

IBM CP4D INSTALLATION & CONFIGURATION IN ROSA/ROKS

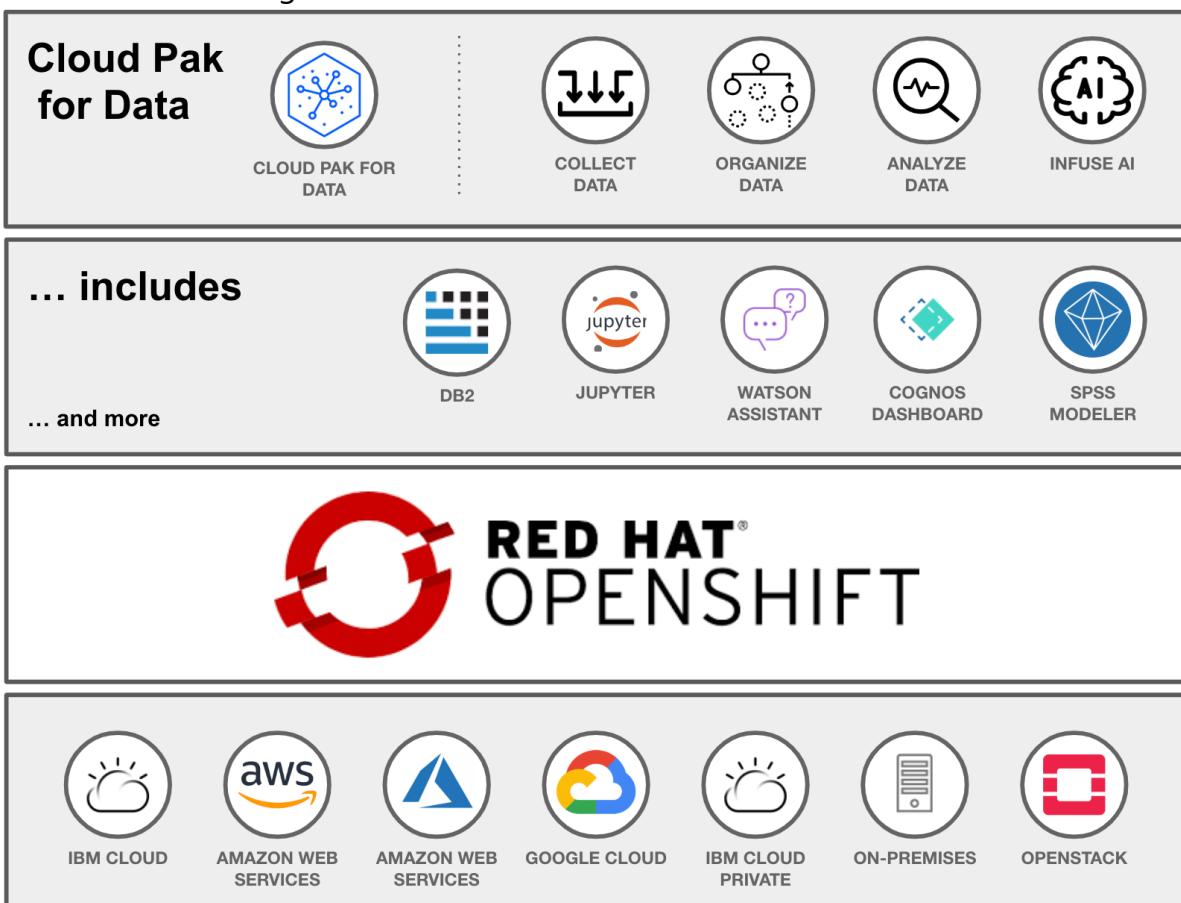
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Overview

IBM Cloud Pak for Data is a unified data and AI platform that connects the right data, at the right time, to the right people anywhere. Running on the Red Hat OpenShift platform simplifies data access, automates data discovery and curation, and safeguards sensitive information by automating policy enforcement for all users in your organization. Make better data-driven decisions and lay the foundation for AI with a data fabric that connects siloed data on-premises or across multiple clouds without data movement. Discover actionable insights and apply trusted data to build, run, automate and manage AI models.



