Deployment

NetApp Solutions

NetApp
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Deployment

Deploy Advanced Cluster Management for Kubernetes

This section covers advanced cluster management for Kubernetes on Red Hat OpenShift with NetApp.

Prerequisites

1. A Red Hat OpenShift cluster (greater than version 4.5) for the hub cluster
2. Red Hat OpenShift clusters (greater than version 4.4.3) for managed clusters
3. Cluster-admin access to the Red Hat OpenShift cluster
4. A Red Hat subscription for Advanced Cluster Management for Kubernetes

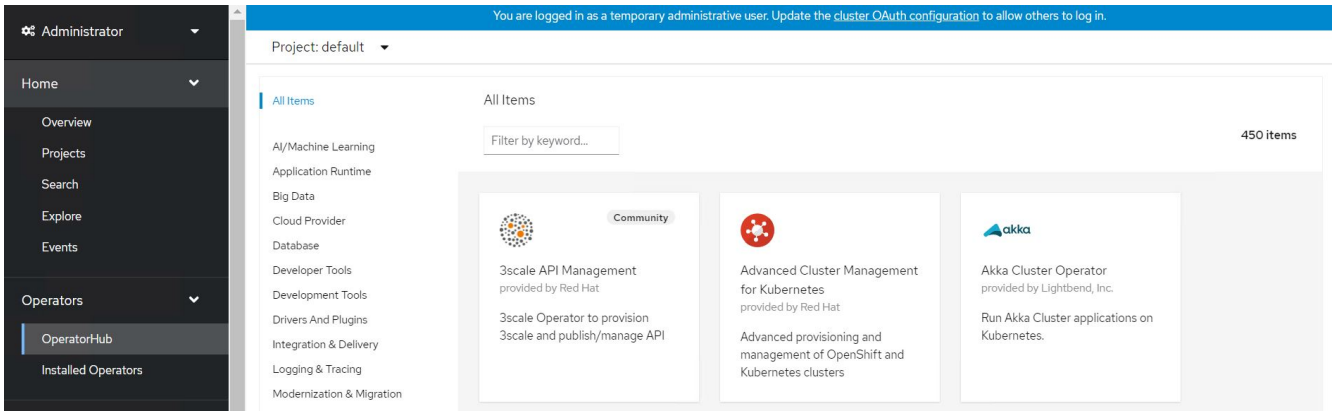
Advanced Cluster Management is an add-on on for the OpenShift cluster, so there are certain requirements and restrictions on the hardware resources based on the features used across the hub and managed clusters. You need to take these issues into account when sizing the clusters. See the documentation here for more details.

Optionally, if the hub cluster has dedicated nodes for hosting infrastructure components and you would like to install Advanced Cluster Management resources only on those nodes, you need to add tolerations and selectors to those nodes accordingly. For more details, see the documentation here.

Deploy Advanced Cluster Management for Kubernetes

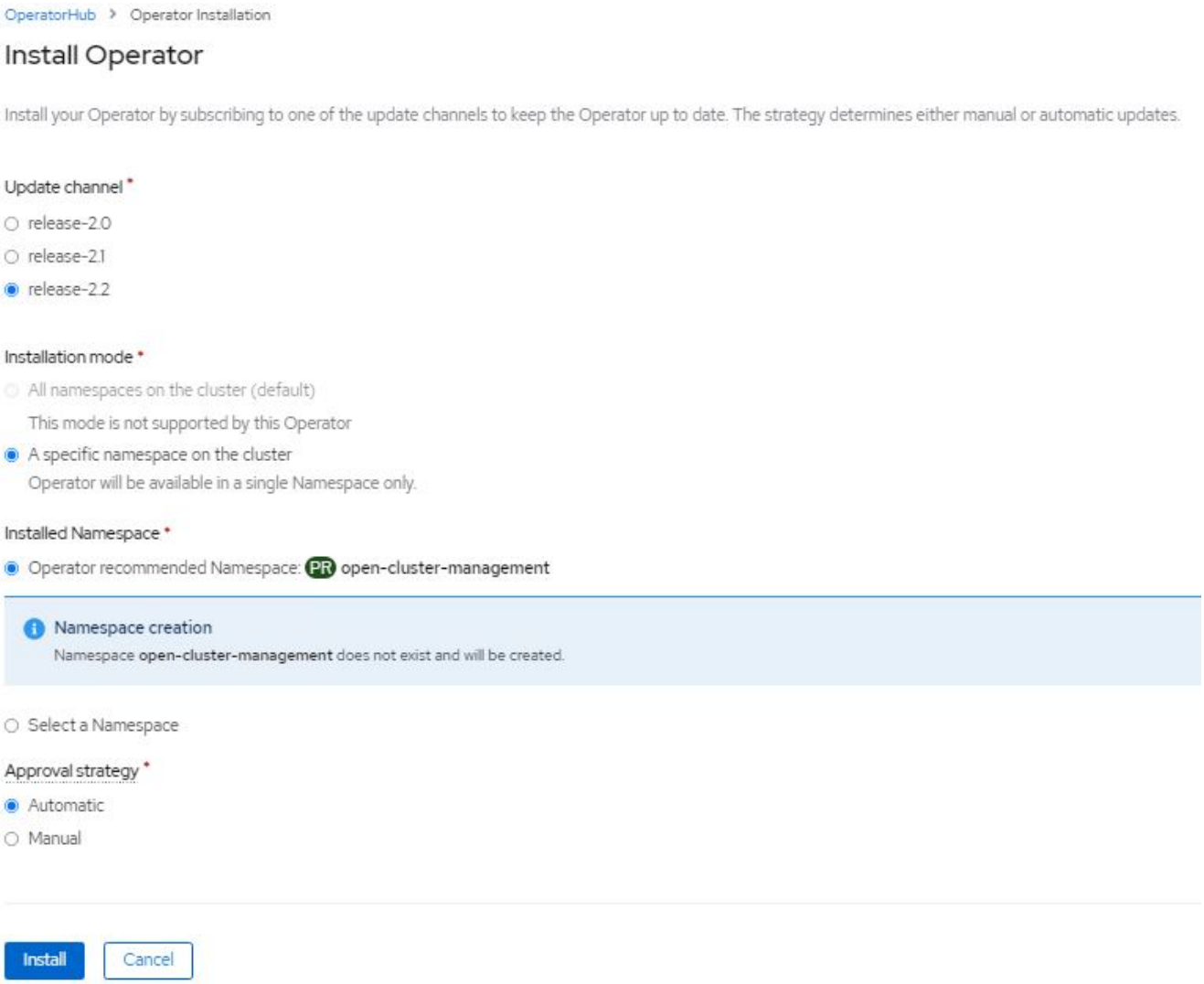
To install Advanced Cluster Management for Kubernetes on an OpenShift cluster, complete the following steps:

1. Choose an OpenShift cluster as the hub cluster and log into it with cluster-admin privileges.
2. Navigate to Operators > Operators Hub and search for Advanced Cluster Management for Kubernetes.

