Lab - Console Treasure Hunt

Table of contents

Overview

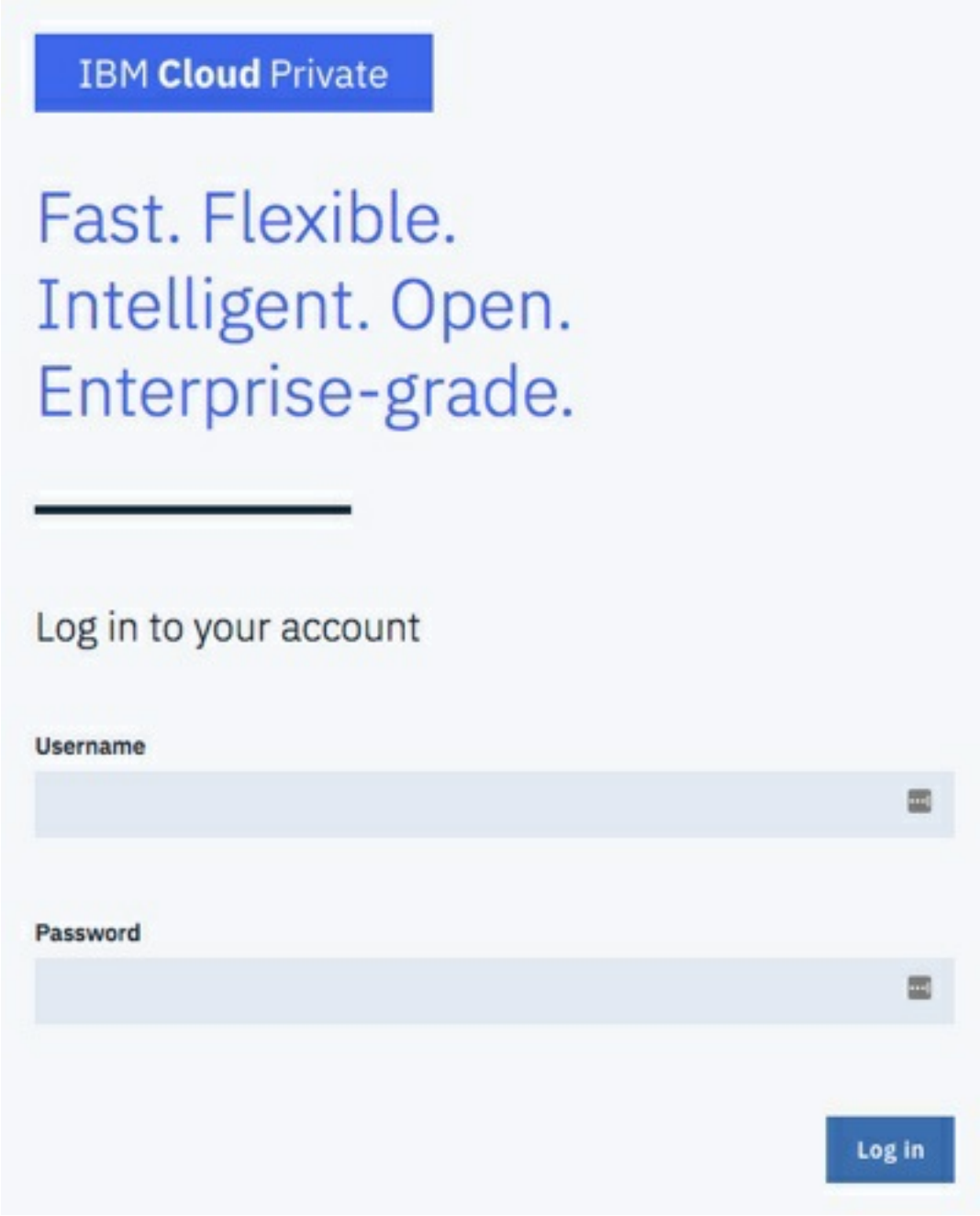
In this lab exercise, you explore the IBM Cloud Private Administration Console by completing a Treasure Hunt.

Access your Master VM

Using the BOOT VM in your SkyTap environment, log in as `root` with the password `passw0rd`

Log in to your ICP Admin Console

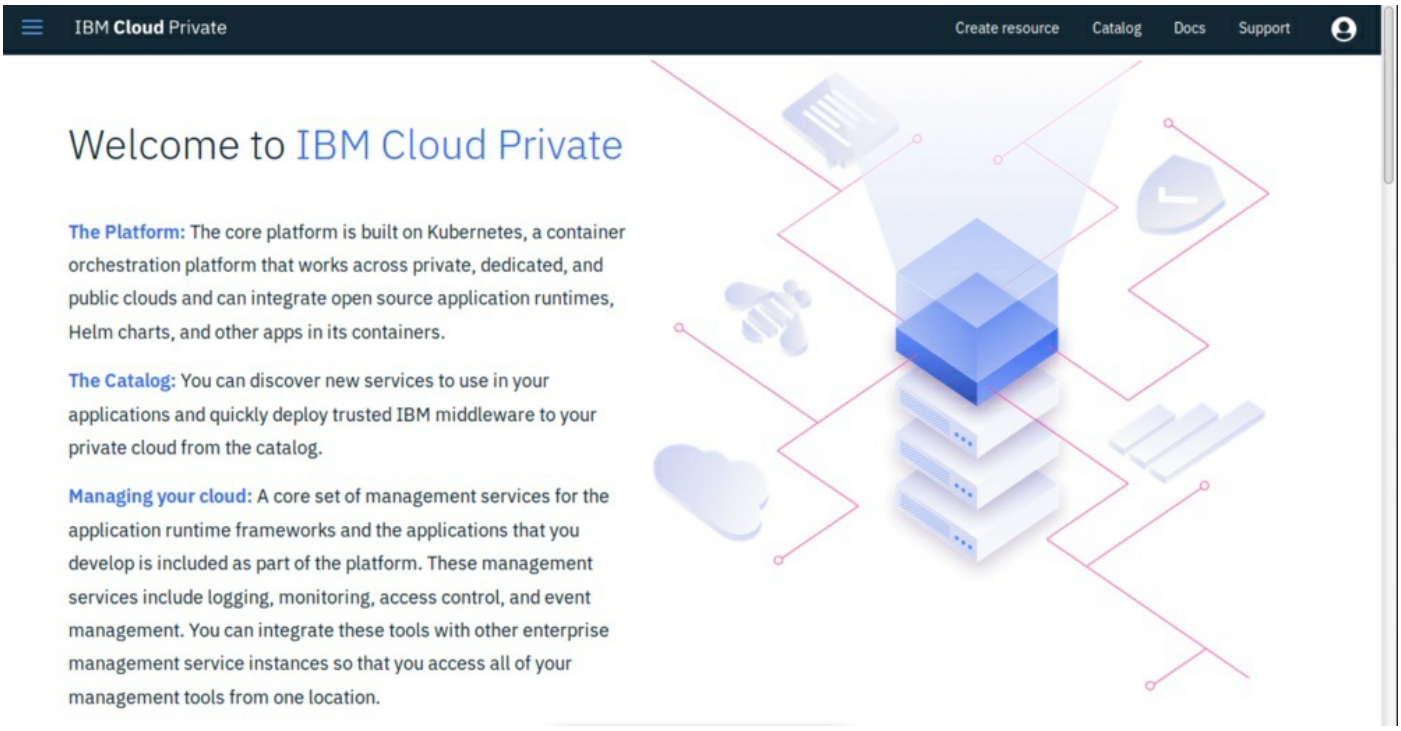
If you are not already logged in to the ICP Admin Console from a previous exercise, open a browser and navigate to `https://10.10.1.2:8443`



Log in by using `username: admin` and `password: admin`

Getting Started

The Welcome page displays after you successfully log in.

