Kubernetes Explorer

Cloud Insights

NetApp
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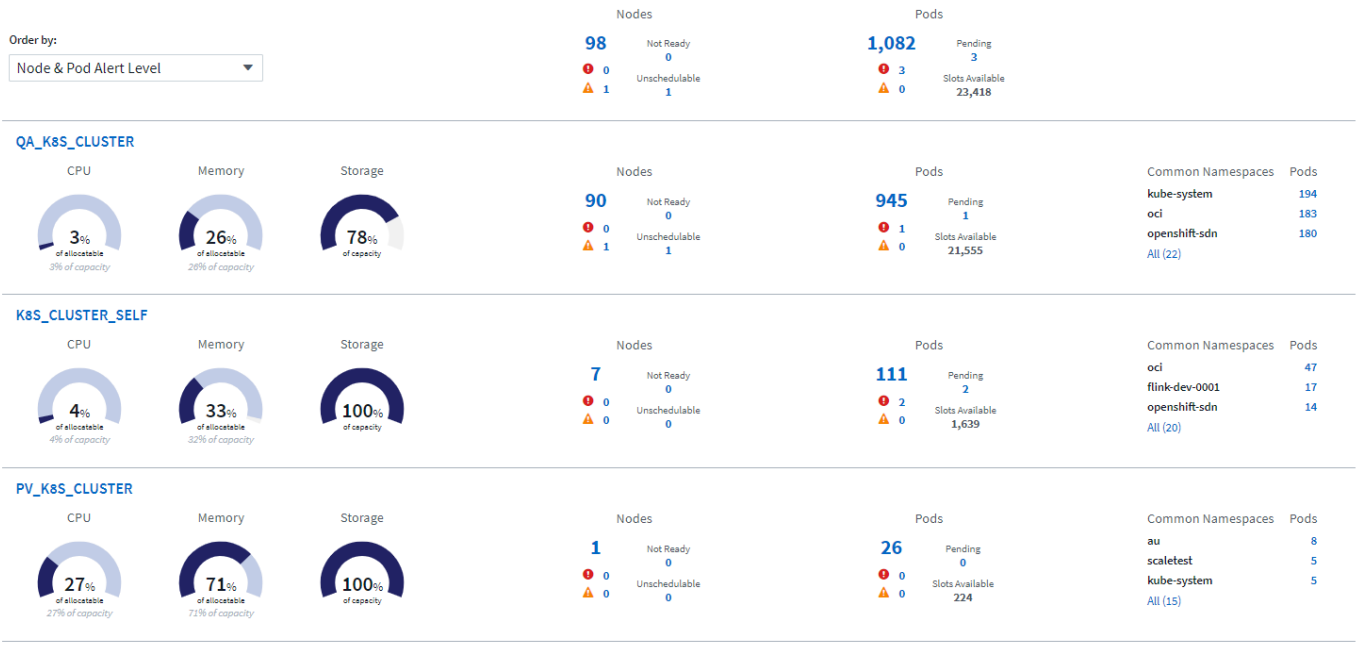
Kubernetes Cluster Overview