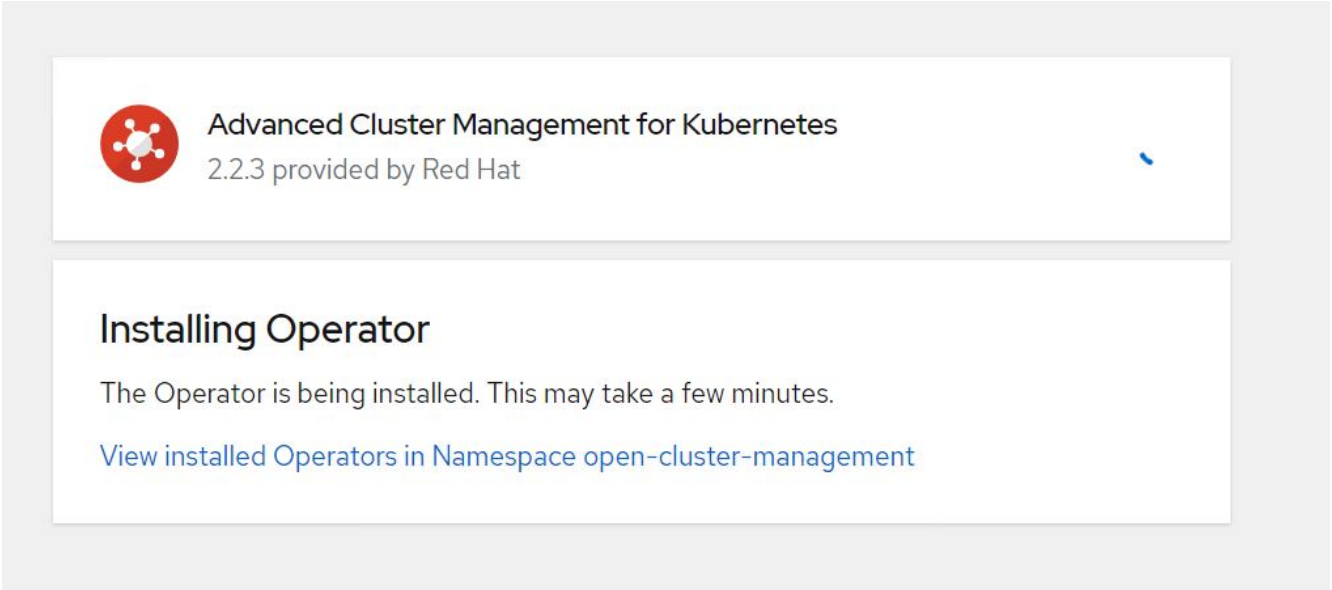


3. Select Advanced Cluster Management for Kubernetes and click Install.

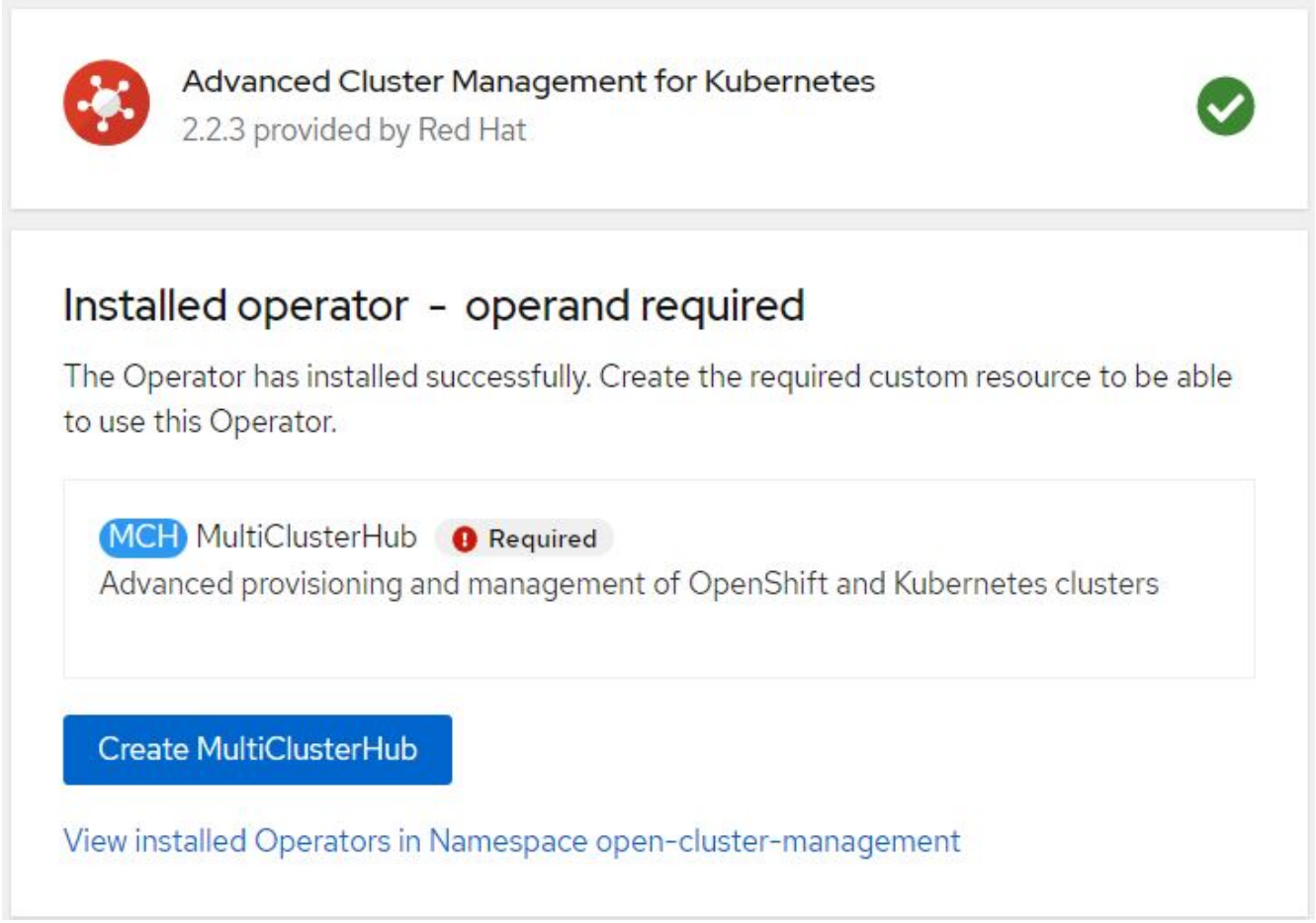
4. On the Install Operator screen, provide the necessary details (NetApp recommends retaining the default parameters) and click Install.



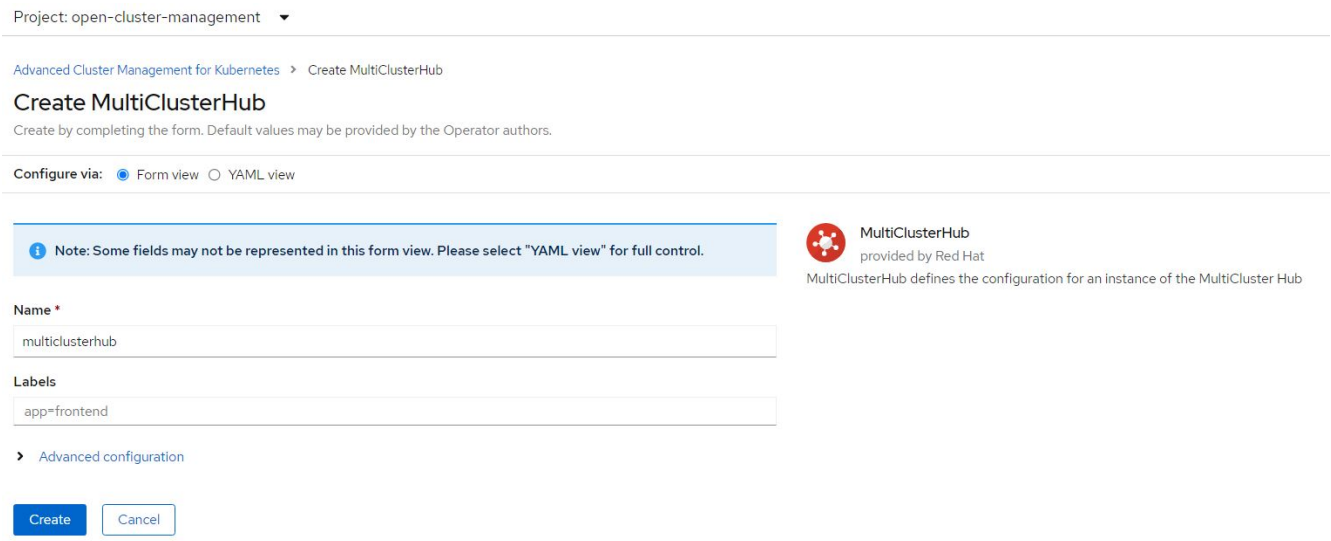
5. Wait for the operator installation to complete.



