# **Databand Installation on OpenShift**

## **Overview**

This document provides step-by-step instructions for installing *Databand in RedHat OpenShift (OCP)* on *IBM ROKS* environment. Official installation instructions are available in [documentation](https://docs.databand.ai/docs/installing-databand-in-kubernetes-cluster). Technical sellers and business partners can use this document to practice installation of Databand on OCP. Please make sure to use official documentation for installation in a customer environment.

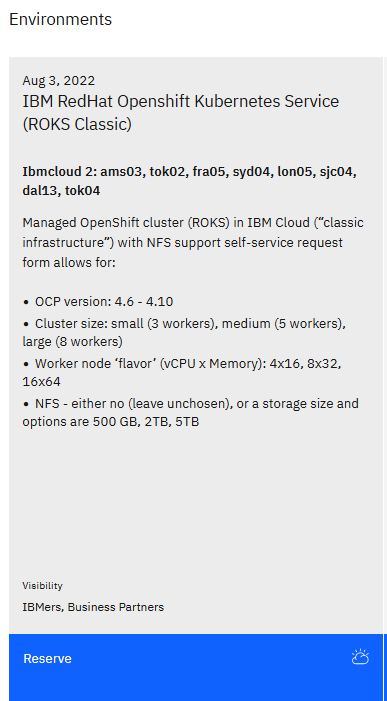
Rather than downloading code to your laptops, we will use the single Ubuntu image used for the Docker Compose installation to drive the installation.

## **Step 1: Provision a ROKS cluster**

**1-4 have been done for you**

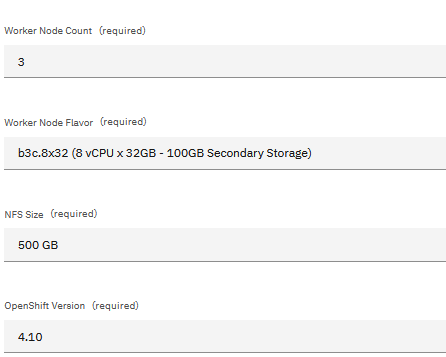
In this section we will provision a ROKS cluster in IBM Cloud. ROKS is a pre-configured OCP cluster. You must have an [IBM Cloud](https://www.ibm.com/cloud) account in order to complete this task.

1. Log in to **TechZone** and navigate to the Custom ROKS requests [collection](https://techzone.ibm.com/collection/custom-roks-vmware-requests).
2. Select the following environment



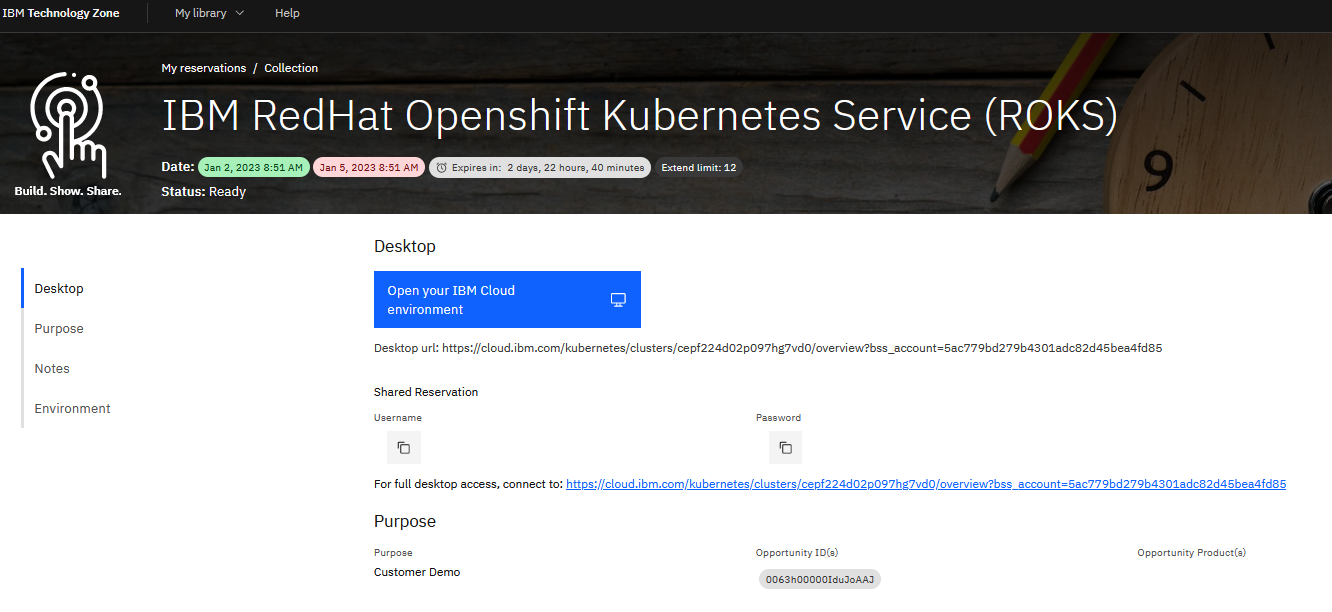
1. Check [documentation](https://docs.databand.ai/docs/installing-databand-in-kubernetes-cluster) for supported versions of OCP and node requirements. As of *January 2023*, Databand supports *OCP 4.10*, and the minimum node requirement is 2 Worker nodes.
2. Click **Reserve** in TechZone and provide the following values for cluster configuration.

*Note: You can reserve the cluster in any geo. The installation was tested with the ROKS cluster in Dallas.*