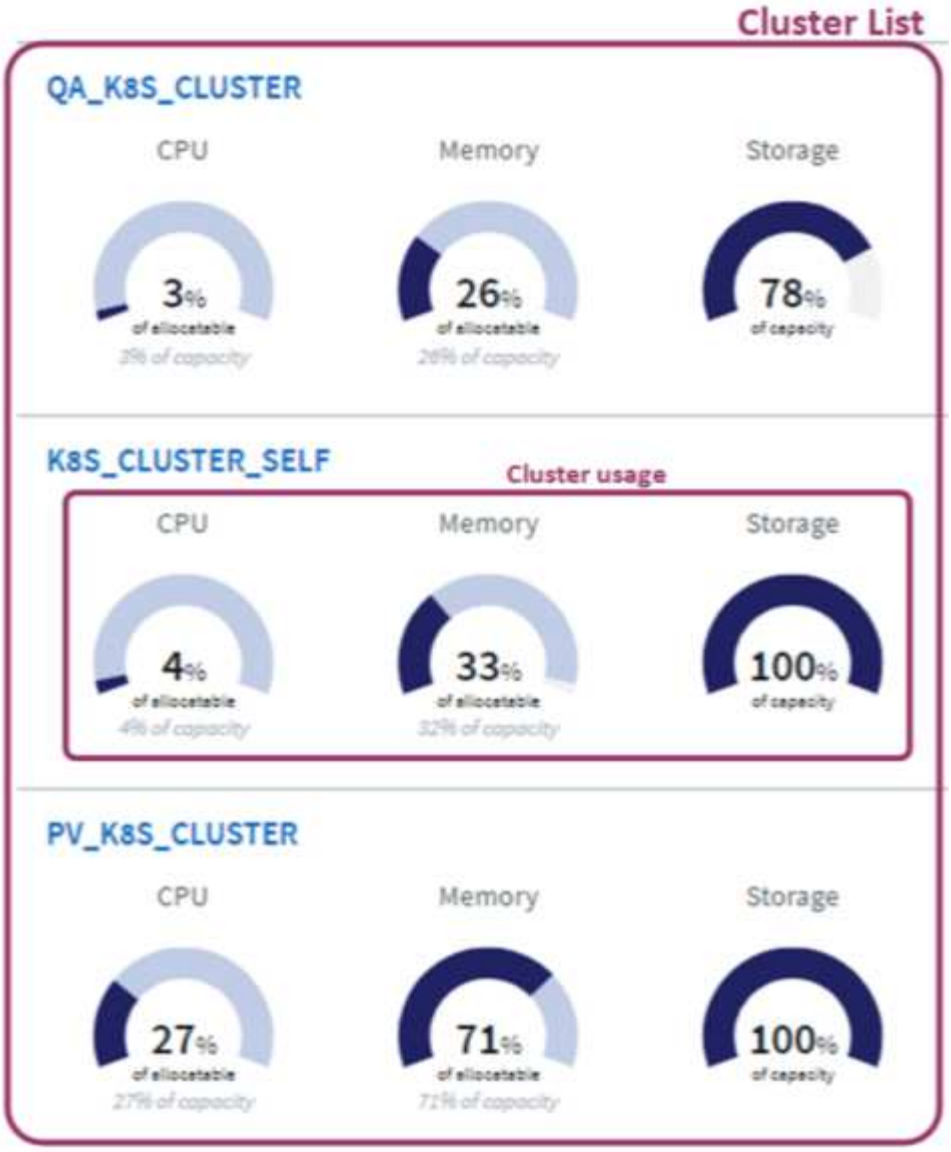
The Cloud Insights Kubernetes Explorer is a powerful tool for displaying the overall health and usage of your Kubernetes clusters and allows you to easily drill down into areas of investigation.

Clicking on **Dashboards > Kubernetes Explorer** opens the Kubernetes Cluster overview page. This overview page contains a wide variety of at-a-glance information.

Numbers displayed in blue in the various sections of this and subsequent Kubernetes Explorer pages (for example, node/pod status, namespace counts, etc.) are links to related query pages that show the details behind those numbers.



Cluster Usage overview



The cluster list displays the following usage information for each cluster in your environment:

- CPU: percentage of total CPU capacity in use
- Memory: percentage of total memory used
- Storage: percentage of total storage in use

You can sort the cluster list by any of the following factors:

- Node & Pod Alert Level (default)
- Cluster Name
- Number of Nodes
- Most Utilized by Compute
- Least Utilized by Compute
- Most Utilized by Storage
- Least Utilized by Storage

Clicking on a Cluster Name will open the **detail page** for that cluster

Node and Pod Status

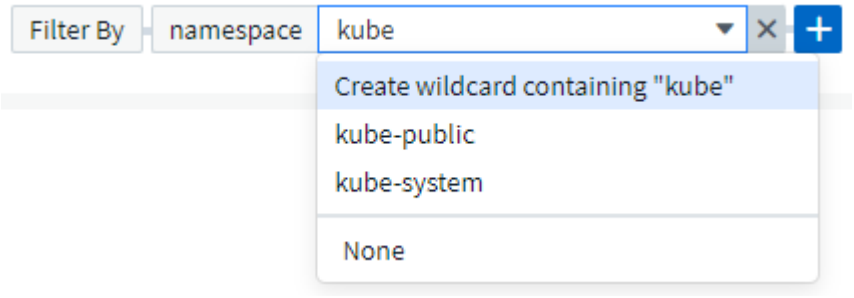
Namespaces

To the right of the screen is a list of the top three namespaces utilized in each cluster. Click the **All** link to see all namespaces for the cluster.