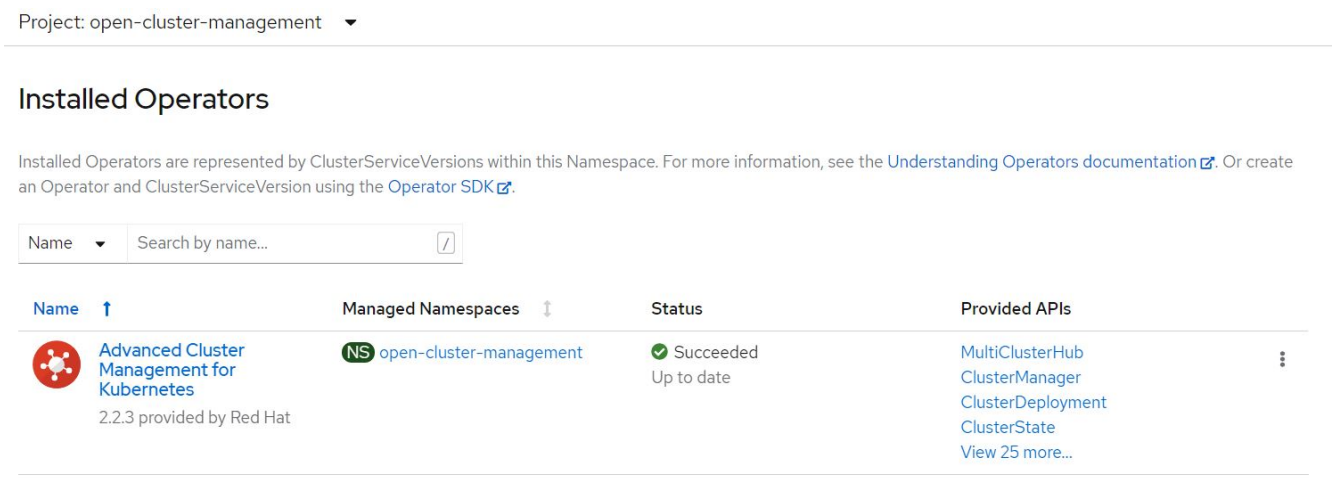
6. After the operator is installed, click Create MultiClusterHub.



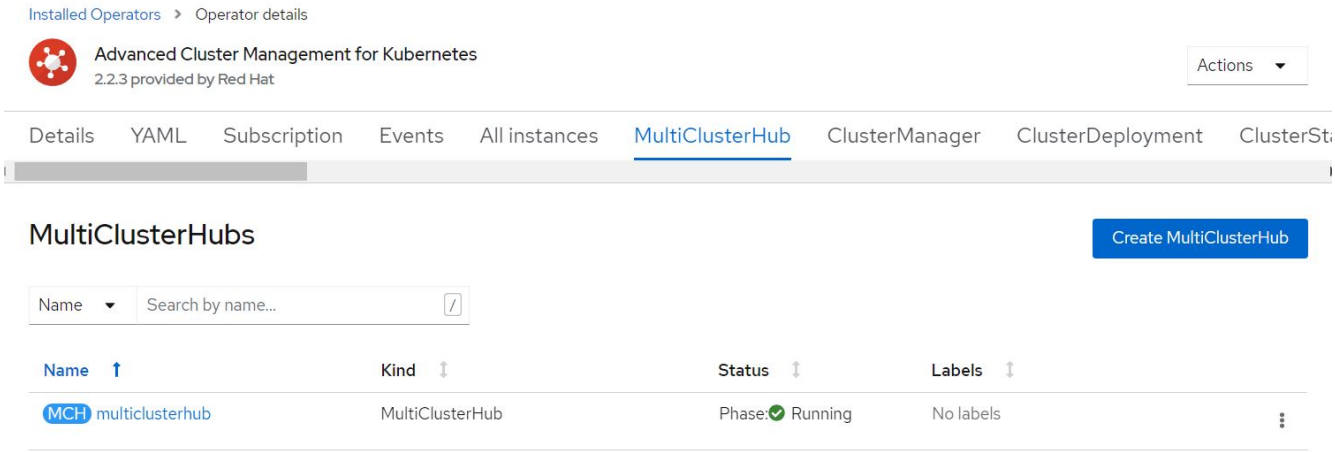
7. On the Create MultiClusterHub screen, click Create after furnishing the details. This initiates the installation of a multi-cluster hub.



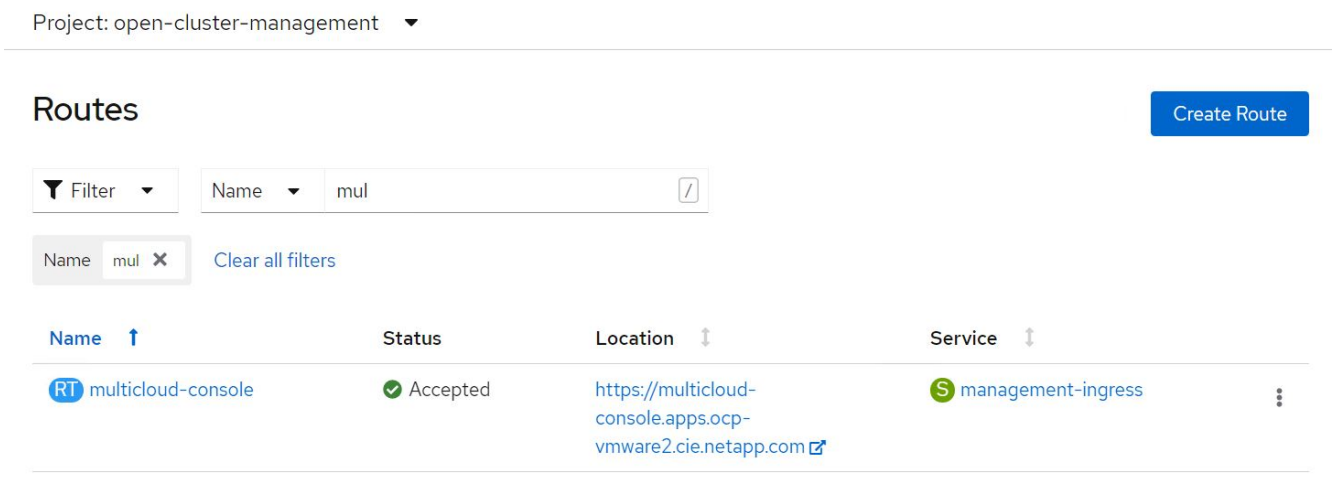
8. After all the pods move to the Running state in the open-cluster-management namespace and the operator moves to the Succeeded state, Advanced Cluster Management for Kubernetes is installed.



9. It takes some time to complete the hub installation, and, after it is done, the MultiCluster hub moves to Running state.



10. It creates a route in the open-cluster-management namespace. Connect to the URL in the route to access the Advanced Cluster Management console.

