Red Hat OpenShift

What's New in Red Hat OpenShift 4.20

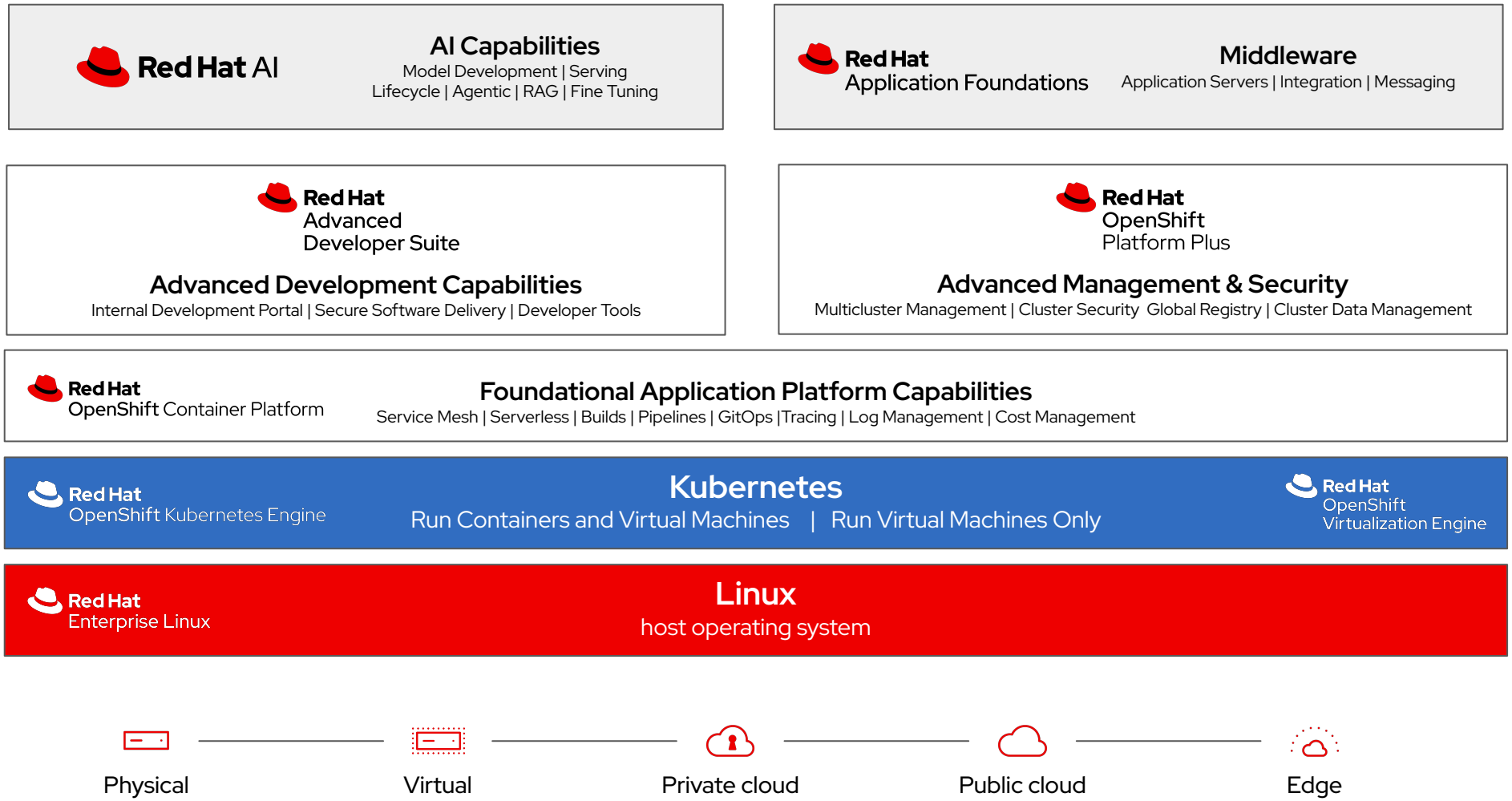
Oct 21, 2025

OpenShift Product Management

red.ht/whatsnew

Red Hat

Red Hat OpenShift and Open Hybrid Cloud



Red Hat OpenShift Cloud Services

- Red Hat OpenShift Service on AWS
- Azure Red Hat OpenShift
- OpenShift Dedicated
- Red Hat OpenShift on IBM Cloud

Kubernetes 1.33

"Octarine"

Notable Stable Features

- Sidecar containers
- Volume populators
- nftables kube-proxy
- Topology aware routing (PreferClose)
- Job enhancements

Notable Beta Features

- In-place Pod vertical scaling
- Dynamic Resource Allocation (DRA)
- OCI images as volumes
- NUMA-aware scheduling and asynchronous preemption
- ClusterTrustBundles

64
Total Enhancements

18
Graduated to Stable

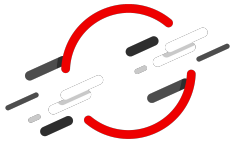
20
Promoted to Beta

24
New Alpha Features

CRI-O 1.33

Kubernetes 1.33

OpenShift 4.20



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Notable Top RFEs and Components

Top Requests for Enhancement (RFEs)

- Support the External Secrets Operator (GA) - RFE-3988
- Install LVMS operator in Different namespace other than `openshift-storage` - RFE-6419
- oc-mirror v2: Verify credentials, hostname, and certs before populating the cache during disk to mirror operations - RFE-7425
- Support bring your own OIDC authentication - RFE-3929
- Support Zero Trust Workload Identity Manager (SPIFFE/SPIRE) - OCPSTRAT-1763
- Support SELinux context mounts for RWO/RWX PVs (TP) - RFE-3327

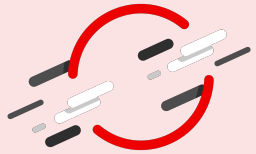
OpenShift 4.20 Spotlight Features

Red Hat

Red Hat OpenShift 4.20 Highlights

AI

- Distributed AI workloads with LeaderWorkerSet (GA) and JobSet (TP)
- Distributed Inference with llm-d with Red Hat OpenShift AI 3.0
- Runtime OCI Image Volume Source for AI Workloads
- Multi-cluster support with OpenShift Lightspeed 1.1 *(coming in Dec 2025)*
- Kubernetes and OpenShift accessibility via Model Context Protocol (DP)



Core

- Bring your own OIDC Identity Provider (GA)
- Zero Trust Workload Identity Manager (GA)
- User namespace (GA)
- External Secrets Operator (GA)
- BGP in OVN-Kubernetes for on-premises (GA)
- Two node OpenShift with arbiter (GA)

Virtualization

- CPU load aware rebalancing with descheduler (GA)
- Arm Support (GA)
- Faster live migration via parallel streams
- OpenShift Virtualization on ARO with Azure Boost and OpenShift Data Foundation
- OpenShift Virtualization on bare metal in OpenShift Dedicated, Google Cloud (GA) and Oracle Cloud (GA)

GA: Generally Available
TP: Technology Preview
DP: Developer Preview

red.ht/whatsnew

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AI Workloads in OpenShift 4.20

Optimizing Infrastructure for Enterprise AI/ML

Leader/Worker Set

General Availability

Simplifies leader-follower workload orchestration for distributed applications within Kubernetes.

JobSet

Technology Preview

Facilitates coordinated execution and lifecycle management of complex, multi-pod batch jobs in Kubernetes.

OCI Volume Source for AI Workloads

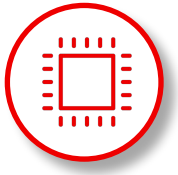
General Availability

Allows containers to directly mount model images as volumes, streamlining AI/ML deployment pipelines.

Red Hat Build of Kueue 1.1

General Availability

Provides Kubernetes-native job queueing for workload orchestration in OpenShift. Supports all OCP architecture types (x86, Arm, IBM Power and IBM Z).



DRA (Attribute-Based GPU Allocation)

Technology Preview

User specifies device type like Nvidia H100 or A100 as opposed to / NVIDIA.com.

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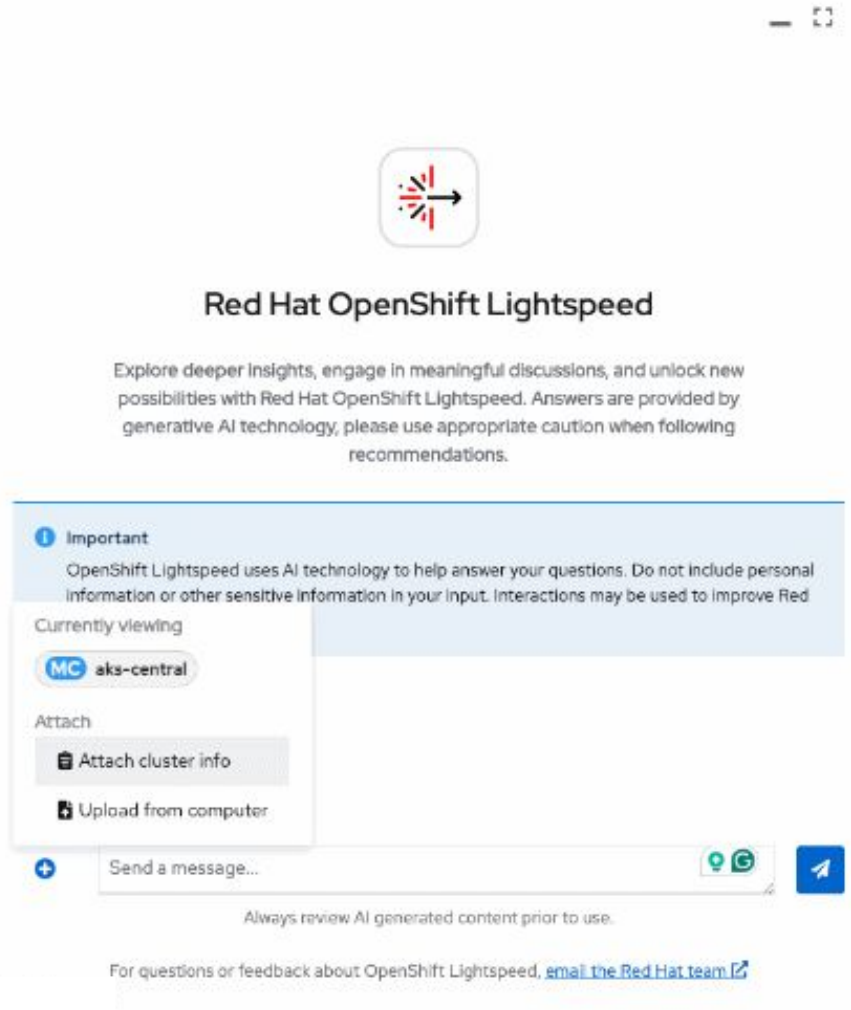
What's next

Multi-cluster support Of OpenShift Lightspeed

With Advanced Cluster Management



Now Available Now

- User ability to attach managed cluster's YAML/logs/events/error in Openshift Lightspeed listed in ACM hub cluster

Coming Soon

- Red Hat Advanced Cluster Management product knowledge in Openshift Lightspeed
  - Example "How to knowledge ACM"
- Ability to get status of remote cluster object
  - Example "List all pods from ABC cluster"

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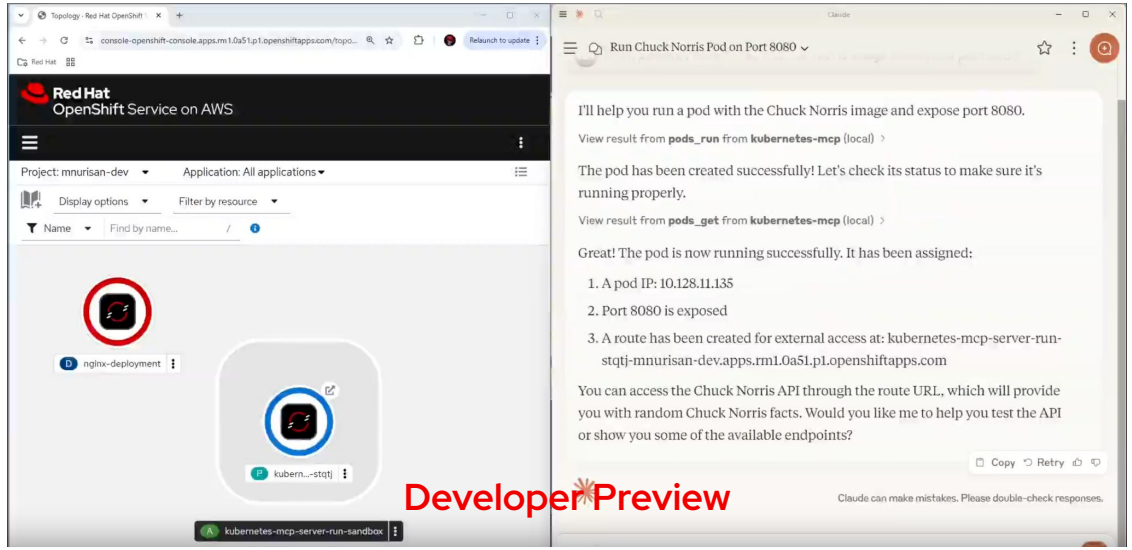
AI-powered Cluster Management

Bridge LLMs to OpenShift / Kubernetes with the Model Context Protocol

- Model Context Protocol (MCP) server extension for Kubernetes and OpenShift
- Developer Preview
- Native Go implementation
- Natural Language Queries
- Direct API Calls
- RBAC-Compliant
- Zero Dependencies
- Generic CRUD
- Try this MCP Server with VSCode, GitHub Copilot, Cursor, Claude Desktop and Goose
- Learn more at [Kubernetes MCP server: AI-powered cluster management]



https://github.com/containers/kubernetes-mcp-server

Product Manager: Gaurav Singh

Red Hat

User Namespace and External Secrets Operator

General Availability

User Namespace

User Namespace isolates the UIDs and GIDs of the containers from the ones on the host.