Clicking on a namespace will open the Namespace Detail Page.

Refining the Filter

When you are filtering, as you begin typing you are presented with the option to create a **wildcard filter** based on the current text. Selecting this option will return all results that match the wildcard expression. You can also create **expressions** using NOT or AND, or you can select the "None" option to filter for null values in the field.



Filters based on wildcards or expressions (e.g. NOT, AND, "None", etc.) display in dark blue in the filter field. Items that you select directly from the list are displayed in light blue.

Kubernetes filters are contextual, meaning for example that if you are on a specific node page, the pod_name filter only lists pods related to that node. Moreover, if you apply a filter for a specific namespace, then the pod_name filter will list only pods on that node *and* in that namespace.

Note that Wildcard and Expression filtering works with text or lists but not with numerics, dates or booleans.

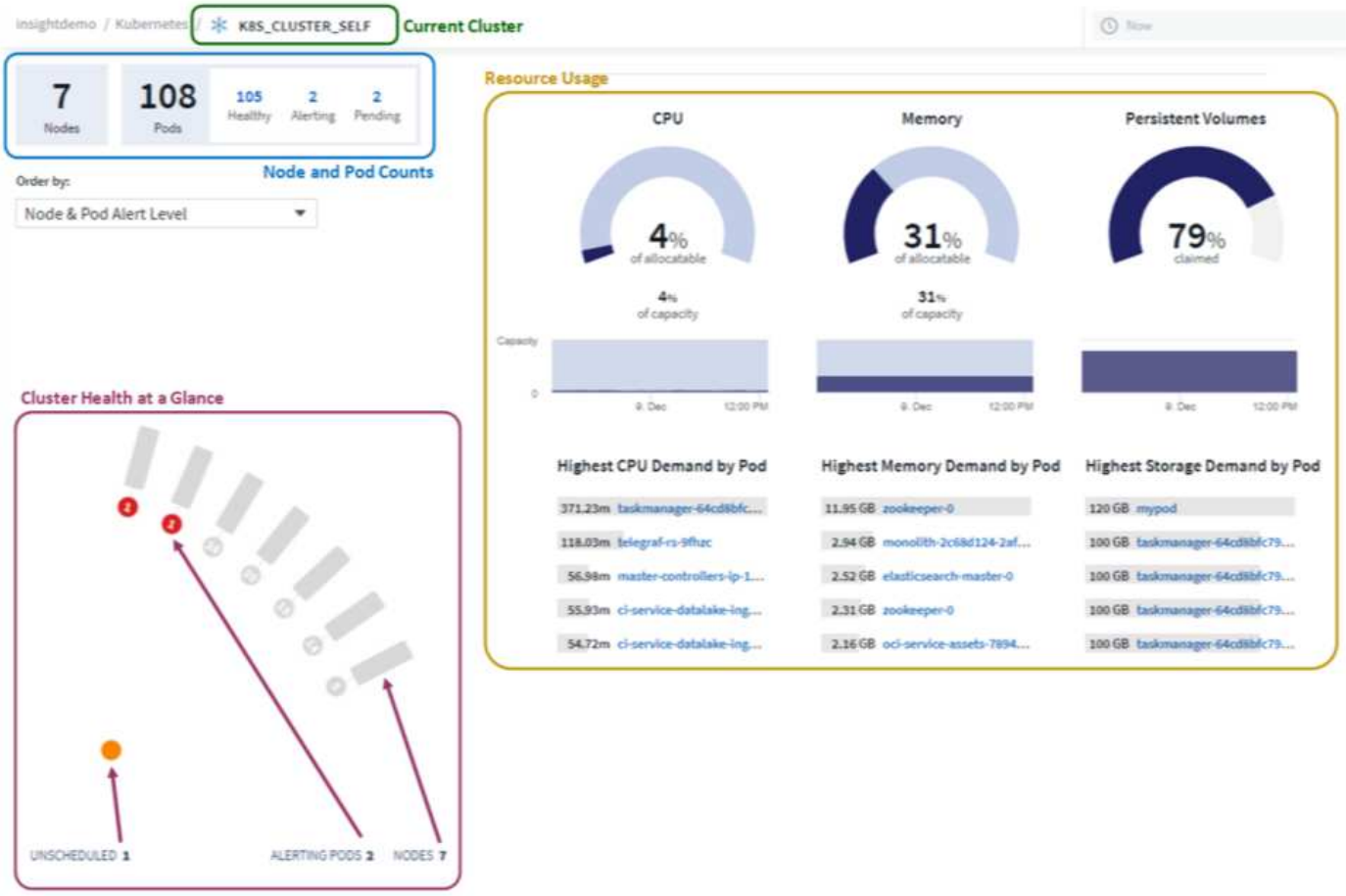
Kubernetes Cluster Detail Page

The Kubernetes cluster detail page displays detailed information about your Kubernetes cluster.