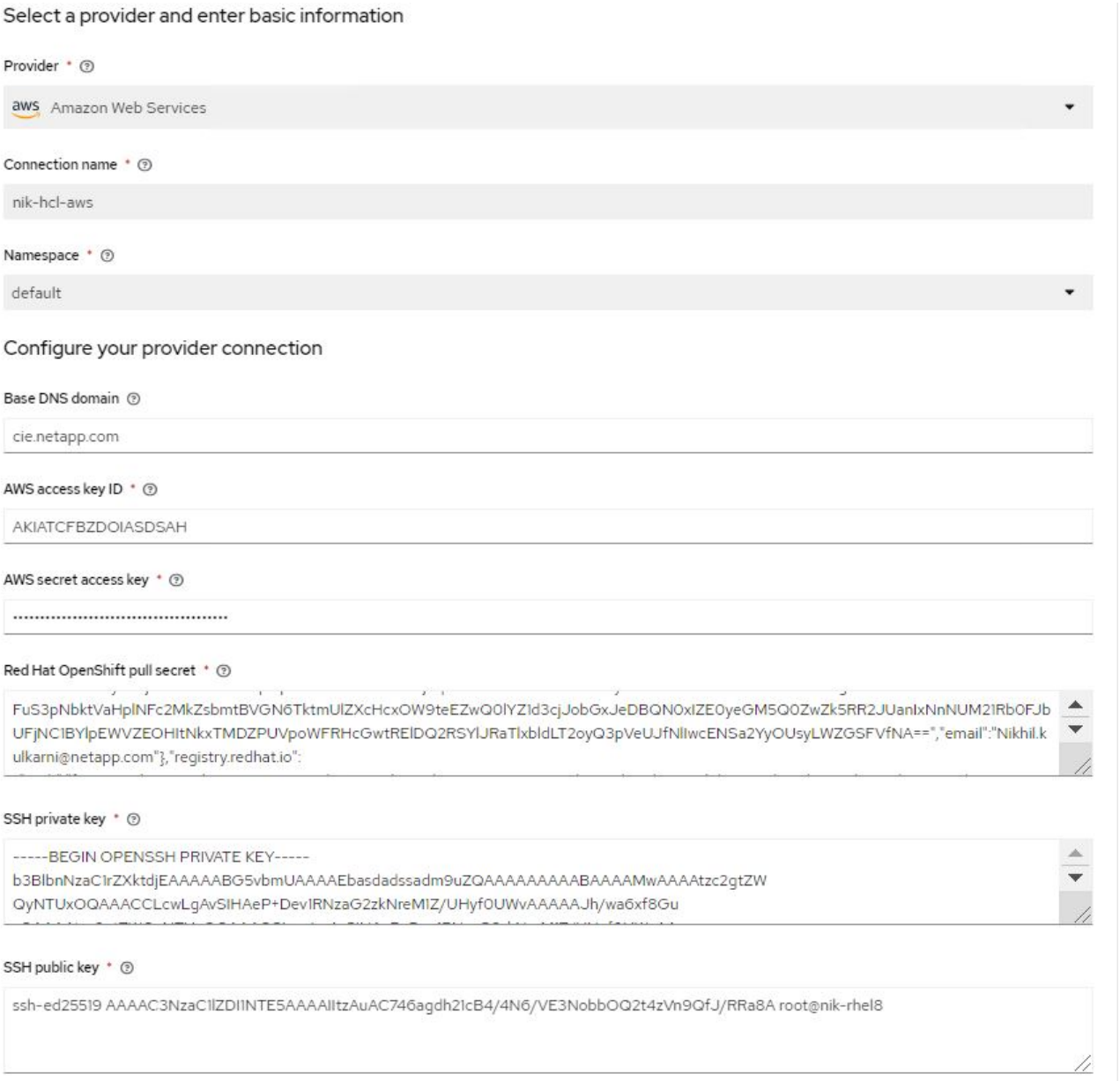


Features

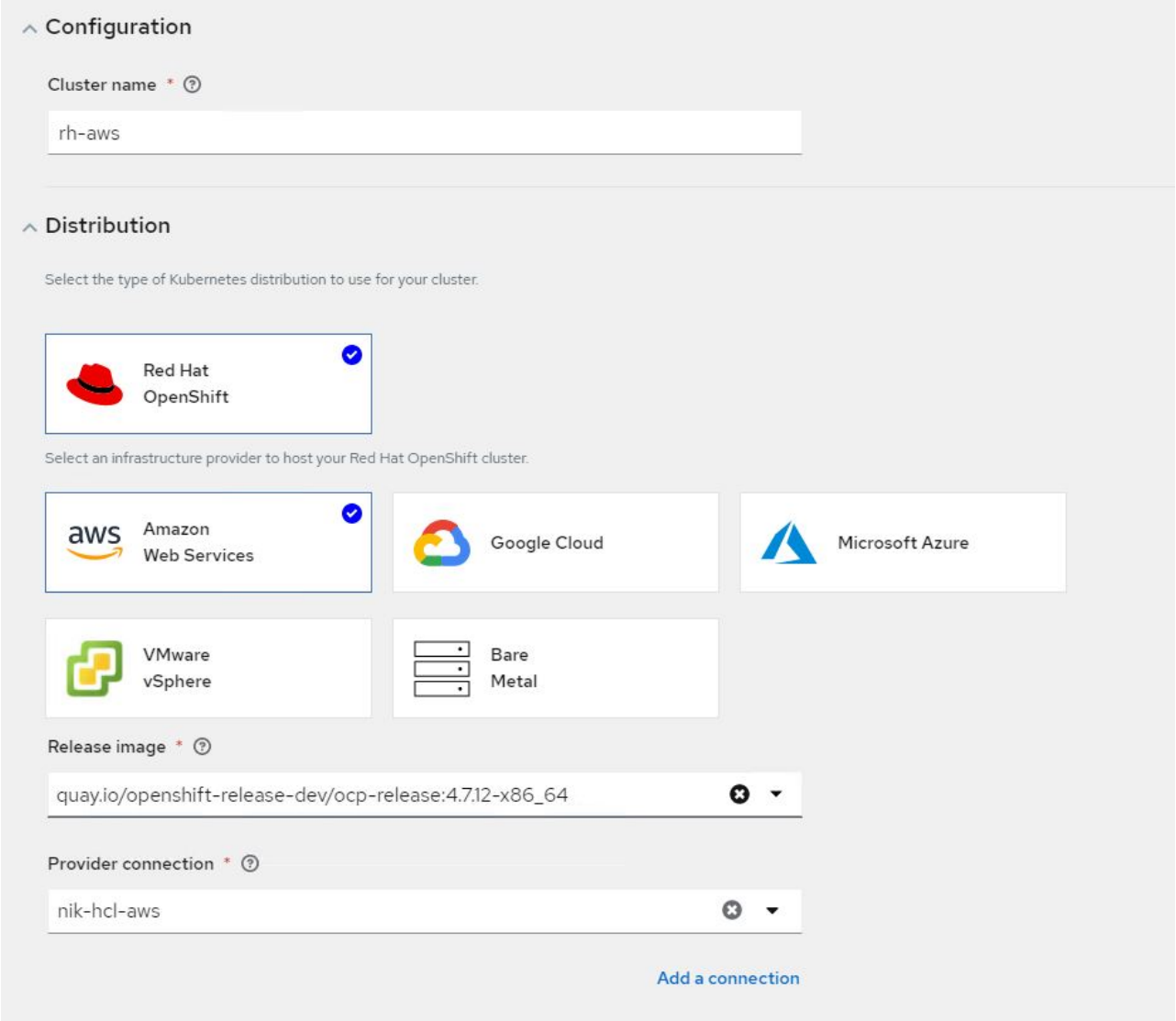
Cluster Lifecycle Management

To manage different OpenShift clusters, you can either create or import them into Advanced Cluster Management.

1. First navigate to Automate Infrastructures > Clusters.
2. To create a new OpenShift cluster, complete the following steps:
   a. Create a provider connection: Navigate to Provider Connections and click Add a Connection, provide all the details corresponding to the selected provider type and click Add.



   b. To create a new cluster, navigate to Clusters and click Add a Cluster > Create a Cluster. Provide the details for the cluster and the corresponding provider and click Create.