This document provides step-by-step instructions to install IBM Cloud Pak for Data on the Red Hat OpenShift cluster. However, before we begin the installation, let's ensure the following assumptions and pre-requisite are met.

Note: IBM® Cloud Pak for Data images are accessible from the IBM Entitled Registry. In most situations, it is strongly recommended that you mirror the necessary software images from the IBM Entitled Registry to a private container registry. Because we are deploying for demo purposes in this example, I have skipped mirroring IBM Cloud Pak for Data images in the private container registry.

Assumptions

- With this guide one can install CP4D in AWS Cluster or ROKS Cluster. Do install only the required clusters. For example: install either AWS Openshift cluster or ROKS Cluster.
- Installing fresh Cloud pak for data Control Plane, Foundational Services and Operators
- Red Hat OpenShift cluster has access to a high-speed internet connection and can pull images directly from IBM Entitled Registry.
- Installing for demo purposes and so, the latest version of the software will automatically install on the Red Hat OpenShift cluster.
- User has knowledge and experience managing Red Hat OpenShift cluster
- Installation of Cloud Pak for Data 4.5.2

Pre-Requisite

- Red Hat OpenShift cluster version 4.6 or later with min 48 vCPU and 192 GB RAM
- Bastion host with 2 vCPU and 4GB RAM with Linux OS
- Internet access for Bastion host and Red Hat OpenShift cluster
- OpenShift Container Storage (OCS) attached to Red Hat OpenShift cluster. This link will help you determine supported storage. In this demo, I have used OCS Storage.
- A User with OpenShift Cluster and Project Administrator access
- IBM Cloud Pak for Data Entitlement Key — Here is the link to download the entitlement key

After reviewing the system requirements and other planning information, install IBM Cloud Pak for Data by completing the provisioning clusters, setup environment variables, completing the installation task itself, and then completing the validation of installation tasks. When complete, the Cloud Pak for Data control plane would be installed. Services are installed separately.

You use the Cloud Pak for Data command-line interface to install the Cloud Pak for Data control plane and any services that you want to run.

This guide is based on Red Hat OpenShift (ROKS) v4.6 on IBM Cloud for Cloud Pak for Data Custom. A fully managed Red Hat OpenShift 4.6 cluster installed on IBM Cloud ready for Cloud Pak for Data installation.

Provisioning of AWS OpenShift Cluster

This section covers steps to provision AWS OpenShift Cluster for Cloud Pak for data in IBM Techzone and accessing the cluster. Note: This is an optional section. Please ignore this step If you are installing ROKS.

Provisioning Cluster

The steps outlined below will assist you to prepare cluster for the installation of Cloud Pak for Data.

1. Login to TechZone (<https://techzone.ibm.com>). Login with your IBMID credentials.
2. Identify the right ROSA through : Go to Environments Tab -> Search for "AWS OpenShift Clusters" Indicating "Unmanaged OpenShift installation. Choose worker sizes from 4/16, 8/36, 16/64 and number of workers from 3, 6, and 9. MachineSets can be used to increase size as needed. ODF/OCS support". Click "Reserve".

The screenshot shows the 'Environments' section of the IBM TechZone website. At the top, there is a search bar with the placeholder 'AWS OpenShift Clusters'. Below the search bar, there is a 'Custom request' button. The main content area displays a list of environments. The first item in the list is 'AWS OpenShift Cluster', which is described as an 'Unmanaged OpenShift installation. Choose worker sizes from 4/16, 8/36, 16/64 and number of workers from 3, 6, and 9. MachineSets can be used to increase size as needed. ODF/OCS support'. To the right of this description, there are buttons for 'Reserve', 'Cloud', and more options. The page also includes filters for 'Brand', 'Offerings', 'Offering portfolios', 'IBMers', 'Infrastructure', and 'Regions' (us-west-1, eu-central-1, sa-east-1, ap-southeast-1). The bottom of the page shows a 'Show advanced' link and a 'Best Match' dropdown.