The detail page is comprised of three distinct but linked landing pages showing cluster, node, and pod information. The "Resource Usage" section changes to show the details of the selected item (cluster, node, or pod). You can see the current page type and name at the top of the screen. The current page is shown in the following heirarchy: *Site Name / Kubernetes / Cluster / Node / Pod*. You can click any part of this "breadcrumb" trail to go directly to that specific page.

Cluster Overview

The cluster overview page provides useful information at a glance:



Node and Pod Counts

The Node/Pod counts at the top of the page show you the total number of nodes and pods in the cluster, as well as a breakdown of how many pods are currently alerting or pending.

It is possible that the three pod sub-counts (healthy, alerting, pending) can add up to more than the displayed total number of pods. This can happen because the *pending* count includes *all* pending pods, both unscheduled and scheduled (in other words, unattached and attached to nodes).

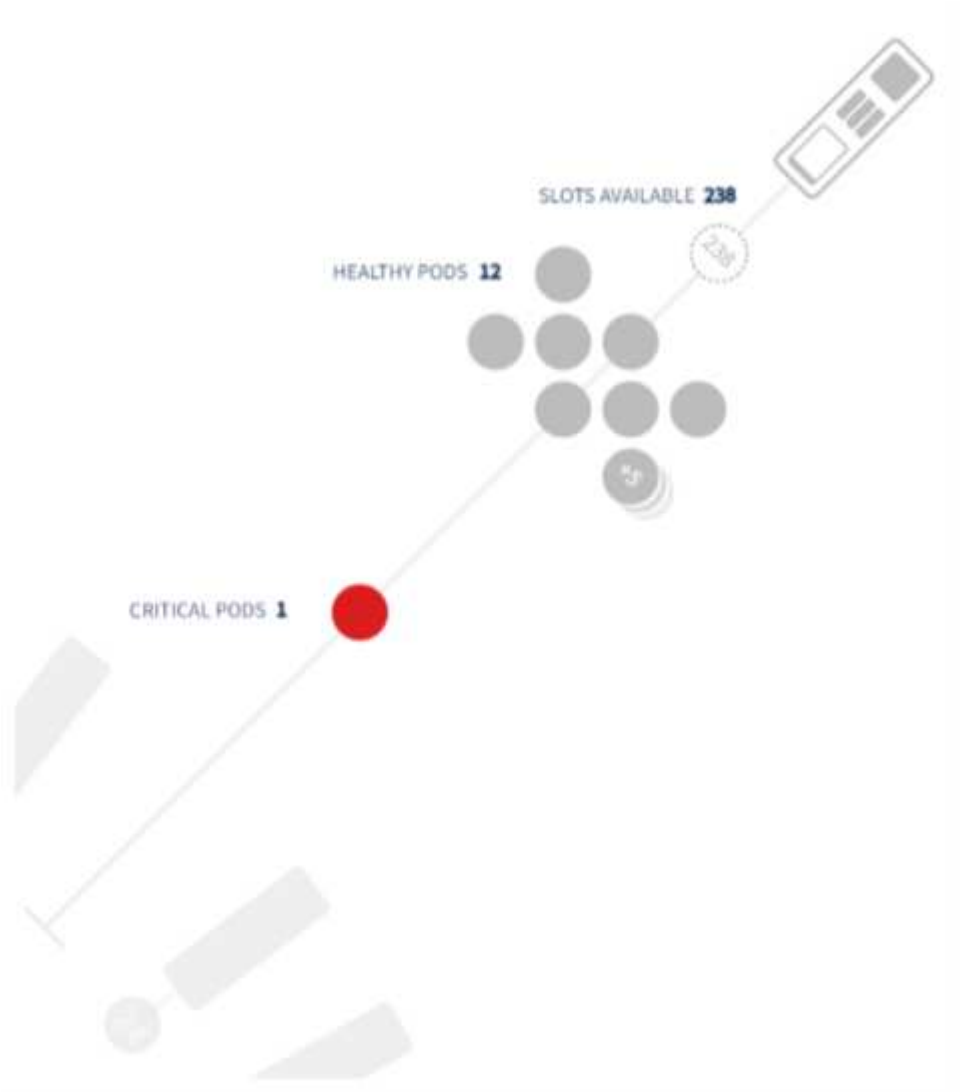
The Cluster "Wheel"

The Cluster "Wheel" section provides node and pod health at a glance, which you can drill into for more information. If your cluster contains more nodes than can be displayed in this area of the page, you will be able to turn the wheel using the buttons available.

