Red Hat Advanced Cluster Management for Kubernetes

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Product overview

Question: What is Red Hat® Advanced Cluster Management for Kubernetes?

Answer: Red Hat Advanced Cluster Management for Kubernetes provides end-to-end management visibility and control to manage your clusters and application life cycle.

Red Hat Advanced Cluster Management provides a single view to manage your Kubernetes clusters. Provision new Red Hat OpenShift® clusters across: Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), Microsoft Azure Government (MAG), bare metal, Red Hat OpenStack® Platform, Red Hat Virtualization, and VMware vSphere. In addition, existing Red Hat OpenShift clusters can be imported and managed, such as Red Hat OpenShift on IBM Cloud, Microsoft Azure Red Hat OpenShift, Red Hat OpenShift Dedicated, Red Hat OpenShift on Red Hat OpenStack Platform, OpenShift on IBM Z, OpenShift on IBM Power, Red Hat OpenShift on Amazon, and OpenShift on Arm architecture. Red Hat Advanced Cluster Management can also import and manage your existing public cloud Kubernetes clusters such as Amazon Elastic Kubernetes Service (Amazon EKS), IBM Cloud Kubernetes Service (IKS), Azure Kubernetes Service (AKS), and Google Kubernetes Engine (GKE). Red Hat Advanced Cluster Management is Federal Information Processing Standards (FIPS)-ready.

Question: What are the key use cases of Red Hat Advanced Cluster Management?

Answer:
Unified multicluster management:

- Create, update, and delete Kubernetes clusters across multiple private and public clouds.
- Search, find, and modify Kubernetes resources across the entire domain.
- Quickly troubleshoot and resolve issues across a federated domain.

Policy-based governance, risk, and compliance:

- Set and enforce policies for security, applications, and infrastructure.

- Visualize detailed auditing on configuration of applications and clusters faster.
- Gain immediate visibility into compliance based on your defined standards.

Advanced application life cycle management:

- Deploy applications at scale.
- Deploy applications from multiple sources.
- Visualize application relationships across clusters faster.

Measure multicluster observability for health and optimization:

- Get an overview of cluster health and optimization using customized and out-of-the-box dashboards that store historical metrics data.
- Sort, filter, and scan performance of individual clusters or aggregated multiclusters.
- Faster troubleshooting using global search and promQL queries for the health metrics..

Multicluster networking with Submariner:

- Provide cross-cluster network infrastructure with Submariner for direct and encrypted communication.
- Use DNS service discovery for Kubernetes clusters connected by Submariner in multi-cluster environments.
- Uniformly manage and observe microservices-based applications network flow for behavioral insight, control, and troubleshooting.

Question: How does Red Hat Advanced Cluster Management extend the value of Red Hat OpenShift Container Platform?

Answer: Red Hat Advanced Cluster Management adds value to OpenShift Container Platform by extending your OpenShift Container Platform applications into a multicluster environment. Together, OpenShift Container Platform and Red Hat Advanced Cluster Management deliver the platform and capabilities that are critical to addressing the challenges organizations face across a range of environments, including multiple datacenters and private, hybrid, and public clouds.

Red Hat OpenShift focuses on the single cluster application model and provides an excellent framework for continuous integration/continuous delivery (CI/CD). Red Hat Advanced Cluster Management models applications for multicluster deployment with enterprise features that help ensure both the rapid deployment of an application and the resilience of your infrastructure. Stand up new clusters and let the subscription framework handle the continuous delivery of your applications across all your environments.

Question: What is the latest version of Red Hat Advanced Cluster Management?

Answer: The latest version, 2.5, became available in June 2022.

Question: What are the key features in the 2.5 release?

Answer:
Manage OpenShift everywhere

- Cluster life cycle support: Provision OpenShift Container Platform clusters on Red Hat Virtualization, and import and manage them.