Example: A root user inside the container can be non root on the host

External Secret Operator

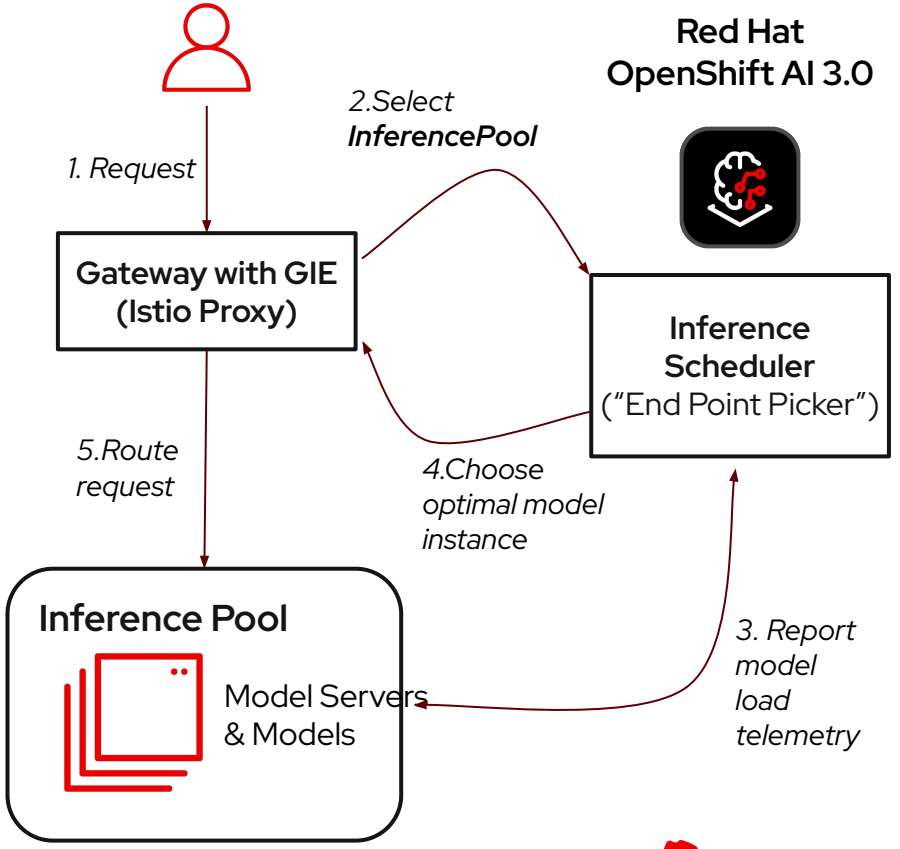
Provides the ability to consume credentials stored in the secrets management system of your choice

Core features: Policies for creation, rotation, and advanced templating

Traffic Management for AI/ML with Red Hat OpenShift AI 3.0

Bringing AI-Optimized Traffic Management to OpenShift

- **Red Hat OpenShift AI 3.0** introduces **distributed inference** with llm-d to enable **specialized routing** and traffic management capabilities **for AI/ML inference workloads**.
- Uses **Gateway API Inference Extensions (GIE)** to provide advanced capabilities for routing inference requests based on the specific model and available load telemetry
- GIE extends **Kubernetes Gateway API** and is automatically enabled when **InferencePool** resources are created.
- GIE is implemented with Istio's Gateway (Envoy) through OpenShift Service Mesh 3.2.0+



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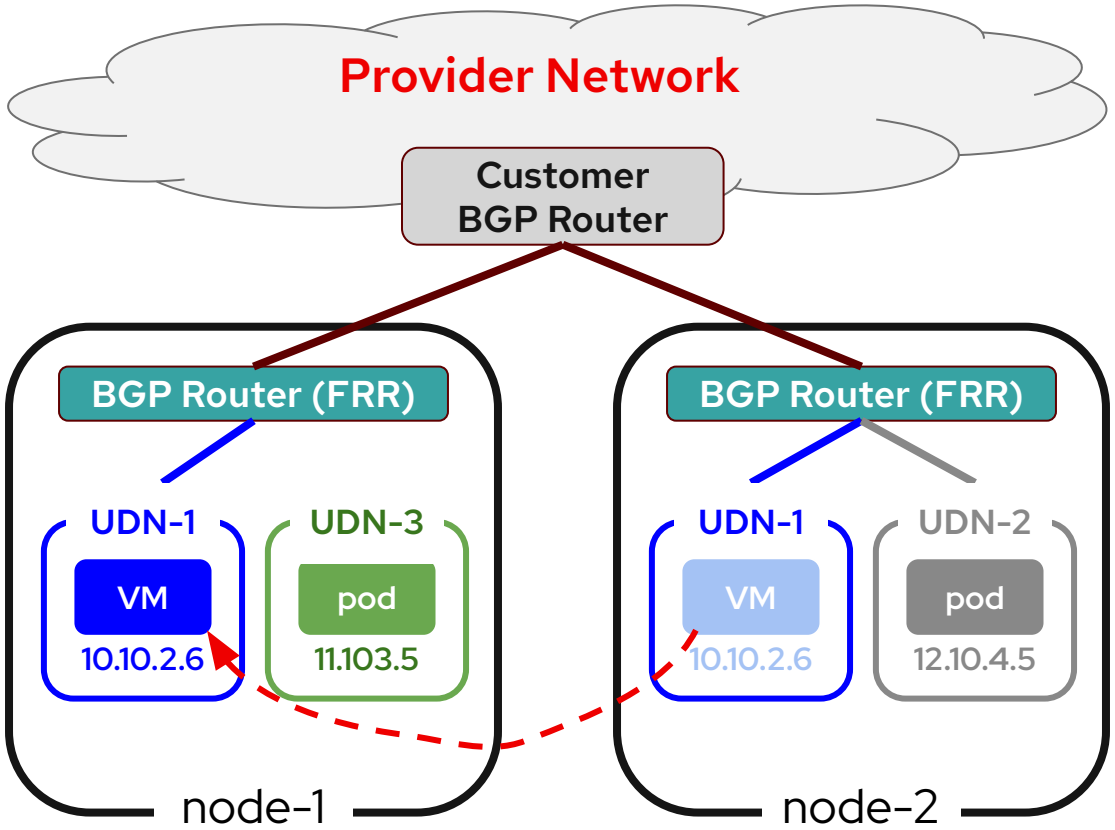
BGP Support in OVN-Kubernetes

Generally Available in 4.20 and 4.19.12

BGP with OVN-Kubernetes (KEP)

- Bare metal platform, initially
- Adds to MetalLB & CNO BGP support already available
- **Expose pod/VM networks directly in the provider network, supports both default and UDN networks**
- Cluster Admin privileged Primary UDN advertisements
- Export EgressIP routes for native L3 failover to another node
- Import routes from the provider network to default pod network or designated UDN (VRF)
- VRF-Lite extends UDN tenant isolation via VPN integration with external networks
- Import/Export of routes enabled independently
- BFD is supported



ROADMAP

- BGP No-overlay support
- EVPN support
- Multi-Platform Multi-Cluster connectivity
- Improved L2 advertised routes to avoid extra hops
- Advertise pod networks from a subset of nodes

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Zero Trust Workload Identity Manager (GA)

Multi-Factor Authentication for Workloads with Runtime Attested Identities

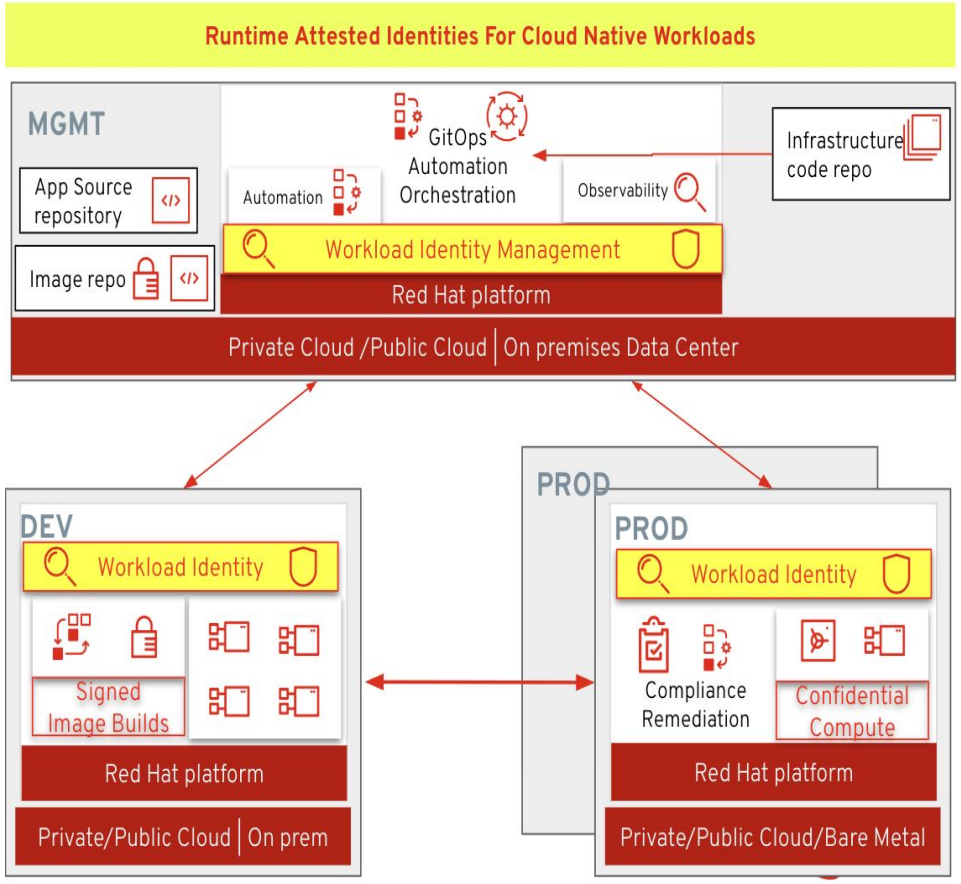
Zero Trust Workload Identity Manager — Now Generally Available on OpenShift
Based on upstream **SPIFFE/SPIRE**, delivering **runtime-attested, cryptographically verifiable identities** for every workload.

Core Capabilities

- **Workload auto-registration** with SPIRE Controller manager
- **SPIRE<>SPIRE Server Federation** enables universal trust across hybrid and multi-cloud environments
- **OIDC Federation** enables workloads to integrate with existing enterprise identity systems (e.g., Keycloak)
- **Secretless authentication** with **Vault integration** using SPIFFE IDs
- **Bring Your Own Database (BYODB)** with PostgreSQL for compliance and resilience
- **Flexible configuration options** for automation and advanced security customization

Why It Matters

- Establishes **universal trust** across hybrid and multi-cloud environments
- **Eliminates static secrets** and manual certificate management
- Enables **short-lived, verifiable identities** for secure workload-to-workload communication
- Provides **consistent, runtime-attested identities** for all cloud-native workloads — from traditional services to emerging **Agentic AI systems**
- Ensures **accountability and traceability** for every workload action
- Forms the **foundation for Zero Trust architectures** across the entire application landscape



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Bring Your Own External Authentication (GA)

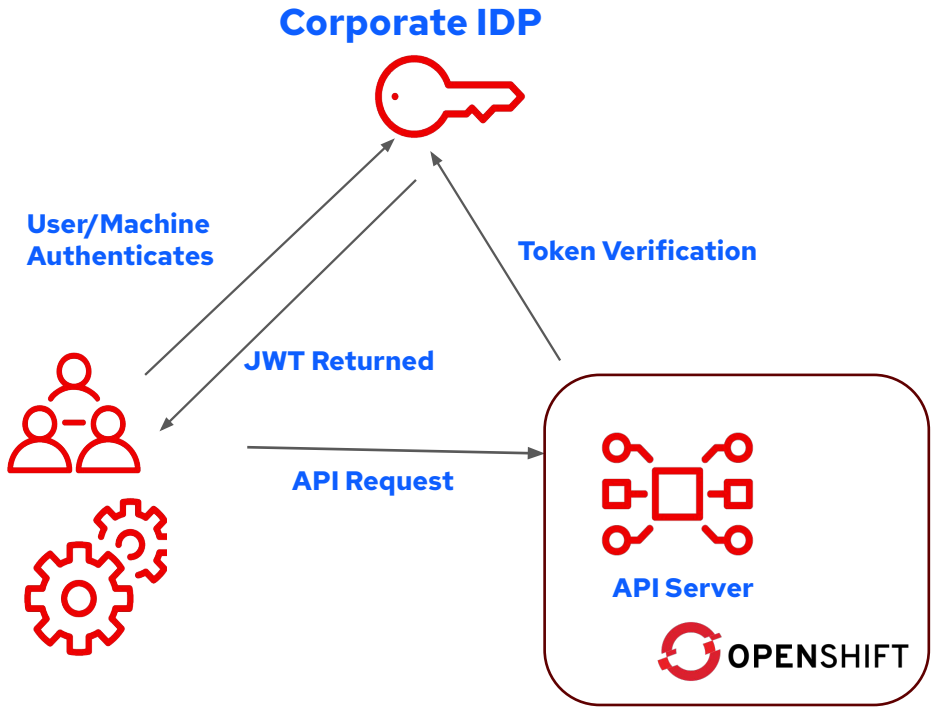
Direct Integration of Corporate Identity Providers with OpenShift APIs

Core Functionality In Self-Managed OpenShift:

- Works on both fresh installs & upgrades
- Switch easily between OAuth server & BYO OIDC configs
- Built-in oc-oidc CLI plugin (Auth Code + PKCE)
- Verified end-to-end with Red Hat–supported OIDC Identity Providers

Customer Benefits

- Corporate IDP Tokens: Direct API access using enterprise credentials
- Customer control over session configuration, which is important for compliance
- Unified Access: Single pane for users & groups across clusters
- Upstream-Aligned: Based on upstream OIDC structured authentication
- Automation-Ready: Enables hybrid & multi-cloud workflows



Self-managed OpenShift OCPSTRAT-1804

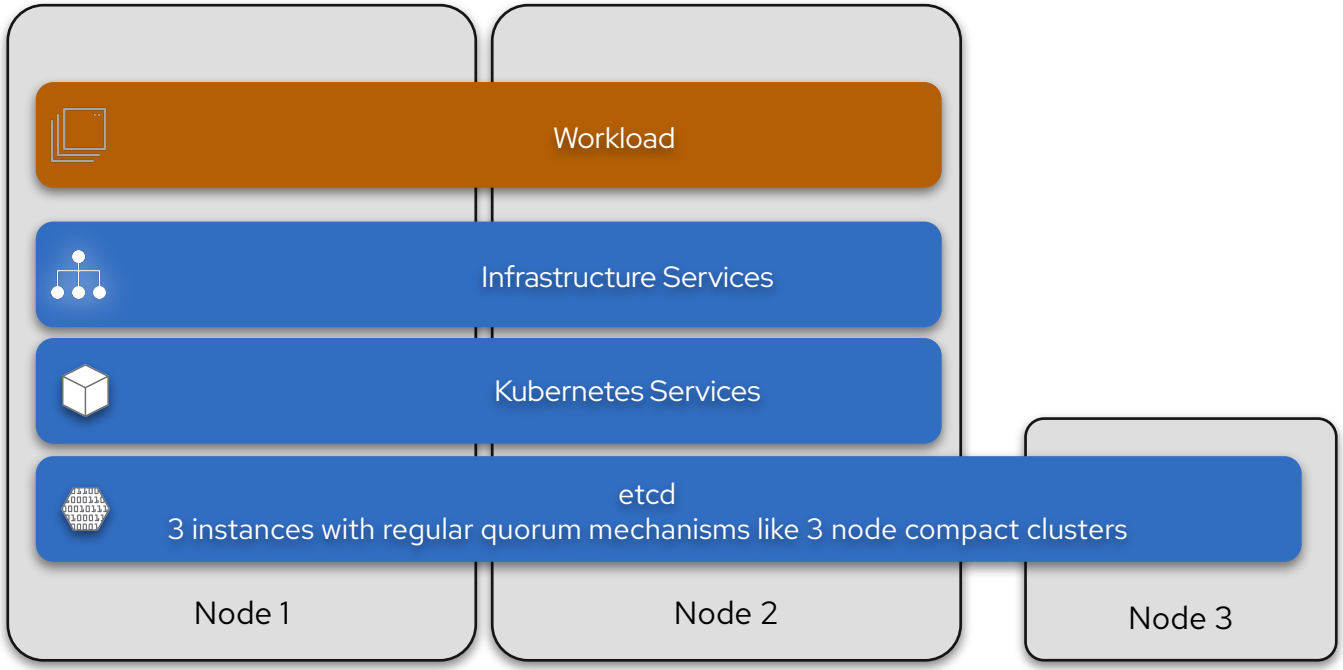
Also available on ROSA HCP ROSA-130 and ARO HCP ARO-21390

Red Hat

Two Node OpenShift with Arbiter (TNA)

New Topology Approach:

- Two node solution for cost sensitive customers who do not need a full third node for their workload
- Small arbiter node (2 vCPU, 8Gi), running only third etcd instance
- Same HA characteristics as a regular three node cluster - tolerates single node outage
- OpenShift Virtualization fully supported
- X86 and Arm, bare metal only (platform=none)
- Hyperconverged Storage / Software Defined Storage (replica 2, disks only on node 1 and 2) via partners:
  - Pure / Portworx (GA 10/'25)
  - Arctera / Infoscale (limited GA 12/'25)*
  - IBM / Fusion (DP 10'25)




```
% oc get nodes
NAME  STATUS  ROLES
node1 Ready   master,worker
node2 Ready   master,worker
node3 Ready   arbiter
```

OpenShift Virtualization Highlights

Modernize your operations with comprehensive lifecycle and infrastructure management

Simplified VM Management

- Multi-cluster VM operations and management
- Optimize cluster for Virtualization with recommended operators
- OpenShift Virtualization installation in Disconnected and Registry-less (TP)