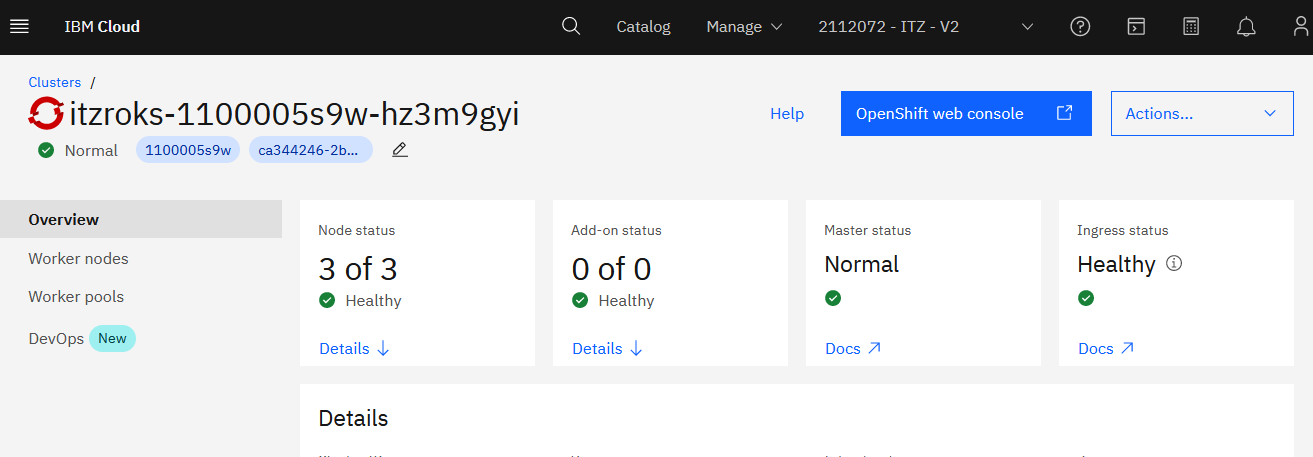


1. You will receive an email when the cluster has been provisioned (may take a few hours). After you have received the email, navigate to the TechZone reservation, open the **Details** page, and click **Open your IBM Cloud environment**.

Alternatively, you can click on the cluster link in the email. If this is the first time that you’re provisioning the ROKS environment, follow instructions in the email to accept the invitation to the TechZone account in IBM Cloud.

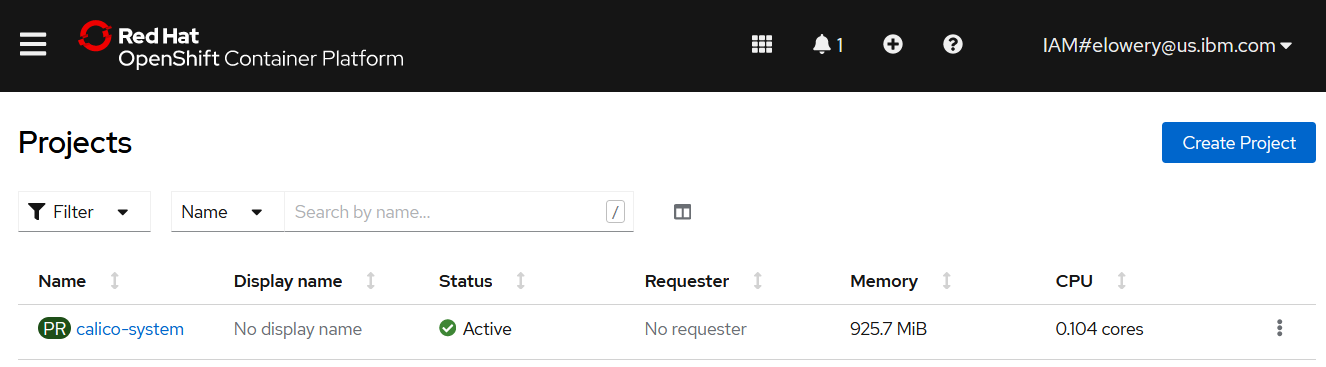


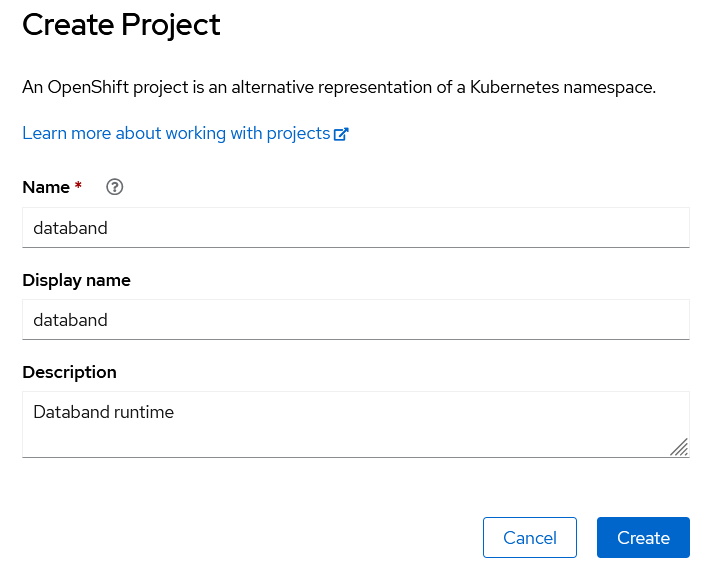
1. In IBM Cloud click ***OpenShift web console.***



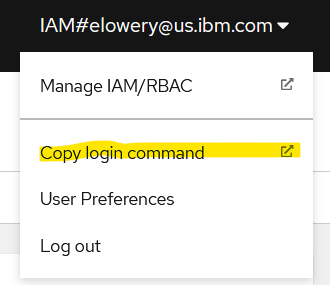
1. Switch to the **Projects** view and create a new project. Name the project *databand*.

*Note: If you use a different project name, make sure to replace it in the image tag and other commands that use the project name*.

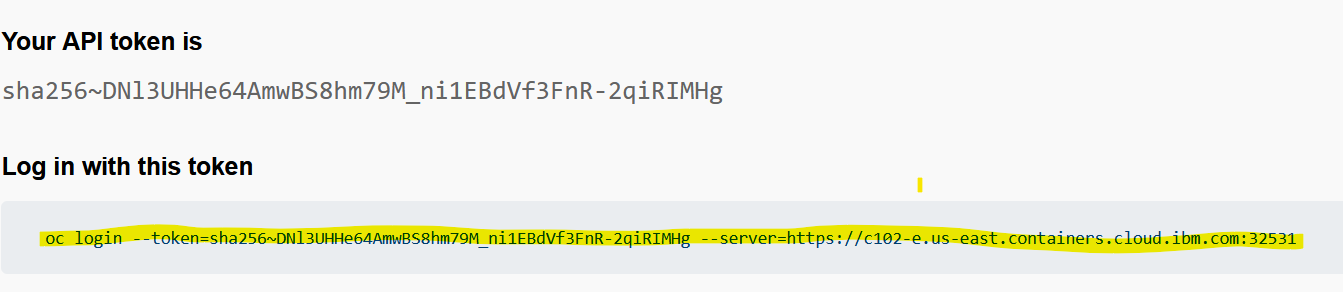




1. In the top right corner of the console click on your userid and select **Copy login command**.



We will use the *oc login* command later. Since the token may be regenerated, you don’t need to copy it at this time.