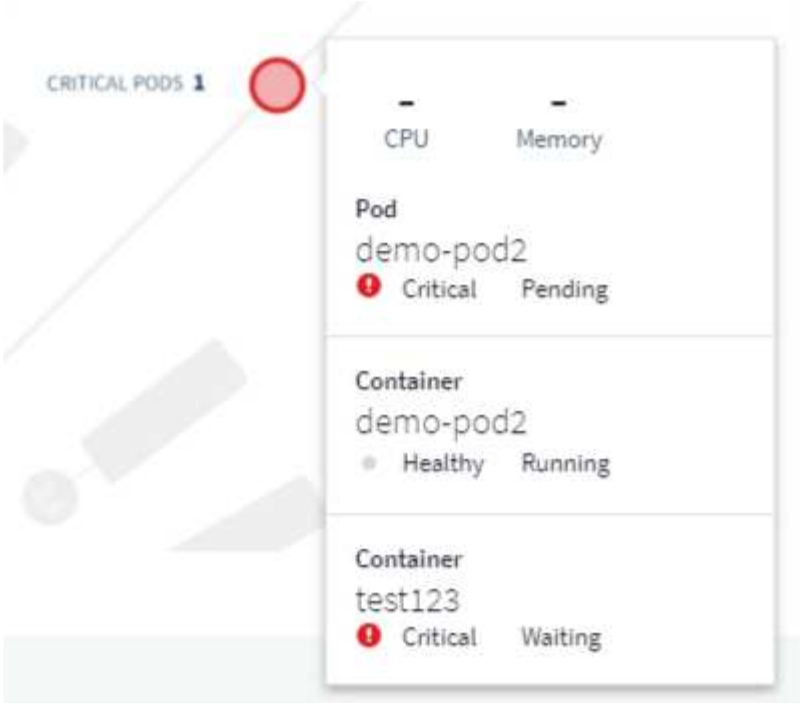
Alerting pods or nodes are displayed in red. "Warning" areas are displayed in orange. Pods that are unscheduled (that is, unattached) will display in the lower corner of the Cluster "Wheel".

Hovering over a pod (circle) or Node (bar) will extend the view of the node.

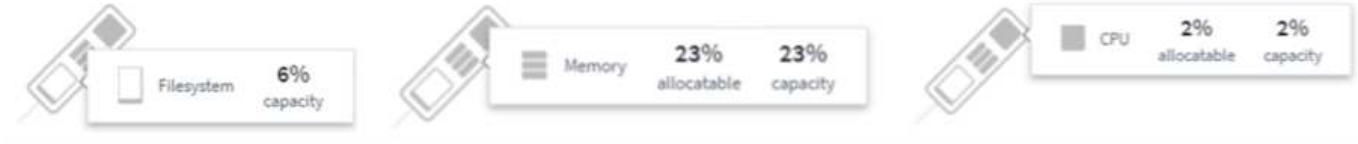
Clicking on the pod or node in that view will zoom in to the expanded Node view.



From here, you can hover over an element to display details about that element. For example, hovering over the critical pod in this example displays details about that pod.