- OpenShift on Arm technology preview (TP): Import and manage OpenShift clusters on ARM architecture.
- *Hosted control plane* (TP): Hosts and provisions containerized OpenShift control planes at scale. It solves for cost, footprint, time to provision, as well as portability across cloud environments with strongly discerning concerns between management and workloads. Hosted control plane will be in TP this release with AWS as an infrastructure provider.
- Central infrastructure management (CIM) for bare metal deployments: Use a self-service model that easily allows infrastructure owners to provide developers access to bare metal infrastructure resources to provision OpenShift clusters.

Better together

- Manage Red Hat Advanced Cluster Management clusters from Red Hat Ansible® Automation Platform (dev preview): Easily access Red Hat Advanced Cluster Management functionality, such as cluster creation, directly from Ansible Automation Platform using the Ansible collections.
- Support for OpenShift GitOps (ArgoCD) ApplicationSets: Easily create application set objects for your clusters that are registered within Argo directly from the Red Hat Advanced Cluster Management console. With this feature, we continue to elevate the OpenShift GitOps experience within Red Hat Advanced Cluster Management by allowing centralized deployment for ApplicationSets across the fleet without having you leave your management interface.
- Enhanced security: Gatekeeper Mutating Webhooks, which implements controls around updating nonconformant resources and can be coupled with policy templating for additional encryption with secrets management integration, improves security.

Why should you care? With key integrations across tools, we continue offering you the best experience across your Kubernetes fleet.

Enhanced user experience

- Service-level objectives (SLOs) defined on the Grafana Observability dashboard: SLOs can be defined on the Grafana dashboard, providing well-defined objectives on how a cluster or the platform services, e.g., Red Hat OpenShift, lets one measure against these objectives. Understanding how one is doing with respect to their objectives supports data-driven decisions on work prioritizations.
- Submariner multicluster networking GA: Get rich multicluster networking capabilities with submariner for application components deployed across multiple clusters, now including support for interconnecting clusters with overlapping CIDRs (Globalnet), thereby reducing the complexity of deploying application components and networking requirements across clusters.
- Unified console experience with OpenShift Container Platform 4.10 (TP): Enhanced user experience by accessing the Red Hat Advanced Cluster Management console directly in the OpenShift Container Platform 4.10 UI to view and manage multiple clusters quickly.
- Policy management through PolicySets: Grouping of policies for specific purposes, e.g., cluster-hardening, grouping Gatekeeper-policies, PCI-storeFront, HIPAA-backend, etc. This provides an enhanced user experience of organizing, managing, and enforcing policies or policy sets for clusters at scale.

Business continuity

- Red Hat Advanced Cluster Management hub backup and restore GA: Using a backup solution based on OpenShift API for Data Protection (OADP operator), managed cluster configurations can be backed up and restored in a different hub cluster.
- Use Red Hat OpenShift Data Foundation (formerly Red Hat OpenShift Container Storage) and Red Hat Advanced Cluster Management for disaster recovery across stateful workloads: For your business-critical stateful apps, OpenShift Data Foundation along with Red Hat Advanced Cluster Management will help you have a robust multisite, multicluster disaster recovery (DR) strategy. Both OpenShift Data Foundation and Red Hat Advanced Cluster Management provide fast and consistent application DR that protects both application data and application state. While OpenShift Data Foundation helps your application data volumes (PVs) be consistently and frequently replicated, resulting in reduced data loss recovery, DR operators together with Red Hat Advanced Cluster Management automate the DR fail-over and fail-back processes, resulting in faster and less error-prone manual operations.

Question: What were the key features in the 2.4 release?

Answer:
Manage Red Hat OpenShift everywhere:

- Cluster life cycle support: Provision OpenShift Container Platform clusters on Microsoft Azure Government more easily and import and manage them.
- Extending Red Hat Advanced Cluster Management hub support: Use Red Hat Advanced Cluster Management hub on IBM Power and IBM Z, giving these the flexibility to run on your infrastructure of choice.
- Central Infrastructure Management (CIM) for bare metal deployments (tech preview): Use a self-service model that allows infrastructure owners to provide developers access to bare metal infrastructure resources to provision OpenShift clusters.
- Allow policies to be auto-generated and deployed via GitOps from existing Kubernetes configuration and Gatekeeper/Kyverno policies.