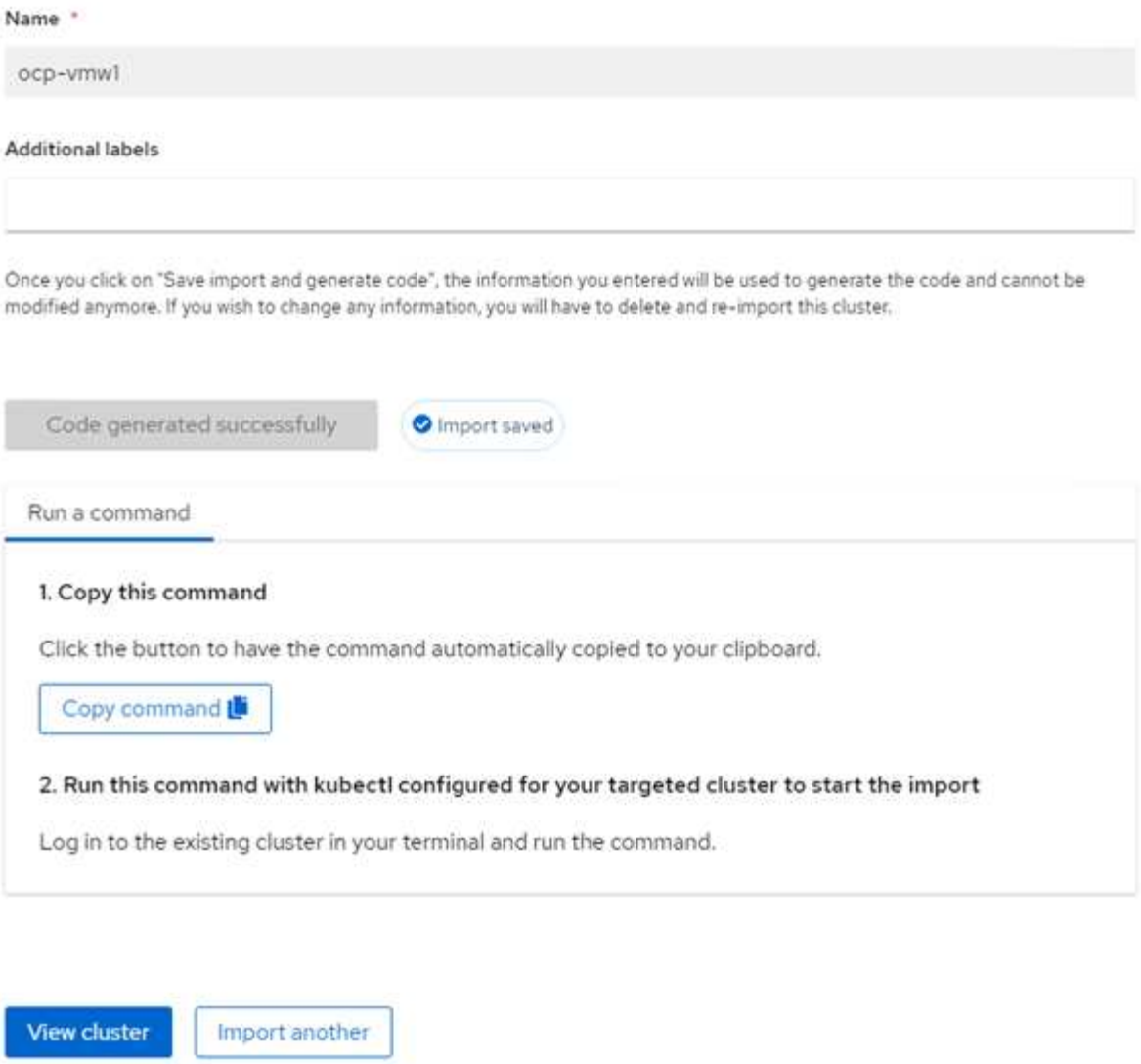
c. After the cluster is created, it appears in the cluster list with the status Ready.

3. To import an existing cluster, complete the following steps:

   a. Navigate to Clusters and click Add a Cluster > Import an Existing Cluster.

   b. Enter the name of the cluster and click Save Import and Generate Code. A command to add the existing cluster is displayed.

   c. Click Copy Command and run the command on the cluster to be added to the hub cluster. This initiates the installation of the necessary agents on the cluster, and, after this process is complete, the cluster appears in the cluster list with status Ready.