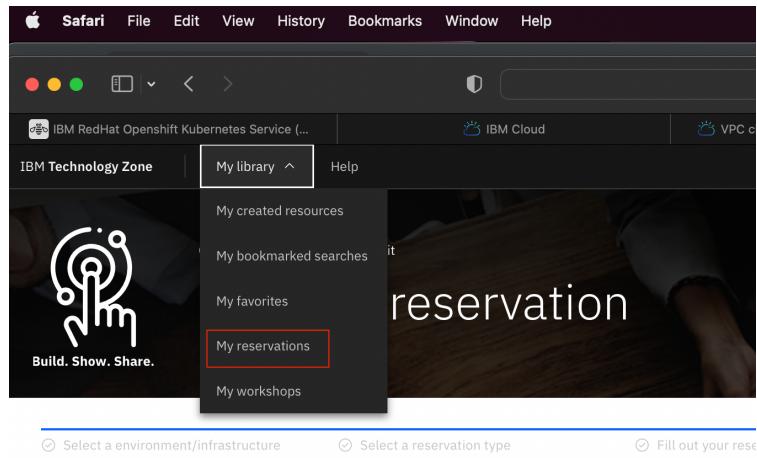
3. Create a reservation of ROSA by "Select a reservation type" -> Click reserve now.

The screenshot shows the 'Create a reservation' page. At the top, there is a large heading 'Create a reservation'. Below the heading, there are three buttons: 'Select a environment/infrastructure' (disabled), 'Select a reservation type' (highlighted with a red border), and 'Fill out your reservation'. Underneath these buttons, there is a note: 'Select your reservation type. Do you need this now or later? Single environment reservation options:'. There are two radio buttons: one selected for 'Reserve now' and one for 'Schedule for later'. At the bottom of the page, there are three buttons: 'Cancel', 'Reset', and 'Submit'.

4. Specify the requirements of ROSA by "Fill out your reservation" -> Fill in the following mandatory fields -> Click submit.

Field Name	Field Value
Name	AWS OpenShift Cluster
Purpose	Practice/self-education
Purpose description	CP4D Installation
Preferred Geography (required)	<<Your nearest location>>
End date and time	Up to 72 hours allowed. You may choose the maximum date time allowed.
OCP/Kubernetes Cluster Network	Choose one of the given options
OpenShift Version (required)	4.10
OCS/ODF Size (required)	4TiB
OCP/Kubernetes Service Network (required)	Choose one of the given options
Worker Node Count (required)	6
Worker Node Flavor (required)	16 CPU x 64 GB

5. Check out the reserved environment: Go to "My library" -> "My reservation"



6. Check on the status of the reservation. Status should be "Ready" to continue.
Note:

AWS OpenShift Cluster

Proof-of-Technology

0063h00000JQa8nAAD

Standard Chartered Bank(SCB)

Sep 12, 2022 1:29 PM -

Sep 15, 2022 1:29 PM

Expires in: 2 days, 21 hours, 14 minutes

Extend limit: 12

Reservation ID 631ec4152a60c100188ab846

Username kubeadmin

Password mUcZv-d2mW6-5ygoj-tAaj7

Status: Ready

Access to the cluster

- Environment details is accessible through Click "Environment" to get the details of provisioned environment and confirm on the choice.