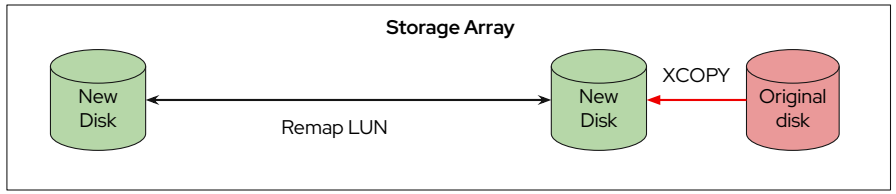
Optimize your infrastructure

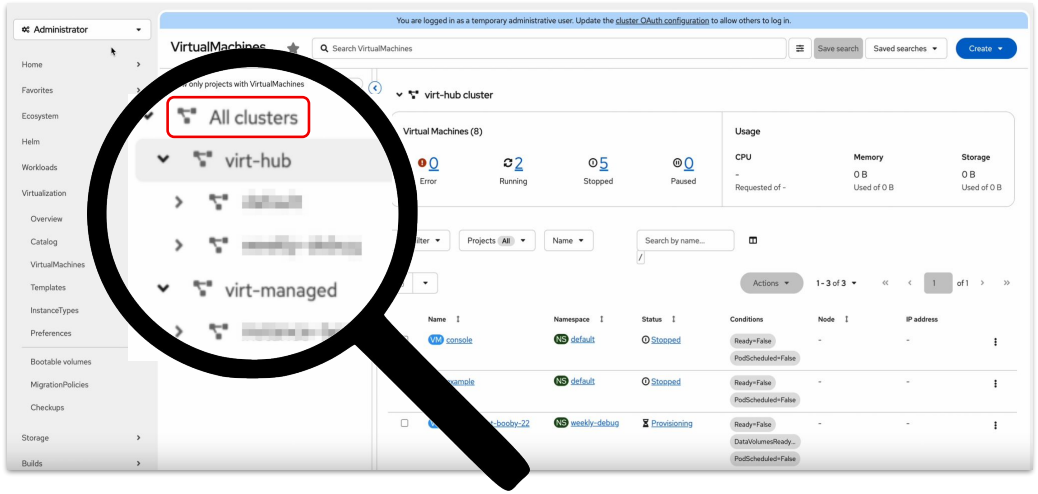
- Cross-cluster VM live migration (TP)
- Live migration to specific node
- Migrate large VMs up to **10 times faster** (minutes vs. hours) with *storage offload* on some models of Hitachi, NetApp, Dell, Pure, and HPE
- CPU utilization based Automatic VM workload balancing
- OpenShift Virtualization on Arm

Networking Enhancements

- Routed ingress (BGP) for L2 User Defined Network
- Ability to change the virtual network interface link state of a running VM
- Passt Integration for OpenShift Virtualization (TP)

MTV Storage offloading accelerated migration





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Learn more about What's New in OpenShift Virtualization 4.20

When: October 28, 11:00am CDT

Where: Virtual

Sign up: Use the QR code or go to red.ht/Virt420

Red Hat

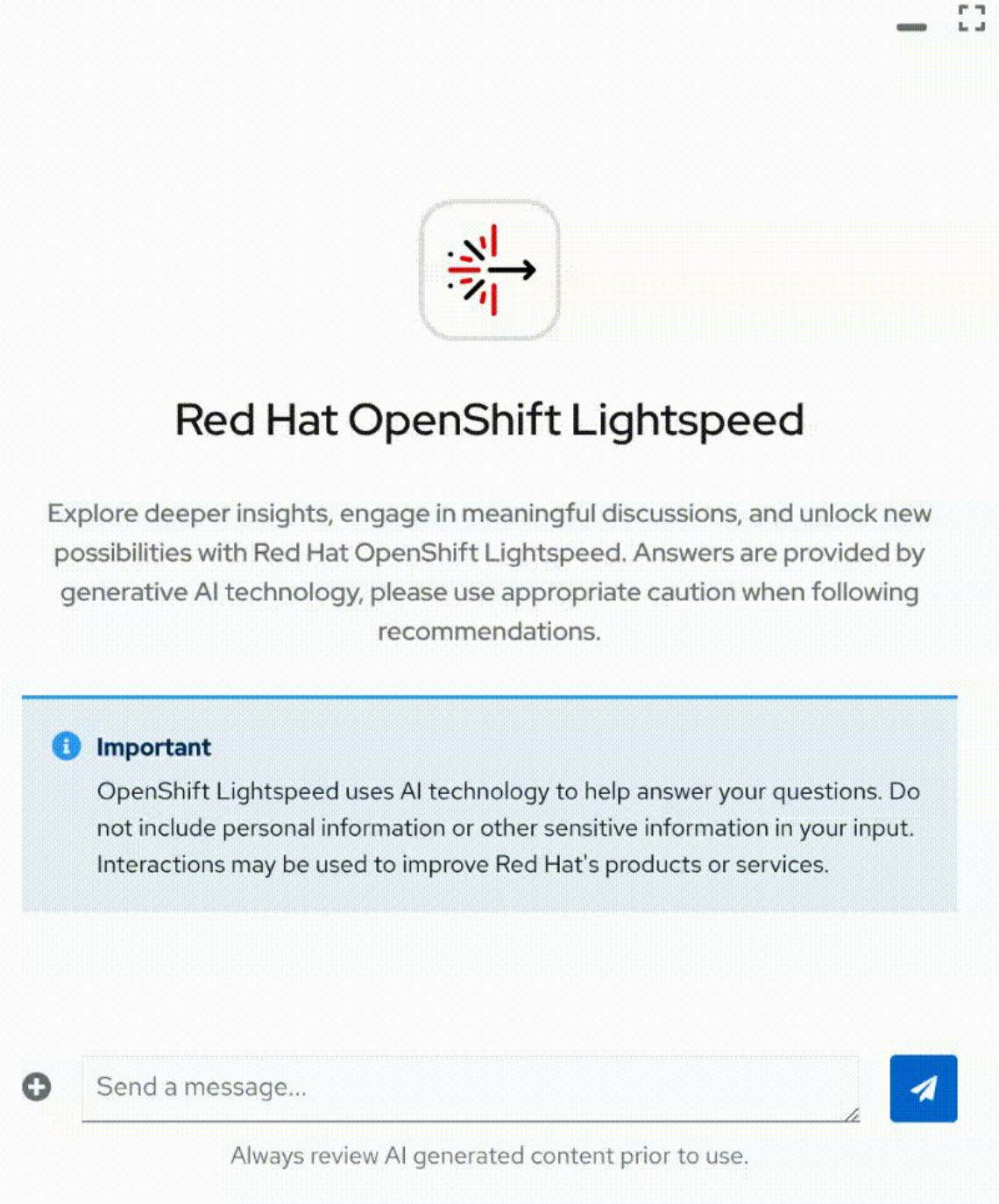
Intelligent OpenShift

Cluster Observability Operator

COO 1.3

New Features

- [Incident Detection MCP](#) / **COO 1.2.2+** (DP) ✔
- **Incident detection** for Red Hat OpenShift (GA)
- **Observability signal correlation f**or Red Hat OpenShift (GA)
- **APM** dashboard (DP)
- **Traces UI** enhancements

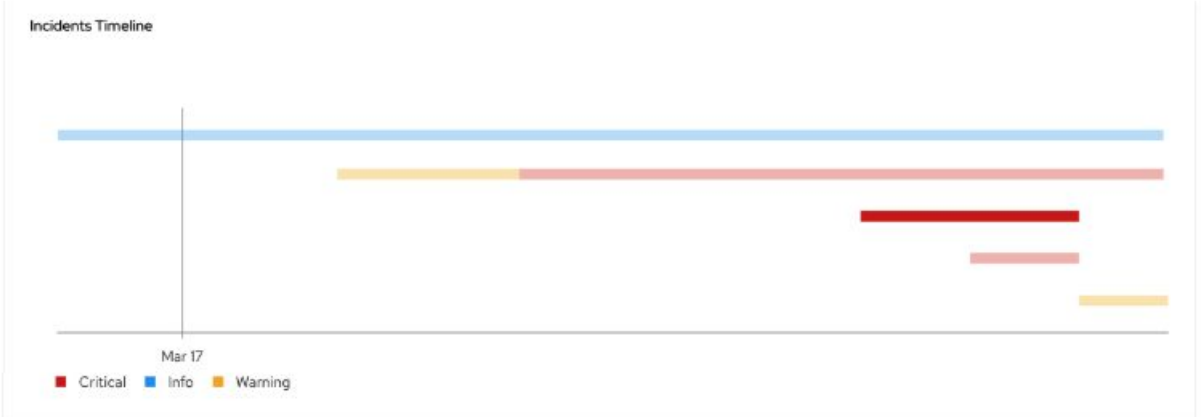


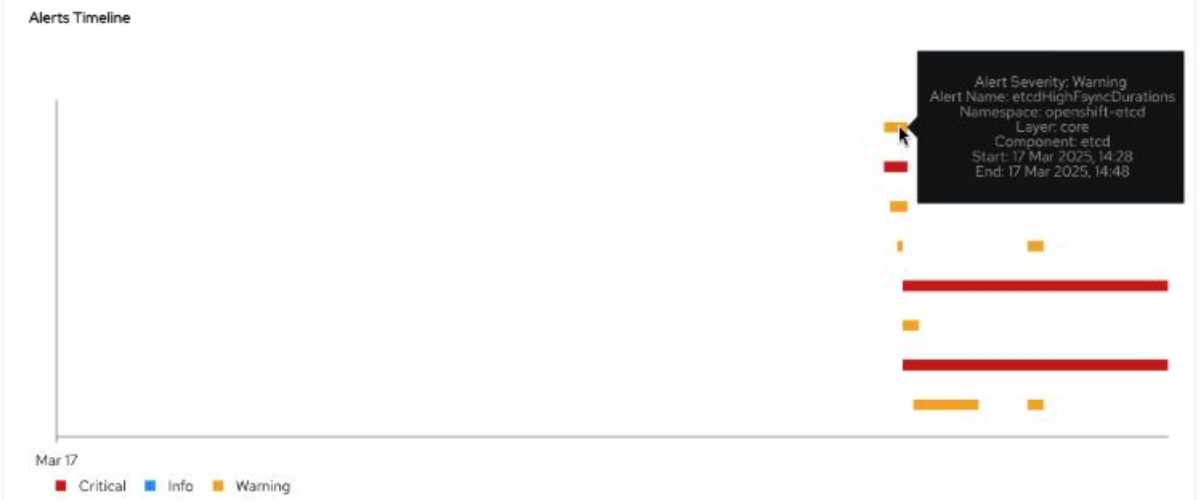
Coming soon!

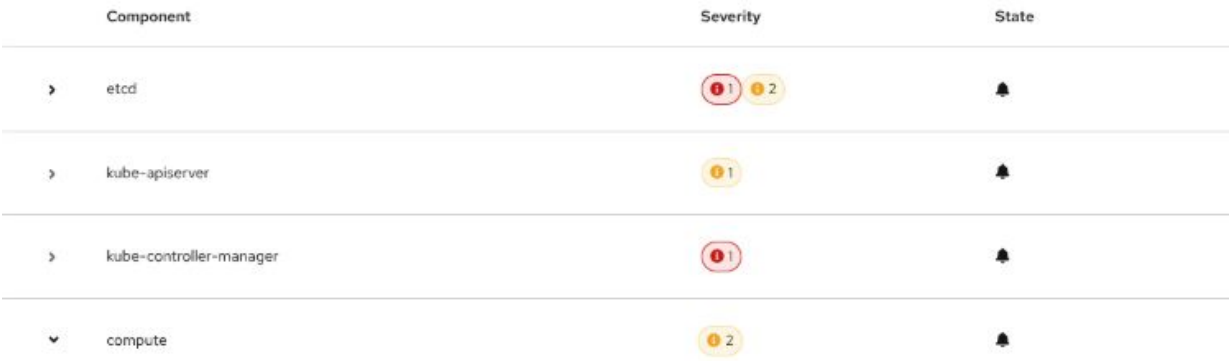
Incident detection for Red Hat OpenShift

Generally Available with **COO 1.3**

- **Manage alert noise at rapid speed**
  Incident detection groups related alerts into incidents
- **Alert groupings = incidents**
  Currently based on the temporal correlation between events
- **Incidents UI in the OpenShift web console**
  A unified view of incidents, their severity with the possibility to drill down into individual alerts
- **Shipped by the cluster observability operator (COO)**
  Optional operator that makes incident detection and advanced observability features available to the user





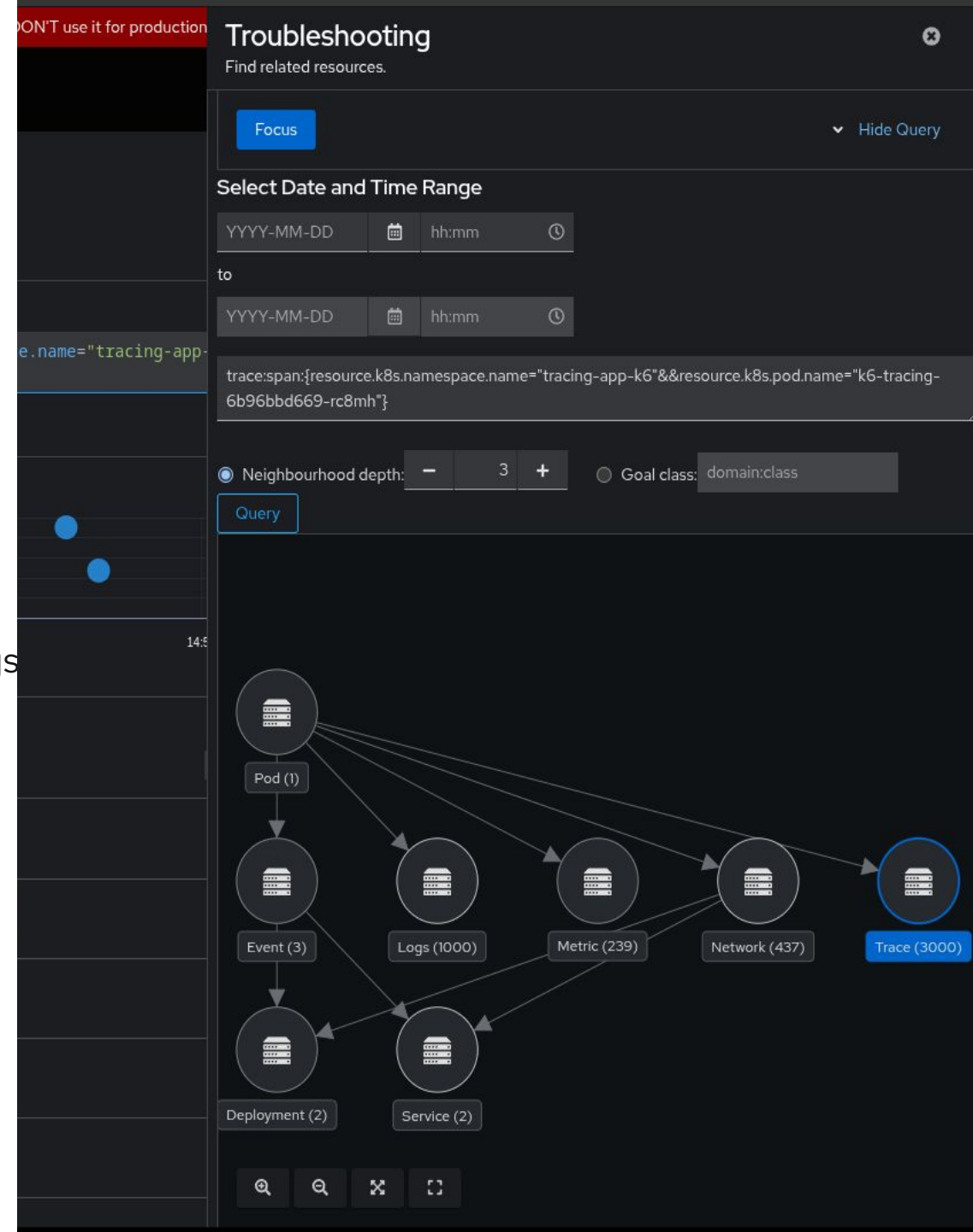


Coming soon!