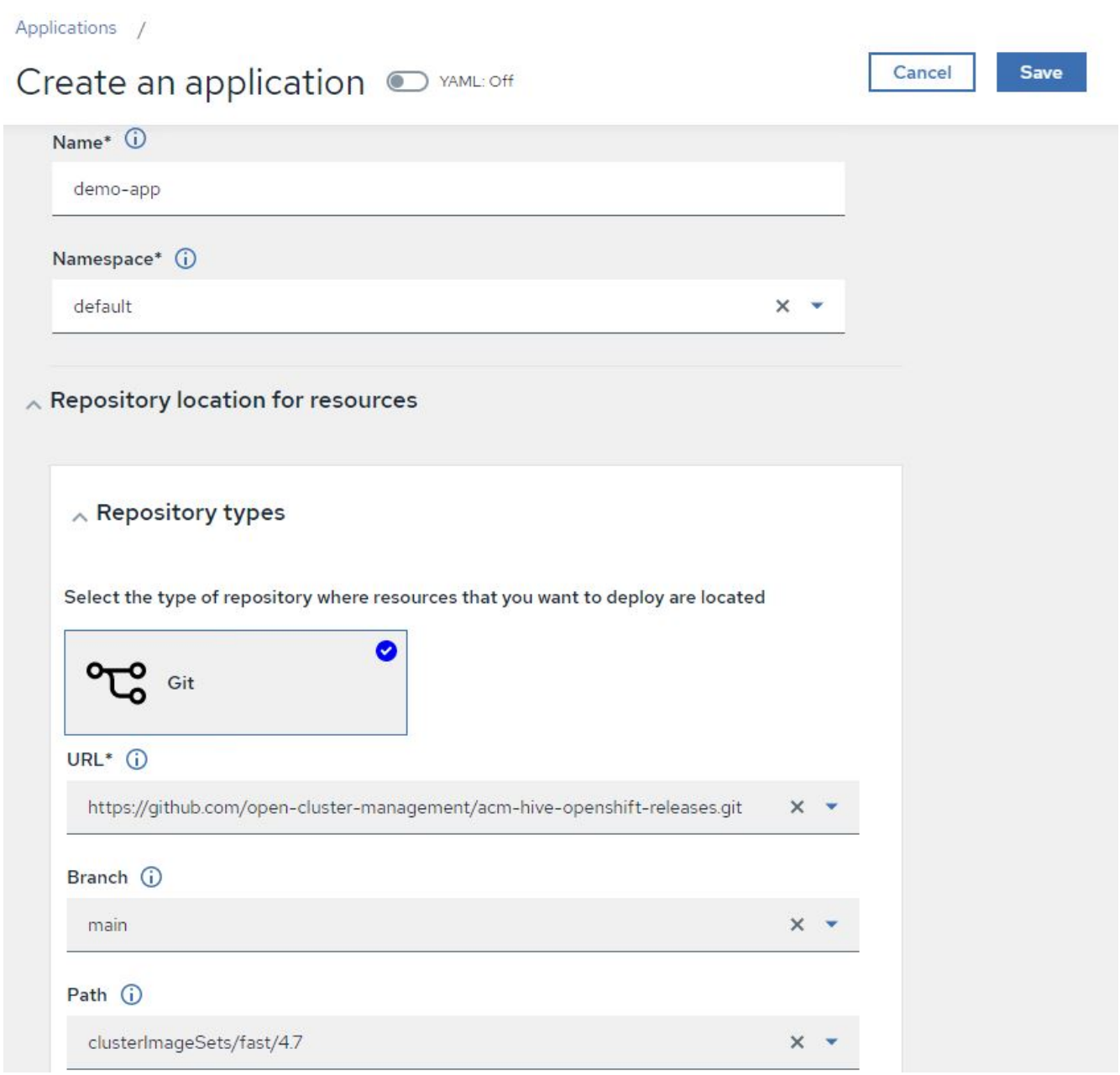


4. After you create and import multiple clusters, you can monitor and manage them from a single console.

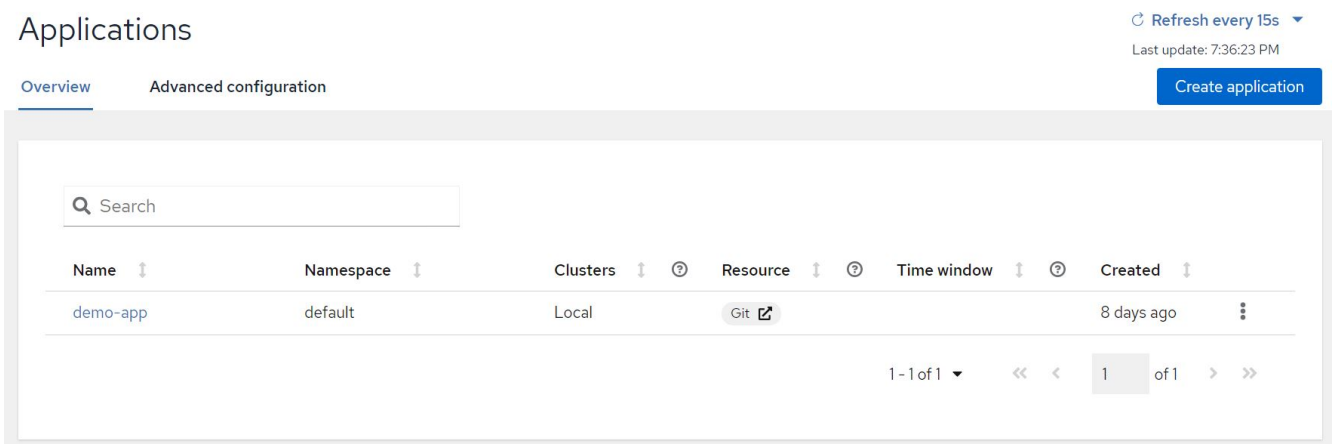
Application lifecycle management

To create an application and manage it across a set of clusters,

1. Navigate to Manage Applications from the sidebar and click Create Application. Provide the details of the application you would like to create and click Save.



