Guided Exercise: Monitor an OpenShift Cluster

Assess the overall status of an OpenShift cluster by using the web console, and identify projects and pods of core architectural components of Kubernetes and OpenShift.

Outcomes

- Explore and show the monitoring features and components.
- Explore the Overview page to inspect the cluster status.
- Use a terminal connection to the `master01` node to view the `crio` and `kubelet` services.
- Explore the Monitoring page, alert rule configurations, and the `etcd` service dashboard.
- Explore the events page, and filter events by resource name, type, and message.

As the `student` user on the `workstation` machine, use the `lab` command to prepare your system for this exercise.

This command ensures that the cluster is prepared for the exercise.

```
[student@workstation ~]$ lab start intro-monitor
```

Instructions

1. As the `developer` user, locate and then go to the Red Hat OpenShift web console.

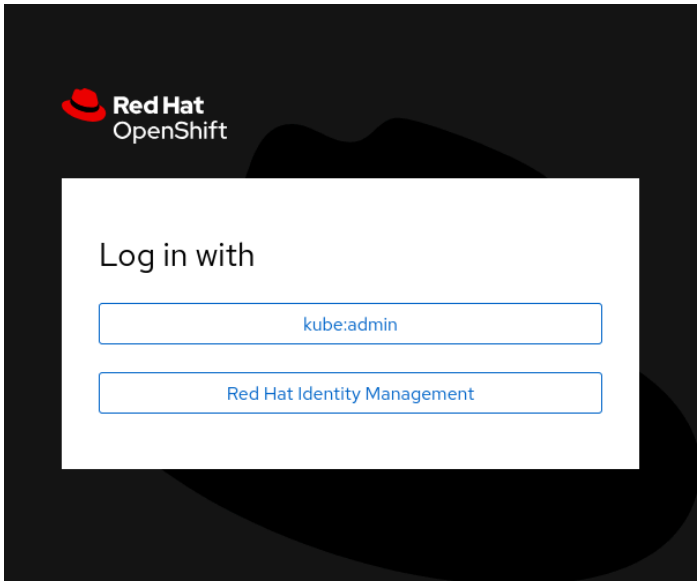
   Use the terminal to log in to the OpenShift cluster as the `developer` user with the `developer` password.

   ```
   [student@workstation ~]$ oc login -u developer -p developer \
     https://api.ocp4.example.com:6443
   ...output omitted...
   ```

   Identify the URL for the OpenShift web console.

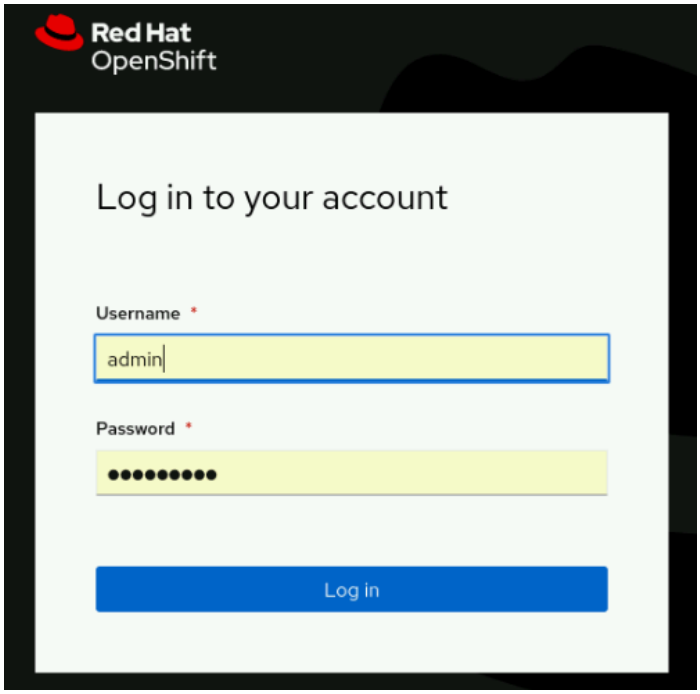
   ```
   [student@workstation ~]$ oc whoami --show-console
   https://console-openshift-console.apps.ocp4.example.com
   ```

   Open a web browser and go to https://console-openshift-console.apps.ocp4.example.com. Either type the URL in a web browser, or right-click and select **Open Link** from the terminal.



2. Log in to the OpenShift web console as the `admin` user.

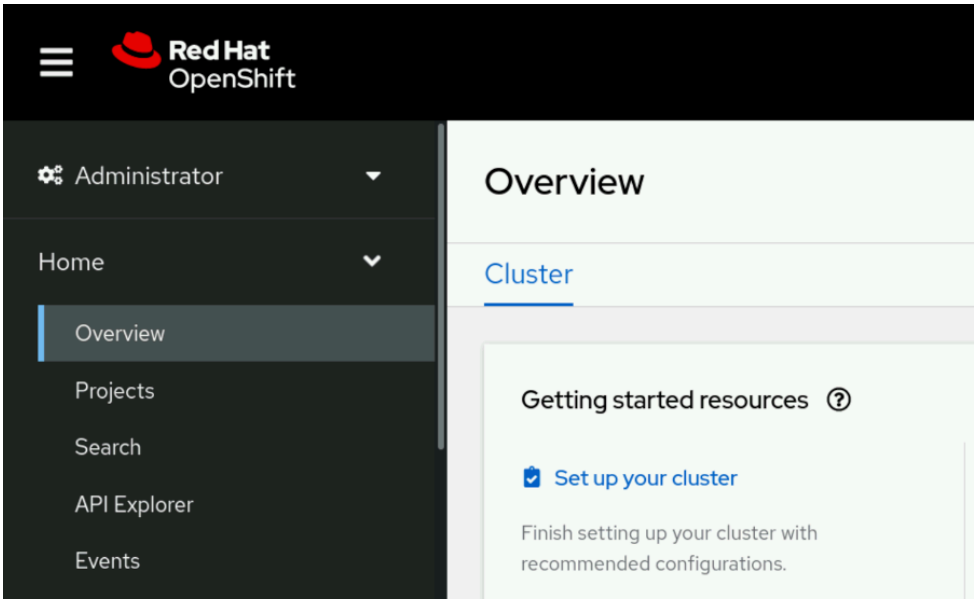
   Click **Red Hat Identity Management** and log in as the `admin` user with the `redhatocp` password.



3. View the cluster health and overall status.

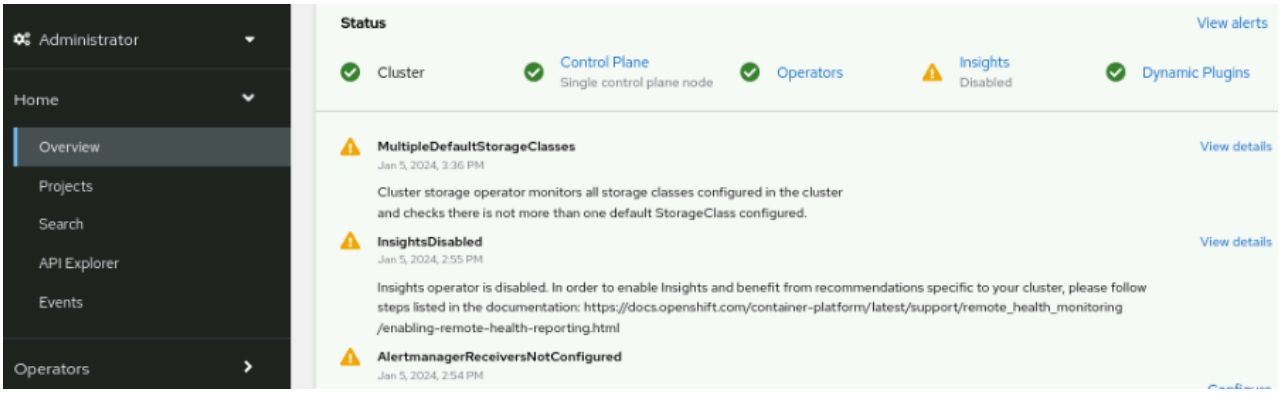
   Review the **Cluster Overview** page.

   If you do not see this page after a successful login, then locate the left panel from the OpenShift web console. If you do not see the left panel, then click the main menu icon at the upper left of the web console. Go to **Home** → **Overview** to view general cluster information.