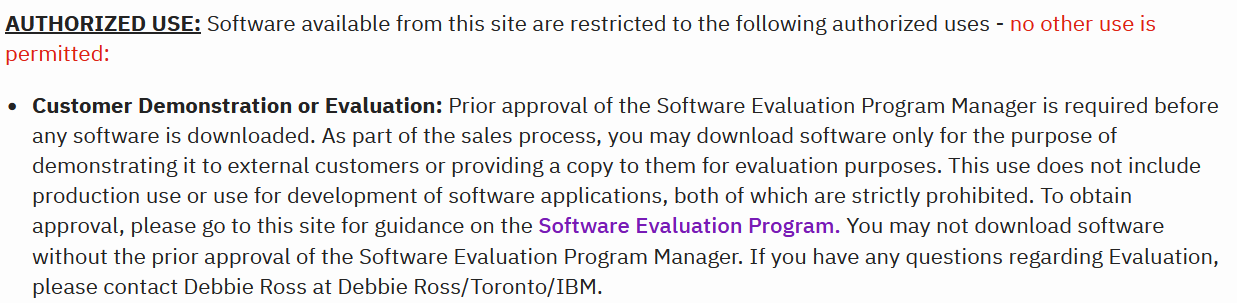
## **Step 2: Download software for installation**

**The software download has been done for you. The code is in the home directory for the itzuser on the Ubuntu linux image.**

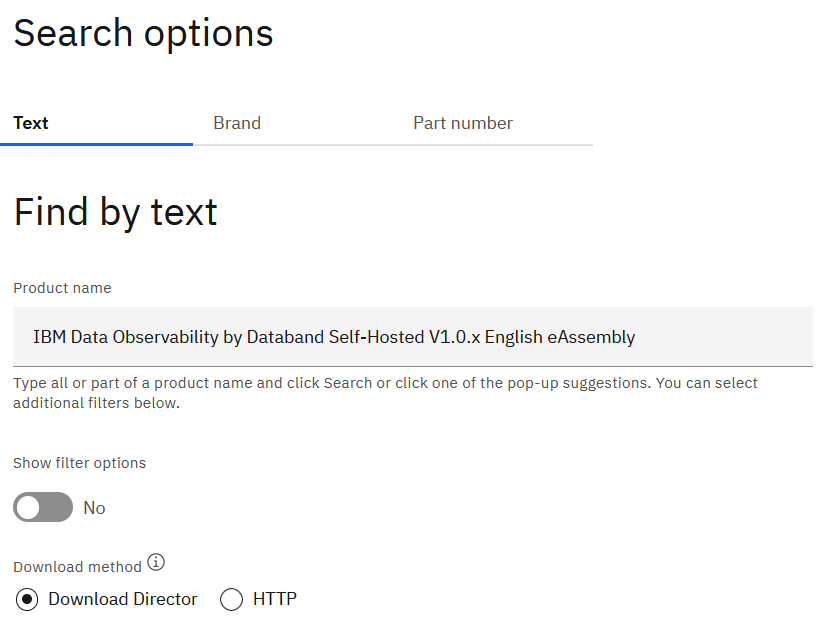
In this section we will download Databand and other files that are required for installation.

* Download [site](https://w3south-limited-use.cpc.ibm.com/software/xl/download/ticket.wss) for IBMers
* Business partners should use Passport Advantage.

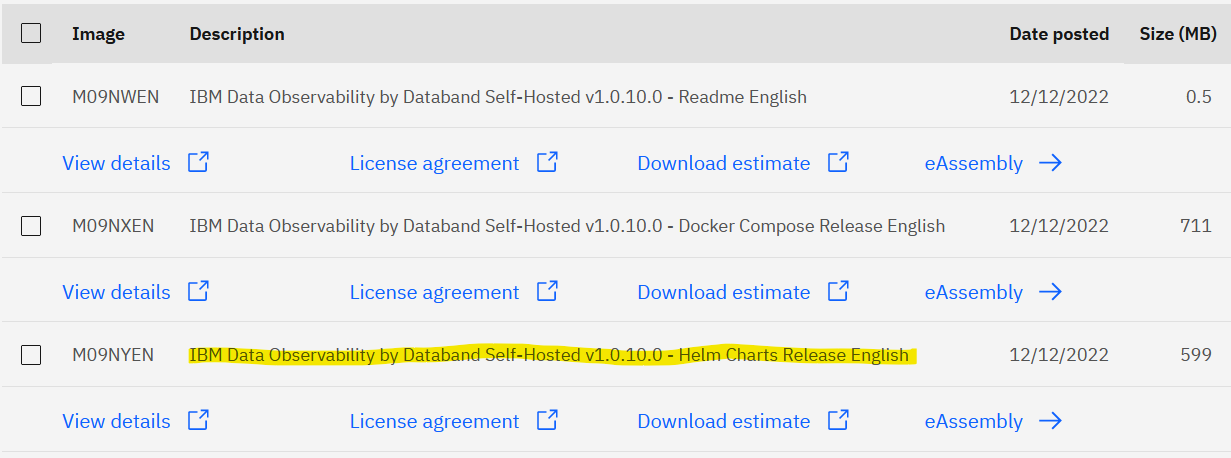
*Note: As stated on the internal downloads site, IBMers can use the downloaded files for PoCs after completing the required software evaluation* [*documentation*](https://ibm.seismic.com/app?ContentId=a37adba3-fec8-4365-94ab-e03cc0d22a00#/doccenter/5477419a-9474-4c51-94af-b442e9169fab/doc/%252Fdd98c5a3df-6b7c-1d77-6f07-d12e63954c78%252FdfOTRiYmU4NTQtNWY4NC03Y2QyLWZjYWUtOGIxYmFmZjkyZThk%252CPT0%253D%252CU2VsbGVyIGVuYWJsZW1lbnQ%253D%252Flf36e674a4-af29-44c4-8f05-000521f0b2ba/grid/?anchorId=5d4d533d-3b46-4773-b292-89e24053a2dc)*.*



* Download Databand installation files from IBM internal downloads or Passport Advantage