2. After the application components are installed, the application appears in the list.

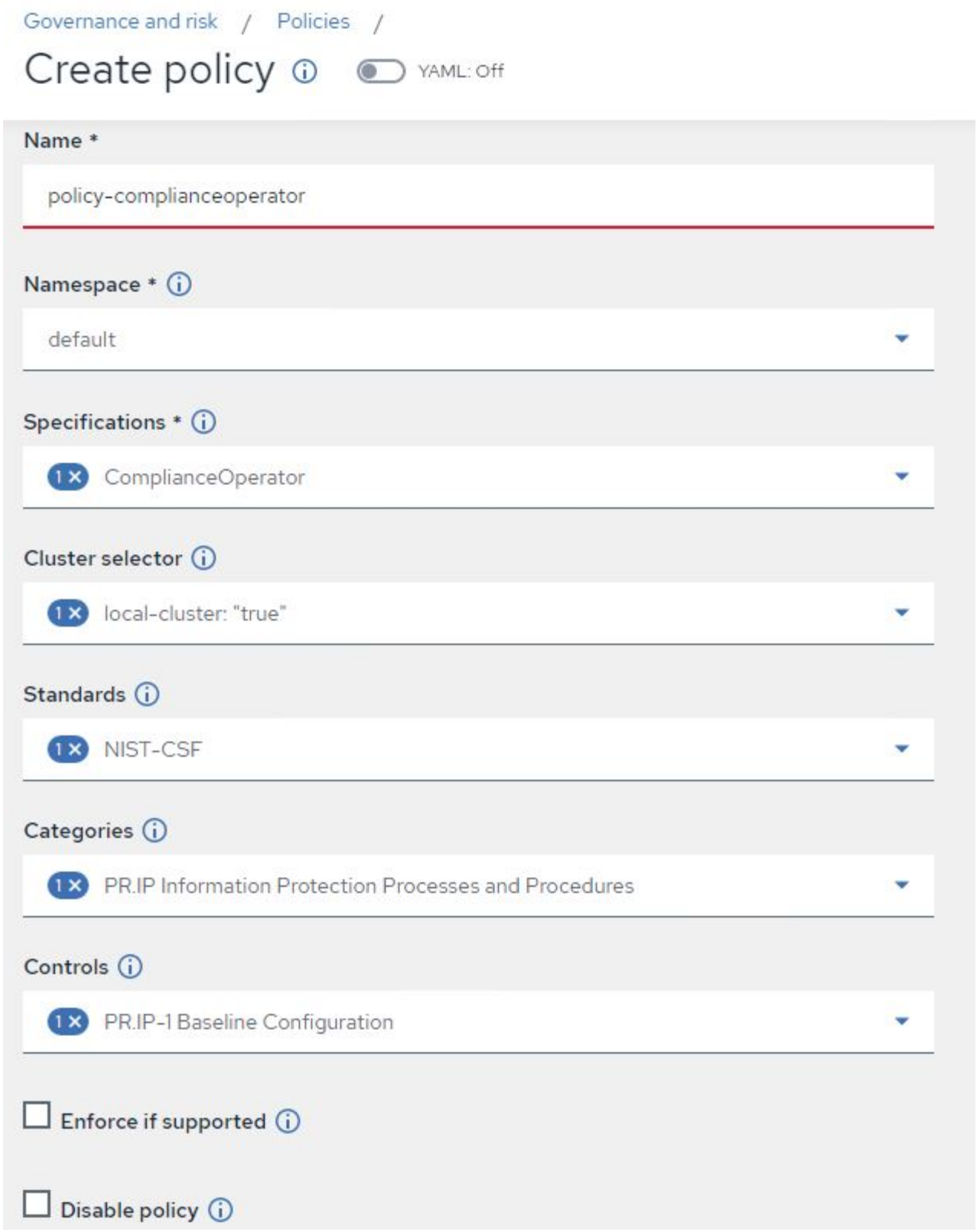


3. The application can now be monitored and managed from the console.

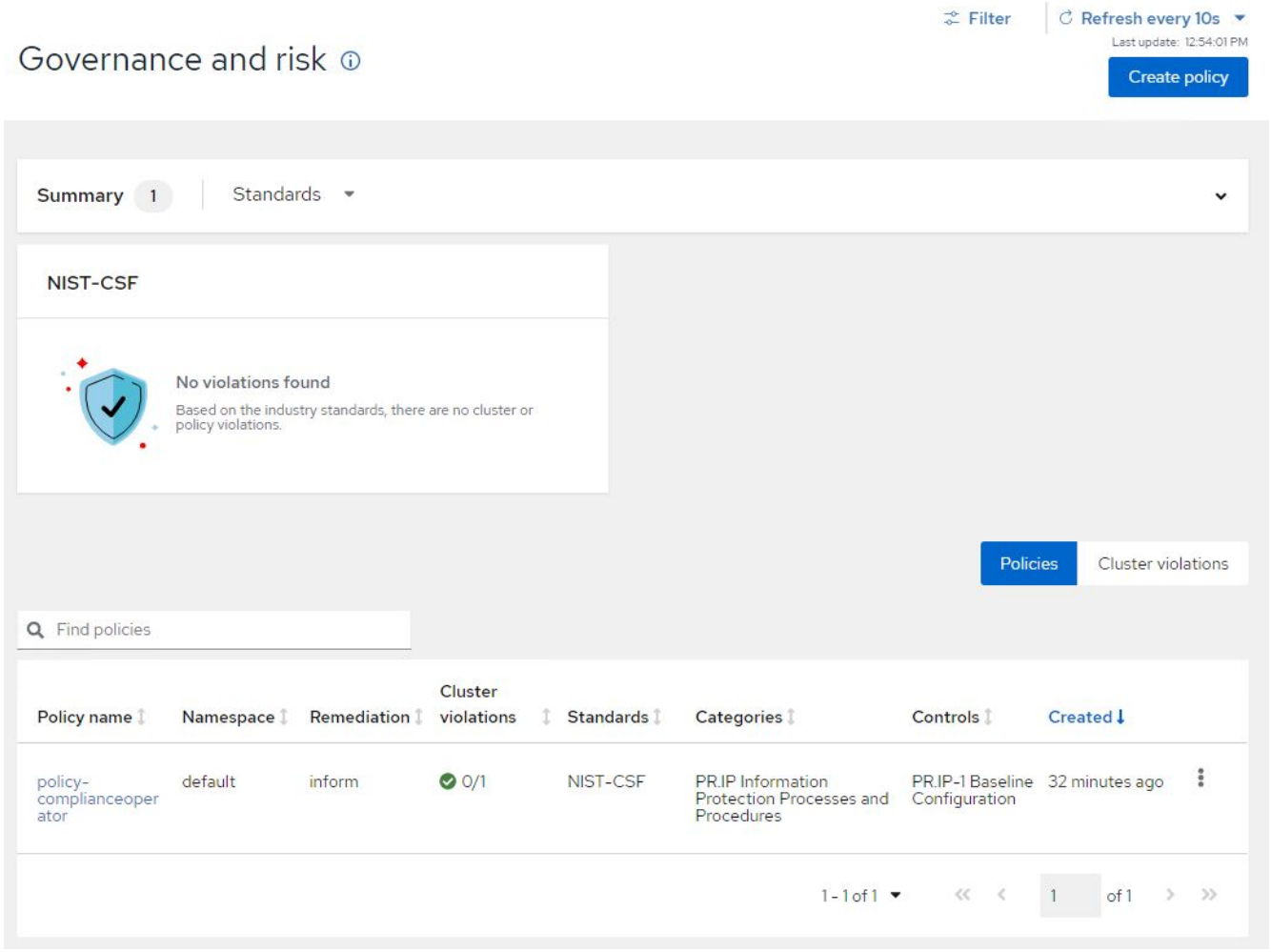
Governance and risk

This feature allows you to define the compliance policies for different clusters and make sure that the clusters adhere to it. You can configure the policies to either inform or remediate any deviations or violations of the rules.

1. Navigate to Governance and Risk from the sidebar.
2. To create compliance policies, click Create Policy, enter the details of the policy standards, and select the clusters that should adhere to this policy. If you want to automatically remediate the violations of this policy, select the checkbox Enforce if Supported and click Create.



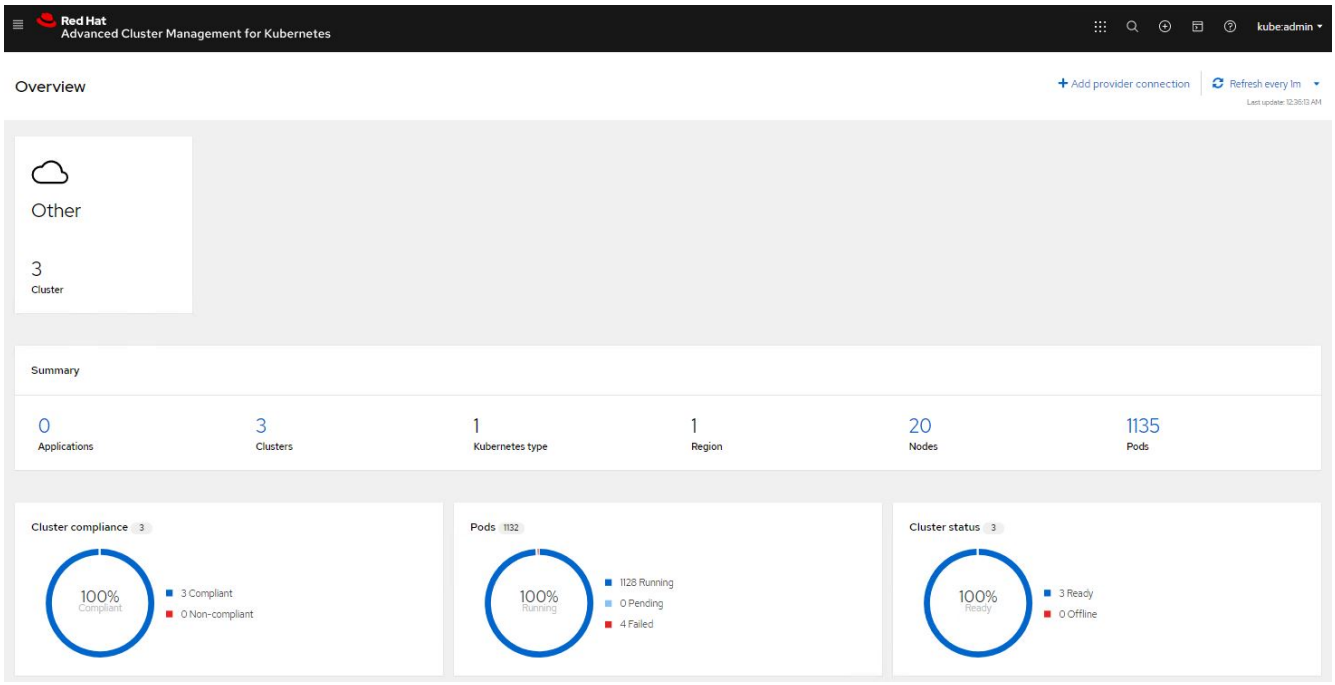
3. After all the required policies are configured, any policy or cluster violations can be monitored and remediated from Advanced Cluster Management.