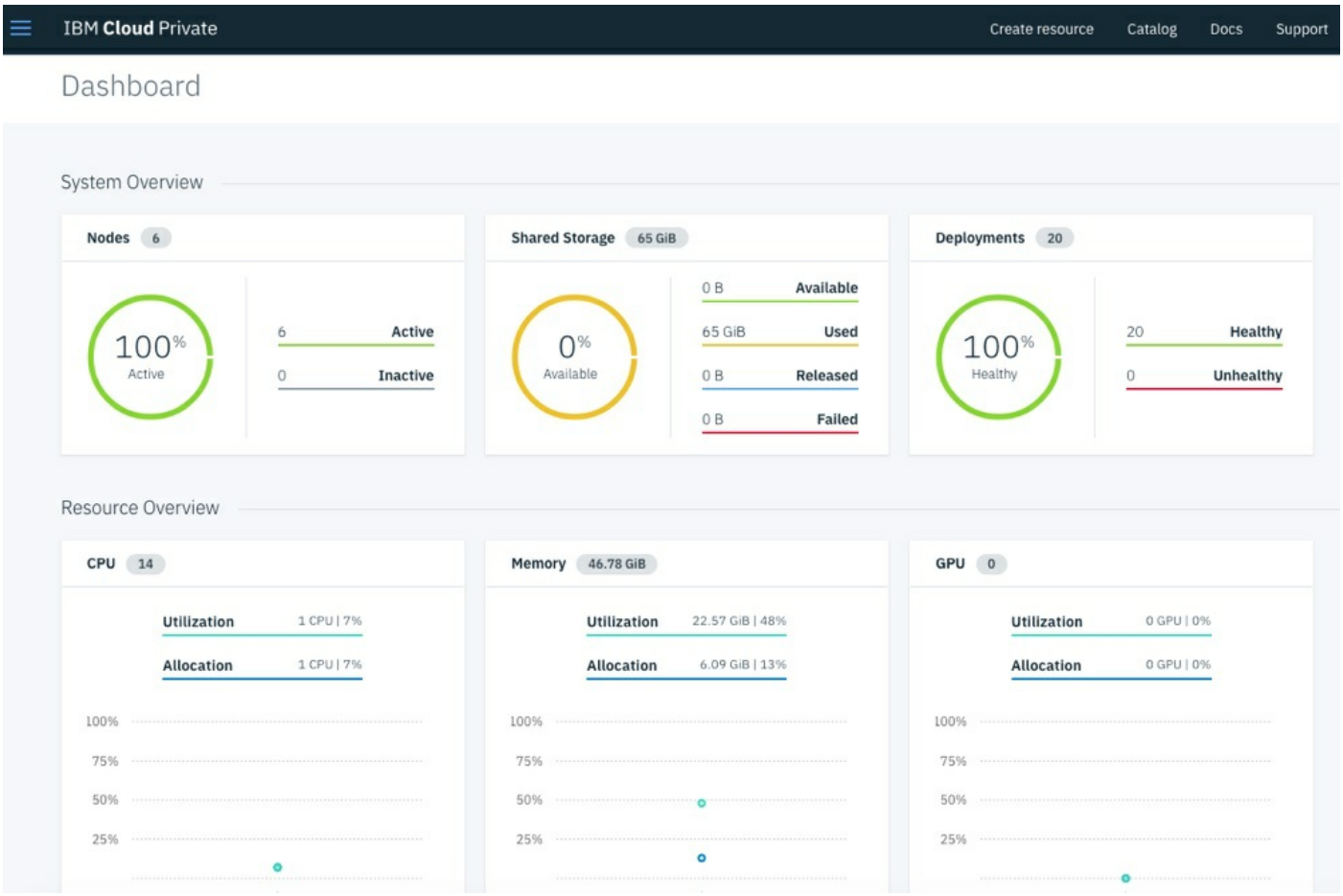


Locate the following information:

1. Which catalog item would you use if you want to migrate an application that uses WebSphere Application Server?
2. Which catalog item would you use if you want to build a 12-factor microservice?
3. What tool can you use to chat with the team if you have any issues?

Dashboard

Click Menu in the top left corner of the page, and then select Dashboard to navigate to the Dashboard page. The Dashboard page provides an overview of the current status of the ICP cluster.

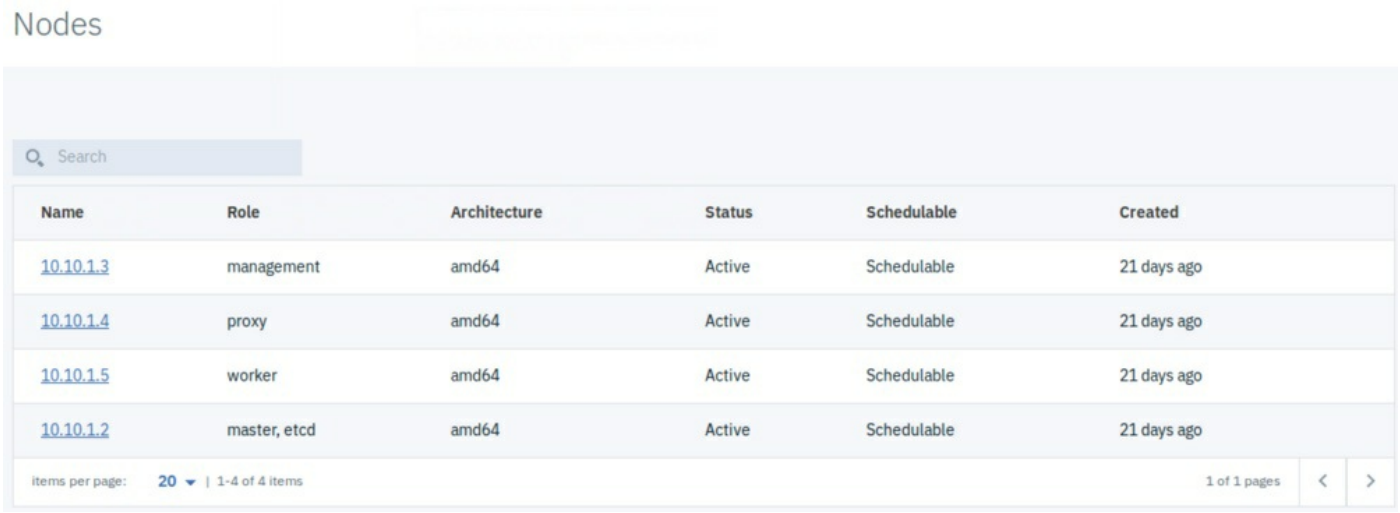


Locate the following information:

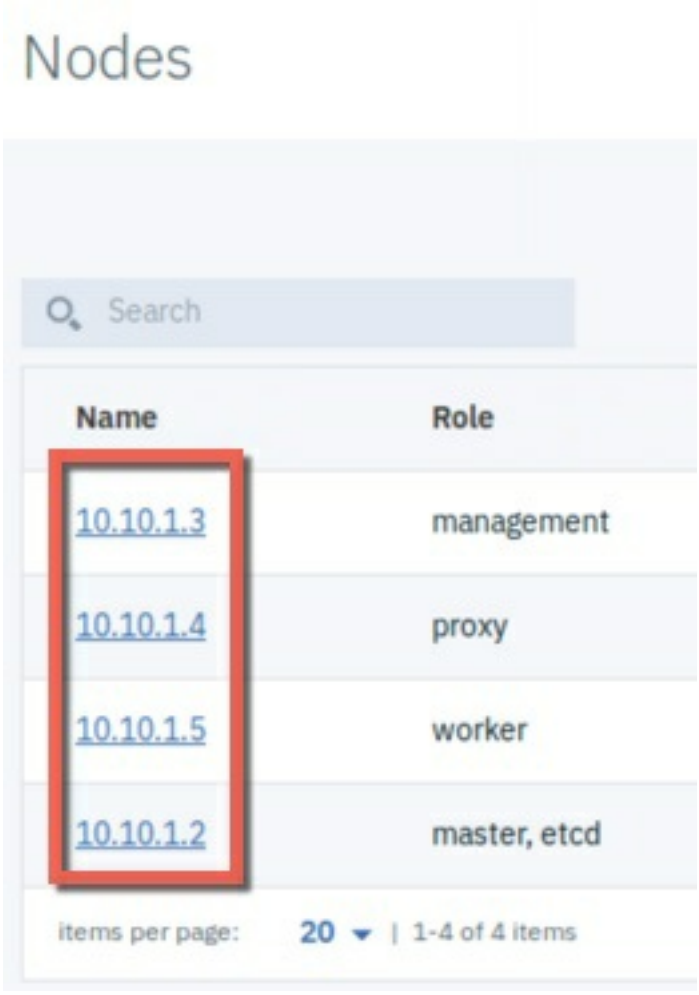
1. How many Nodes are in your ICP Cluster?
2. How much Storage is currently available in your ICP Cluster?
3. Are all of the Deployments in your ICP Cluster healthy?

Nodes

Click Menu, and then select Platform > Nodes to navigate to the Nodes page. This page displays information about the nodes that are part of the ICP Cluster.



Click the Name of a node to *drill down* and see more information about the node.



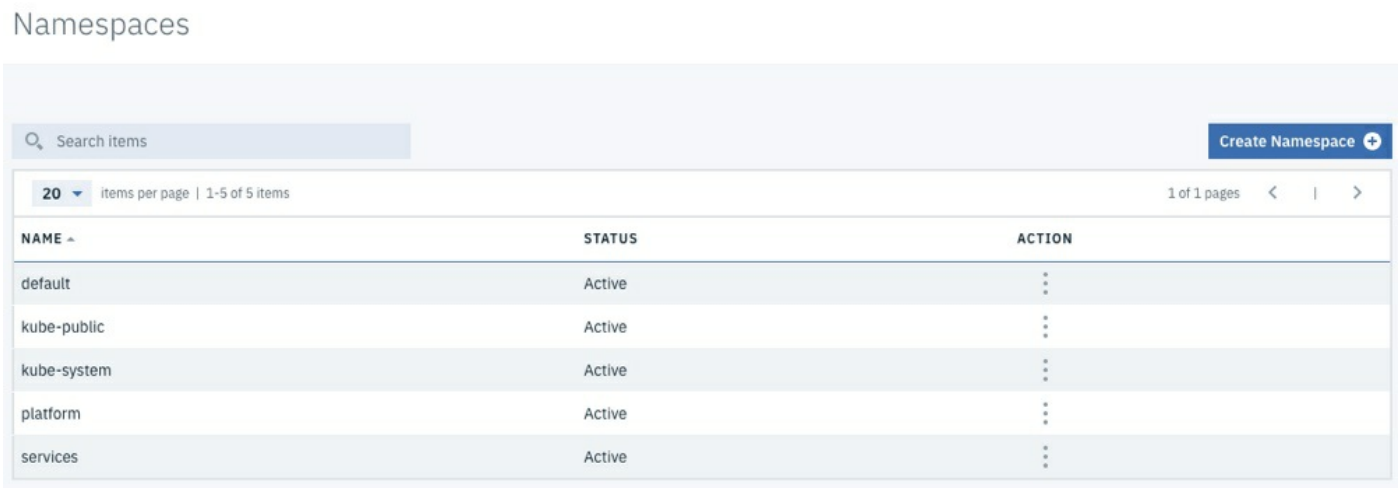
Locate the following information:

1. How many Worker nodes are in your cluster?
2. What is the Architecture of your master node?
3. How much memory does your proxy node have?
4. How many CPUs do each of your worker nodes have?
5. Which node is the logging-elk-data-0 pod deployed to?

Namespaces

Click Menu and then select Manage > Namespaces to navigate to the Namespaces page.

Users are assigned to organizational units called namespaces. Namespaces are also known as tenants or accounts. In IBM Cloud Private, users are assigned to teams. You can assign multiple namespaces to a team. Users of a team are members of the team's namespaces.

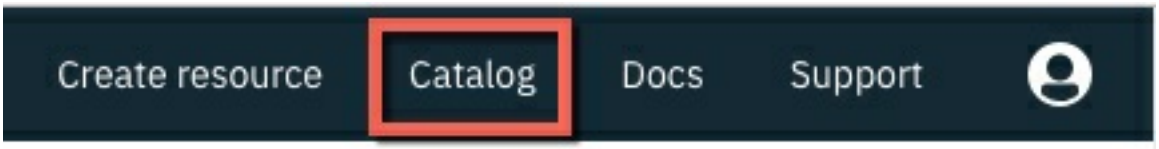


Locate the following information:

1. How many namespaces were automatically created in your cluster during installation?
2. What actions can you take on namespaces?

