



Five Considerations for Managing Your Kubernetes Clusters

Applications have typically been composed all in one place, but more frequently now, companies are building out a cloud-native approach that spans multiple components across multiple clusters and cloud providers. This cluster sprawl can present a problem without a good management solution. As application workloads move from development to production, IT often requires multiple fit-for-purpose Kubernetes clusters to support continuous integration/continuous delivery (CI/CD) of DevOps pipelines. Cluster sprawl continues with the addition of new clusters configured for specific workloads, placing an increasing strain on traditional IT processes and methodologies. With this checklist, you explore the key things to keep in mind when considering the management of your Kubernetes clusters.

1 Centralized management

When choosing a cloud management platform, you want to have a single view of all your core capabilities. Maintaining centralized management with a single user interface allows

- Control of public clouds (such as Amazon Web Services [AWS], Microsoft Azure, and Google Cloud Platform)
- Management of technologies you use in the cloud and on-premises, such as
 - Virtualization software (VMware, Red Hat OpenStack, and Red Hat Virtualization)
 - Varied operating systems



WARNING

While you want cluster life cycle tooling that works across the entire Kubernetes fleet, also be wary of platforms that attempt to do everything. Sometimes a platform does one or two things really well but then offers more services that don't run as well, which could cause your platform to become unusable, overly complex, and unstable. Keep things simple and establish the core capabilities you need to support your multi-cloud environment.

2 End-to-end cluster management

Maintaining consistency within your cluster management is driven by using Infrastructure as Code (IaC) best practices and design principles. Your management tool needs to

- Provide reliable, consistent, and at-scale management
- Manage clusters across multiple datacenters and public cloud services
- Identify health across all clusters and pods
- Provide visibility into problems across clusters

3 Security and compliance

Security from the start gives developers and operations teams a consistent playbook to work from with compliance and regulatory standards built in, rather than tacked on later. When considering policy-based governance, risk, and compliance, choose a management solution that

- Leverages a desired state model to ensure clusters and workloads are kept secure
- Creates and enforces policies at a cluster level to prevent unintentional or malicious configuration drift
- Retrieves details on cluster compliance and reports violations based on defined policies
- Enables evidence collection for audit purposes
- Uses and contributes policies to an open-source community to help streamline and share hardened assets for quick start and rapid time-to-value in production

4 Central life cycle management of containerized apps

While managing containerized applications, it's important to deliver workloads asynchronously to all your clusters. This process should happen automatically and with certain controls in place for enterprise and production environments. Central life cycle management tools for managing containerized apps should include

- Placement rules that are integrated into existing CI/CD pipelines and governance controls
- Open standards that ensure longer term adoption
- Deployment of applications across clusters based on channel and subscription definitions
- Quick views of service endpoints and pods associated with your application topology
- Cluster labels and application placement rules to easily move workloads across clusters — even between multiple cloud providers
- Deployment and maintenance of Day-2 operations of business applications distributed across your cluster domain

5 Achieving faster results

One aspect that's traditionally missing from some products in the market is the opportunity for cultural transformation with integrated dashboards and tooling that bring your ops teams together into one place to do their work. With the right Kubernetes cluster management solution, you can start breaking those old silos of work and encourage teams to work together to achieve faster results:

- Organize your teams for successful application modernization.
- Prepare your business for open hybrid cloud opportunities.
- Allow central IT to provide integrated solutions across various lines of business.
- Harness cloud disruption and catalyze change within traditional IT.



TIP

Red Hat Advanced Cluster Management for Kubernetes provides end-to-end management visibility and control to manage your cluster and application life cycle, along with security and compliance of your entire Kubernetes domain

across multiple datacenters and public clouds. You can extend the value of Red Hat OpenShift by deploying apps, managing multiple clusters, and enforcing policies across multiple clusters at scale. It provides a single view to manage your Kubernetes clusters — from Red Hat OpenShift deployed on-premises and in public clouds, as well as clusters from public cloud providers such as AWS, Microsoft Azure, Google, and IBM.

To find out more about managing your Kubernetes clusters with Red Hat Advanced Cluster Management, visit www.redhat.com/clustermanagement. Get started with a free product trial at www.redhat.com/en/technologies/management/advanced-cluster-management/try-it.



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