Better together:

- Deploy Red Hat Advanced Cluster Security for Kubernetes (Stackrox) Central via governance, risk management, and compliance (GRC) Policy (tech preview): Get a consolidated experience by using the Red Hat Advanced Cluster Management console to deploy Red Hat Advanced Cluster Security (Stackrox) Central server consistently across clusters, using a single policy instead of manually deploying on individual clusters. Also access the Red Hat Advanced Cluster Security URL through the Red Hat Advanced Cluster Management console for an in-depth look at your security metrics.
- Support for OpenShift GitOps (ArgoCD) Application Sets: Create application set objects for your clusters that are registered within Argo, directly from the Red Hat Advanced Cluster Management console. With this feature, we continue to elevate the OpenShift GitOps experience within Red Hat Advanced Cluster Management by allowing centralized deployment for ApplicationSets across the fleet without having to leave your management interface.

- Send notifications from GRC into AlertManager and other incident management tools. Along with the cluster health metrics, now get centralized alerts for all your policy violations across clusters to the hub, and send notifications to third-party applications such as Slack and PagerDuty. Use these third-party tools as an entry point to your Red Hat Advanced Cluster Management dashboards for faster troubleshooting.
- Observability of non-OpenShift clusters: In addition to your OpenShift cluster health metrics, get health metrics from EKS, GKE, AKS, and IKS within Red Hat Advanced Cluster Management giving you an overview of cluster health across your OpenShift cluster fleet and beyond.
- Service Level Objectives (SLO) can be defined on the Grafana dashboard. Providing well-defined objectives on how a cluster or the platform services, e.g., OpenShift, allow for measuring against these objectives, fostering data-driven decisions on work prioritizations.
- Using Red Hat Ansible® Automation Platform integration with Red Hat Advanced Cluster Management, automate remediation of noncompliant conditions and gather audit information about the clusters to take proactive measures against policy violations detected by Red Hat Advanced Cluster Management.

Management at the edge:

- Edge management at scale: Provide the scale needed for your edge use cases with Red Hat Advanced Cluster Management hub to manage up to 2,000 clusters along with the IPV6 dual stack support for the managed fleet. These features ensure scalability in low-bandwidth, high-latency connections and disconnected sites.
- Zero Touch Provisioning (tech preview): Use Red Hat Advanced Cluster Management with Assisted Installer on-premise for high-scale cluster deployment serving telco and edge scenarios.
- Single-node OpenShift management: Get full management capabilities for your single-node OpenShift clusters essential for your edge use cases.
- Hub-side policy templating: Reduce the number of policies for high-scale management scenarios by allowing policies to refer to data from resources on the hub. Instead of 1,000 policies, the framework reads a single policy on the hub and substitutes the variable as the policy deploys on the clusters.

Business continuity:

- Red Hat Advanced Cluster Management hub backup and restore: Using a backup solution based on OpenShift API for Data Protection, managed cluster configurations can be backed up and restored in a different hub cluster.
- Use Red Hat OpenShift Data Foundation and Red Hat Advanced Cluster Management for disaster recovery (DR) across stateful workloads (tech preview): For the stateful apps your business relies on, OpenShift Data Foundation along with Red Hat Advanced Cluster Management will ensure you have a robust multisite, multicluster DR strategy. Both OpenShift Data Foundation and Red Hat Advanced Cluster Management foster fast and consistent application DR that protects both application data and application state. While OpenShift Data Foundation ensures your application data volumes (PVs) are consistently and frequently replicated resulting in reduced data loss recovery, DR operators that have Red Hat Advanced Cluster Management automate the DR fail-over and fail-back processes, ensuring that your recovery is fast and error free from manual operations.