Observability signal correlation for Red Hat OpenShift

Generally Available with **COO 1.3**

- **Powered by Korrel8r**
  Open source rule-based correlation engine that provides the backend logic
- **Guided troubleshooting**
  Navigate from an alert to a pod, from a pod to logs, and from logs to a specific metric, following the chain of events until the root cause of the issue is identified
- **Troubleshooting panel in the OpenShift web console**
  An Interactive, correlated view of observability signals and K8s resources
- **Shipped by the cluster observability operator (COO)**
  Optional operator that makes signal correlation and advanced observability features available to the user



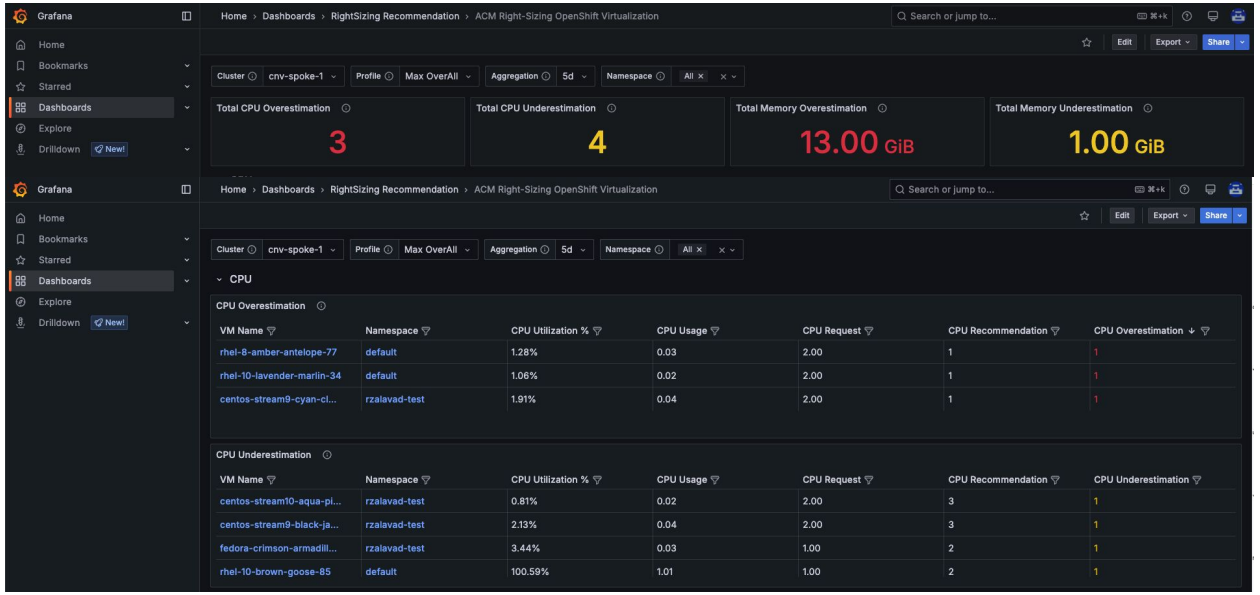
Coming soon!

Right Sizing Recommendations / Virtualization

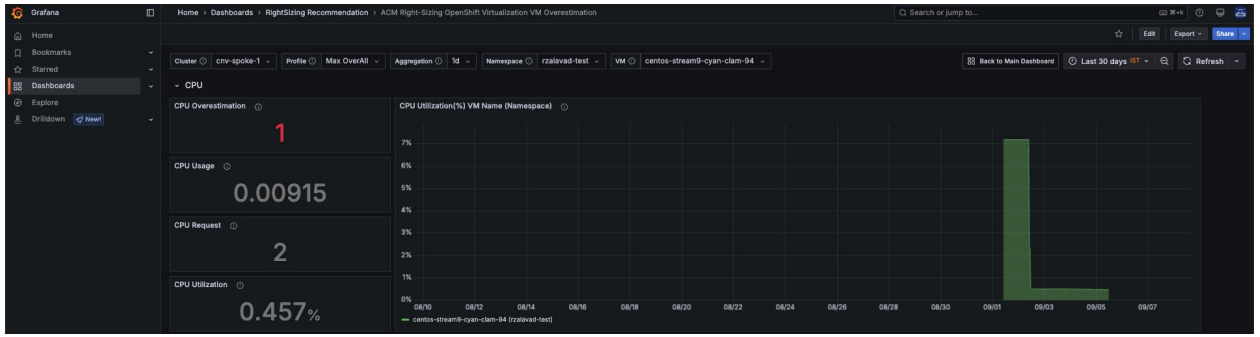
Technology Preview with **Red Hat Advanced Cluster Management 2.15**

- **Right sizing recommendations at the VM level**
  Policy-driven architecture using **PrometheusRule**
  Customizable data filtering via **ConfigMap**
  Working with OpenShift **labels** & **namespace** filters
  Historical analysis using **daily aggregated data** points
- **Ensure better performance across VM workloads**
  Help identify savings in resource allocation and over-utilized resources (CPU & Memory)
- **Enable the feature in the MultiClusterObservability Custom Resource in the hub cluster**
  Make use of a dedicated Grafana dashboard in RHACM console

CPU overestimation/underestimation:



Detailed overview for each VM:



Red Hat

AI Accelerator Ecosystem

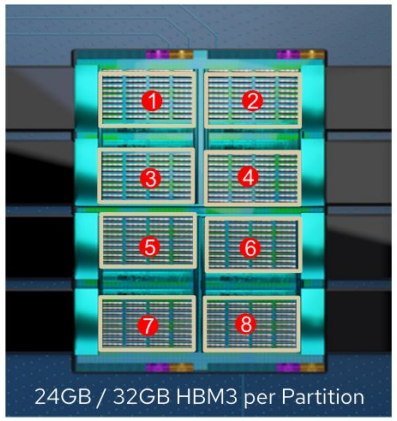
NVIDIA

With the NVIDIA GPU Operator 25.10:

- OpenShift Virtualization vGPU for compute (MIG-backed)
- Support for hardened base images UBI-STIG container driver.
- Distroless NVIDIA GPU Operator.
- Support OpenShift on GB200 NVL72 (Arm)
- NVIDIA GPU Operator CDI by default
- DCGM metrics included in OpenShift telemetry

AMD

- AMD MI300X SR-IOV support with partitioning support for containers and OpenShift with the AMD GPU Operator.
- Device-Metrics-Exporter enhancements: New Metric Fields, Health Service Config, Profiler Metrics Default Config Change



Eight partitions (CPX)

rebellions_

- Rebellions AI NPU Operator
- ATOM NPU, 8 cards per servers

ATOM-Max

Red Hat

Hosted Control Planes

ARO with HCP roadmap in motion

Ongoing development towards releasing ARO with HCP in 2026. Progress during OpenShift 4.20:

- New hosted_cluster_info Prometheus metrics
- Global Pull Secret for private registries
- Heterogeneous architecture support: x86 control plane with Arm data plane
- OIDC provider support with customer-managed client secrets

Cluster AutoScaler API for Hosted Clusters

Customize the Cluster AutoScaler behaviour for hosted clusters such as CPU utilization thresholds

CNI Certification for HCP

Isovalent now certified for Hosted Clusters.
Tigera coming soon.

OVN IPv4 subnet configuration

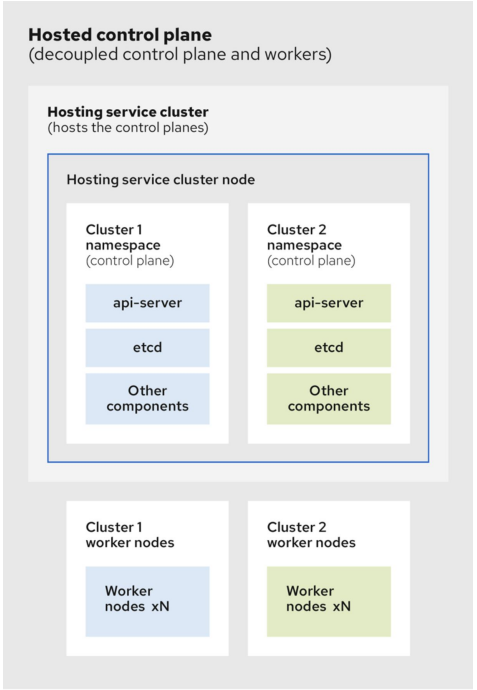
Customizable OVN IPv4 subnet configuration for HCP clusters to avoid CIDR conflicts and enable advanced networking features adding `ovnKubernetesConfig` to the HostedCluster API

GA Dual-Stack IPv4/IPv6

GA support for the agent provider (bare metal) for 4.18 onwards

Documentation Improvements

Greatly improved the documentation for deploying hosted clusters on bare metal



* Hosted Control Planes is shipped in the HyperShift Operator included in RHACM, released about 6 weeks after the GA of OCP

Red Hat

Manage at Scale

Red Hat Advanced Cluster Management for Kubernetes *2.15*

Global Cluster Management

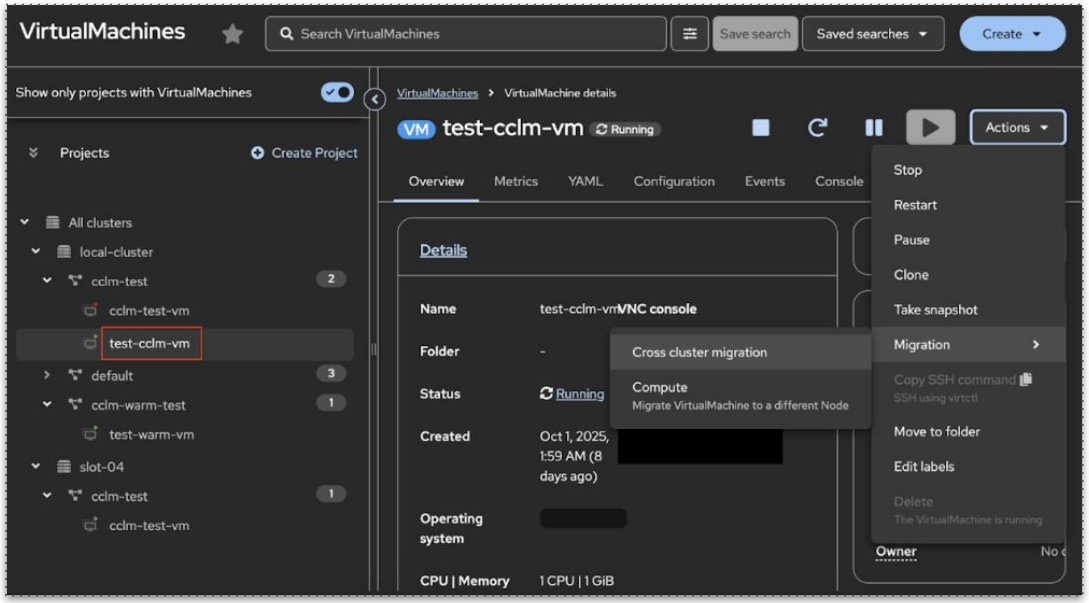
- Managed Cluster Migration - Global Hub (GA)

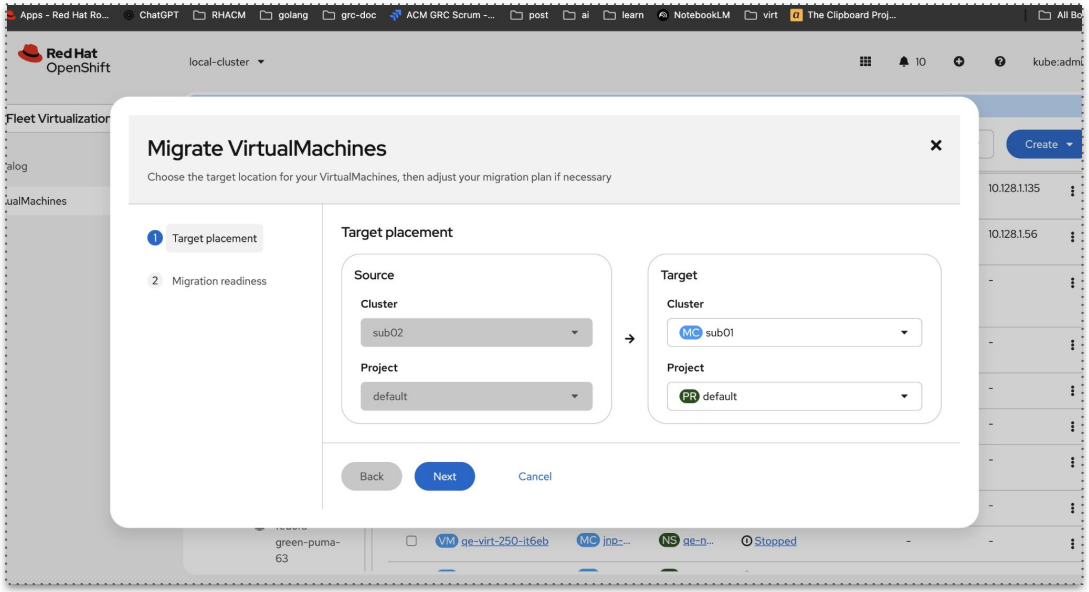
Virtualization & Fleet Management

- **Fleet Virtualization**
  - Tree View & VNC Console
  - VM Details, VM Actions , VM Multiselect (GA)
- Cross-cluster live migration (TP)

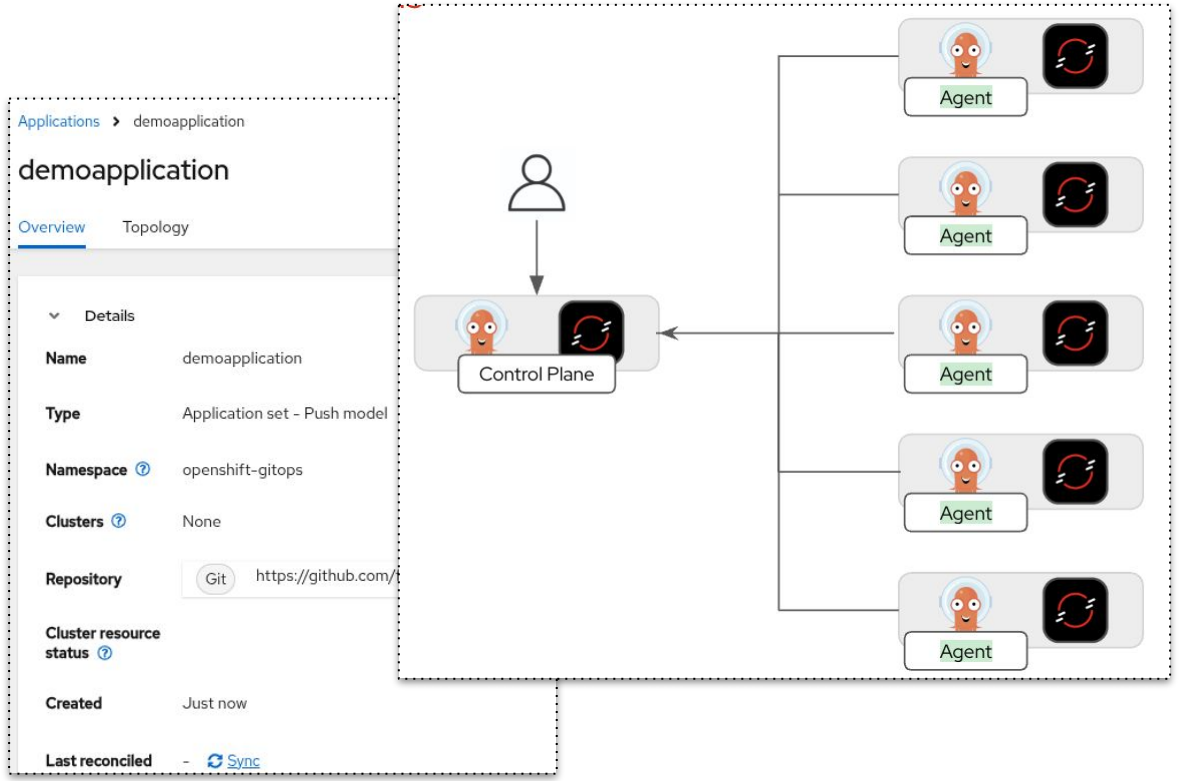
Policy & Governance

- Expanded Gatekeeper run-time configurability (GA)
- ***policytools*** CLI dry-run against live cluster (GA)





Red Hat Advanced Cluster Management for Kubernetes *2.15*



ArgoCD & Application Management

- ApplicationSets in any namespace (TP)
  - crucial for enabling multi-tenancy or self-service and at scale
- ACM **ArgoCD Agent** Integration (TP)
  - focus on lifecycle management
- Support for syncing ApplicationSets in the UI

Cluster Lifecycle Management

- **Cluster Lifecycle for ROSA** with Cluster API Provider AWS (CAPA) (GA)
- Cluster Lifecycle for **Nutanix IPI** (GA)

Monitoring & Observability

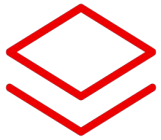
- Metrics Collection with **MCOA** (GA)
- Improved backup restore procedure for Observability
- Alert Management UI (TP)
- Global Hub enhancements (ability to observe Managed Hub Clusters)

Red Hat

Red Hat Advanced Cluster Security for Kubernetes

4.9 highlights

KEY UPDATES



ServiceNow Integration

ACS vulnerability data populated in ServiceNow Container Vulnerability Response Application to support custom management workflows

View based Vulnerability Reporting

Export filtered vulnerability data as CSV files providing unprecedented flexibility in analyzing data and addressing specific security concerns

Declarative Machine-to-Machine Auth Config

DevSecOps-friendly declarative M2M config for access to ACS APIs

MORE FEATURES

ACS Prometheus Metrics

Centralized exposed Prometheus metrics for custom dashboarding and monitoring

Automatic process baseline lock-in

Automatic alerts for suspicious process detection

Policy Editor Reorganized

Policy editor is more intuitive and documentation includes comprehensive guidance

Dev Preview: Vulnerability Reporting for Virtual Machines (VMs) in Red Hat OpenShift Virtualization

Agent-based solution for RHEL guest OS vulnerability reporting, offering a unified view for containerized and VM workloads

Red Hat

Red Hat Quay 3.16

Enhanced Insights, Security, Storage Flexibility, and Modernized UX.