Field	Remarks
Type	Cloud Provider
Region	Region that this environment is provisioned
Cluster URL	URL for the Openshift cluster
Username & Password	Cluster Login & Password

My reservations / Collection

AWS OpenShift Cluster

Date: Sep 15, 2022 1:29 PM Exp: Sep 15, 2022 1:29 PM Expires in: 2 days, 21 hours, 12 minutes Extend limit: 22 Status: Ready

Desktop

Open your AWS environment

Desktop url: <http://console-openshift-console.apps.itzrocks-661003lwek-37kj.selfservice.aws.techzone.ibm.com>

Shared Reservation

Username: **kubeadmin** Password: **mUic2v-d2mW6-5ygoj-tAa7**

For full desktop access, connect to: <https://console-openshift-console.apps.itzrocks-661003lwek-37kj.selfservice.aws.techzone.ibm.com>

Purpose

Project

Proof-of-Techology

Notes

Test

Environment

Reservation ID: 631ec4152ew0c100188eb849

Type: **AWS**

Region: **eu-central-1**

Reservation method: **aws-odp-id**

Idle runtime limit: 108000

Transaction ID: f2d19347-44ec-41e4-0fc3-230d32e36ec5

API URL: <https://api.itzrocks-661003lwek-37kj.selfservice.aws.techzone.ibm.com:4443>

Cluster Admin Username: kubeadmin

Cluster Admin Password: mUic2v-d2mW6-5ygoj-tAa7

Cluster URL: <https://console-openshift-console.apps.itzrocks-661003lwek-37kj.selfservice.aws.techzone.ibm.com>

debug: itzrocks-661003lwek-37kj-26wfl

OCF Version: 4.10

Download SSH key

2. IBM cloud environment can be accessed from the "Desktop" -> Click "Open Your IBM Cloud environment". Login with the details as Username & Password.

My reservations / Collection

AWS OpenShift Cluster

Date: Sep 12, 2022 1:29 PM Exp: Sep 15, 2022 1:29 PM Expires in: 2 days, 21 hours, 9 minutes Extend limit: 12 Status: Ready

Desktop

Open your AWS environment

Desktop url: <http://console-openshift-console.apps.itzrocks-661003lwek-37kj.selfservice.aws.techzone.ibm.com>

Shared Reservation

Username: **kubeadmin** Password: **mUic2v-d2mW6-5ygoj-tAa7**

For full desktop access, connect to: <https://console-openshift-console.apps.itzrocks-661003lwek-37kj.selfservice.aws.techzone.ibm.com>

Purpose

Proof-of-Techology

Note: Click the pop-up to open up if it is not enabled previously.

cloud.ibm.com

IBM Red Hat OpenShift Kubernetes Service (...)

IBM Cloud

VPC clusters: Why can't my app connect via...

Red Hat OpenShift (ROKS) v4.6 on IBM Cloud

itzrocks-661003lwek-x5xf4u5e - IBM Cloud

IBM Cloud

Search resources and products...

Catalog Docs Support Manage 2112072 - ITZ - V2

3. Find the cluster details in the overview pane.

Details

- Cluster API address: https://api.itzroks-661003lwek-x5xf4u5e.Overview - Red Hat OpenShift Container Platform
- Cluster ID: 35390e76-fb92-4ce0-b893-ac486f0d4aca
- Provider: AWS
- OpenShift version: 4.10.30
- Service Level Agreement (SLA): Self-support, 60 day trial
- Alerts: 59 days remaining
- Manage subscription settings
- Update channel: stable-4.10

Status

- Cluster: Green
- Control Plane: Green
- Operators: Green
- Insights: Yellow (1 issue found)

Activity

Ongoing: There are no ongoing activities.

Recent events:

- All pending requests proceed...
- HTTP Server has stopped...
- HTTP Server has stopped...
- The minimal shutdown dur...
- The minimal shutdown dur...
- All pending requests proceed...
- All pre-shutdown hooks...
- All pending requests proceed...
- Server has stopped listen...
- All pending requests proceed...
- All pre-shutdown hooks ha...
- The minimal shutdown dur...
- Server has stopped listen...
- HTTP Server has stopped...
- All pre-shutdown hooks ha...