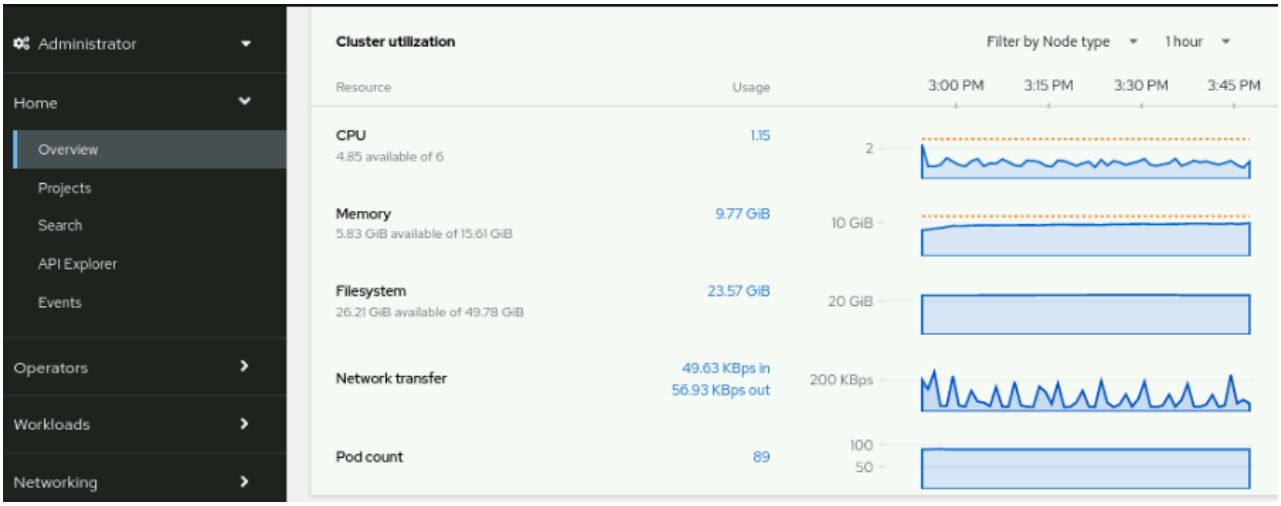
   The **Overview** section contains links to helpful documentation and an initial cluster configuration walkthrough.

   Scroll down to view the **Status** section, which provides a summary of cluster performance and health.

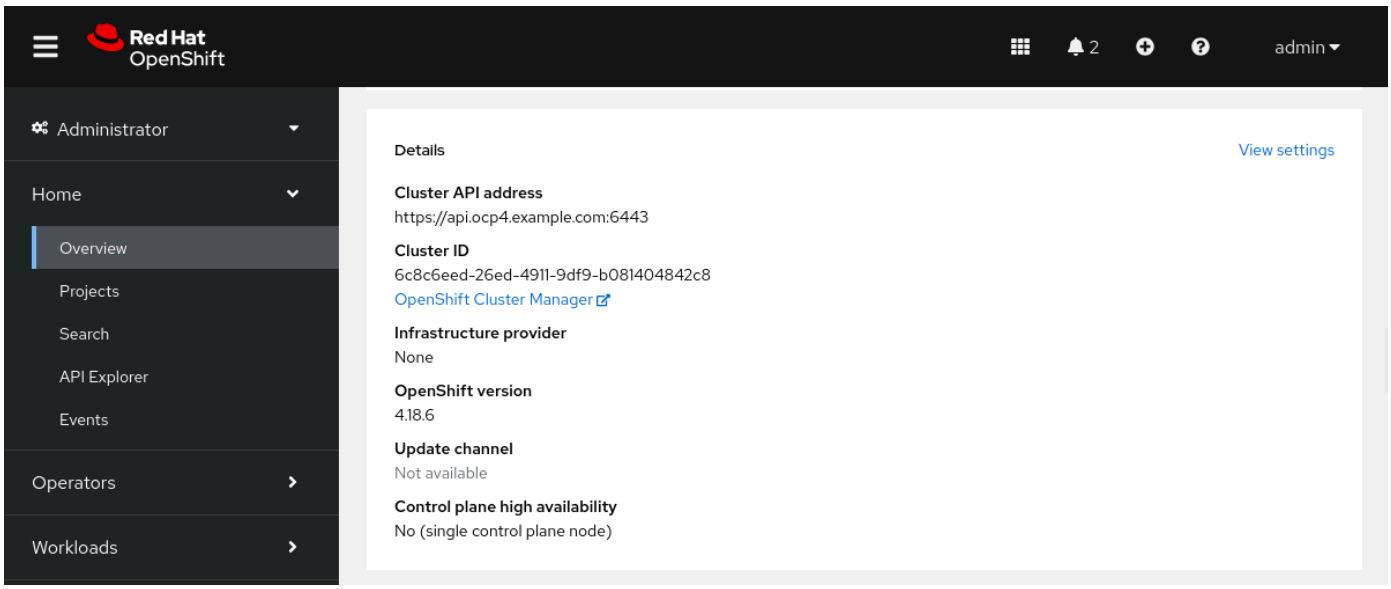


Many of the headings are links to sections with more detailed cluster information.

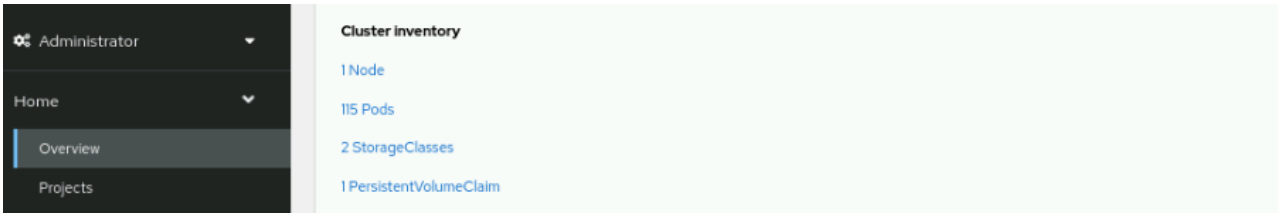
Continue scrolling to view the **Cluster utilization** section, which contains metrics and graphs that show resource consumption.



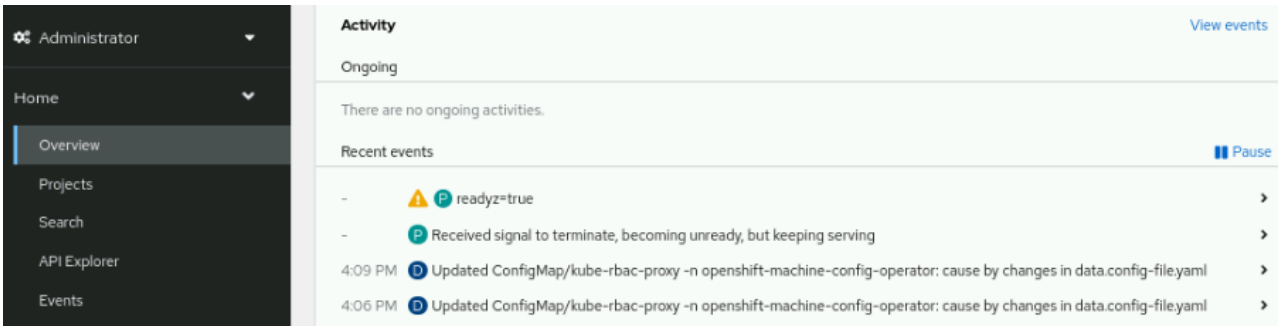
Continue scrolling to view the **Details** section, including information such as the cluster API address, cluster ID, and Red Hat OpenShift version.



Scroll to the **Cluster Inventory** section, which contains links to the `Nodes`, `Pods`, `StorageClasses`, and `PersistentVolumeClaim` pages.

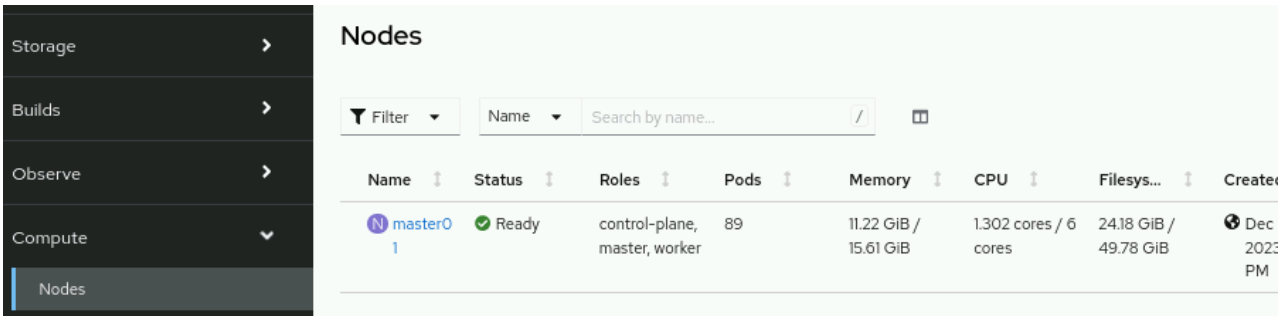


The last part of the page contains the **Activity** section, which lists ongoing activities and recent events for the cluster.