- Persistent volumes replication using VolSync (Scribe) (tech preview): Ensure resilience for the stateful apps your business relies on by ensuring a planned application migration strategy across your clusters. You can also use VolSync to create your own DR solution when working with non-OpenShift Data Foundation storage or varied storage products.

Packaging

Question: Is Red Hat Advanced Cluster Management included as part of the Red Hat OpenShift Platform Plus subscription?

Answer: Yes. We recently announced that Red Hat OpenShift Platform Plus and Red Hat Cluster Management are part of the subscription. Red Hat OpenShift Platform Plus provides a single hybrid cloud platform for enterprises to build, deploy, run, manage, automate, and secure intelligent applications at scale. Building on Red Hat OpenShift Container Platform, a solution trusted by global, industry-leading companies, delivers an enterprise Kubernetes system for migrating existing workloads to cloud environments. To learn more about Red Hat OpenShift Platform Plus, read this datasheet. Red Hat Advanced Cluster Management for Kubernetes is available for purchase using a unique SKU. Entitlement to Kubernetes clusters acquired separately from Red Hat OpenShift Platform Plus will require entitlement through a standalone Red Hat Advanced Cluster Management for Kubernetes SKU, this includes entitlement for supported managed OpenShift offerings as well as select non-OpenShift-based managed Kubernetes offerings (see supported offerings in the technical details section).

Question: What is included as part of the Red Hat OpenShift Platform Plus subscription?

Answer: Red Hat OpenShift Platform Plus includes:

- Red Hat OpenShift Container Platform: A complete set of services that helps developers code applications with speed while providing flexibility and efficiency for IT operations teams.
- Red Hat Advanced Cluster Security for Kubernetes: A solution that provides Kubernetes-native security to enhance infrastructure and workload security through the entire application life cycle.
- Red Hat Advanced Cluster Management for Kubernetes: Provides extended visibility of your entire Kubernetes domain with built-in governance and application life cycle management capabilities.
- Red Hat Quay is an open source registry platform for managing content across global datacenter and cloud environments, focusing on cloud-native and DevSecOps development models and environments.
- Red Hat OpenShift Data Foundation Essentials provides cluster data management for hybrid cloud and multicloud container deployments.

Question: What are the pricing options for the standalone Red Hat Advanced Cluster Management subscriptions?

Answer: Pricing for Red Hat Advanced Cluster Management subscriptions uses the same metric as OpenShift Container Platform and OpenShift Platform Plus per core pair. Similarly, only the worker nodes are licensed. For example, if a client is buying 2,000 core pairs of OpenShift Container Platform, adding Red Hat Advanced Cluster Management to the entire fleet requires 2,000 core pairs of Red Hat Advanced Cluster Management. This pricing policy also applies to renewals.

Question: When can I purchase Red Hat Advanced Cluster Management via Red Hat OpenShift Platform Plus?

Answer: Red Hat Advanced Cluster Management via Red Hat OpenShift Platform Plus is available for purchase. Please contact your Red Hat account representative for more details.

Question: Can I evaluate Red Hat Advanced Cluster Management for Kubernetes?

Answer: Yes. Request an evaluation.

Technical details

Question: Does Red Hat Advanced Cluster Management run as a cloud.redhat.com service or on-site?

Answer: Red Hat Advanced Cluster Management installs and runs on Red Hat OpenShift, so customers can take advantage of it wherever they run their OpenShift clusters.

Question: How is Red Hat Advanced Cluster Management deployed?

Answer: Red Hat Advanced Cluster Management is deployed using an operator and runs on OpenShift Container Platform 4.8.x, and above, and manages 3.11, 4.8.x, and above.

Question: What are the technology specifications for installing Red Hat Advanced Cluster Management?