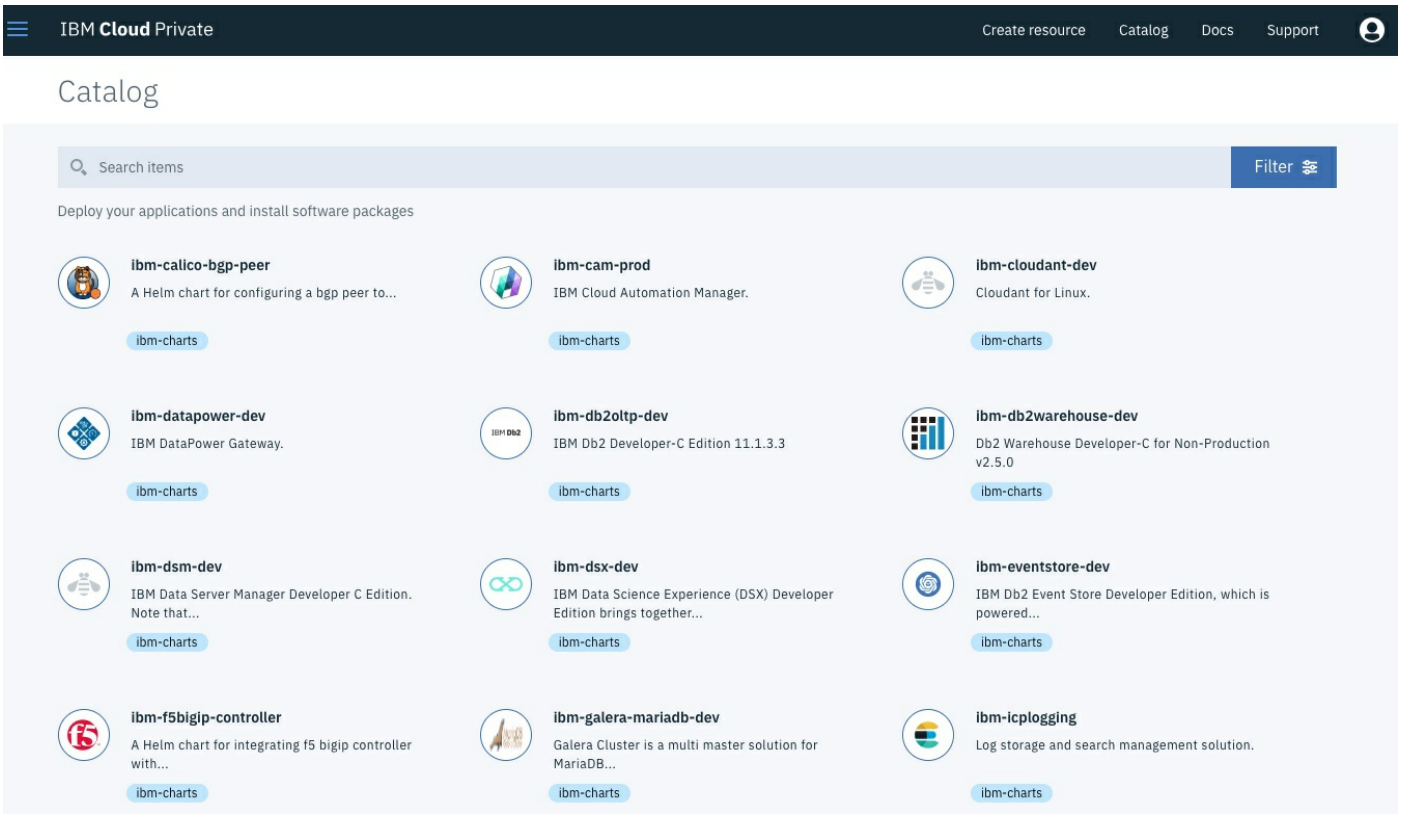
Helm Charts

Click Catalog on the navigation bar to navigate to the Helm Chart Catalog page.



By using the Catalog, you can browse and install packages in your IBM Cloud Private cluster from Helm charts.

The Catalog displays Helm charts, which contain application packages that can run as Kubernetes services. The packages are stored in repositories. The Catalog in IBM Cloud Private contains connections to recommended repositories by default, but you can connect to other repositories. After you connect to a repository, you can access its charts from the Catalog. Application developers can also develop applications and publish them in the Catalog so that other users can easily access and install the applications.



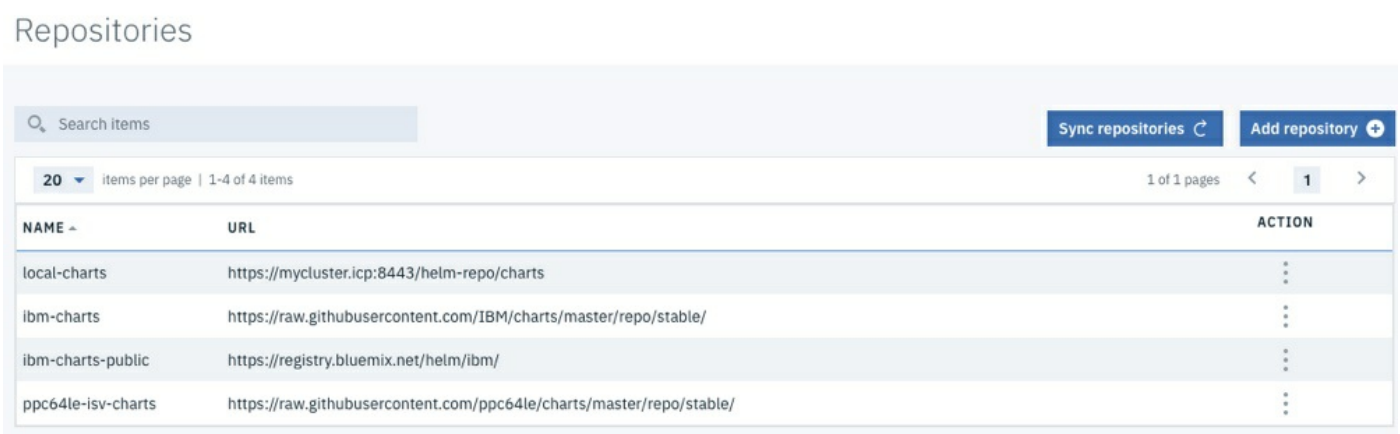
** If your catalog page is empty, click `Menu --> Manage > Helm Repositories`, click `Sync Repositories` and after a couple of minutes return to the `Catalog` page **

Note: Click on the Helm Chart name to view the readme file.

Locate the following information:

1. What date was the ibm-jenkins-dev Helm chart released?
2. How many MQ servers does the ibm-mqadvanced-server-dev Helm chart deploy?
3. What type of server does the ibm-swift-sample Helm chart deploy the sample application on?

Click Menu and then select Manage > Helm Repositories to navigate to the list of configured Helm repositories page.