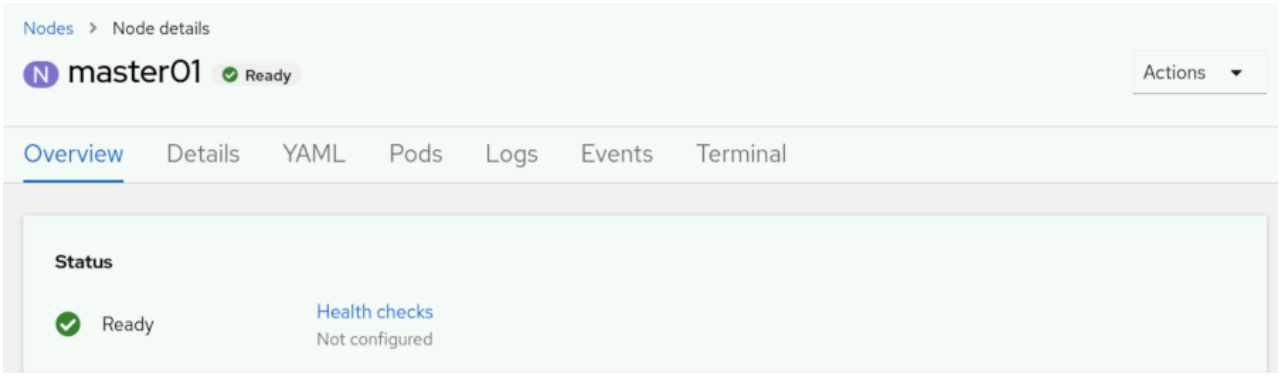
4. Use the OpenShift web console to access the terminal of a cluster node. From the terminal, determine the status of the `kubelet` node agent service and the `CRI-O` container runtime interface service.

   Go to **Compute** → **Nodes** to view the machine that provides the cluster resources.

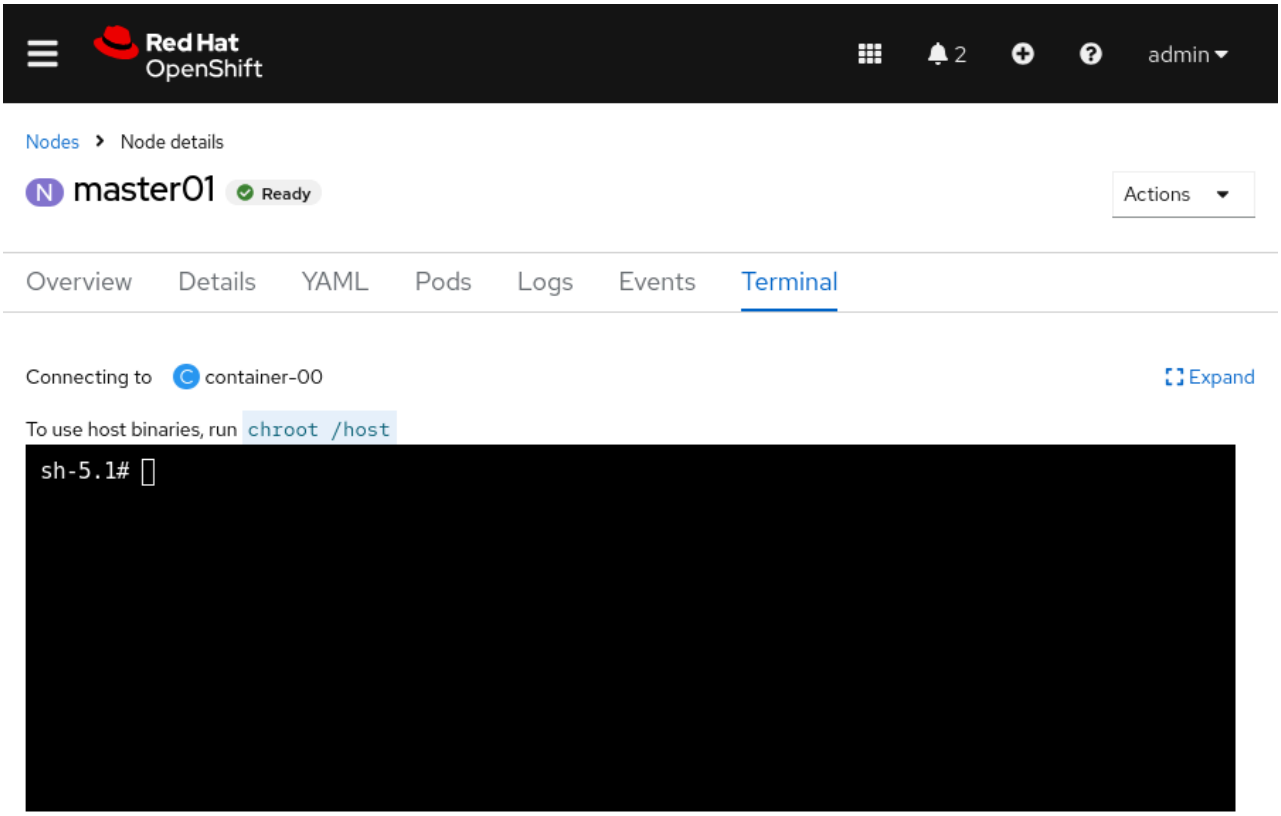


> **NOTE**
>
> The classroom cluster runs on a single node named `master01`, which serves as the control and data planes for the cluster, and is intended for training purposes. A production cluster uses multiple nodes to ensure stability and to provide a highly available architecture.

Click the **master01** link to view the details of the cluster node.

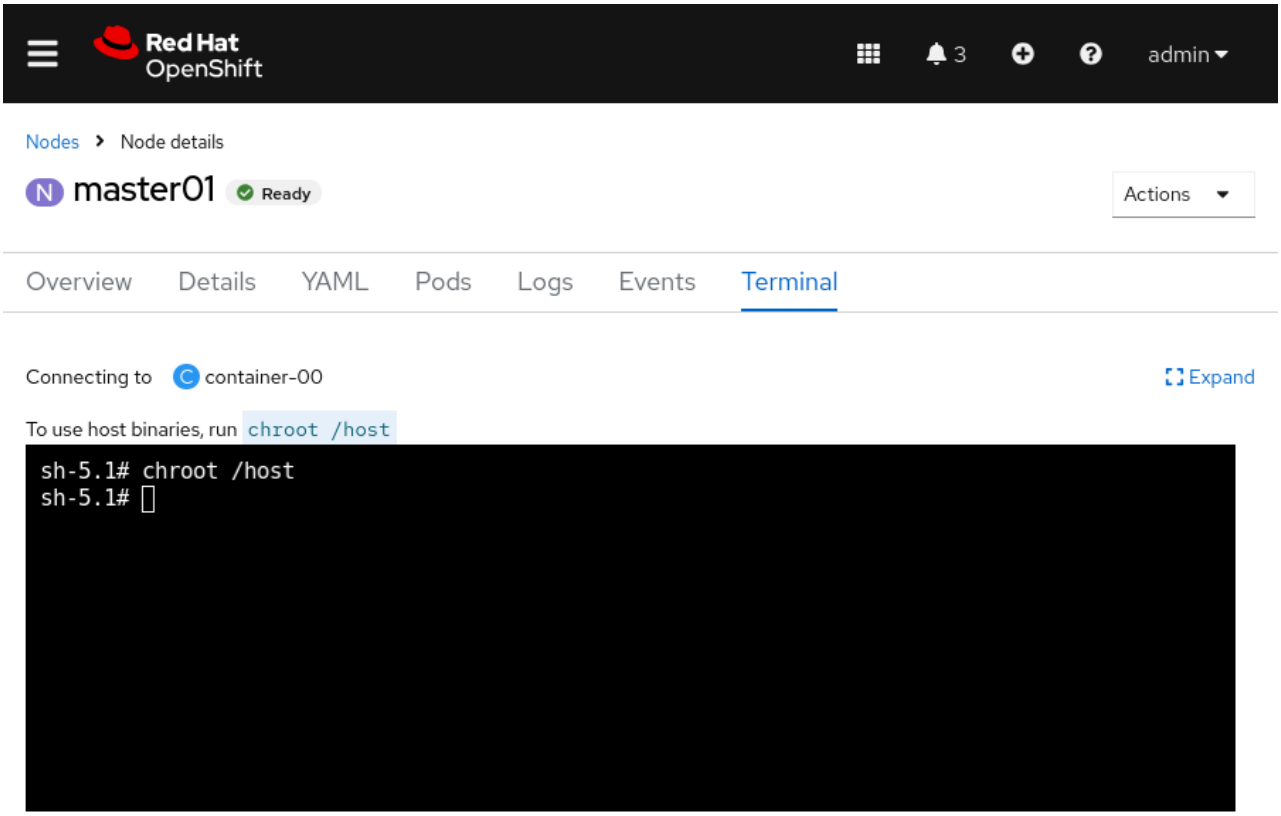


Click the **Terminal** tab to connect to a shell on the `master01` node.