Image Tag Popularity Tracking

Tracks the **last pull time** and **pull count** for each **image tag**, providing insights for **custom pruning** and **future automated cleanup** to improve repository governance.

Enhanced Security with OIDC PKCE Support

Integrates with **modern OIDC providers** that require **Proof Key for Code Exchange** (**PKCE**) to ensure secure and uninterrupted authentication.

Operator Support for Custom StorageClass

Customize the Kubernetes **Storage Class** for **Persistent Volume Claims** (**PVC**s) using the **Quay Operator**, allowing for **different storage backends** to improve performance and resilience.

Modernized Quay User Experience (*New UI*!)

The **new PatternFly UI** is now the default with enhanced features, providing a **modern**, **consistent experience** that aligns with Red Hat products.

Note: *The **Classic UIs** are fully **deprecated** in this release.*

Observability & Sustainability

Red Hat

Observability

OpenShift Monitoring

OpenShift 4.20

New Features

- **Expanded Node-Level Metrics**: Enabled the sysctl node-exporter collector for networking troubleshooting.
- **Enhanced KSM Metric Configuration**: multi-tenancy support for Custom Resource State in kube-state-metrics
- **Adjustable metric-server Verbosity**: Possible to directly change the log verbosity of the metric-server.

Improvements

- Enhanced **Network Security**
  - Implemented NetworkPolicy support for monitoring components to improve security
- Monitoring stack **components** updated
  - Prometheus Operator: 0.85.0
  - Prometheus: 3.3.1
  - kube-state-metrics: 2.16.0
  - node-exporter: 1.9.1
  - thanos: 0.39.2

Observability

OpenShift Logging

Logging 6.4

Log Collection

- Streamlined storage AWS output
- Cross-account forwarding enabled with assume-role

Log Storage

- Loki performance troubleshooting made simple
- Smarter monitoring with Loki conditional alerting rules

Observability

Application Observability & Integrations

Distributed Tracing 3.7

Red Hat Build of OpenTelemetry

- [Tech Preview] **Probabilistic Sampling** Processor
- Deploy **custom exporters**

Distributed Tracing

- Updated Tempo version to **Tempo 2.8.2**
- Expose Tempo Gateway using Route with Reencrypt

Red Hat

Console

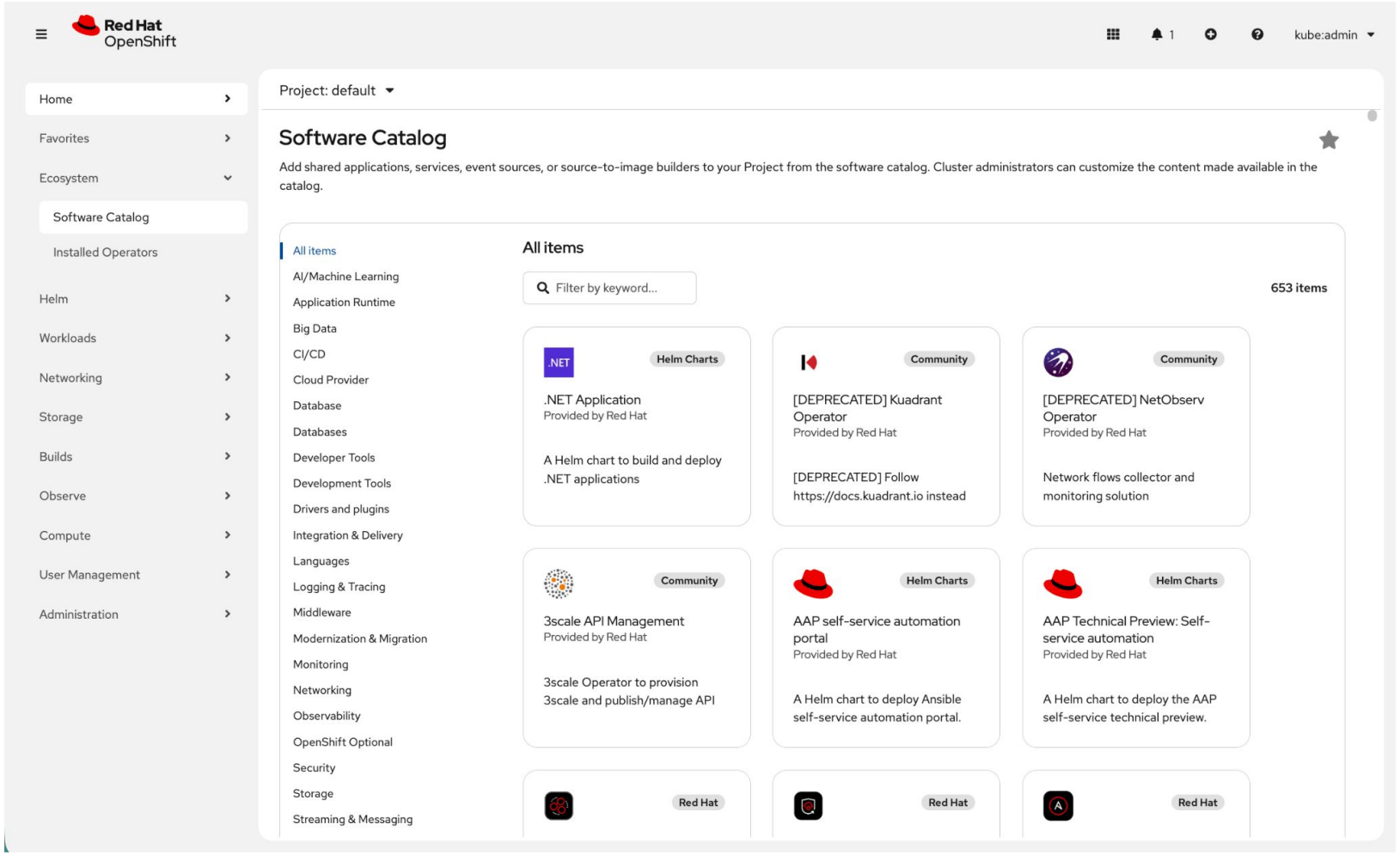
Console

Console: Unified Software Catalog

One location to manage all software that runs on your cluster

Designed to Simplify!

- New Ecosystem Navigation Menu
- Merged Dev Catalog and Operator Hub
  - Previous Content merged into a Single Catalog for simplification
- Two Sub Menus
  - Software Catalog
  - Installed Operators



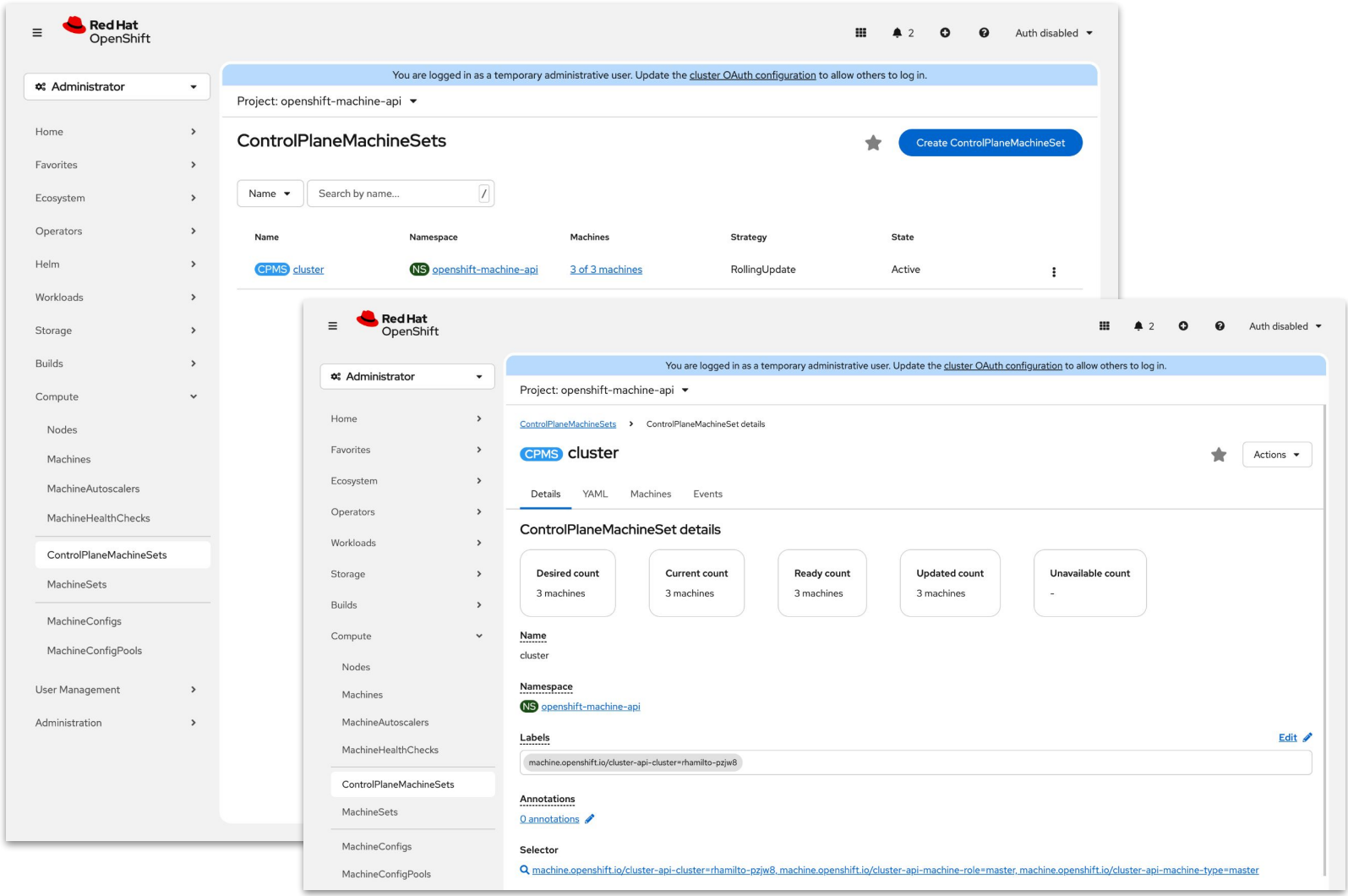
Red Hat

Console

ControlPlaneMachineSet User Experience

Improved discoverability and manageability of CPMS in the Console

- Added CPMS to the Console under Compute
- Provide UI controls to manage CPMS, similar to MachineSets
- Show node lifecycle status and replacement operations in the UI
- Enable rolling upgrade strategies visibility in the console



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Console

Console **RFEs** “Customer Happiness” for 4.20

- RFE-7712 - Full-Screen YAML Editor in OpenShift Web Console
- RFE-4945 - "Copy to clipboard" button for YAML in OpenShift Console
- RFE-1125 - Allow custom icons in OpenShift 4 developer catalog templates
- RFE-5057 - Ability to define Application Icon in Topology View
- RFE-4254 - Make PodRingSet available in Console Dynamic SDK

Developer Experience

Red Hat Developer Hub

Streamlined DevX and accelerated onboarding using centralized tools and docs.

RHDH 1.7 Highlights:

- New look Homepage experience
- Quickstart - for platform engineers
- ServiceNow Plugin - fully OSS
- Developer Lightspeed for RHDH - Dev. Pre.
  - Also available in RHDH Local!
- Plugin management can now be done via the Extension Catalog
- Dynatrace & IBM API Connect plugins are now Certified by Red Hat
- Template versioning
- New rhdh-CLI for devs
- Adoption Insights is now GA & on by default

RHDH Release Notes

Podman Desktop

6.6k !

3 million downloads and counting!

- Clearer dashboard notifications and updated onboarding experience
- Switch namespaces & context in the Kubernetes UI
- Libkrun as default provider (macOS) → GPU access for containers
- Switch between a rootless and rootful Podman Machine
- Podman Support for Windows ARM64
- Transparent proxy support

Release Notes

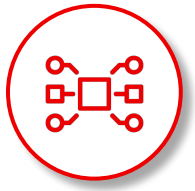
Extensions! Extensions! Extensions!

- **New! Apple Containers:** View and manage your Apple containers from within Podman Desktop
- **AI Lab:** Model catalog updated with recent models (gpt-oss, Granite 4.0, Gemma 3n, phi 4)
- **Minc**: Start *MicroShift* in a container for a lightweight development experience.
- **RHEL VMs**: Run RHEL in VMs directly from Podman Desktop

OpenShift Dev Spaces

Version 3.23 is now available

Red Hat OpenShift Dev Spaces 3.23 is based on Eclipse Che 7.107



More Jetbrains IDEs and host IDEs on local infra

Added Support for Rider, GoLand, and PhpStorm. For air-gapped environments, admins can now host these IDEs on an internal network which removes the need to download them from the internet.

On-prem openvsx instance

Admins can now deploy an on-premises instance of the Open VSX extension registry where they can host extensions internally and point Dev Spaces to it.

Support for ARM64 Architecture

Dev Spaces can now run on Openshift clusters using ARM64 CPUs, which gives developers the ability to run and test application on ARM64 architecture. Currently limited to the VS Code web IDE for now.

Etcd Auto pruner

Admins can now configure an automatic pruner to clean up unused Dev Workspace objects. This reduces etcd usage and helps Dev Spaces run at scale.