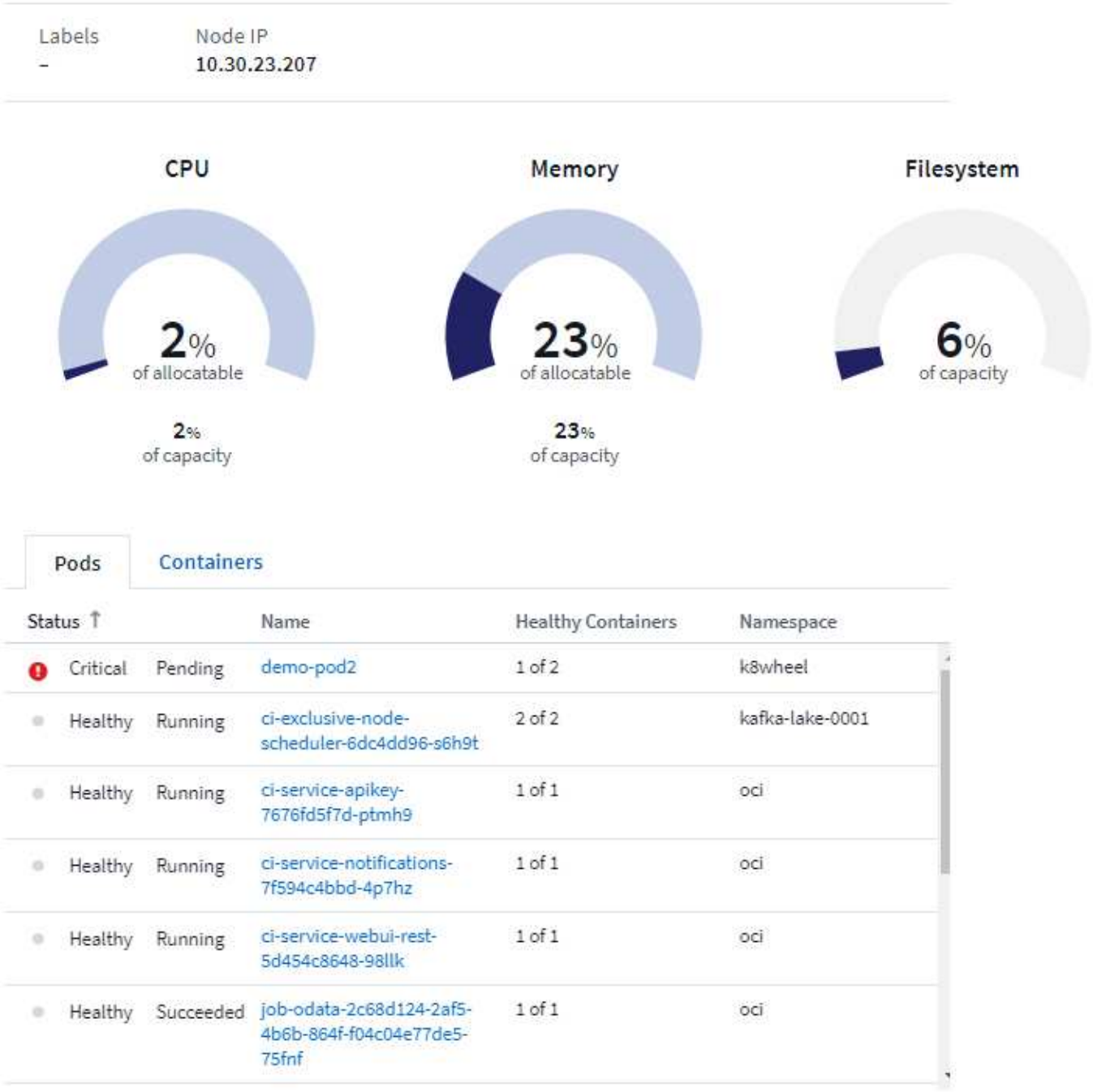


You can view Filesystem, Memory, and CPU information by hovering over the Node elements.



Detail Section

Each page of the Kubernetes Explorer displays a set of usage graphs that may include CPU, Memory, and Storage. Below these graphs are summaries and lists of the top objects in each category, with links to underlying details. For example, *Node* shows pods and containers, *Pod* shows PVCs and related objects and containers, etc. The following illustration shows an example of the detailed information on a *Node* page:



Resources experiencing alerts will show at the top of the lists. Click on the affected resource to drill into it for more detail.

A note about the gauges

The Memory and CPU gauges show three colors, since they show *used* in relation to both *allocatable capacity* and *total capacity*. Storage gauges only show two colors because they only show a single pair of values: *used* in relation to *total*.

Keep the following in mind when reading the gauges.

The dark blue band shows the amount used.

- When viewed against the *light blue band*, the dark blue shows used as the % of allocatable amount. This

matches the "% of allocatable" value shown (81 in the example below).

- When viewed against the *white background*, the dark blue shows used as the % of total capacity. This matches the "% of capacity" value shown (63 in this example).