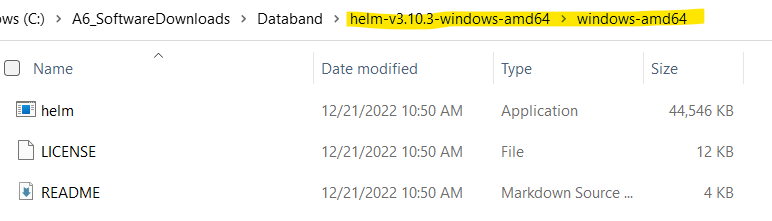


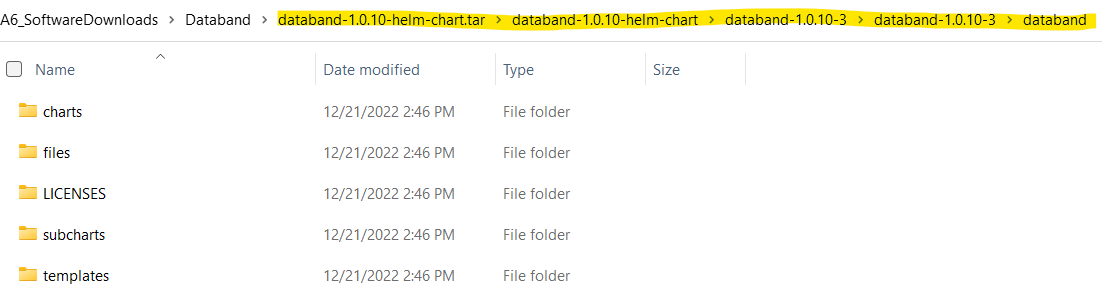
For this lab we need the *Helm Charts*, but if you wish, you can download all files in the Databand assembly.



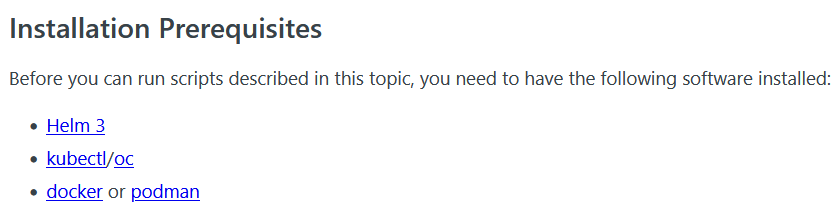
*Note: If you did not install the Download Director, then select the HTTP option for download. The HTTP option supports downloading 1 file at a time, while the Download Director can download multiple files simultaneously*.

* Unzip downloaded files to get to the following file structure:



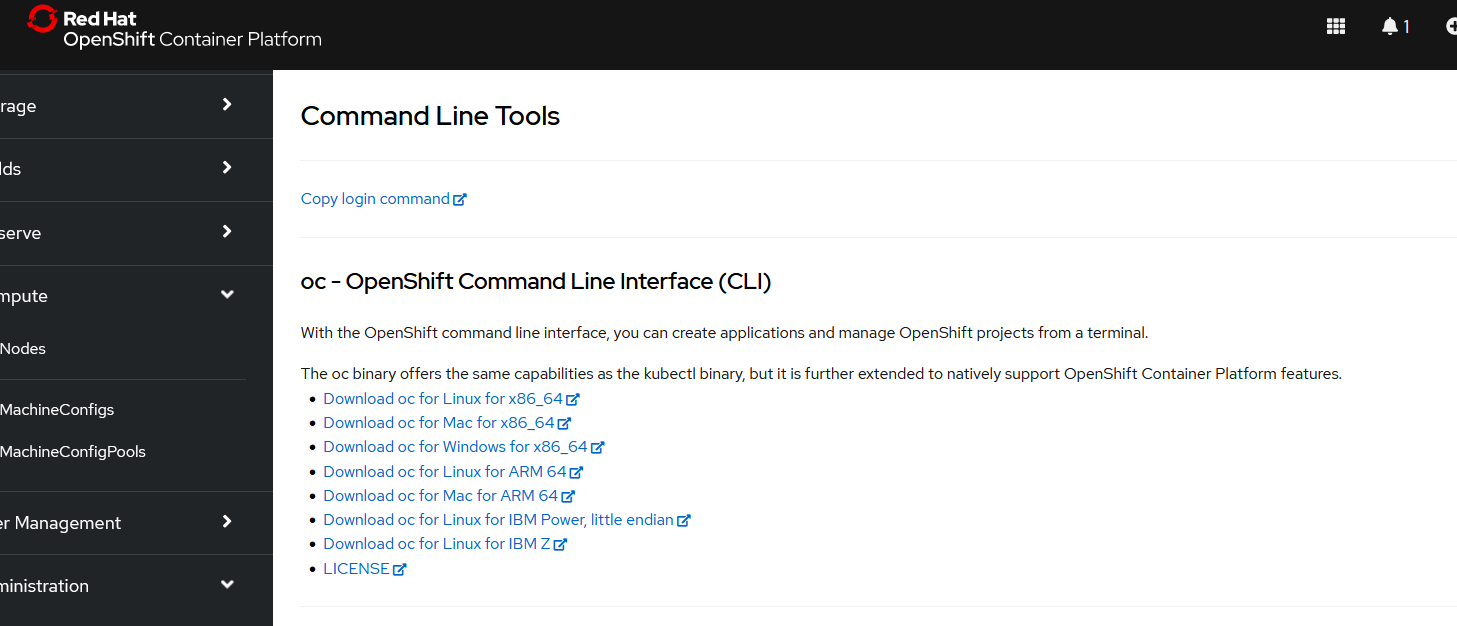


* Follow instructions in Databand [documentation](file:///C:\A1_WSL\A_CP4D\Databand\Installation\in%20documentation) to install *Helm*, *oc*, and *docker* on your laptop.

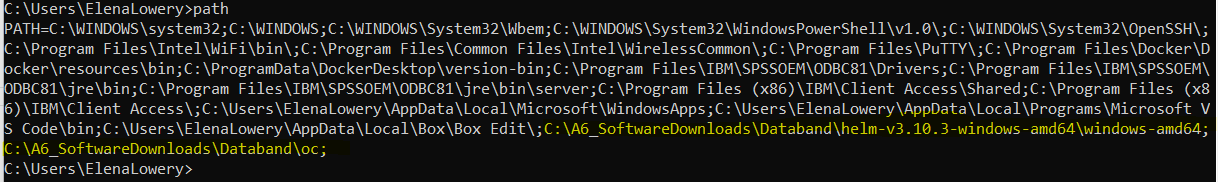


Notes:

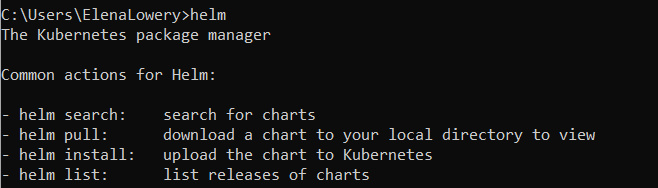
* *You will access these tools through command line interface. On Windows, the command line tool is called the* ***Command Prompt****. On MacOS, use* ***Terminal****.*
* *You can install Docker Desktop, which includes docker.*
* *If you do not have RedHat subscription, oc (OCP CLI) can be downloaded from the OCP console of your ROKS cluster. After the cluster has been provisioned, click on* ***Your command line tools*** *in the top right of the navigation bar.*



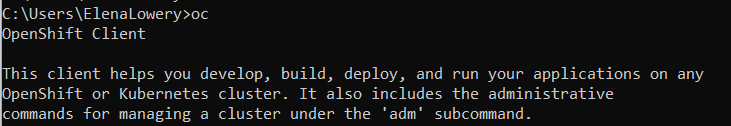
* **Windows only:** After downloading Helm and oc on Windows, don’t forget to update the *Path* environment variable



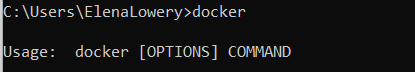
* Test Helm installation: in your command line tool, type in helm



* Test oc installation: in your command line tool, type in oc



* Test docker installation: in your command line tool, type in docker

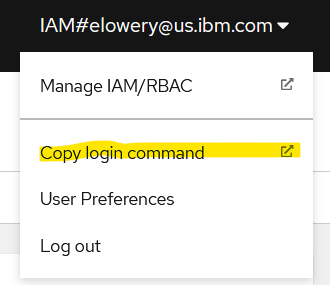


## **Step 3: Review prerequisites and configure OCP repository**

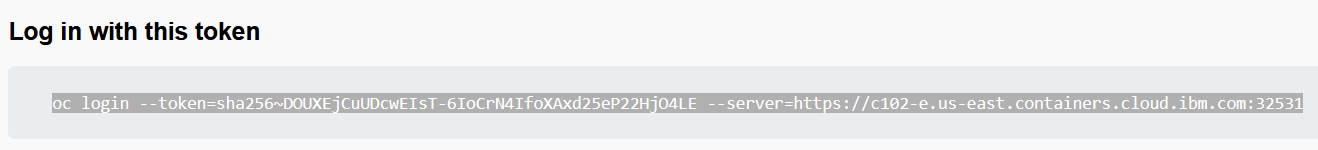
Review prerequisites in [documentation](https://docs.databand.ai/docs/installing-databand-in-kubernetes-cluster).

* For this installation we will use the included (default) versions of Postgres and Redis
* All OCP requirements are met in the ROKS cluster
* While the ROKS cluster includes the repository, we will need to perform configuration steps to make the repository accessible from a client system for installation.

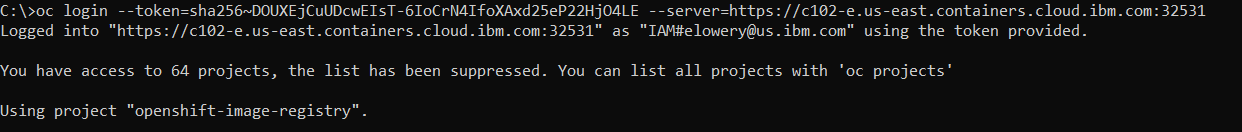
1. Login to *oc* on your laptop:
   * In the top right corner of the OCP console in IBM Cloud click on your userid and select **Copy login command**.



1. Copy the login command.



1. Paste the login command to your command line tool.



Next, we will configure the OCP registry.

1. Type in the following command:
   * oc get route -n openshift-image-registry



Notice that we get “No resources found” message. By default, the registry is not exposed. We will follow instructions in [OCP documentation](https://docs.openshift.com/container-platform/4.10/registry/securing-exposing-registry.html) to expose the registry.

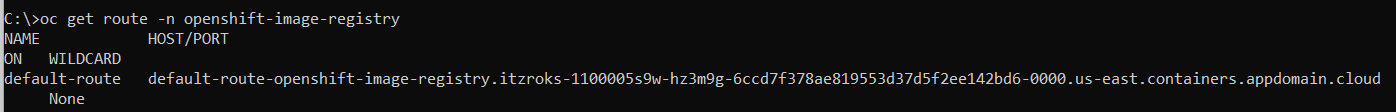
1. Run the patch command (from documentation)
   * oc patch configs.imageregistry.operator.openshift.io/cluster --patch '{"spec":{"defaultRoute":true}}' --type=merge

*Important Note: this command does not work on Windows. You can either ask your colleague who as a Mac or Linux os to run the command for your cluster, or you can edit the file manually.*

* Type in command: oc edit configs.imageregistry.operator.openshift.io/cluster
* Add defaultRoute: true and save the file



1. Verify that the registry has been exposed
   * oc get route -n openshift-image-registry



Save the registry URL. We will use it when loading images in **Step 4** and updating *user-values.yaml* in **Step 5**.

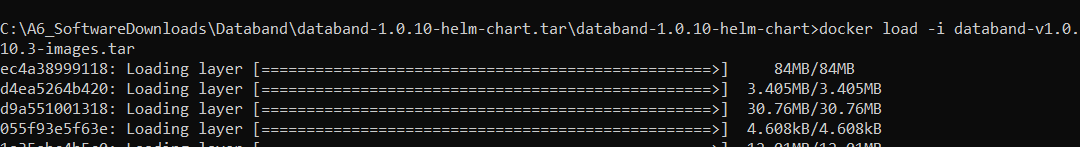
In our example (screenshot above) the registry URL is *default-route-openshift-image-registry.itzroks-1100005s9w-hz3m9g-6ccd7f378ae819553d37d5f2ee142bd6-0000.us-east.containers.appdomain.cloud*

## **Step 4: Load, tag and push docker images**

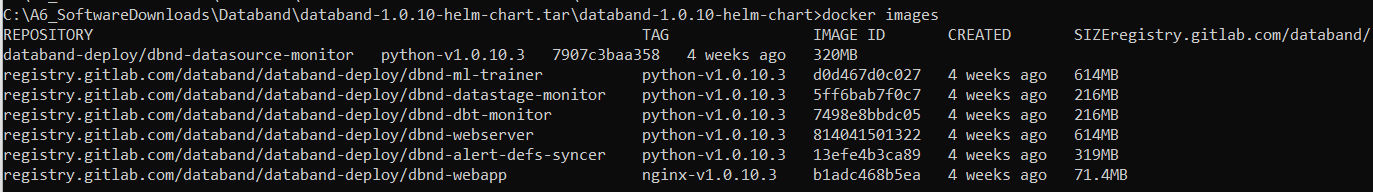
In this section we will load Databand images into a local docker repository and then push them to the OCP registry.