Red Hat

Red Hat Developer Hub

Red Hat Trusted Artifact Signer (RHTAS)

Enables cryptographic signing, verification of software and provenance metadata

RHTAS 1.3 Highlights:

- Model Transparency Library with support for private Sigstore instances
- Model Validation Operator for runtime model verification
- High-availability Sigstore deployment options
- Scalable Transparency Log with cloud storage support
- Transparency Log Monitoring capabilities
- Conforma now supports Open Policy Agent (OPA) version 1.0
- Conforma can verify signatures from multiple Rekor instances within a single policy execution

RHTAS 1.3 Release Notes

Red Hat Developer Hub

Red Hat Trusted Profile Analyzer (RHTPA)

Analysis of software for vulnerabilities, on demand, at code-time, or over lifetime

RHTPA 2.2 Highlights:

- AIBOM (CycloneDX 1.6 component=machine-learning-model) Ingestion and Labeling
- SBOM Ingestion and Generation from QUAY
- License Search Inventory Wide
- RH Dependency Analytics Multiple TPA sources

Runtimes

Red Hat build of Quarkus

What's New in 3.27 (Nov '25)

- **Red Hat build of Quarkus 3.27 (ETA Nov 2025)**
  - Upgrade to Hibernate ORM 7, Hibernate Reactive 3 and Hibernate Search 8
  - Subscription aware tooling (CLI, code.quarkus, etc)
  - Chappie - AI-powered assistant to improve dev experience
    - assistant module to talk to extensions

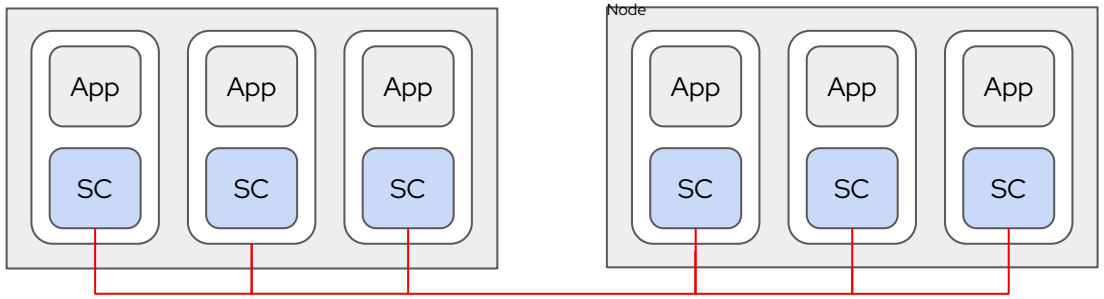
- IBM Enterprise build of Quarkus will be released in Nov (announcement FAQ)
- planning stages for Quarkus/RHBQ 4 (late '26/early '27)

Platform Services

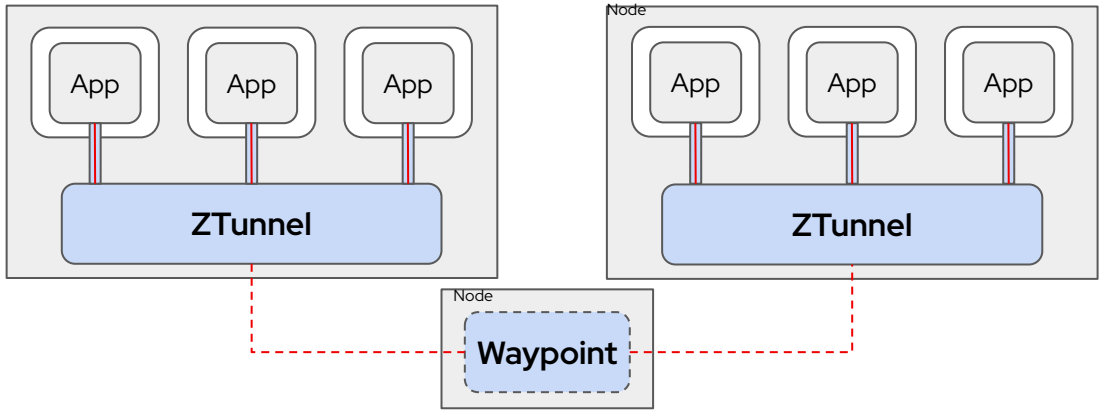
OpenShift Service Mesh

- OpenShift **Service Mesh 3.2** is coming soon:
  - Based **Istio 1.27** and **Kiali 2.17**
  - **Istio Ambient mode - Generally Available**
    - **Service mesh without sidecars!**
    - Significantly less resource usage
    - ZTunnel proxies enable lightweight pod to pod mTLS encryption
    - Waypoint proxies for L7 mesh features.
  - **Cert-manager 1.18 makes istio-csr GA**
  - Kiali's new "local mode" enables efficient debugging & observability
- OpenShift Service Mesh 3.2 will be supported on OCP 4.18+.

Sidecar mode (Traditional service mesh)



Ambient mode (GA in 3.2!)



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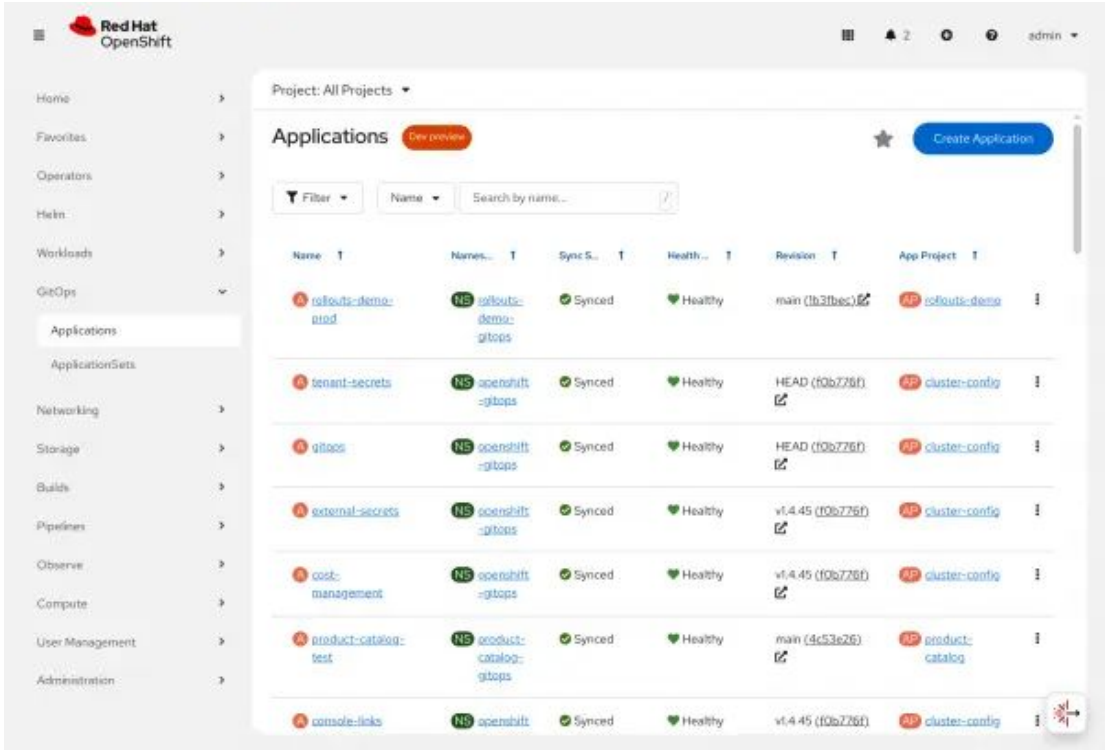
OpenShift GitOps

OpenShift GitOps **1.18** release highlights:

- Argo CD 3.1, Argo Rollouts 1.8.3,

  and Argo CD Agent 0.4.1
- Console menu item Environments -> GitOps
- Keycloak usage update
- OCI Support



6 Customer RFEs, including:

- Tenant namespace management without cluster-admin
- Declarative config to enable and disable auto-sync
- Dex support for additional volumes/volume mounts

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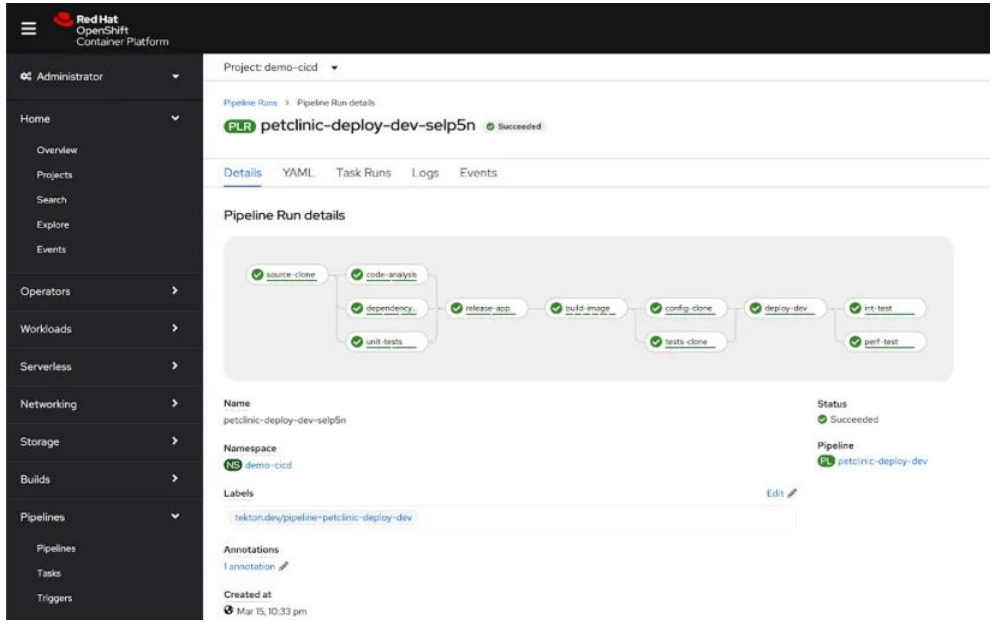
Builds & Pipelines

OpenShift Pipelines 1.20

- **DEPRECATION**: Tekton Hub will be shut down in January 2026.
- **Operator:** HA support, CA/RBAC separately managed, and read-only filesystems on pipeline pods
- **Security:** The buildah-ns task uses Kubernetes user namespace
- **PaC:** Portability with relative paths, JSON body parameters support, and pull request numbers.
- **Console**: The UI displays task names with their resolved param values.
- **Results:** Skip incomplete runs to improve performance.



Builds for OpenShift 1.6

- Cloud-native Buildpacks build strategy GA

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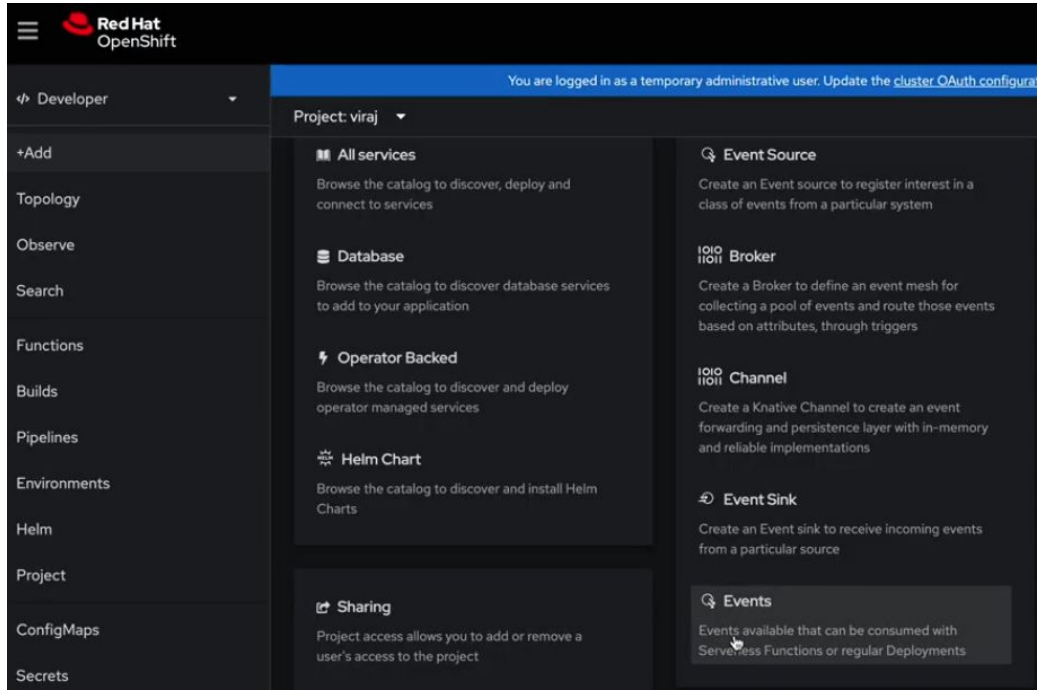
OpenShift Serverless

- Serverless 1.37 release based on Knative 1.17
  - New IntegrationSink option for AWS EventBridge
- On-demand certs with cert-manager
- End-to-end TLS encryption across all Knative traffic hops (GA)
- Serverless integration with Service Mesh 3



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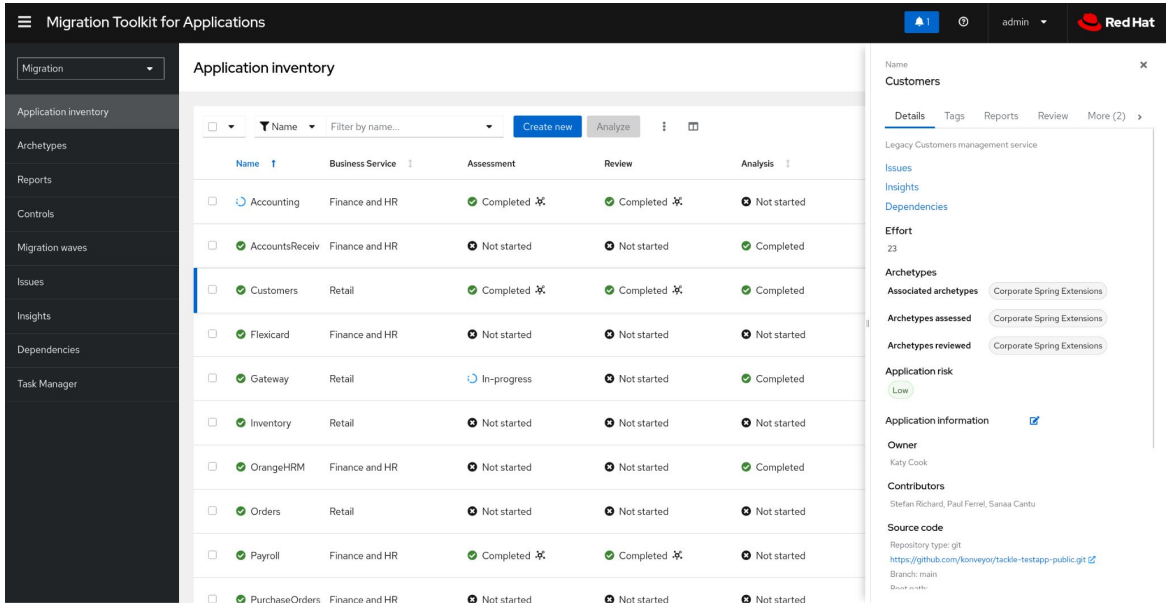
Migration Toolkit for Applications

Migration Toolkit for Applications 8

- GA of **Red Hat Developer Lightspeed for MTA** (Downstream of Konveyor AI)
  - Automated source code transformation leveraging LLMs
  - MTA addon available in the Red Hat Advanced Developer Suite subscription
- Simplify the migration from **Cloud Foundry to OpenShift** of already containerized applications that don't require changes in the source code by enabling MTA to:
  - Retrieve deployment and runtime configuration from the platform an application is deployed on
  - Produce deployment manifests and configuration files to deploy applications in OpenShift



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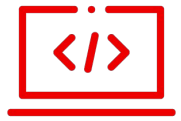
Will be available with 4.20.z+

Support Log Gather

Non-privileged, secure collection of OpenShift logs



Developer triggered log collection

Using the **support log gather** operator, developers can now trigger collection of logs to pass to Red Hat Support teams.

Secure by default

Enables **non-privileged users** to trigger log collection while **preventing** privilege escalation paths

Additional customizations

Customize the operator deployment to enable **automatic upload** of logs to a linked support case.