Answer: Hub cluster:

- Operator-based installation
- Available on OperatorHub.io
- Requires Red Hat OpenShift Container Platform 4.8.x and above

Managed clusters (Learn more: Support Matrix):

- Full life cycle management: Red Hat OpenShift Container Platform4.8.x and above:
  - Red Hat OpenShift on AWS, Microsoft Azure, Google Cloud Platform, Microsoft Azure Government (MAG), VMware vSphere, Red Hat OpenStack Platform, Red Hat Virtualization, and bare metal.
- Import and manage:
  - Red Hat OpenShift Container Platform 3.11
  - Red Hat OpenShift on IBM Power
  - Red Hat OpenShift on IBM Z
  - Red Hat OpenShift on IBM Cloud
  - Red Hat OpenShift on Amazon
  - Microsoft Azure Red Hat OpenShift
  - Red Hat OpenShift Dedicated
  - Red Hat OpenShift on Arm
- Limited life cycle support for managed Kubernetes clusters:
  - Amazon Elastic Kubernetes Service (Amazon EKS)
  - Azure Kubernetes Service (AKS)
  - IBM Cloud Kubernetes Service (IKS)

- Google Kubernetes Engine (GKE)
- Red Hat Advanced Cluster Management provides observability, application life cycle management, and policy-based management of imported clusters.
- Red Hat Advanced Cluster Management provides full cluster life cycle management (create, upgrade, destroy) with additional security compliance capability for Red Hat OpenShift Container Platform clusters.

High-availability:

- Red Hat OpenShift Container Platform availability zone supported
- Limitation for search component based on RedisGraph

Resource requirements:

- 3 masters, 3 infrastructure nodes, 6 vCPU and 16GB RAM

Question: Can Red Hat Advanced Cluster Management compare application versions across different clusters and environments?

Answer: Yes. Red Hat Advanced Cluster Management customers can compare application resources using the application topology view with GitOps via subscription and channel. For example, customers can compare how an application is configured in development, cluster A, compared to quality assurance, cluster B.

Question: Does Red Hat Advanced Cluster Management integrate with other Red Hat solutions?

Answer: Yes.

- Integration with Red Hat Ansible Automation Platform, including: 1) Support for pre-hooks and post-hooks to inside the application builder engine; 2) Red Hat OpenShift cluster creation or cluster upgrade actions with the ability to trigger Ansible job templates before or after each of the cluster actions; 4) Policy engine integration with the ability to trigger Ansible job templates based on policy violations and remediate the violated conditions.
- Integration with Red Hat Advanced Cluster Security for Kubernetes provides PolicySets.
- Integration with Red Hat OpenShift Data Foundation supports automated disaster recovery fail-over and fail-back strategies.

Question: Does Red Hat Advanced Cluster Management have an alerting system or provide advanced monitoring for clusters?

Answer: Yes. With the integration of Grafana and AlertManager on the centralized hub cluster, you can create alerts based on specific user issues that will trigger. Red Hat uses Grafana and Thanos integration to query the object store and provide visibility into clusters for monitoring.

Question: Will Red Hat Advanced Cluster Management work in a disconnected environment?

Answer: Yes. Red Hat Advanced Cluster Management runs as an operator on Red Hat OpenShift and can be deployed in a disconnected environment.

Question: Can Red Hat Advanced Cluster Management run behind a HTTP proxy that is not disconnected but connected to the internet via a proxy?

Answer: Customers can configure a global load balancer that will incorporate the proxy configuration therein. There are additional steps documented for HTTP proxy configuration.

Question: Are Red Hat OpenShift managed services such as Red Hat OpenShift Dedicated and Microsoft Azure Red Hat OpenShift also supported?

Answer: Yes. Red Hat Advanced Cluster Management manages Red Hat OpenShift Dedicated and Azure Red Hat OpenShift but not the underlying infrastructure.

Question: Does Red Hat Advanced Cluster Management support Kubernetes clusters, including those not based on OpenShift Container Platform?