1. Load images to local docker repository

* In your command line tool change directory to the location of the *databand-v1.0.10.3-images.tar* file
* Run this command to load images to local docker:
  + docker load -i databand-v1.0.10.3-images.tar



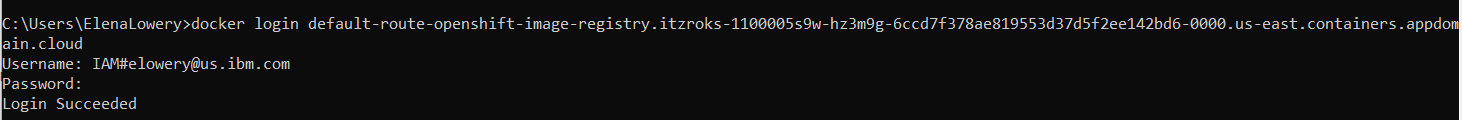
* Run this command to verify that the images have been loaded:
  + docker images



1. Log in to the registry

* Run this command to get your userid:
  + oc whoami
* Run this command to get the password for your userid:
  + oc whoami -t
* Run this command to log in:
  + docker login <your\_repository\_URL>

When prompted, provide the userid and password you retrieved with the previous commands.



Next, we need to tag and push images to the OCP registry. The *January 2023* release of Databand has 7 images:

* *dbnd-ml-trainer:python-v1.0.10.3*
* *dbnd-datasource-monitor: python-v1.0.10.3*
* *dbnd-datastage-monitor:python-v1.0.10.3*
* *dbnd-dbt-monitor:python-v1.0.10.3*
* *dbnd-webserver:python-v1.0.10.3*
* *dbnd-alert-defs-syncer:python-v1.0.10.3*
* *dbnd-webapp:nginx-v1.0.10.3*

The tag command has the following syntax: ***docker tag*** *<source> <destination>.*

* The *source* is the name of the image in your local docker repository (looked up with docker images command), including the tag (for Databand, the Python version).
* The *destination* includes the registry url, the TODO schema (*databand* in our example), the image name and the tag (same as the tag above)

***Example:***

***docker tag*** *registry.gitlab.com/databand/databand-deploy/dbnd-datasource-monitor:python-v1.0.10.3 default-route-openshift-image-registry.itzroks-1100005s9w-d3w255-6ccd7f378ae819553d37d5f2ee142bd6-0000.us-south.containers.appdomain.cloud/databand/dbnd-datasource-monitor:python-v1.0.10.3*

* *Blue: name of the image in your local docker repository (looked up with docker images command)*
* *Purple: repository URL*
* *Red: OCP project name (created earlier)*
* *Green: name of the image + tag*

The push command has the following syntax: ***docker push*** *<destination>.*

* The *destination* value is the same as in the tag command.

***Example*:**

***docker push*** *default-route-openshift-image-registry.itzroks-1100005s9w-d3w255-6ccd7f378ae819553d37d5f2ee142bd6-0000.us-south.containers.appdomain.cloud/databand/dbnd-datasource-monitor:python-v1.0.10.3*

* *Purple: repository URL*
* *Red: OCP project name (created earlier)*
* *Green: name of the image + tag*

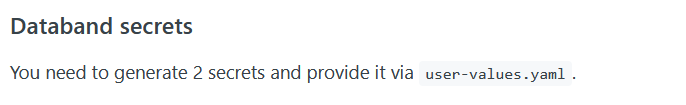
1. Run the tag and push commands for all 7 images.

If you wish, you can use the helper file (*Tag\_and\_push\_genertic.txt*) that we created for you to copy/paste commands.

## **Step 5: Update the YAML file**

In this section we will update the Databand YAML file with cluster information and credentials.

1. As described in Databand [documentation](file:///C:\A1_WSL\A_CP4D\Databand\Installation\in%20documentation), we need to generate 2 secrets for Databand.



If you are able to run the *bash* commands on your laptop, then run the 2 commands to generate secrets

* Fernet key command: dd if=/dev/urandom bs=32 count=1 2>/dev/null | openssl base64
* Webserver secret command: head -c 32 /dev/urandom | base64 | tr -d =

If you do not have *bash* on your laptop (for example, on Windows), you can generate keys in a Python environment that runs on Linux, such as notebooks in Watson Studio on IBM Cloud or Cloud Pak for Data.

* In Watson Studio create a notebook
  + Type in the following commands and run them
    - import os
    - os.system('dd if=/dev/urandom bs=32 count=1 2>/dev/null | openssl base64')
    - os.system('head -c 32 /dev/urandom | base64 | tr –d =')



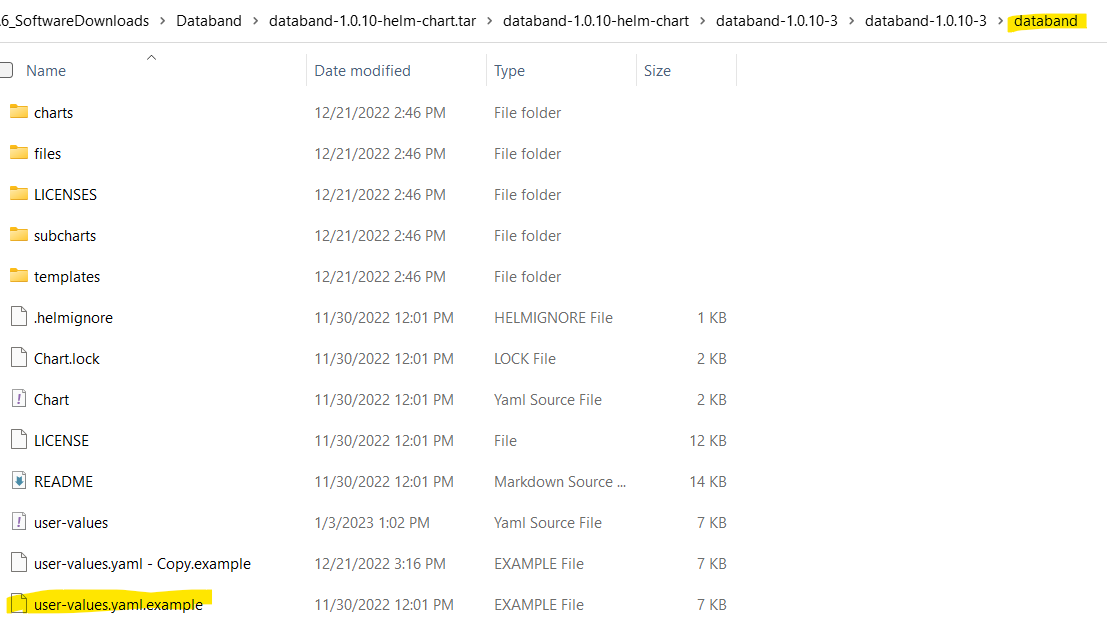
It’s also possible to generate the fernet key in any Python environment (including Windows) with the cryptography API. You can run the following code in Python command line or a script.