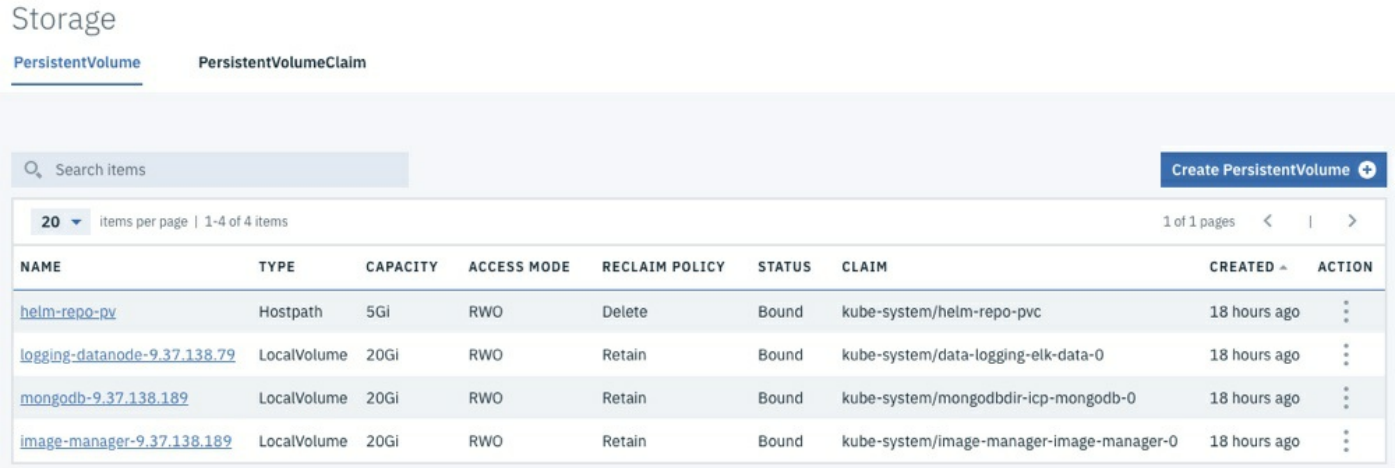
Note: If you want to connect to other repositories, you can add them here.

Storage

Click Menu and then select Platform > Storage to navigate to the Storage page.

Data storage in a Kubernetes cluster is handled by using volumes. For Kubernetes, a PersistentVolume (PV) is a piece of networked storage in a cluster that is provisioned by an administrator. A PersistentVolumeClaim (PVC) is a request for storage that is made by a user.

In an IBM Cloud Private cluster, administrators can create PersistentVolumes that are available to all projects in the cluster. Users can then create PersistentVolumeClaims to request this resource for their application. All PersistentVolume types that are supported by Kubernetes are also supported by IBM Cloud Private.



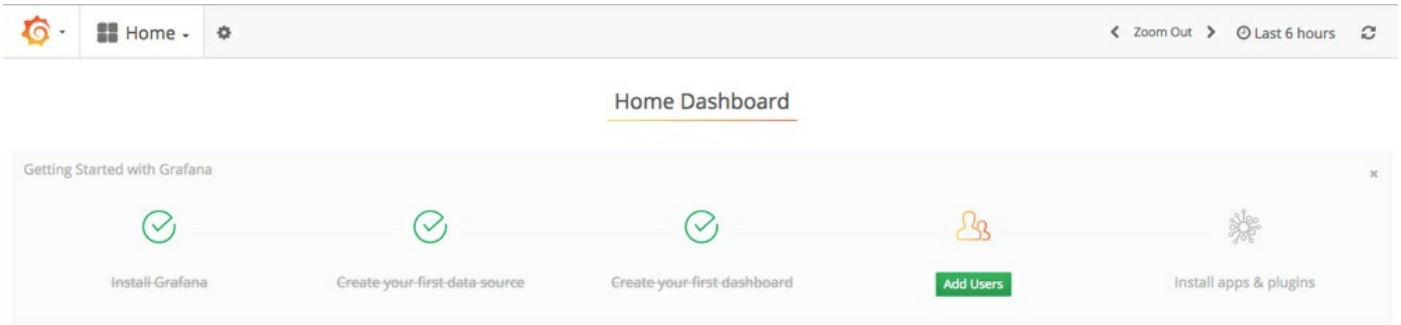
Click PersistentVolumeClaim to see the current Persistent Volume Claims in the ICP Cluster

Locate the following information:

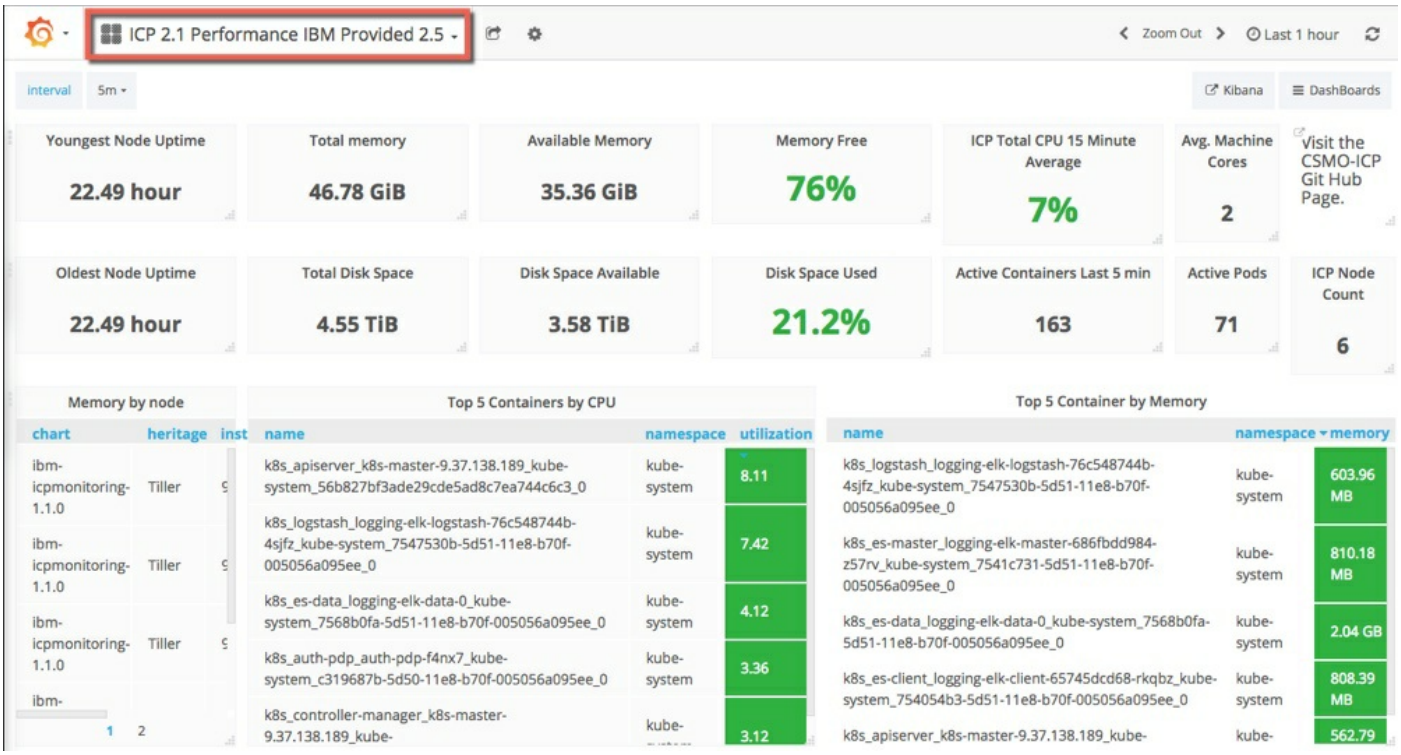
1. What is the capacity of the helm-repo-pv Persistent Volume?
2. What is the reclaim policy of the mongodb Persistent Volume?
3. What namespace is the helm-repo-pvc Persistent Volume Claim in?