Installation & Updates

OpenShift 4.20 Supported Providers

Installation Experiences

aws
Outposts
Wavelength
Local Zones

Azure
Azure Stack Hub
Alibaba Cloud
(Tech Preview)

IBM Cloud
IBM Power Systems
IBM Z and
IBM LinuxONE

Bare Metal

ORACLE
Cloud Infrastructure

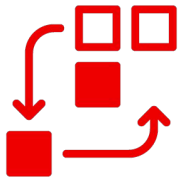
Google Cloud

NUTANIX

vmware vSphere

Red Hat
OpenStack Services
on OpenShift

RED HAT
OPENSTACK
PLATFORM



Automated

Installer Provisioned Infrastructure

- Auto-provisions infrastructure
- *KS like
- Enables self-service

Full Control

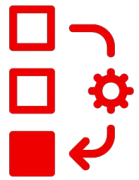
User Provisioned Infrastructure

- Bring your own hosts
- You choose infrastructure automation
- Full flexibility
- Integrate ISV solutions

Interactive – Connected

Assisted Installer

- Hosted web-based guided experience
- Agnostic, bare metal, vSphere and Nutanix
- ISO driven



Local – Disconnected

Agent-based Installer

- Restricted network (disconnected / air -gapped)
- Automatable installations via CLI
- Bare metal, vSphere, SNO
- ISO driven

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Cloud

Installation Highlights for Cloud Providers

aws

- Support customer managed DNS solutions (Developer Preview)
- Support Mexico and Taipei regions

Google Cloud

- Support DNS Zones in a third separated project for OpenShift in GCP XPN deployments

Azure

- Support OpenShift installation into Azure VNETs with encryption
- Confidential Nodes in Intel TDX (GA)
- Configure additional disks at install time (Technology Preview)

ORACLE Cloud

- OpenShift in EU Sovereign Cloud (General Availability)
- OpenShift in US Government Cloud (Technology Preview)
- OpenShift in UK Government Cloud (Technology Preview)
- OpenShift in Oracle Cloud Isolated Region (Technology Preview)
- OpenShift in Oracle Alloy (Technology Preview)

Red Hat

On-premises

Installation Highlights for On-premises Providers

Bare Metal

- Extend Metal3 firmware updates to cover NiC F/W (GA)
- Bare Metal Multi-Arch Support for Virtual Media (GA)

vmware vSphere

- vSphere multi-NIC VM creation support for IPI installation (GA)
- MachineSet - support of more than one disk (TP)
- Support Additional Bare Metal Node to OpenShift Cluster (Dev Preview)

IBM Power Systems and IBM LinuxONE IBM Z

- Hosted Control Planes: IBM Z control plane with x86 nodepools
- Improvements to Multi-arch builds with OpenShift Pipelines
- Enabling accelerators for IBM Z and IBM Power platforms

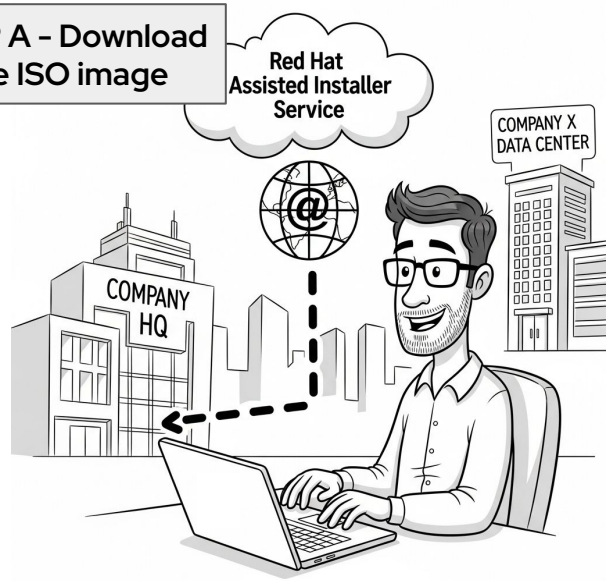
Multi- Arch

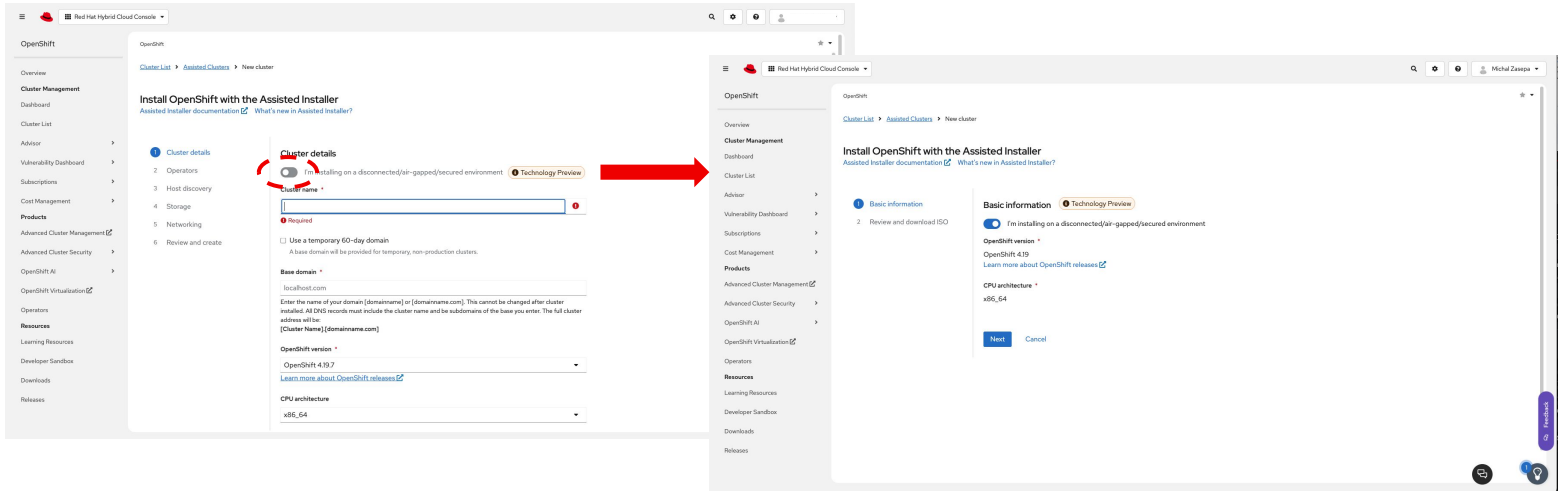
- Migrate your control planes to Arm based systems on GCP

OpenShift Virtualization Installation in Disconnected and Registry-less

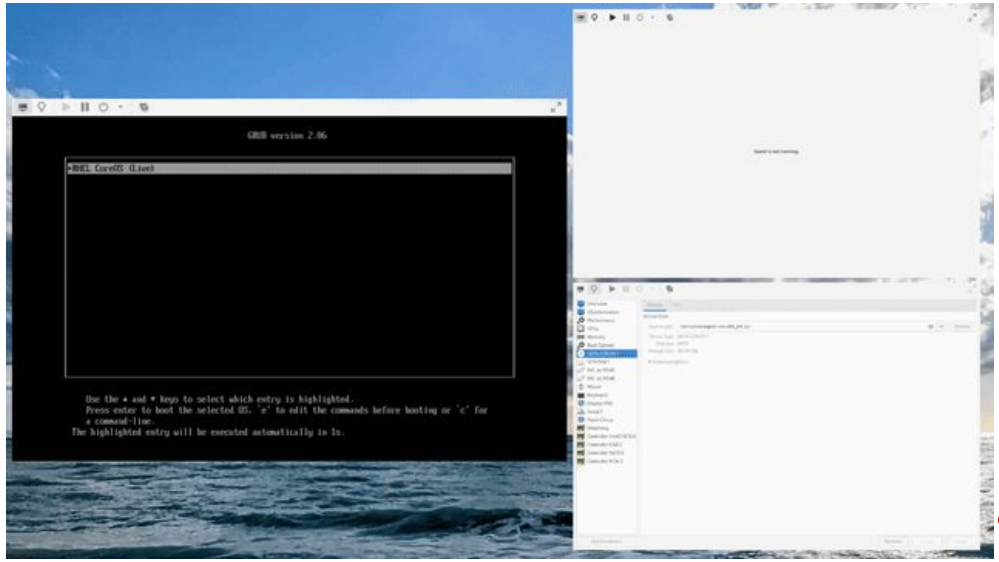
Technology Preview in OpenShift 4.20.z

STEP A - Download the ISO image





STEP B - Boot all servers using downloaded ISO and install an OpenShift Virt cluster in the air-gap and registry-less environment



[Blog]

Red Hat

RHOSO18 and Shift-On-Stack in 4.20

- OpenShift on Openstack Highlights
  - Manila CSI now supports multiple CIDR when mounting a volume
    - Allows multiple IP ACLs to access shared for better AZ support
    - Removed the all (0.0.0.0/0) or null (single subnet) default limitation which provides better security and flexibility
- RHOSO18 Highlights (Feature Release 4 Nov 16th 2025)
  - OpenStack Workload Optimization Operator GA
    - Dynamically manage compute resources based on infrastructure utilization
    - Save resources by consolidating workloads
    - Proactive policy to avoid congestion
  - Native OVN-BGP support
    - Removed the OVN-agent and FRR dependencies
    - Improves Forwarding performance
    - Paves the way for BGP-EVPN and FDP

Find issues prior to Performing OpenShift Updates

General Availability

- GA in OpenShift 4.20
- Use **`oc adm upgrade recommend`** to show:
  - The next version recommended to update
  - Precheck feature: Important alerts which can affect updates

This allows users to check cluster before an update.

  - read-only command and does not alter the state of your cluster

```
$ oc adm upgrade recommend

Failing=True:

  Reason: ClusterOperatorNotAvailable
  Message: Cluster operator monitoring is not available

The following conditions found no cause for concern in updating this cluster to later releases:
recommended/NodeAlerts (AsExpected), recommended/PodImagePullAlerts (AsExpected)

The following conditions found cause for concern in updating this cluster to later releases:
recommended/PodDisruptionBudgetAlerts/PodDisruptionBudgetAtLimit/1

recommended/PodDisruptionBudgetAlerts/PodDisruptionBudgetAtLimit/1=False:

  Reason: Alert:firing
  Message: warning alert PodDisruptionBudgetAtLimit firing, which might slow node drains.
Namespace=openshift-monitoring, PodDisruptionBudget=prometheus-k8s. The pod disruption budget is
preventing further disruption to pods. The alert description is: The pod disruption budget is at the
minimum disruptions allowed level. The number of current healthy pods is equal to the desired healthy
pods.
https://github.com/openshift/runbooks/blob/master/alerts/cluster-kube-controller-manager-operator/PodDisruptionBudgetAtLimit.md

Upstream update service: https://api.integration.openshift.com/api/upgrades_info/graph
Channel: candidate-4.18 (available channels: candidate-4.18, candidate-4.19, candidate-4.18, eus-4.18,
fast-4.18, fast-4.19, stable-4.18, stable-4.19)

Updates to 4.18:
  VERSION     ISSUES
  4.18.32     no known issues relevant to this cluster
  4.18.30     no known issues relevant to this cluster
And 2 older 4.18 updates you can see with '--show-outdated-releases' or '--version VERSION'.
```

OpenShift Update Status

General Availability

- GA in OpenShift 4.20
- **`oc adm upgrade status`** shows current status of the OpenShift updates
  - read-only command and does not alter the state of your cluster

```
$ oc adm upgrade status

= Control Plane =
Assessment:      Progressing
Completion:      12%
Duration:        12m5s
Operator Status: 33 Healthy

Control Plane Nodes
NAME                                        ASSESSMENT    PHASE     VERSION   EST   MESSAGE
ip-10-0-30-217.us-east-2.compute.internal   Outdated Pending   4.14.0   ?
ip-10-0-53-40.us-east-2.compute.internal    Outdated  Pending   4.14.0   ?
ip-10-0-92-180.us-east-2.compute.internal   Outdated  Pending   4.14.0   ?

= Worker Upgrade =

= Worker Pool =
Worker Pool:   worker
Assessment:    Excluded
Completion:    0%
Worker Status: 3 Total, 3 Available, 0 Progressing, 3 Outdated, 0 Draining, 3 Excluded, 0 Degraded

Worker Pool Nodes
NAME                                       ASSESSMENT  PHASE    VERSION   EST   MESSAGE
ip-10-0-20-162.us-east-2.compute.internal  Excluded    Paused   4.14.0    -
ip-10-0-4-159.us-east-2.compute.internal   Excluded    Paused   4.14.0    -
ip-10-0-99-40.us-east-2.compute.internal   Excluded    Paused   4.14.0    -

= Update Health =
SINCE LEVEL    IMPACT MESSAGE
- Warning  Update Stalled Outdated nodes in a paused pool 'worker' will not be updated

Run with --details=health for additional description and links to related online documentation
```

OpenShift oc-mirror v2

Enhancements and functionality gaps for `oc-mirror v2`

Enhancements driven by customer requests:

- Verify credentials, hostname, and certs **before** populating the cache
  - `oc-mirror` **will fail quickly** by checking if the mirror registry is accessible before the caching starts to help users address the underlying issues before going too far
- Enhance Helm support via **improved environment variable parsing** for `ImagePaths`
  - Users *can now mirror all necessary container images referenced within environment variables* of deployment templates, including operand images, for operator-based applications in air-gapped environments
- Timestamp will be added to the name of the new log file created
  - Logs in the same working directory won't get overwritten and new log file will be created for each execution of `oc-mirror`

Control Plane & Security

OpenShift Control Plane

Security

Hitless TLS Certificate Rotation

Zero API server downtime during certificate updates, even under heavy loads or in SNO deployments

Operators Internal TLS Registry

Creation of a TLS registry containing metadata for all certificates in OpenShift including ownership and rotation details

Scalability

Improved API Traffic Distribution

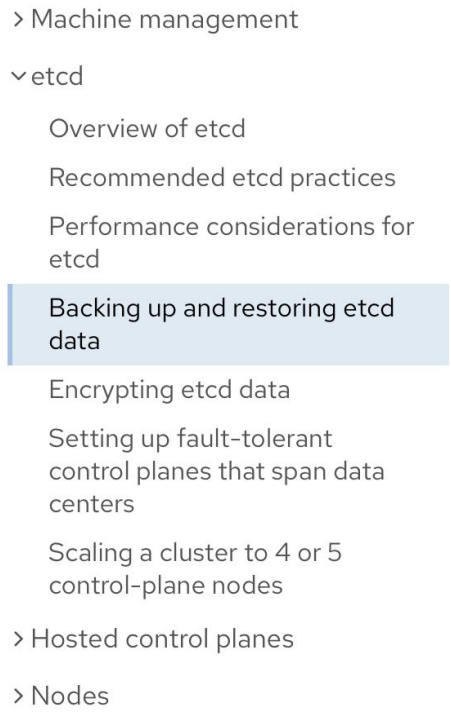
Improved default *go-away chance* to 0.001 to automatically distribute HTTP/2 connections across API server pods, preventing overload and improving response times

Documentation

Etcd Documentation Section

Consolidate information to manage the OpenShift control plane in one section

In 4.20 we are focusing on consolidating content only available in articles



Red Hat

Sigstore Policy Controller

GA of sigstore API (clusterimagepolicy, imagepolicy)

What Sigstore Policy Controller Is

Sigstore Policy Controller is a Openshift admission controller that **enforces supply chain security policies** on container images before they're deployed.

API	Scope	What It Does
ClusterImagePolicy (CIP)	**Cluster-wide**	Defines policies that apply to **all namespaces** in the cluster. Good for organization-wide rules.
ImagePolicy (IP)	**Namespace-scoped**	Defines policies for a **single namespace**. Good for team- or app-specific rules.

Sigstore-based image verification with BYOPKI

Technology Preview

The Problem

OpenShift already has **Sigstore-based image verification** (ClusterImagePolicy / ImagePolicy) but it was limited to using **built-in PKI** managed by the cluster.

BYOPKI

Lets organizations **use their own CAs or intermediate certs** to verify image signatures.