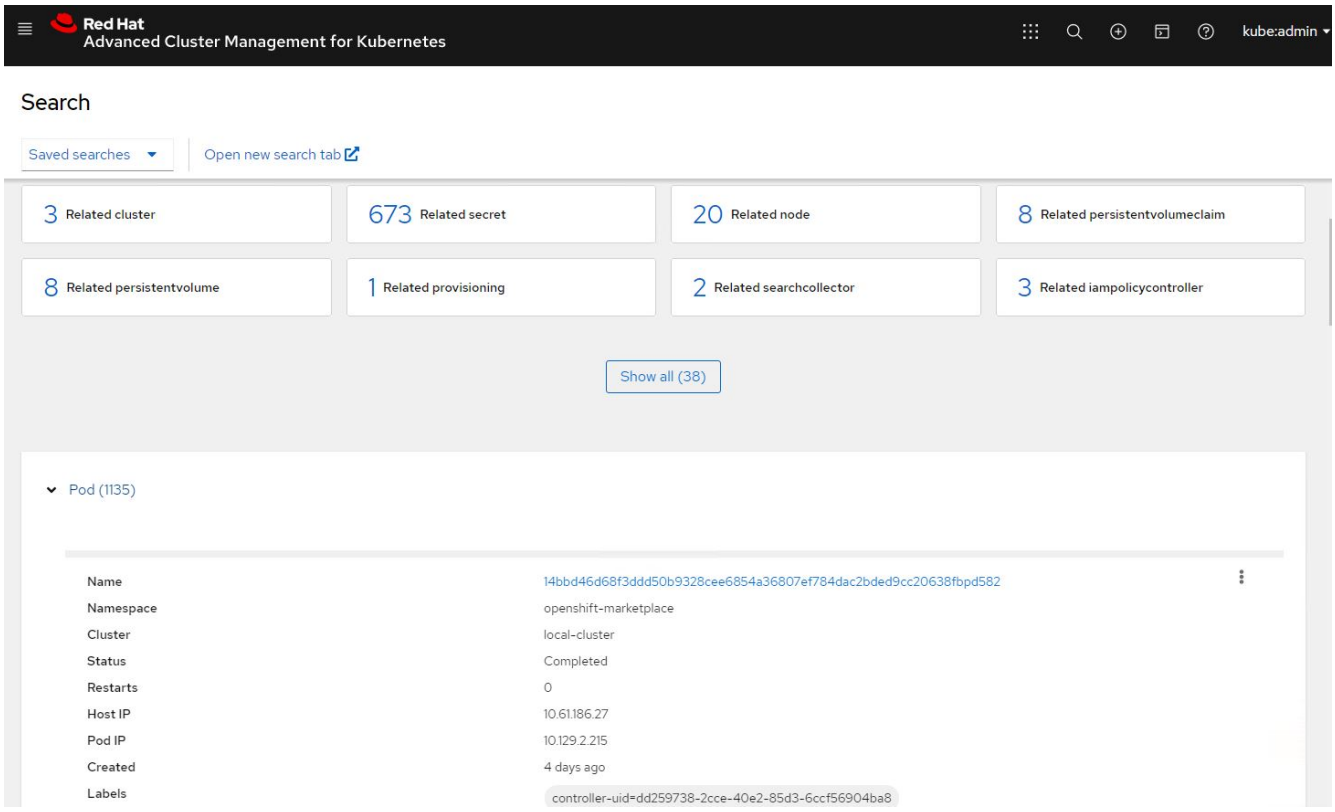
Observability

Advanced Cluster Management for Kubernetes provides a way to monitor the nodes, pods, and applications, and workloads across all the clusters.

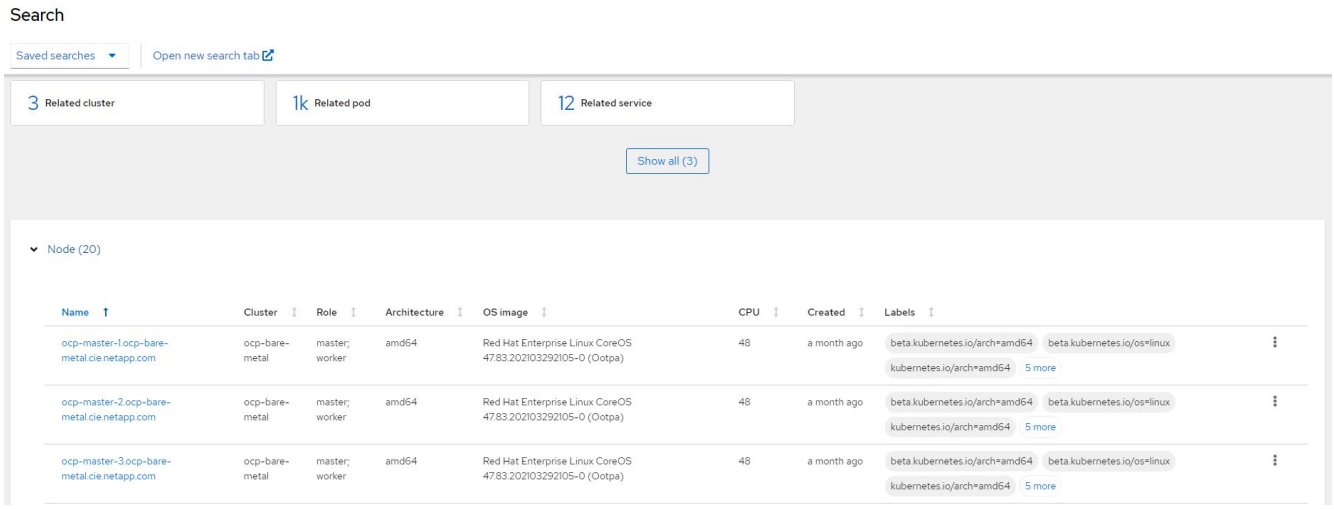
1. Navigate to Observe Environments > Overview.



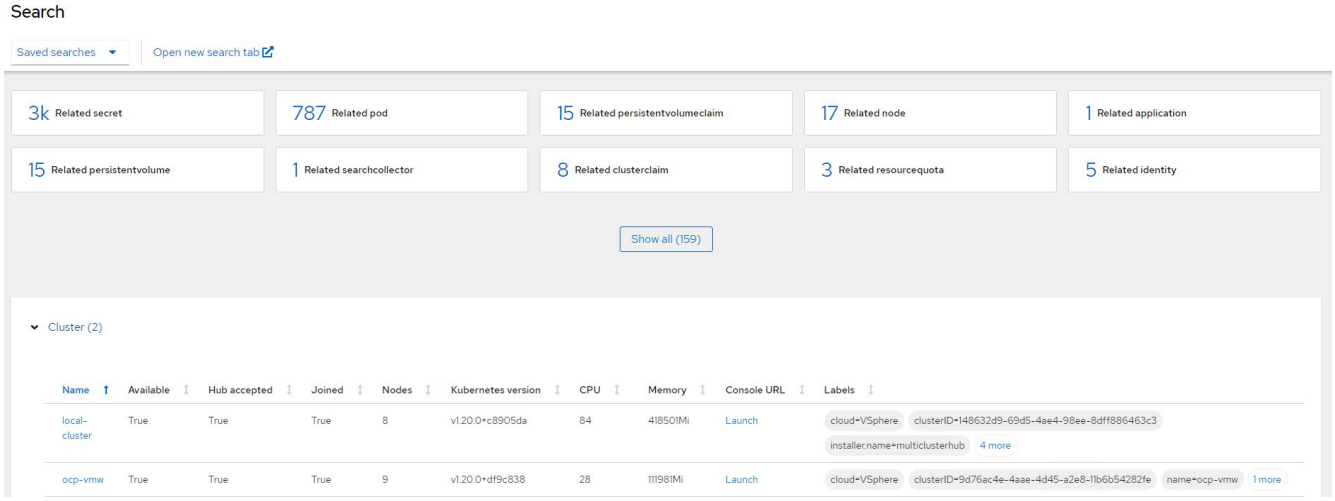
2. All pods and workloads across all clusters are monitored and sorted based on a variety of filters. Click Pods to view the corresponding data.



3. All nodes across the clusters are monitored and analyzed based on a variety of data points. Click Nodes to get more insight into the corresponding details.



4. All clusters are monitored and organized based on different cluster resources and parameters. Click Clusters to view cluster details.



Create resources on multiple clusters

Advanced Cluster Management for Kubernetes allows users to create resources on one or more managed clusters simultaneously from the console. As an example, if you have OpenShift clusters at different sites backed with different NetApp ONTAP clusters and want to provision PVC's at both sites, you can click the (+) sign on the top bar. Then select the clusters on which you want to create the PVC, paste the resource YAML, and click Create.

Create resource

Cancel Create

Clusters | Select the clusters where the resource(s) will be deployed.

2 × local-cluster, ocp-vmw

Resource configuration | Enter the configuration manifest for the resource(s).

YAML

```yaml
kind: PersistentVolumeClaim
apiVersion: v1
metadata:
  name: demo-pvc
spec:
  accessModes:
    - ReadWriteOnce
  resources:
    requests:
      storage: 1Gi
  storageClassName: ocp-trident
```

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