Monitoring

Click Menu and then select Platform > Monitoring to open Grafana in a new browser window.



Click Home on the navigation bar and select ICP Performance IBM Provided 2.5 from the list to open the IBM provided Grafana page



NOTE If the page doesn't display correctly it may be due to prometheus not starting correctly in your lab environment. Execute the following steps to restart any failed prometheus pods:

- open a terminal session and enter the following command. When prompted log in as *user:* `admin` with *password:* `admin` and select the `default` namespace

```
cloudctl login -a https://10.10.1.2:8443
```

- enter the following command to find the failed pod

```
kubectl get pods -n kube-system | grep monitoring-prometheus
```

- take the pod name of the failed pod (in `crashloopbackoff` state) and execute the following command

```
kubectl delete pod -n kube-system <podname>
```

e.g.: `kubectl delete pod -n kube-system monitoring-prometheus-fdb49f66b-jp6dw`

- after a few moments, refresh the grafana page

Locate the following information:

1. How many active pods are in your ICP cluster?
2. How much memory is available in your ICP cluster?
3. Which pod is using the most memory currently?
4. Which pod is using the most CPU currently?

Close the Grafana browser tab.

Alerts

Click Menu and then select Platform > Alerting to open the ICP Alert Manager in a new browser tab.

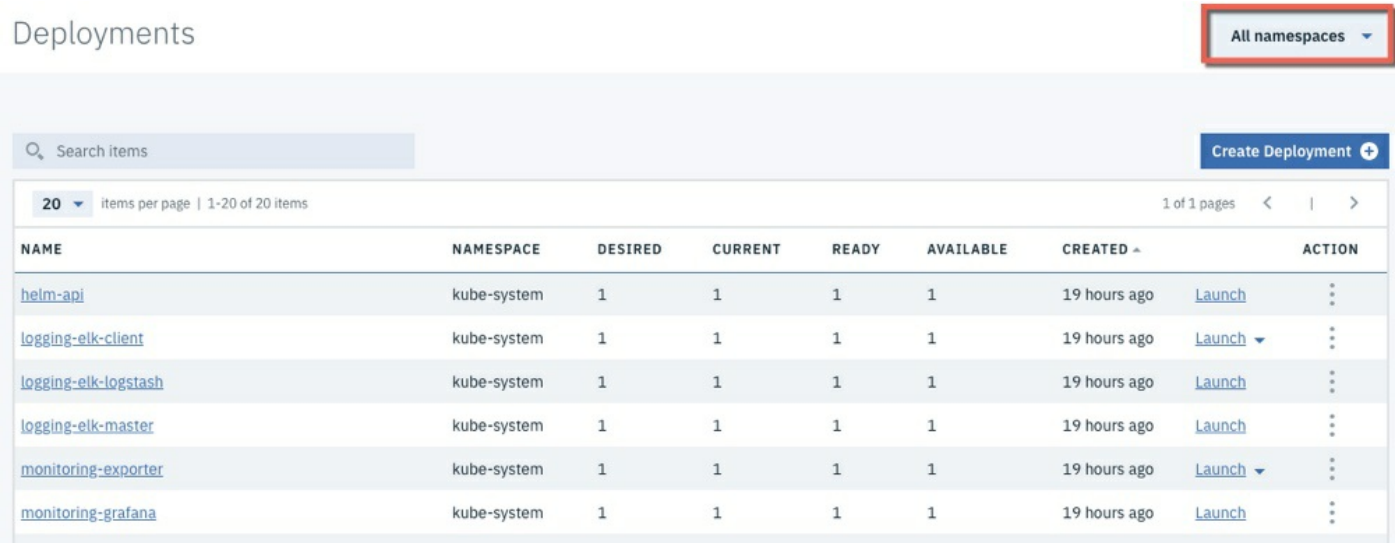
Locate the following information:

1. How many Alerts are configured in your ICP cluster?

Close the ICP Alert Manager tab.

Deployments

Click Menu and then select Workloads > Deployments to navigate to the Deployments page. A Deployment controller provides declarative updates for Pods and ReplicaSets. You describe a desired state in a Deployment object, and the Deployment controller changes the actual state to the desired state at a controlled rate. You can define Deployments to create new ReplicaSets, or to remove existing Deployments and adopt all their resources with new Deployments.



Notes:

1. Click on a Deployment Name to *drill down* and see more information, such as the Pods that are part of the

Deployment. Scroll down, and click a Pod to find out information about the Container and Logs.

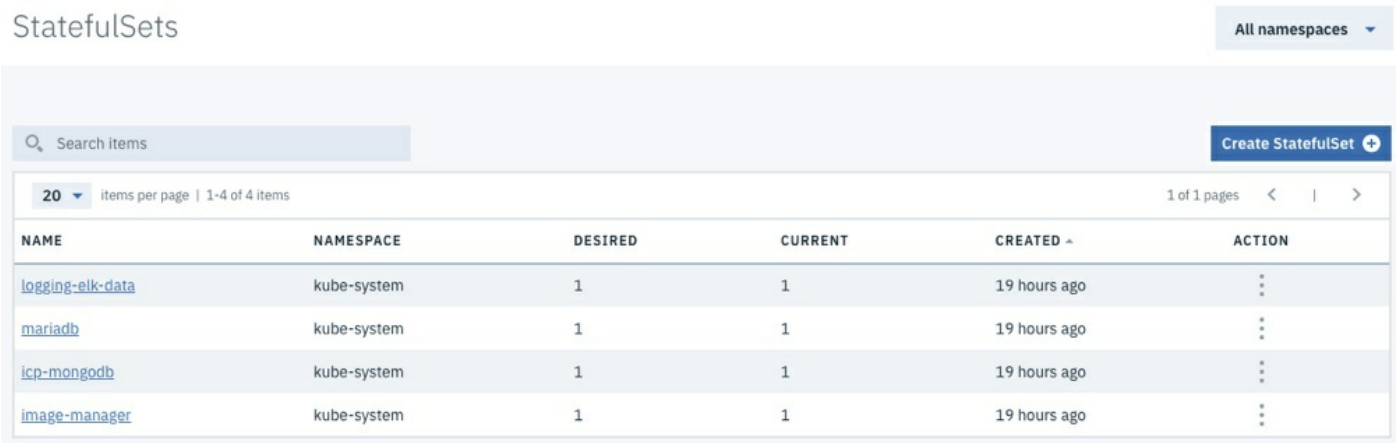
2. Use the Namespace drop-down menu in the top right corner of the page to change the Deployments that are displayed.

Locate the following information:

1. How many Deployments are in the default Namespace?
2. How many Pods are part of the helm-api Deployment?
3. Which Containers are part of the helm-api Deployment?
4. Find the Logs for the es-client Container in the logging-elk-client Deployment.
5. Which Ports are exposed on the es-client Container in the logging-elk-client Deployment?