Use Cases	How This Helps
Large Enterprises with Internal PKI	Seamlessly integrate your company's existing certificate authorities into OpenShift image verification
Disconnected Clusters	Enforce image verification with a fully offline or government-approved CA

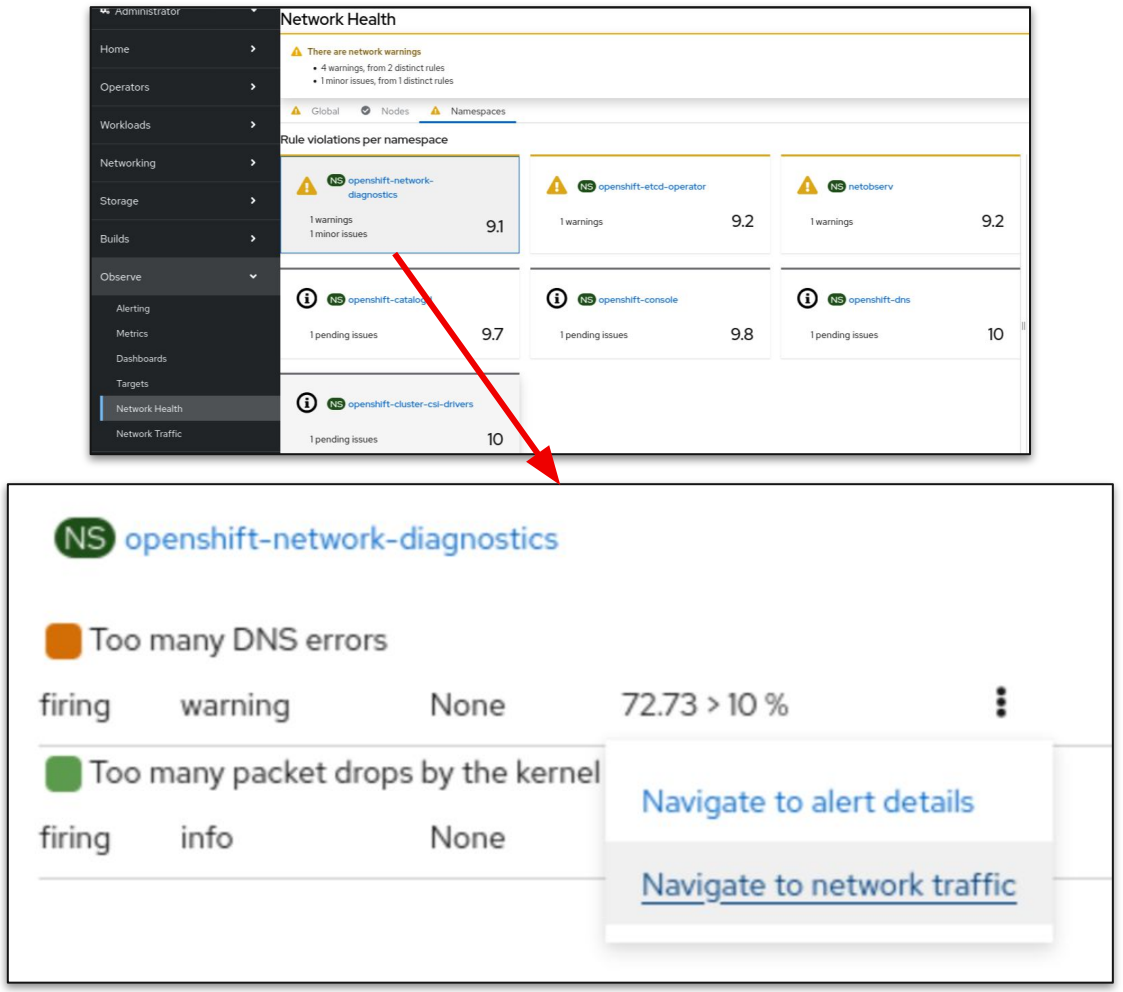
Networking & Routing

Network Observability

Network Observability Operator

- **New release: v1.10**
- New CLI-based console-like features, adding customizable columns, smart filtering, packet preview and in-terminal line charts
- Network Health and Alerting view [Tech Preview]
  - e.g. a namespace exceeding a configurable threshold of packet drops (w/ context links)
- Default OpenShift Network Policies compliance
- Performance Estimator
  - sampling rate slider to choose between accuracy and impact on resources
- New installation wizard and improved FlowCollector & FlowMetric forms for a simplified setup

Network Health & Alerting views



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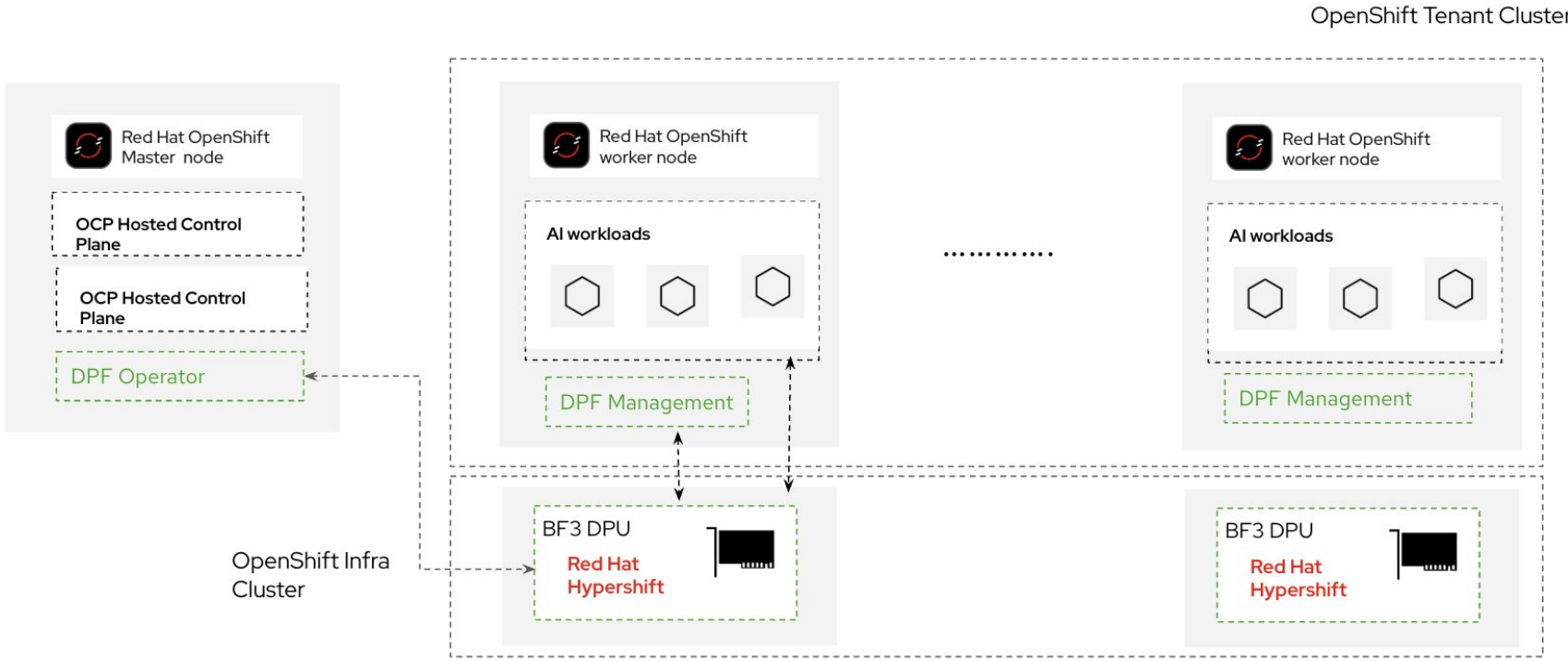
Introducing BlueField 3 DPU (Tech Preview)



- Extending compute capacity dynamically
- Tenant and Infrastructure workload isolation improving the security posture
- Accelerated data plane for AI and Enterprise workloads with 400G line rate
- 3rd party network function deployment on DPU

DOCA services

- HBN (Host based networking) - OCP 4.20
- Firefly (timing service) - Future
- Storage-defined Network Accelerated Processing (SNAP) - Future
- DOCA Telemetry Service - Future

Red Hat

Red Hat Connectivity Link

New Release (v1.2) Featuring:

New Features:

- ***New Custom Policy Extensions:***
  - *OIDC (Auth) Policy*
    - *Low-Code Approach to Authentication*
  - *Plan Policy*
    - *Definition of Usage Plans for API Consumers*
  - *Telemetry Policy*
    - *More Extensibility w/ Metrics*
- ***AI Gateway Functionalities:***
  - *Token-Based Rate Limiting Policy*
    - *Controlling Access to AI Services (ex. LLMs) by setting limits based on Tokens*
  - *Token Metrics*
    - *Evaluate the performance, efficiency, & resource consumption of AI Models & Applications*

Additional Updates:

- ***RHCL CoreDNS integration goes from Developer Preview to Technical Preview***
  - *Tech Preview support now in place for RHCL's CoreDNS Integration*
- ***RHCL for ARM Infrastructure***
  - *New builds of RHCL for operation within ARM infrastructure*
- ***Seamless WASM Plugin Installation***
  - *Continued effort to keep RHCL Modular & Simple for Operation*

Operator Framework

Operator Framework

Enhancing OpenShift **Security** Posture

- Enable support for Network Policies in OLM and OLM Bundles
- Use of read only root file system for OLM internal components

Improvements in OLM **performance**

- Resolved multiple issues related to Catalog performance

OLM v1 new features (as Tech Preview)

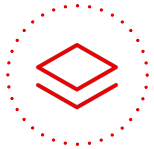
- **Broader** registry+v1 bundle **support** for **existing operators,** together with OwnNamespace and SingleNamespace support added in 4.19 and now also:
- [Tech Preview] Support operators packaged in registry+v1 bundles with **webhooks**
  - Operator authors can rely on OLM v1 to manage the lifecycle of webhooks in their registry+v1 bundle-packaged operators without modifications
  - Users can rely on OLM v1 to detect webhook misconfigurations and troubleshoot the underlying Service's Pods

Storage

OpenShift Storage

Operators & Drivers

- Azure Disk
  - Support for “Performance Plus” disks
- AWS EFS
  - Zonal volumes (GA)
  - EFS cross account process improvements



Core Storage

- Volume Populators (GA)
- SELinux Context Mount RWO/RWX (TP)
- Changed Block Tracking (DP)

Misc

- Set `fsGroupChangePolicy` label per namespace
  - `storage.openshift.io/fsgroup-change-policy` `NS` label
- Set `SELinuxChangePolicy` label per namespace
  - Opt-out of future context mount default switch
    - For conflicting pods
- Set `SELinuxChangePolicy` parameter per pod
  - Opt-out of future context mount default switch
    - For conflicting pods

Red Hat

OpenShift Data Foundation 4.20

- Regional Disaster Recovery
  - Multi Volume support
  - Recipes with Exec hooks
  - Independent VM DR control within namespace
  - Support for Multus (Tech Preview)
- Multus with IPv6
- Forceful redeployment option for test cluster automation
- ARM Tech Preview

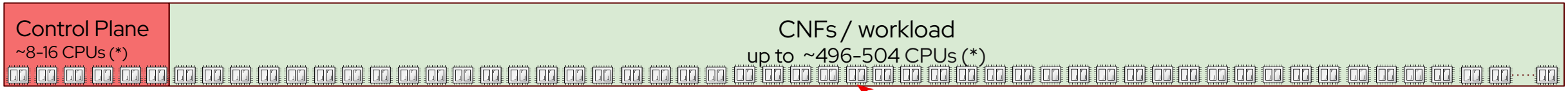
Out of the box support	
Block, File, Object, NFS	
Platforms	
AWS/Azure	Google Cloud (GA)
OpenShift Virtualization	OSP (Tech Preview)
Bare metal/IBM Z/Power	VMWare 7,8 Thin/Thick IPI/UPI
ARO	**ARM (Tech Preview)**
ROSA HCP (GA) with Self managed ODF	IBM ROKS & Satellite - Managed ODF (GA)
Any platform using agnostic deployment mode for self managed OpenShift deployments.	
Deployment modes	
Disconnected environment and Proxied environments	

Telco 5G & Edge

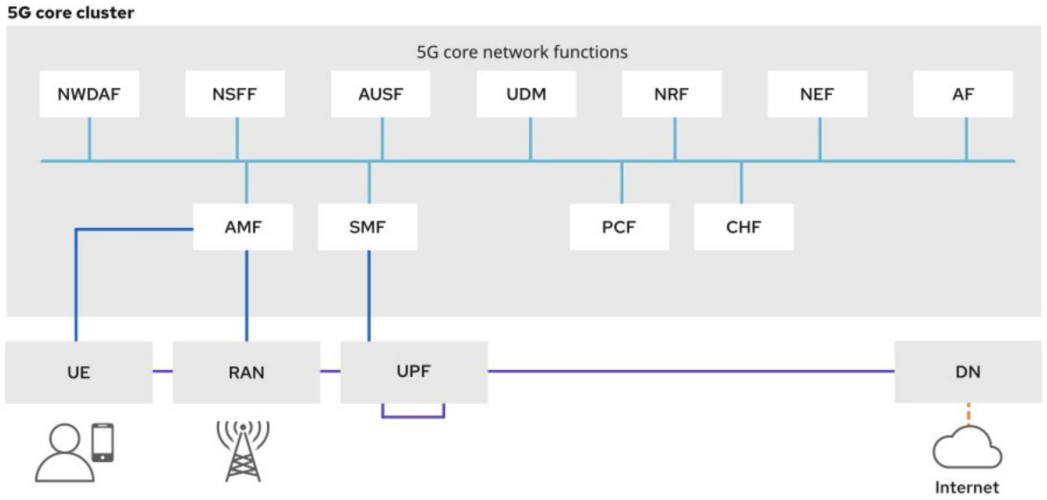
Telco 5G

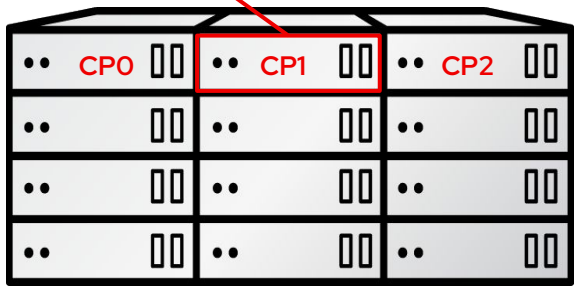
Telco Core **R**eference **D**esign **S**pecifications (RDS)

https://docs.redhat.com/en/documentation/openshift_container_platform/4.20/html/scalability_and_performance/telco-core-ref-design-specs#scheduling-crs_telco-core



(*) Exact dimensioning depends on the use case and servers





New server generation high core count

- Schedulable Control plane
- AMD Turin CPUs
- intel Sierra Forest CPUs

Red Hat

Telco Edge New Platforms

Intel® Xeon® 6 SoC "Granite Rapids-D"

First Call Ready

Available

- Xeon 6 CPUs
- Integrated NIC & Carter Flat NIC
  - SR-IOV & FDP
  - PTP: OC & BC
- Acceleration: VRB2 (3rd party support)

Not Ready

- T-BC & T-GM
  - Microchip M.2 Advanced Timing
  - Ublox M.2 GNSS
- OEM Certifications (HW & RT)

OCP 4.20

Full Functionality / Commercial HW

Available

- Xeon 6 CPUs
- Integrated NIC & "Carter Flat" NIC
  - SR-IOV & FDP
  - PTP: OC & BC
  - PTP: T-BC & T-GM
    - Microchip M.2 Advanced Timing
    - Ublox M.2 GNSS
- Acceleration: VRB2 (3rd party support)
- OEM Certifications (HW & RT)

Not Ready

- "Pine Channel" NIC

OCP 4.20.z (Q1'26)

- Projected alignment with OCP assumes both Intel and 3rd party upstream schedules are met and that Intel and OEM hardware availability schedules are met.
- Red Hat will regression test 4.20 on commercial hardware, but commercial HW will not be available in time for OCP 4.20 GA so **commercial support expected in 4.20.z**.
- OEM hardware must be certified and available in the Red Hat Ecosystem Catalog for production use cases.

nVIDIA Grace Hopper (ARM)

Single Node and Multi Node OpenShift Use Cases

- All RAN Operators supported on ARM
- Standard Kernel Only (no Real Time Kernel)
- Full regression testing and KPI testing
- Zero Touch Provisioning
- Image Based Install, Upgrade and Break+Fix
- CX-7/BF3 (NIC mode only)
- RDS Update

OCP 4.20

- Real Time kernel not supported by nVIDIA GPU Operator
- Multi Node OpenShift deployments assume control plane nodes are x86 architecture
- Assumes Hub Cluster nodes are x86 architecture

Red Hat

New Features MicroShift V4.20

Cert-manager support

- Add cert-manager as optional component to MicroShift, to dynamically and automatically manage certificates from external certificate authorities
- Greatly simplifies certificate management with self-serving and automatic renewal
- Wide range of issuer providers supported (same as with OpenShift, e.g. ACME, Vault etc.)
- Use for Ingress, Routes and the API server endpoints

RHEL image mode Enhancements

- Delta update with bootc to reduce update sizes

Enhanced config options

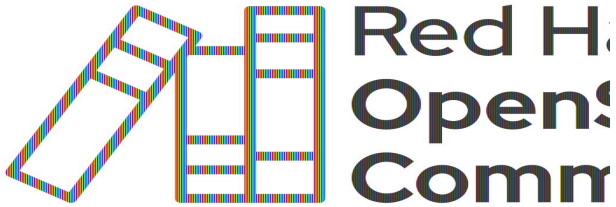
- Ingress errors & Logging customization

Generic Device Plugin (TechPreview)

- Simplifies access to generic devices like USB cameras, serial ports etc.
- No elevated privileges for the consuming pod needed
- Uses standard k8s device plugin mechanism for devices that do not need a special driver, e.g. `/dev/ttyUSB0`
- Simple but configuration of available devices
- Containers declare device requirements as resources:

```
spec:
  containers:
  - name: CONTAINER
    resources:
      limits:
        device.microshift.io/serial: "1"
```

OpenShift Commons Gathering



Date: Monday, November 10
Time: 7:00 AM - 2:30 PM
Location: Courtland Grand Hotel
165 Courtland St NE, Atlanta, GA 30303

- Agenda includes customer use cases on **App development, Virtualization, Hybrid cloud, Observability, AI, Security**
- Registration open!
  red.ht/commons

Red Hat

Red Hat OpenShift

Thank you

Guided demos of new features on a real cluster
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