Answer: The latest Red Hat Advanced Cluster Management 2.5 release can support the import and management of managed clusters like Red Hat OpenShift on IBM Cloud , IBM Power and Z, Red Hat OpenShift on AWS, Microsoft Azure Red Hat OpenShift, OpenShift Dedicated, Amazon Elastic Kubernetes Service (EKS), Azure Kubernetes Service (AKS), IBM Cloud Kubernetes Service (IKS), and Google Kubernetes Service (GKE). Red Hat can create, upgrade, and destroy OpenShift Container Platform clusters on AWS, Google Cloud Platform, Microsoft Azure, bare metal, Red Hat OpenStack Platform, Red Hat Virtualization and VMware vSphere.

Question: Does the interface support role-based access control (RBAC) and filtered views?

Answer: Yes. Red Hat Advanced Cluster Management is backed by OpenShift Container Platform for RBAC. Permissions set through the OpenShift Container Platform will transfer to Red Hat Advanced Cluster Management.

Question: What role, if any, will Hive play in multicluster life cycle management, including cluster installation, or will this product replace Hive?

Answer: Hive is the application programming interface (API) that Red Hat Advanced Cluster Management uses to deploy OpenShift Container Platform clusters on infrastructure like Amazon AWS, Google Cloud, Microsoft Azure, Microsoft Azure Government, OpenStack, bare metal, RHV and VMware vSphere.

Question: Can Red Hat Advanced Cluster Management discover a cluster and take control of its resources or must everything always be deployed, controlled, and managed from Red Hat Advanced Cluster Management?

Answer: Yes. Red Hat Advanced Cluster Management allows you to discover the cluster resources and import existing clusters. There is no need to synchronize or update a managed cluster. The managed cluster controllers run automatically to ensure the state is always current on the hub.

Question: What is the Red Hat Advanced Cluster Management deployment model? Does it install on top of OpenShift Container Platform or Kubernetes? What additional infrastructure must be added?

Answer: Red Hat Advanced Cluster Management only runs on OpenShift Container Platform. It installs as an operator via the Operator Hub. Red Hat Advanced Cluster Management runs on a three master, two worker cluster with minimum node sizing at 6 vCPU and 16GB RAM.

Question: Will Red Hat Advanced Cluster Management need to exist in a central cluster, considering the deployment architecture? Can it be deployed in two or three different sites and clustered to withstand a disruption to one cluster?

Answer: The Operator hub is configured to be highly available for DR with a minimum configuration of three master nodes. Currently, Red Hat Advanced Cluster Management offers the hub backup and restore operator. This solution, where managed clusters' configurations can be backed up and restored in a different hub cluster, combined with the various methods available to recover and failover an OpenShift Container Platform cluster, makes it so that there is no need to deploy Red Hat Advanced Cluster Management in different sites.

Question: Is it easy to install and configure Red Hat Advanced Cluster Management?

Answer: You can complete an end-to-end installation in a matter of minutes. It is installed as an operator through the Operator Hub, on top of Red Hat OpenShift 4.8.x, and above.

Question: What do I need for connectivity?

Answer: Red Hat Advanced Cluster Management uses an https-based web interface. The remote-managed clusters communicate with the hub over a transport layer security (TLS)-secured channel in its own namespace with its own certificates.

Question: Where can I find more information on Red Hat Advanced Cluster Management?

Answer: To learn more about Red Hat Advanced Cluster Management and request access for a tech preview, visit our website at redhat.com/clustermanagement.

About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers develop cloud-native applications, integrate existing and new IT applications, and automate and manage complex environments. A trusted adviser to the Fortune 500, Red Hat provides award-winning support, training, and consulting services that bring the benefits of open innovation to any industry. Red Hat is a connective hub in a global network of enterprises, partners, and communities, helping organizations grow, transform, and prepare for the digital future.

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