StatefulSets

Click Menu and then select Workloads > StatefulSets to navigate to the StatefulSets page. Like a Deployment, a StatefulSet manages Pods that are based on an identical container spec. Unlike a Deployment, a StatefulSet maintains a sticky identity for each of their Pods. These pods are created from the same spec, but are not interchangeable: each has a persistent identifier that it maintains across any rescheduling.

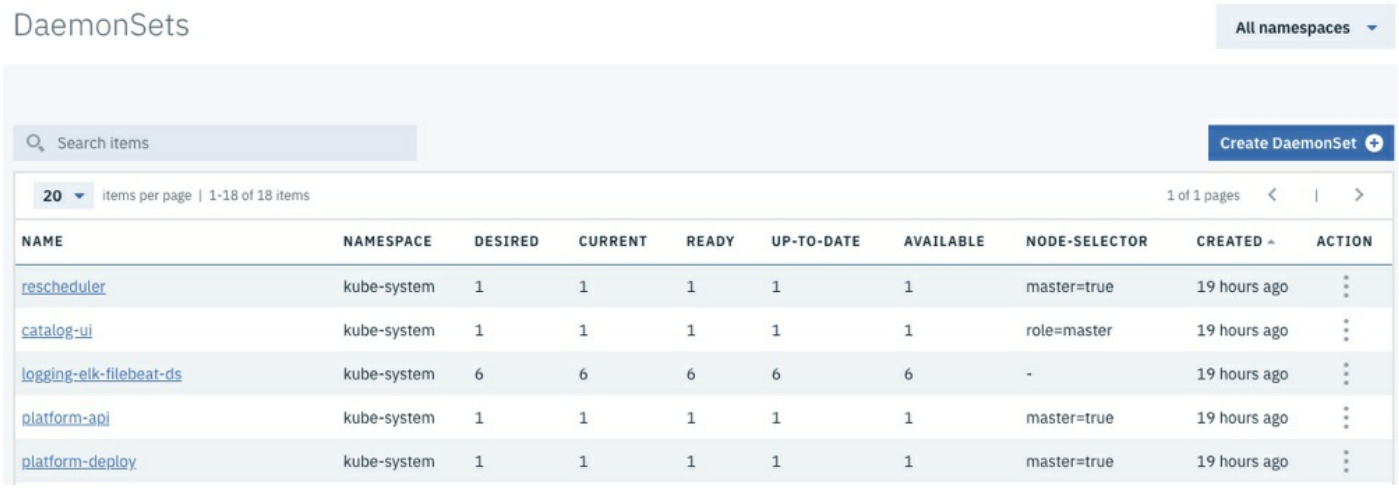


Locate the following information:

1. How many StatefulSets are in the default Namespace
2. How many Pods are part of the icp-mongodb StatefulSet
3. Which Containers are part of the image-manager-0 StatefulSet
4. Find the Logs for the **iamge-manager* Container in the image-manager-0 StatefulSet

DaemonSets

Click Menu, and then select Workloads > DaemonSets to navigate to the DaemonSets page. A DaemonSet ensures that all (or some) Nodes run a copy of a Pod. As nodes are added to the cluster, Pods are added to the cluster. As nodes are removed from the cluster, those Pods are garbage-collected. Deleting a DaemonSet cleans up the Pods that it created.



Locate the following information:

1. How many Nodes is the calico-node DaemonSet deployed to?
2. How many Nodes is the nginx-ingress-controller DaemonSet deployed to?
3. How does Kubernetes know which Nodes to deploy a DaemonSet to?

Services

Click Menu, and then select Network Access > Services to navigate to the Services page. Kubernetes Pods are mortal; when they die, they are not resurrected. ReplicaSets in particular create and destroy Pods dynamically (when scaling up or down). While each Pod gets its own IP address, even those IP addresses cannot be relied upon to be stable over time. This leads to a problem: if some set of Pods (for example, call them backends) provides functionality to other Pods (for example, call them frontends) inside the Kubernetes cluster, how do those frontends find out and keep track of which backends are in that set?

Enter Services.

A Kubernetes Service is an abstraction that defines a logical set of Pods and a policy by which to access them - sometimes called a microservice. The set of Pods targeted by a Service is typically determined by a Label Selector.

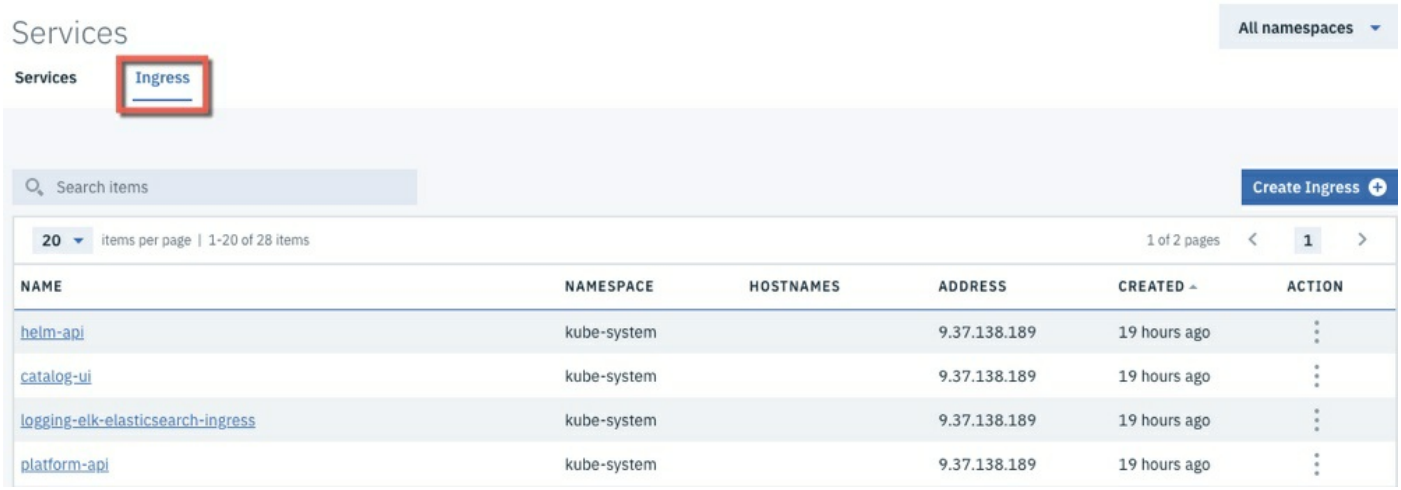
Note: Use the drop-down menu in the upper left corner to customize the number of items displayed per page, or click > in the upper right corner to page through a long list of services. Click a service to view more information about it. Click the Action link to view and edit the contents of a service.