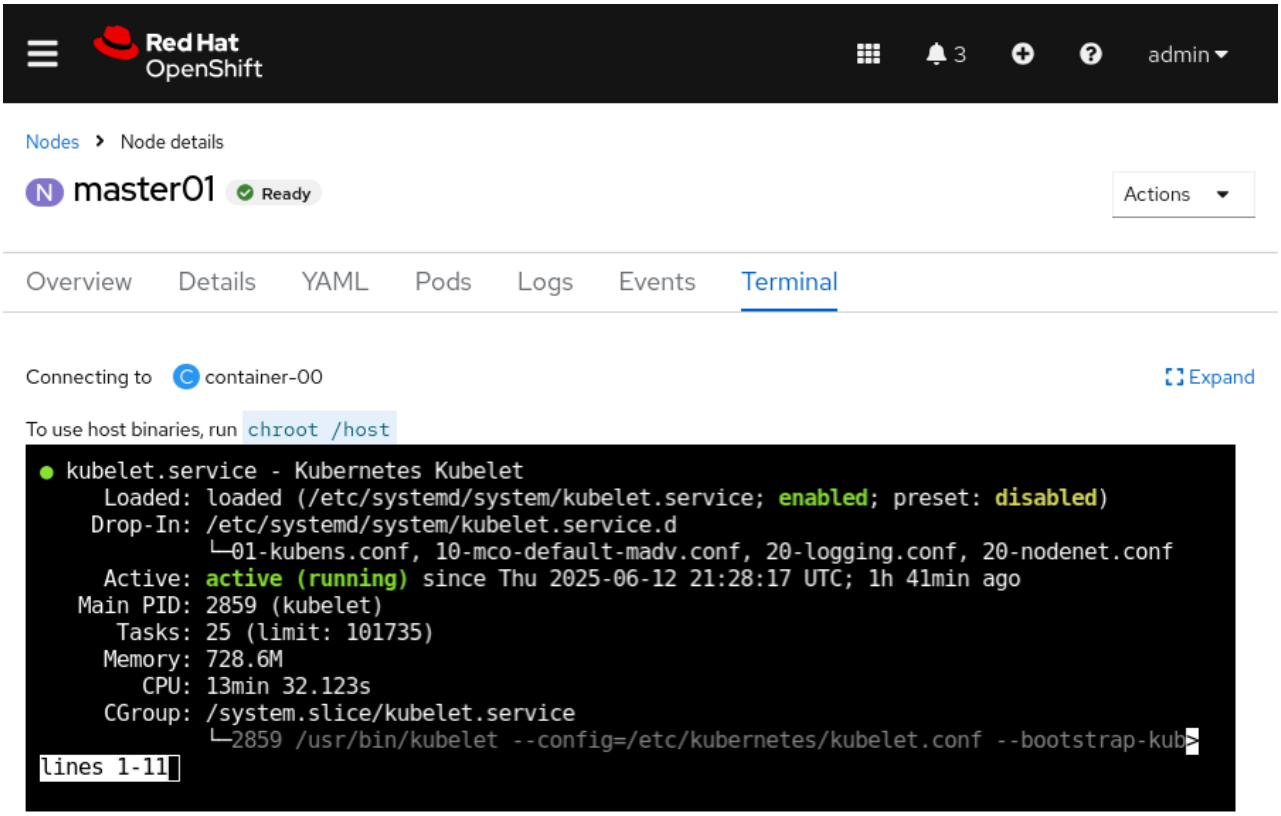


With the interactive shell on this page, you can run commands directly on the cluster node.

Run the `chroot /host` command to enable host binaries on the node.

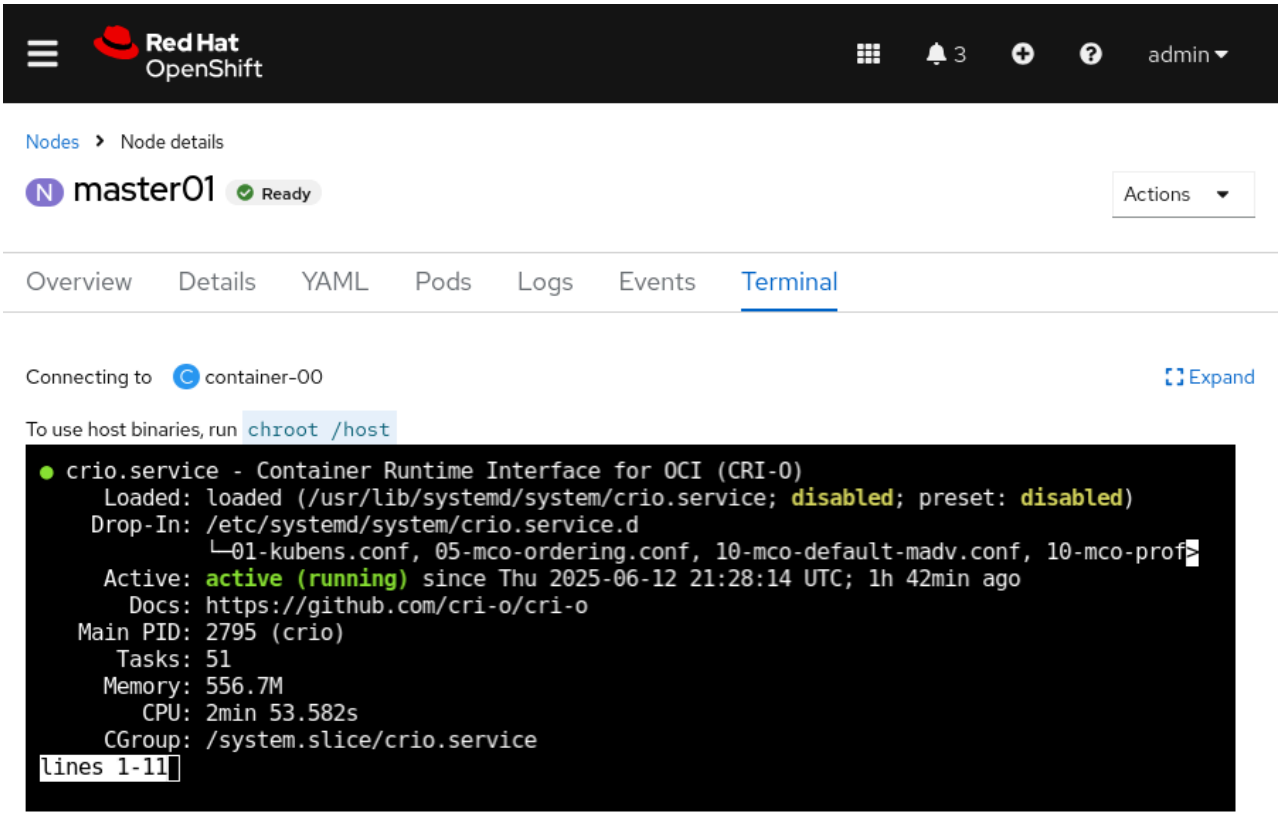


View the status of the `kubelet` node agent service by running the `systemctl status kubelet` command.



Press **q** to exit the command and to return to the terminal prompt.

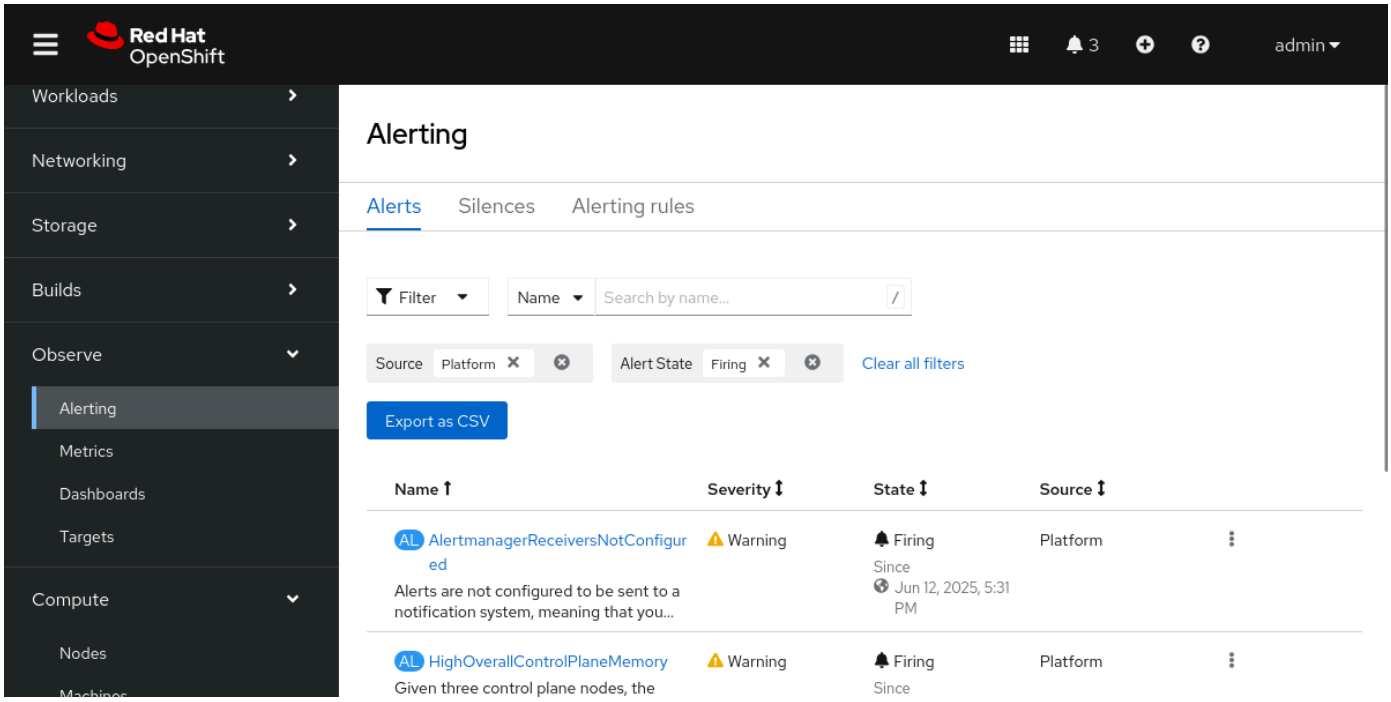
View the status of the `CRI-O` container runtime interface service by running the `systemctl status crio` command.