**from** cryptography.fernet **import** Fernet  
  
fernet\_key = Fernet.generate\_key()  
print(fernet\_key.decode()) *# your fernet\_key*

Save both secrets.

1. As described in Databand [documentation](file:///C:\A1_WSL\A_CP4D\Databand\Installation\in%20documentation), we need to create a copy of the *user-values.yam*l and update it with the values for our cluster.

The sample yaml file , *user-values-yaml.example*, is located in the *databand* directory of the unzipped helm chart tar file.

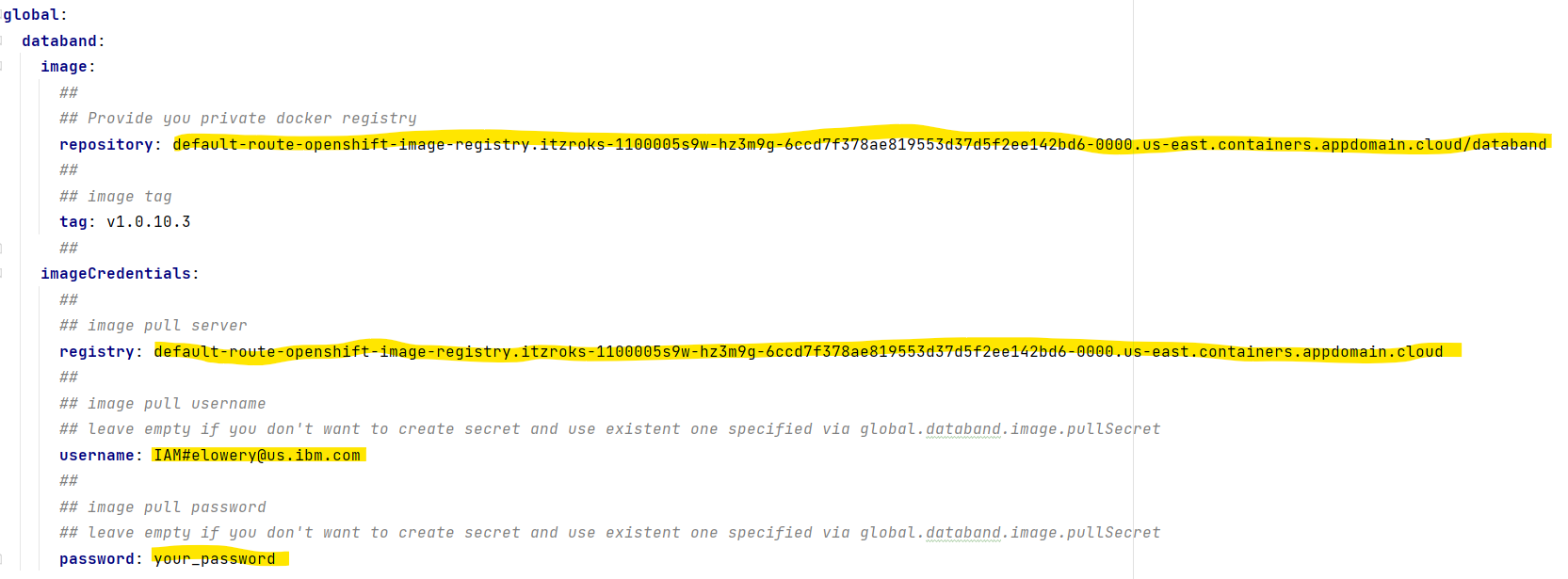


We need to replace the following information in the sample file:

* **Repository**: the repository value is a string that contains the URL of the *OCP registry* + the name of the *OCP project* that you created. For our installation the project name is databand (we created the project earlier in the lab).
  + **Registry**: URL of the OCP registry that we have been using for tag and push commands
  + Registry userid and password: we will use the OCP admin userid and password. When working on a customer engagement, ask the customer to provide registry credentials. OCP admin credentials for ROKS can be looked up using the oc whoami commands that we ran earlier in the lab.
  + **Fernet key secret** generated in the previous step
  + **WebServer secret** generated in the previous step

1. Navigate to the directory containing the *user-values.yaml.example file*. Make a copy of this file and name it *user-values.yaml*

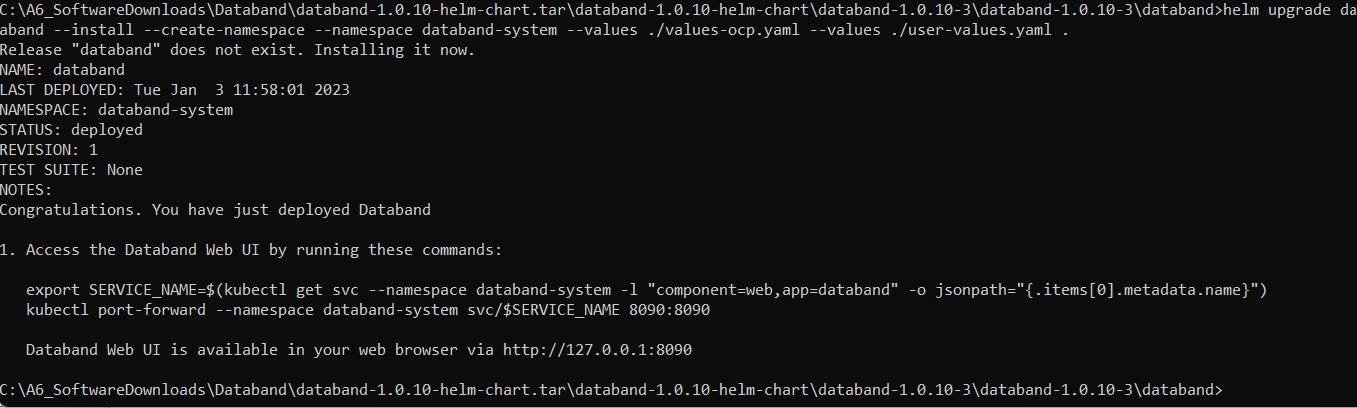
*Note: make sure there are spaces in the YAML file after the : for registry, userid, password*

**

## **Step 6: Install and test Databand**

In this section we will run the Helm install command and test installation.