Locate the following information:

1. What is the Label Selector for the helm-api Service?
2. Which Port is the monitoring-prometeus Service exposing?
3. What is the targetPort for the monitoring-prometheus Service? (Hint: use the Action link to *drill down* on the Service)
4. In order to access the monitoring-prometheus Service, would an application use the Port and targetPort?
5. Can you access a Service in an ICP Cluster from a browser running outside of the ICP Cluster network?

Ingress

Click Ingress to navigate to the Ingress page. An Ingress is an API object that manages external access to the services in a cluster, typically HTTP. Ingress can provide load balancing, SSL termination and name-based virtual hosting.

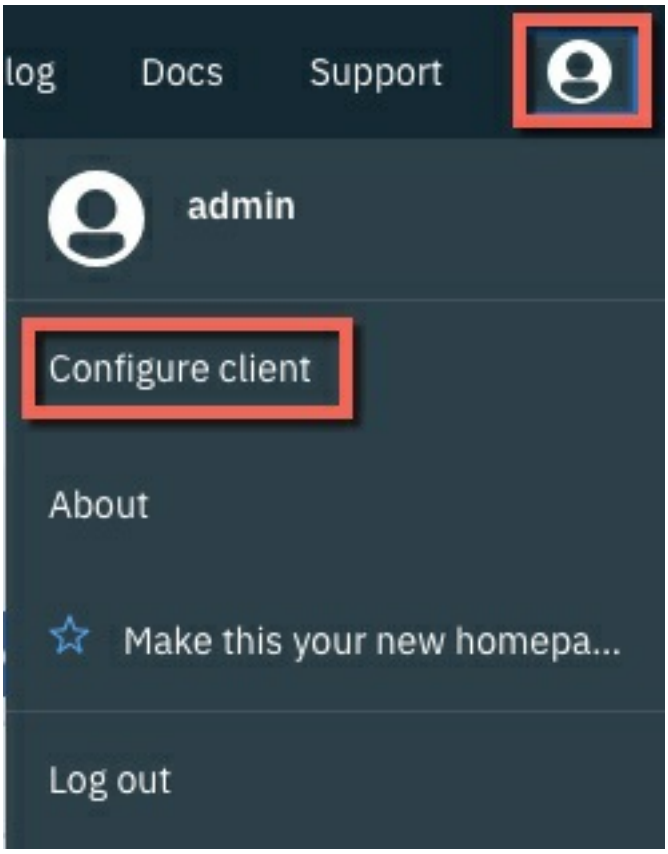


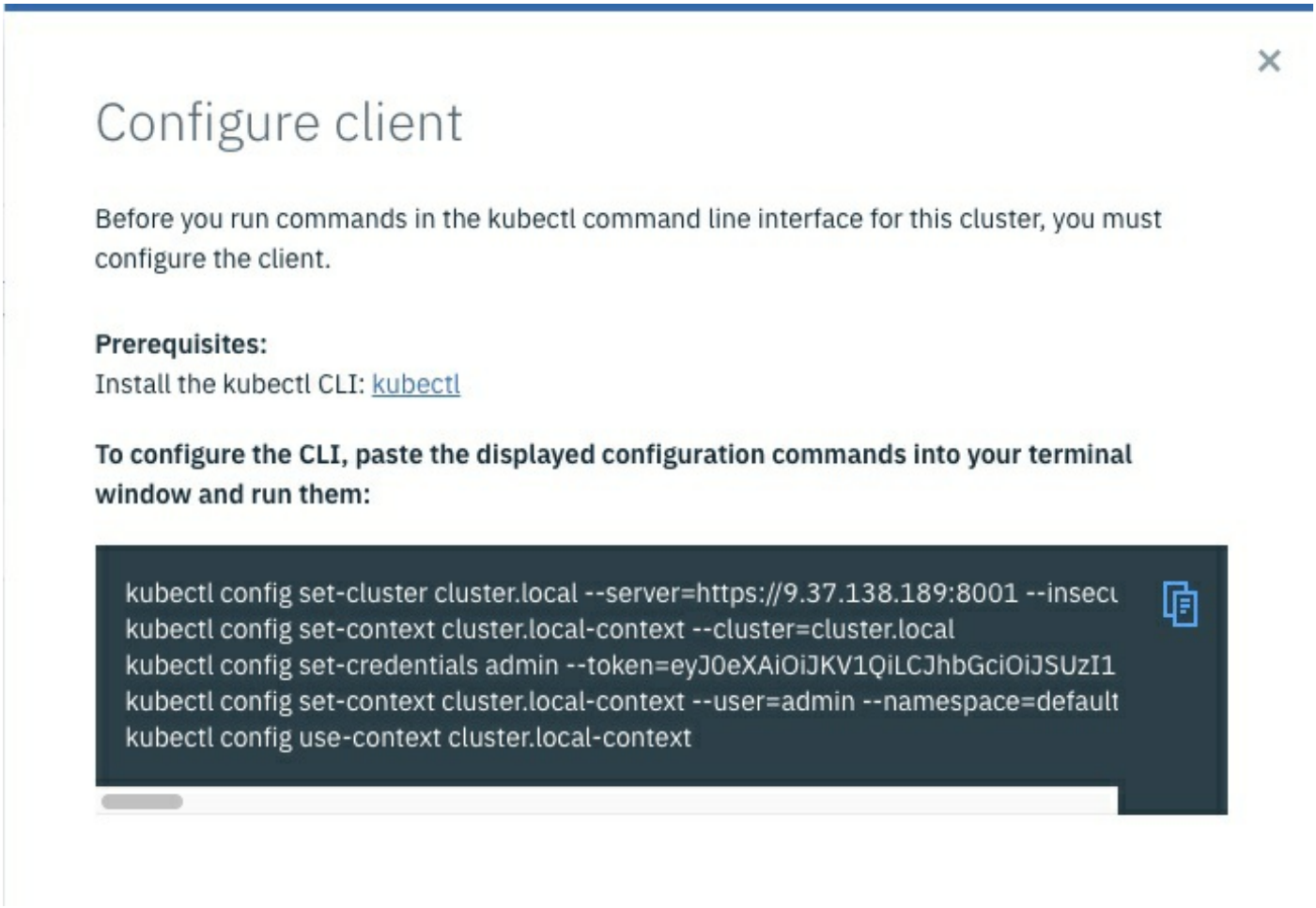
Locate the following information:

1. What Path is the helm-api Ingress configured to listen on? (Hint: use the Action link to *drill down* on the Ingress)
2. How does the helm-api Ingress locate the target Pod?
3. Can you access an Ingress in an ICP Cluster from a browser running outside of the ICP Cluster network?

Command Line Parameters

Click the User icon on the navigation bar and then select Configure Client to display the commands that are used to configure a kubectl command line to connect to this ICP Cluster.





Locate the following information:

1. What should you do with the commands that are displayed here?

Close the Configure client dialog box.

End of Lab Review

In this lab exercise, you explored the IBM Cloud Private Administration Console by completing a Treasure Hunt. You learned about:

- The ICP Admin Console dashboard
- Nodes, Namespaces, Deployments, StatefulSets, DaemonSets, Services, and Ingress
- Helm Charts
- Storage, Monitoring and Alerts

End of Lab Exercise