4. OpenShift CLI login details can be retrieved by click "IAM#<<userid>>" -> Click "Copy login command".

5. Click "Display Token".

6. oc login commands will be displayed.

Your API token is

```
oc login --token=REDACTED --server=https://c100-e.eu-gb.containers.cloud.ibm.com:31736
```

Log in with this token

```
curl -H "Authorization: Bearer REDACTED" "https://c100-e.eu-gb.containers.cloud.ibm.com:31736/apis/user.openshift.io/v1/users/~"
```

Use this token directly against the API

Provisioning ROKS Cluster

The steps outlined below will assist you to prepare cluster for the installation of Cloud Pak for Data. Note: This is an optional section. Please ignore this step If you are installing AWS Openshift Cluster.

1. Login to TechZone (<https://techzone.ibm.com>). Login with your IBMID credentials.
2. Identify the right ROKS through : Go to Environments Tab -> Search for "ROKS CP4D". You will find a cluster " Red Hat OpenShift (ROKS) v4.6 on IBM Cloud for Cloud Pak for Data Custom" Indicating "CP4D must be installed manually". Click "Reserve".

Title	Description	Infrastructure	Collection	Regions	Actions
ROKS Cluster with CP4D Healthcare Demo	IBM Cloud managed OpenShift with Cloud Pak for Data Healthcare Demo	IBM Cloud	Production Deployment Guides for Cloud Pak Solutions	syd01, wdc06, sjc03 syd04, dal10	<button>Reserve</button>
Red Hat OpenShift (ROKS) v4.6 on IBM Cloud for Cloud Pak for Data Custom	A fully managed Red Hat OpenShift 4.6 cluster installed on IBM Cloud ready for Cloud Pak for Data installation. CP4D must be installed manually.	IBM Cloud	Cloud Pak for Data Activation Kit	wdc04, che01, sao01 syd01, wdc06, fra02	<button>Reserve</button>

3. Create a reservation of ROKS by "Select a reservation type" -> Click reserve now.

Select a environment/infrastructure Select a reservation type Fill out your reservation

Select your reservation type. Do you need this now or later?

Single environment reservation options:

Reserve now Schedule for later

Cancel Reset Submit

4. Specify the requirements of ROKS by "Fill out your reservation" -> Fill in the following mandatory fields -> Click submit.

Field Name	Field Value
------------	-------------

Name	Red Hat OpenShift (ROKS) v4.6 on IBM Cloud for Cloud Pak for Data Custom
Purpose	Practice/self-education
Purpose description	CP4D Installation
Preferred Geography (required)	<<Your nearest location>>
End date and time	Up to 72 hours allowed. You may choose the maximum date time allowed.

© Select a environment/infrastructure © Select a reservation type **Fill out your reservation** © Complete

Name
Red Hat OpenShift (ROKS) v4.6 on IBM Cloud for Cloud Pak for Data Custom
Name this reservation. This will help identify it in your reservation list.

Purpose Practice / Self-Education

Please select the purpose for this reservation request and review the [Reservation Duration Policy](#) to understand default durations allowed for specific infrastructures based on purpose.

Customer name(s)
Enter a customer name
Enter a list of customer names

Sales Opportunity Number
Enter an opportunity number(s)
Providing an [IBM Sales Cloud opportunity number](#) or a [Gainsite Relationship ID](#) will allow you to extend your reservation date.

Purpose description
CP4D Installation

What are you doing? Why do you need this? What are you trying to accomplish?