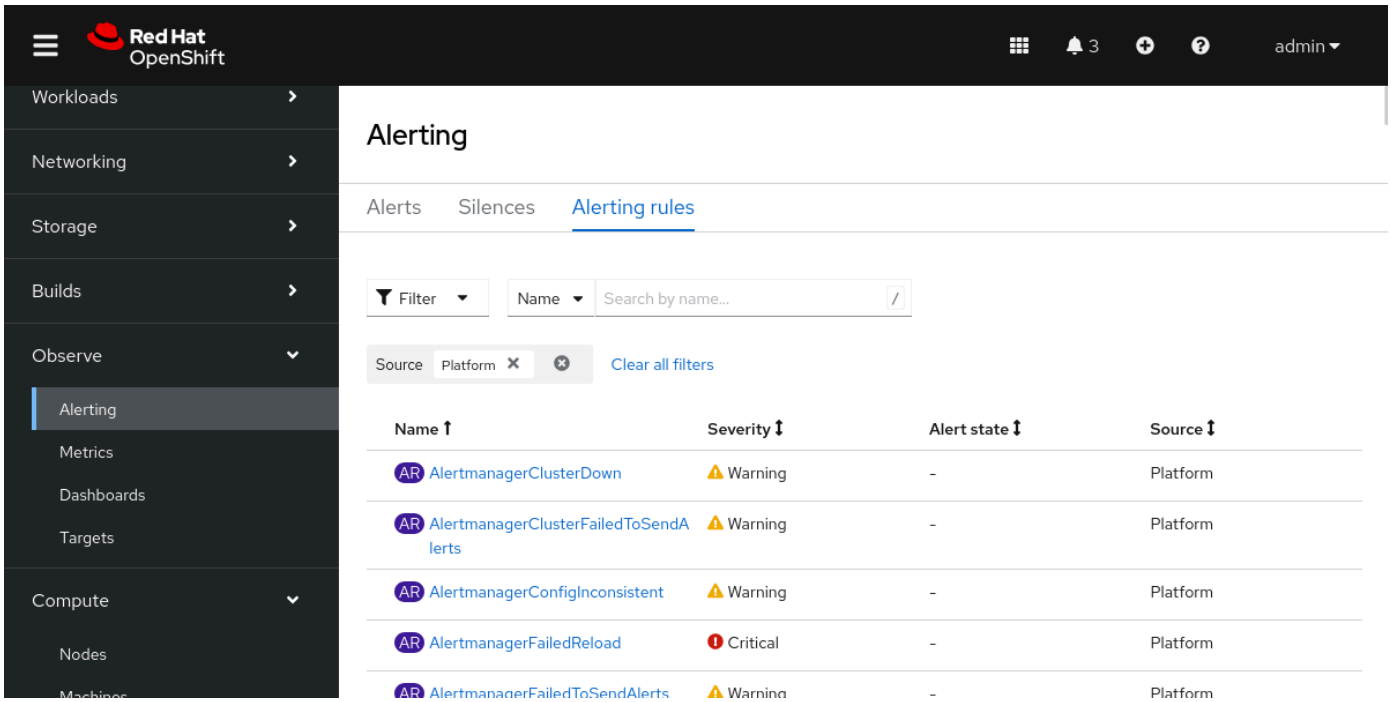
Press **q** to exit the command and to return to the terminal prompt.

5. Inspect the cluster monitoring and alert rule configurations.

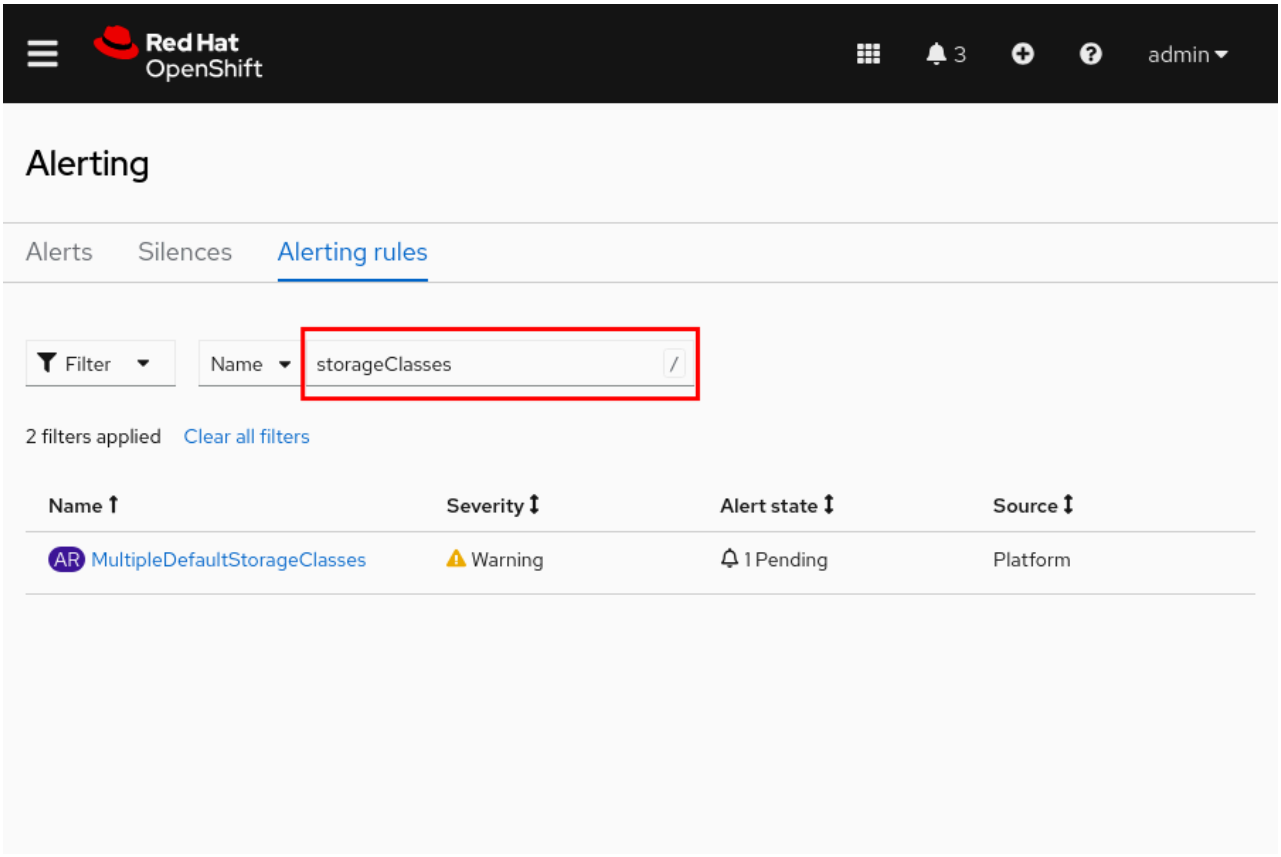
   From the OpenShift web console menu, go to **Observe** → **Alerting** to view cluster alert information.



