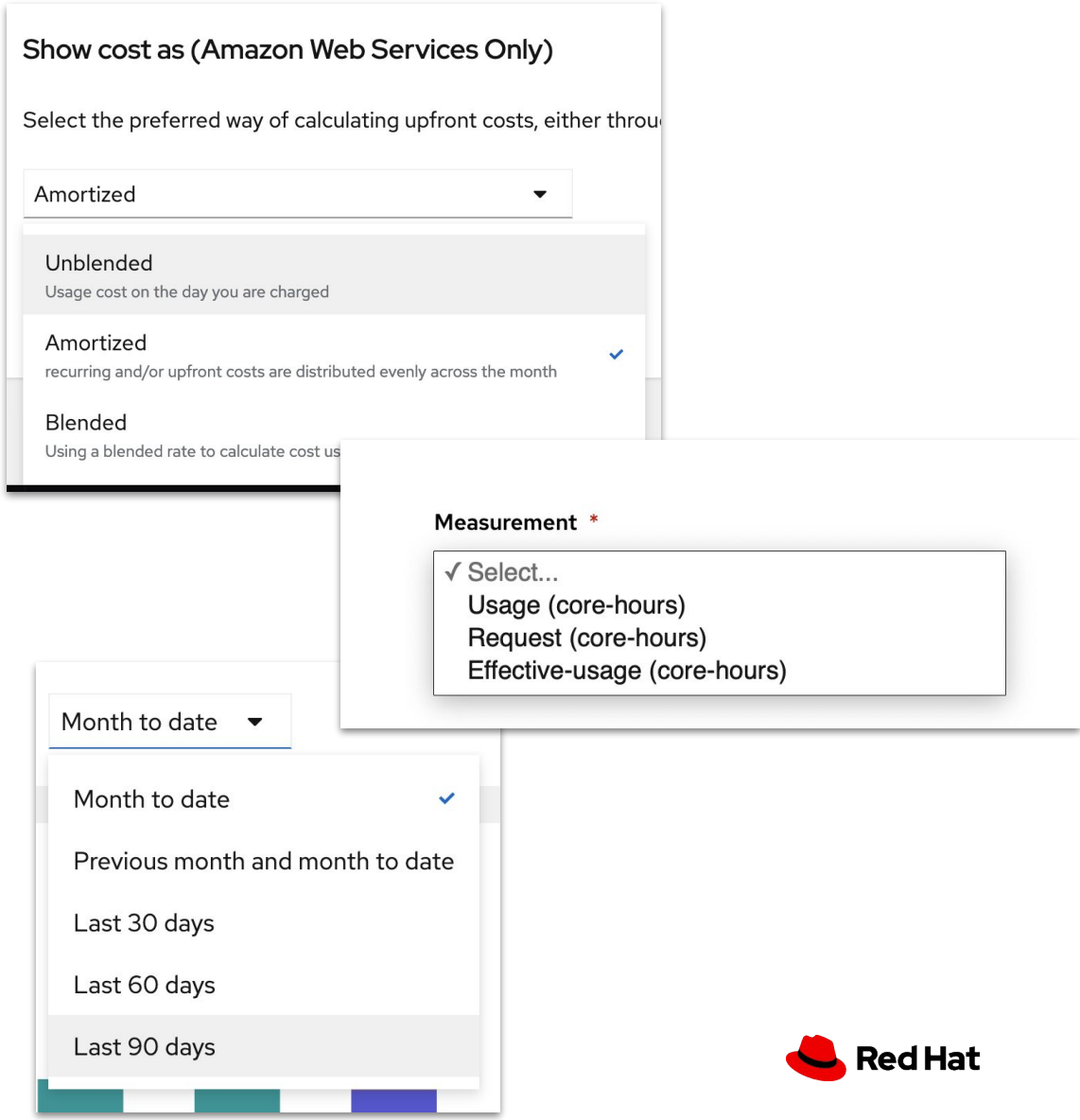
- We have updated the cost explorer and now you can select up to 90 days of data

OCP on GCP

- OCP costs can now be automatically calculated when connected to the GCP underlying infrastructure, like previously with AWS and Azure

Effective usage calculating costs

- A new rate policy has been added to take into account the maximum of requests and usage of each pod reflecting real reservation.



Red Hat

Thank you for joining!

Guided demos of new features on a real cluster

learn.openshift.com

OpenShift info, documentation and more

cloud.redhat.com

February
23
Wednesday

OpenShift Commons: Database Gathering

commons.openshift.org

Red Hat