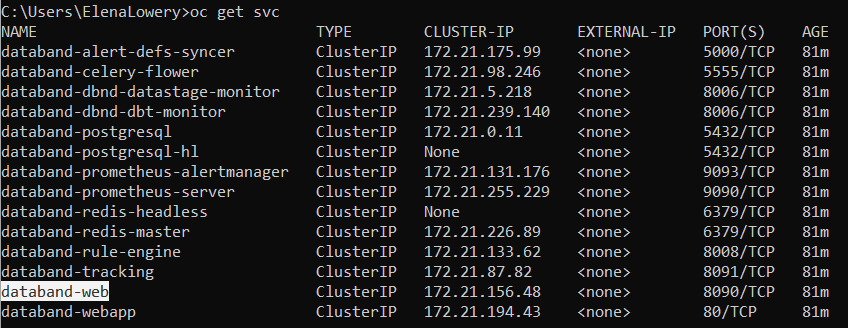
* As described in Databand [documentation](file:///C:\A1_WSL\A_CP4D\Databand\Installation\in%20documentation), from your command line environment, run the Helm chart command:
  + helm upgrade databand --install --create-namespace --namespace databand-system --values ./values-ocp.yaml --values ./user-values.yaml .



**Please note that the commands for accessing Databand UI shown in installation output do not work on Windows.**

You can use an alternative approach on any OS to enable access to Databand UI.

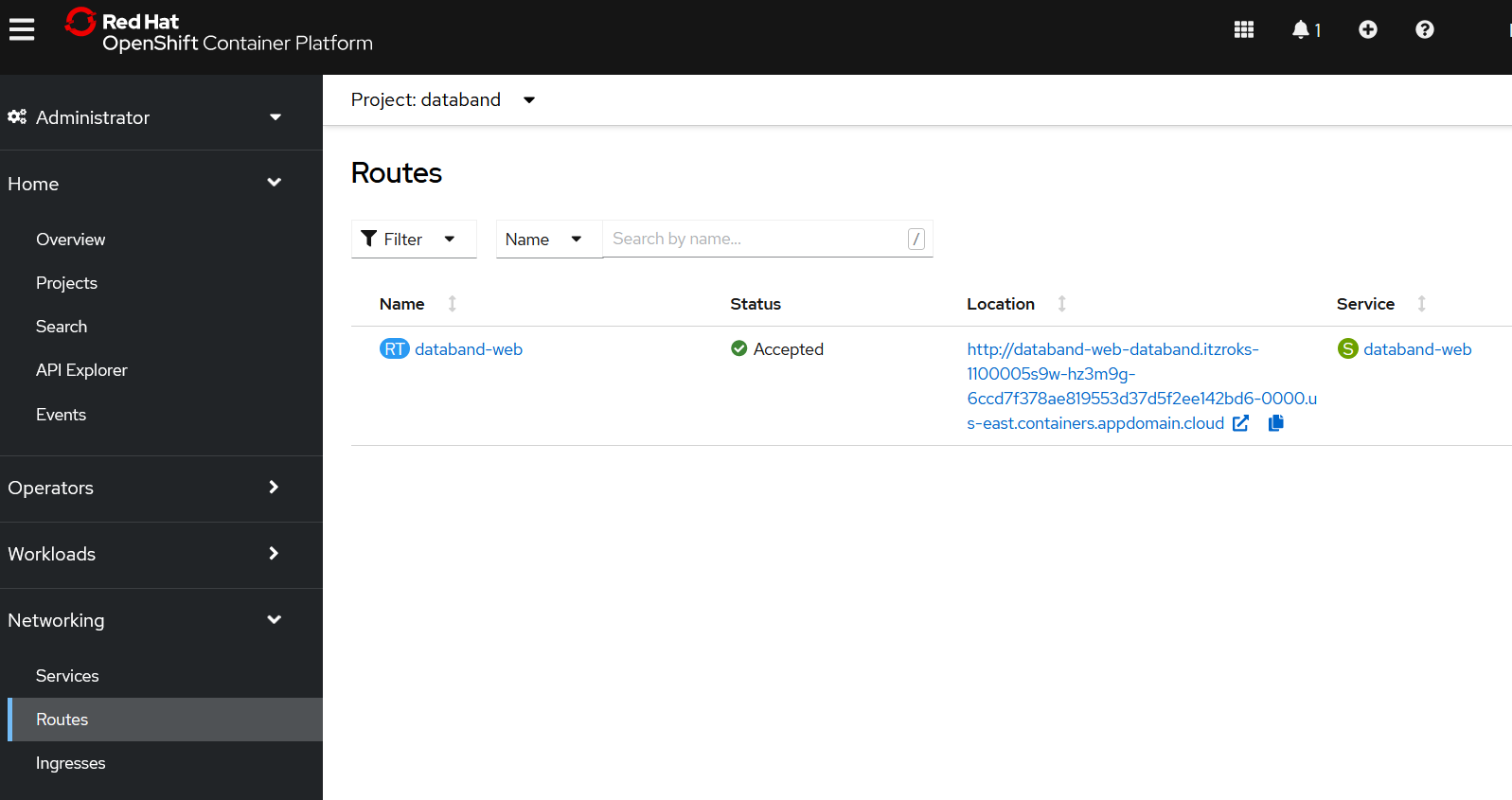
1. List Databand services:
   * oc get svc



1. We need to expose the service databand-web:
   * oc expose svc databand-web



1. Log in to the **OCP console**, navigate to **Routes**. Click on the URL (*Location*) to access Databand.



1. Log in to Databand with the default admin password: *databand/databand*.

**You have finished installing Databand on OCP.**

If you wish, test data observability with one of the Python scripts that we’ve used in other labs.

## Useful Links

OCP Registry overview: <https://docs.openshift.com/container-platform/4.8/registry/index.html>

Tagging overview: <https://docs.openshift.com/container-platform/4.10/openshift_images/managing_images/tagging-images.html>