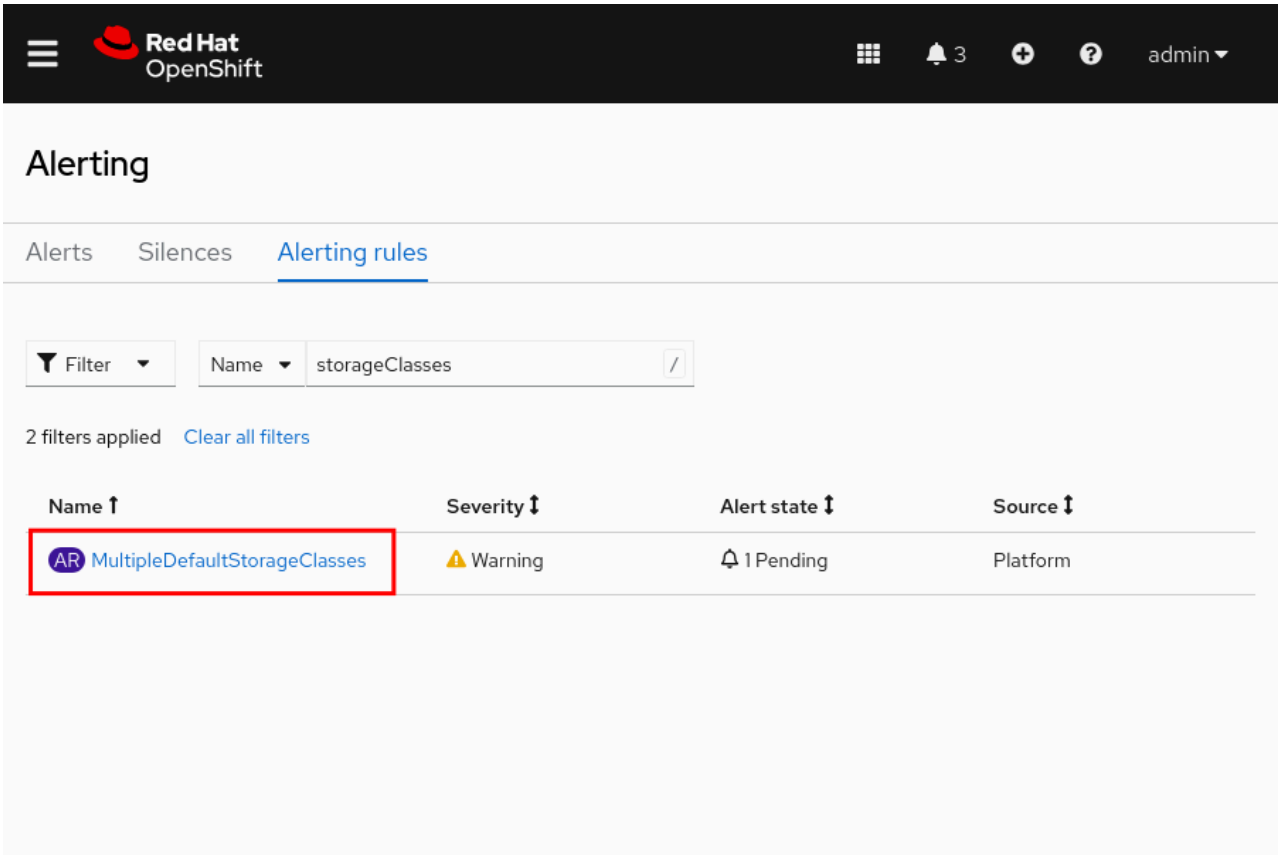
Select the **Alerting rules** tab to view the various alert definitions.



Filter the alerting rules by name and search for the `storageClasses` term.

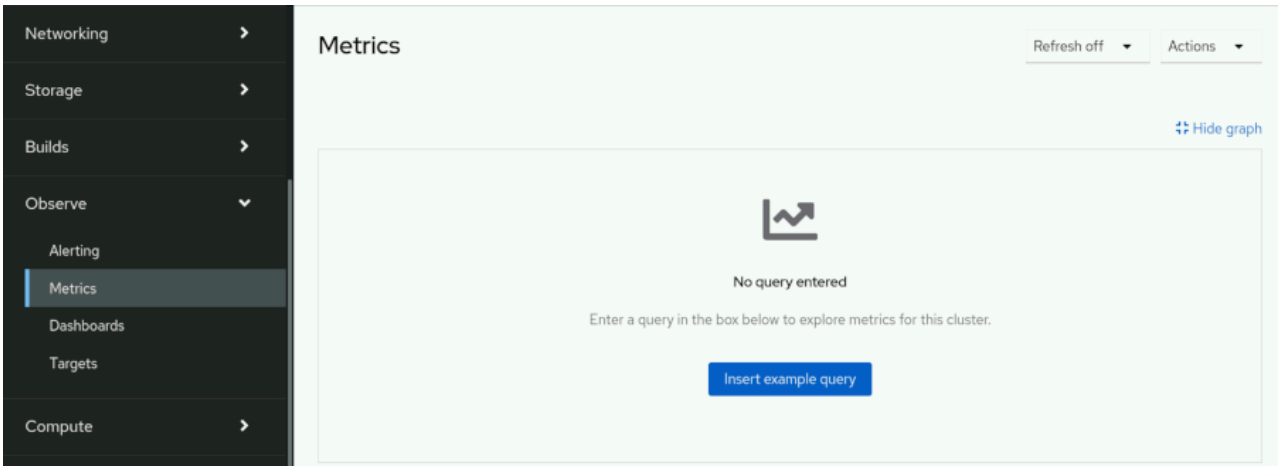


Select the `Warning` alert that is labeled `MultipleDefaultStorageClasses` to view the details of the alerting rule. Inspect the **Description** and **Expression** definition for the rule.

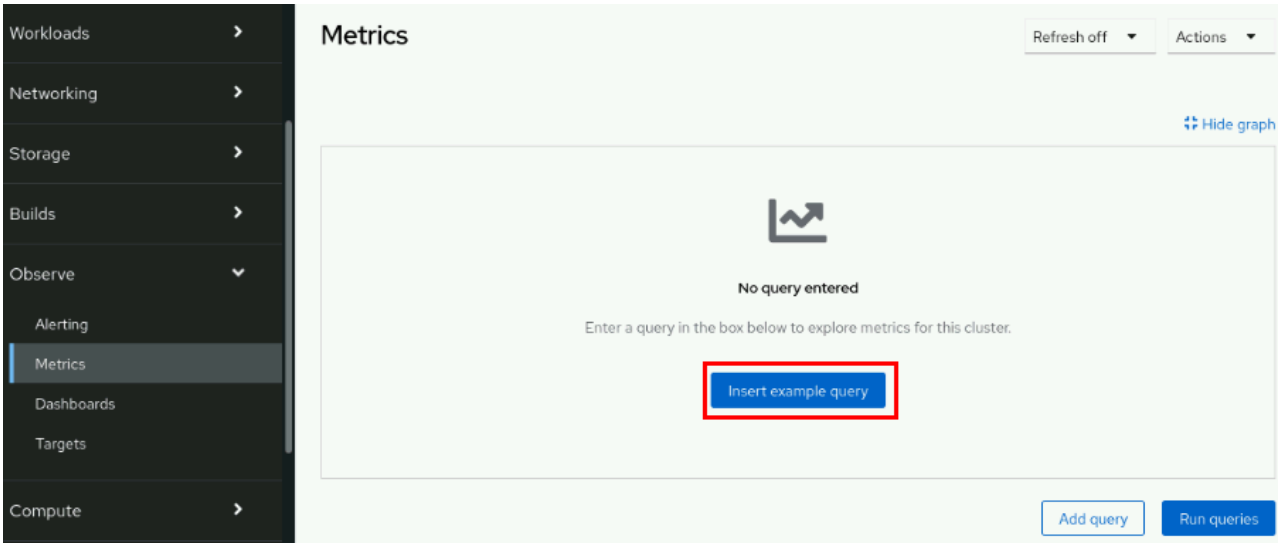


6. Inspect cluster metrics and execute an example query.

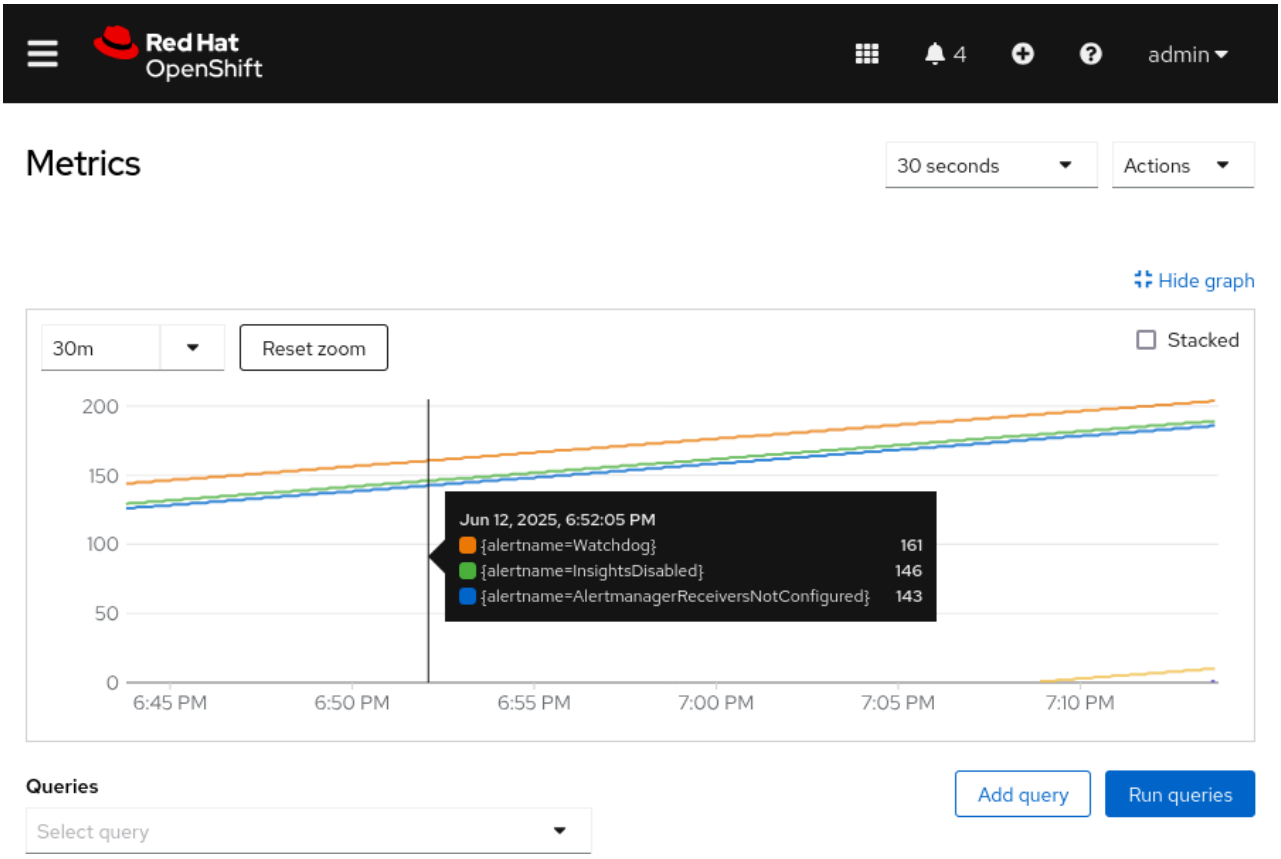
   Go to **Observe** → **Metrics** to open the cluster metrics utility.



   Click **Insert example query** to populate the metrics graph with sample data.

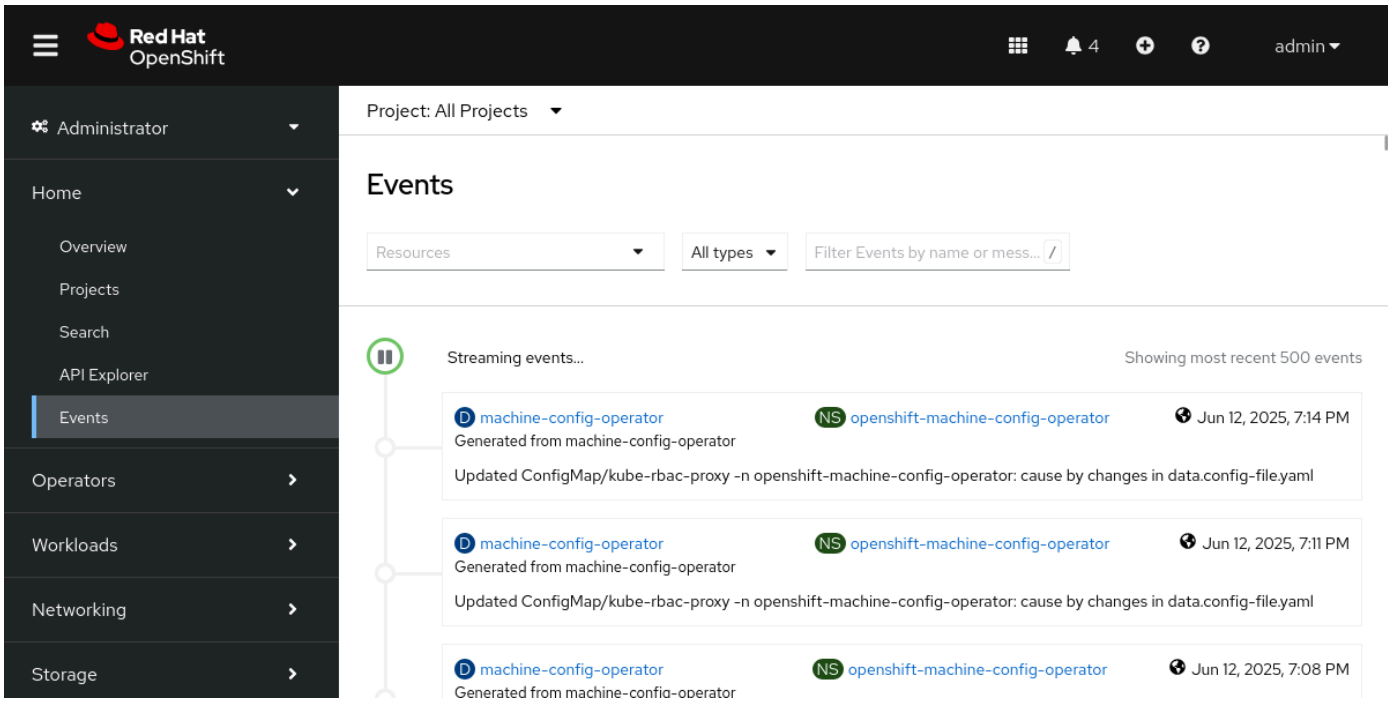


   From the graph, hover over any point on the timeline to view the detailed data points.



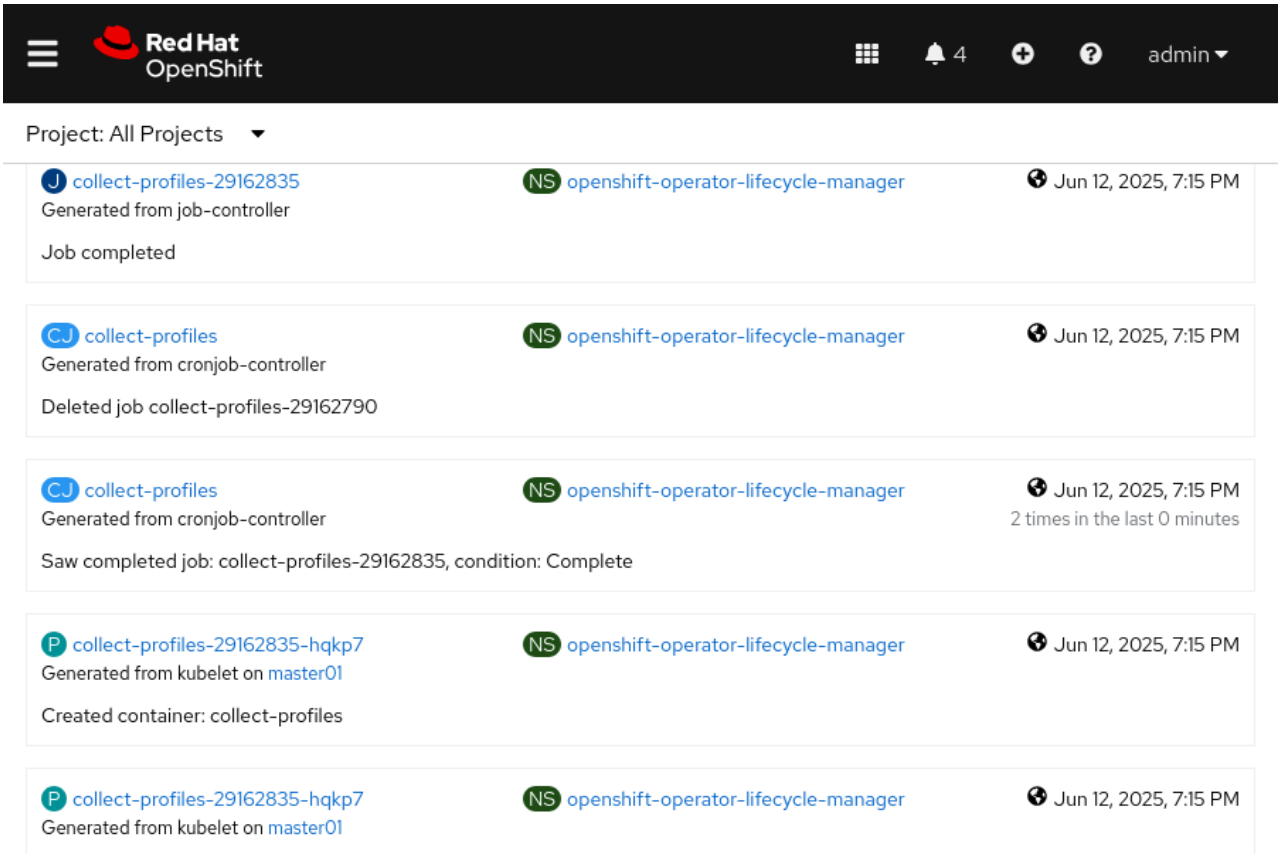
7. View the cluster events log from the web console.

   Go to **Home** → **Events** to open the cluster events log.



> **NOTE**
>
> The event log updates every 15 minutes and can require additional time to populate entries.

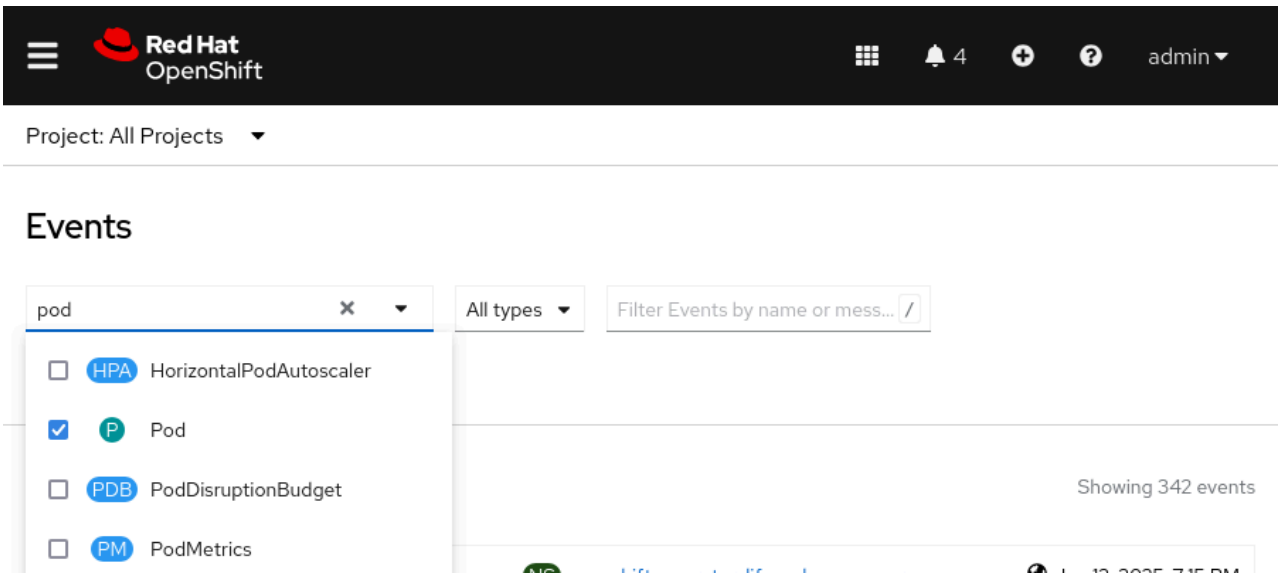
Scroll down to view a chronologically ordered stream that contains cluster events.



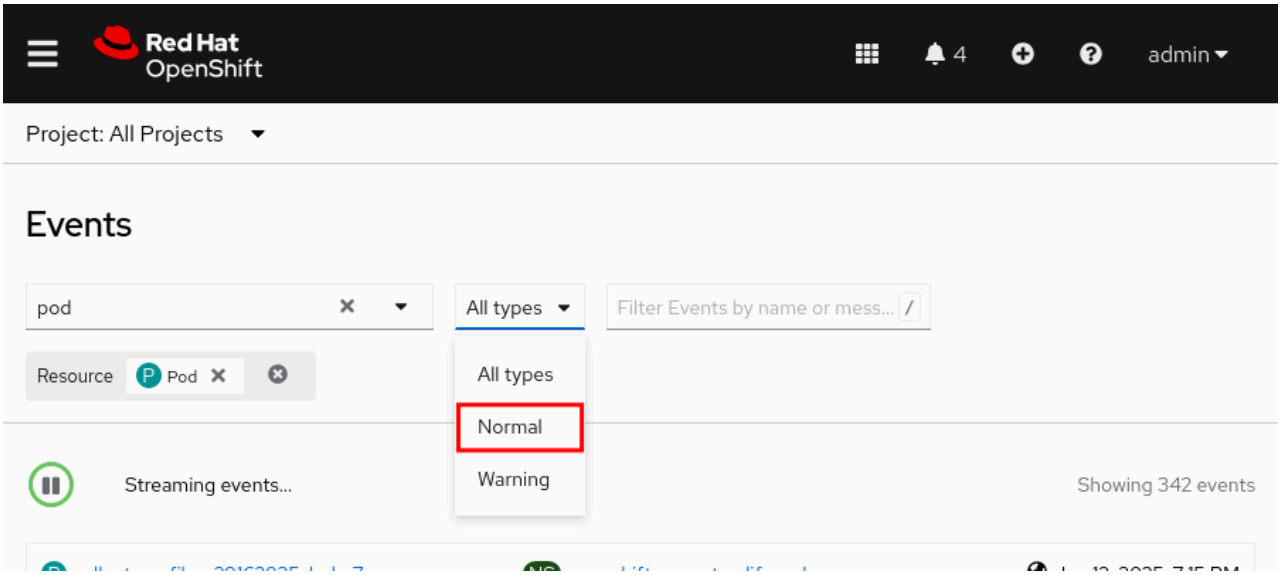
> **NOTE**
>
> Select an event to open the `Details` page of the related resource.

8. Filter the events by resource name, type, or message.

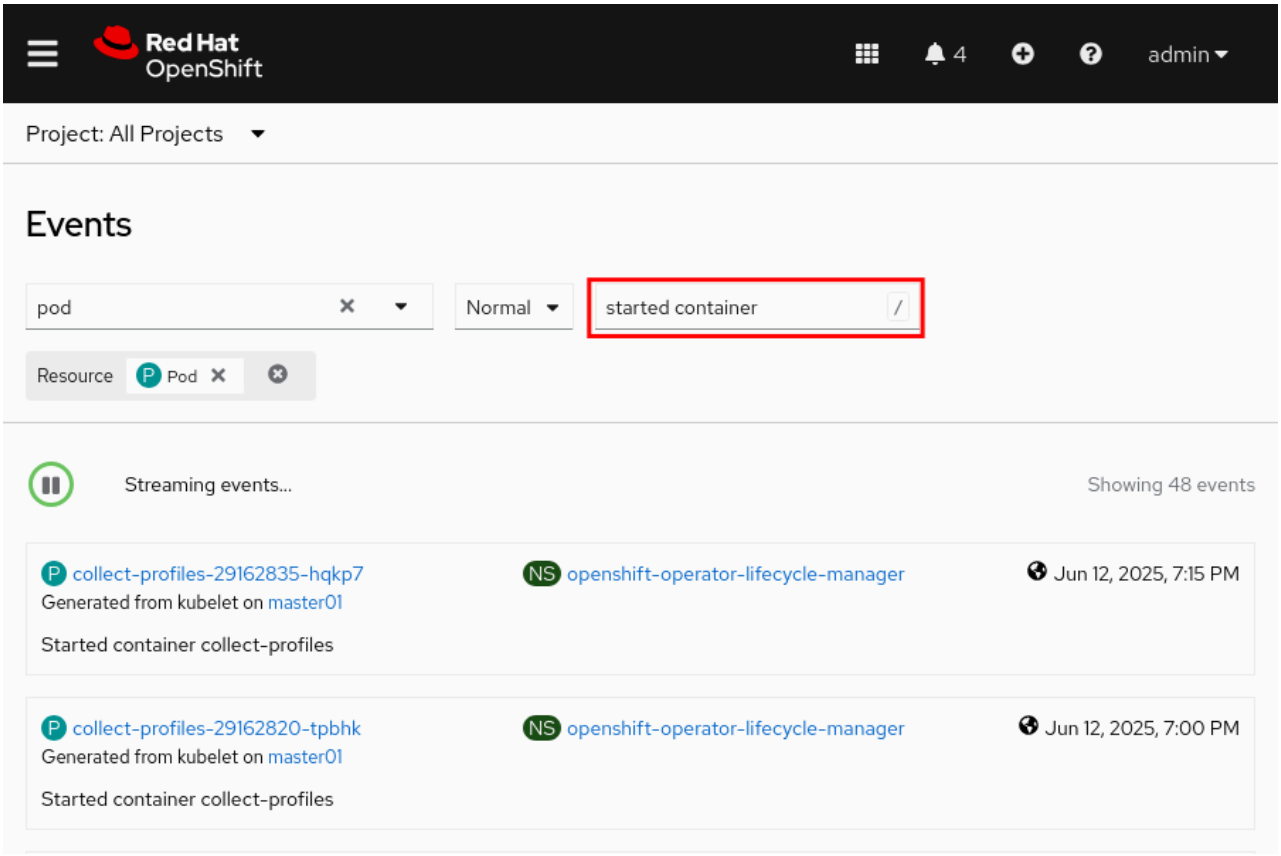
   From the **Resources** drop-down, use the search bar to filter for the `pod` term, and select the box labeled **Pod** to display events that relate to that resource.



   Continue to refine the filter by selecting **Normal** from the types drop-down.



Filter the results by using the **Message** text field. Enter the `started container` text to retrieve the matching events.



Finish

On the `workstation` machine, use the `lab` command to complete this exercise. This step is important to ensure that resources from previous exercises do not impact upcoming exercises.

```
[student@workstation ~]$ lab finish intro-monitor
```