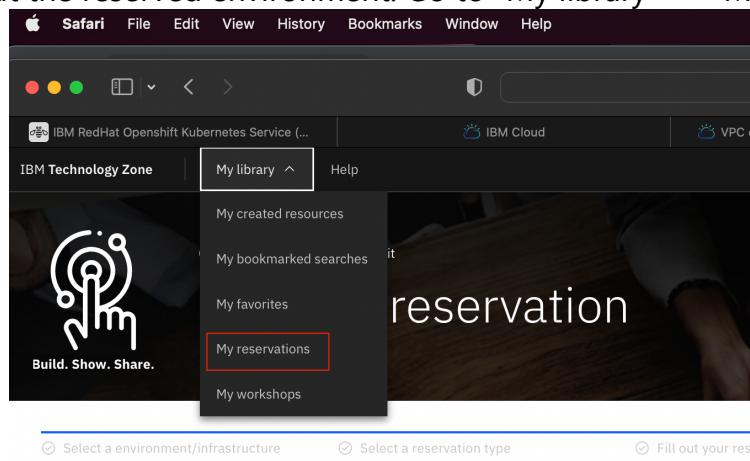
Preferred Geography (required)
Frankfurt 2

End date and time
Select a date
09/07/2022 Select a time
8:00 PM Asia/Singapore
Available for up to 3 days (72 hours)

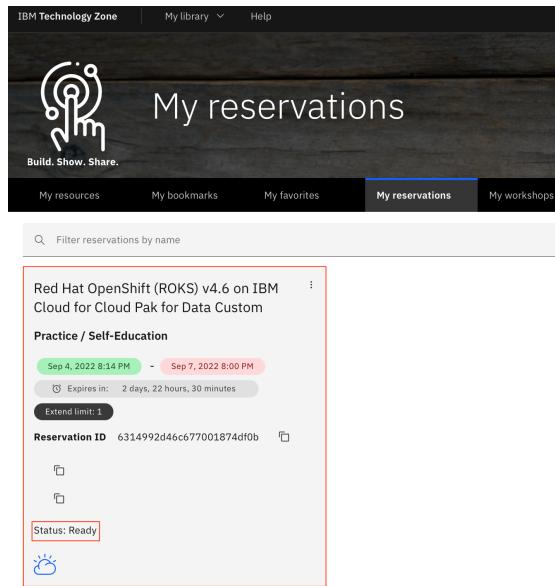
Notes
Enter any notes you would like to attach to this reservation

Cancel **Reset** **Submit**

5. Check out the reserved environment: Go to "My library" -> "My reservation"



6. Check on the status of the reservation. Status should be "Ready" to continue. Note:



Access to the cluster

- Environment details is accessible through Click "Environment" to get the details of provisioned environment and confirm on the choice.

Field	Remarks
Type	Cloud Provider
Region	Region that this environment is provisioned
Knowledge Center	Documentations links for your reference.
Slack #cp4d-tech	To discuss on technical matters for WD for ICP4D
DeveloperWorks	Documentations links for your reference.
Cluster URL	URL for the Openshift cluster

IBM Technology Zone | My library | Help

Notes

Shared Reservation
For full desktop access, connect to: https://cloud.ibm.com/kubernetes/clusters/cca9imdl0u7csgune5ng/overview?bss_account=ead8711ba2cc4d08a16fd37427f4f01a

Purpose
Practice / Self-Education

Notes
CP4D Installation

Environment

Reservation ID 631492d46c677001874df0b	Type IBM Cloud	Reservation method ibm-roks-cp4data	Transaction ID c246313a-56b9-475c-ab9e-41322bf4fb
Cloud Account ITZEV2	Region fra02	Environment cca9imdl0u7csgune5ng	Idle runtime limit 10800
Knowledge Center https://www.ibm.com/docs/en/cloud-paks/cp-data			
Slack #cp4d-tech https://ibm-cloudplatform.slack.com/archives/CAD1KG1QU			
DeveloperWorks https://developer.ibm.com/recipes/tutorials/how-to-deploy-cloud-paks-on-ibm-cloud-managed-openshift-cluster/			
Cluster ID cca9imdl0u7csgune5ng			
Cluster Name itzroks-661003lwek-x5xf4u5e			
Cluster URL https://cloud.ibm.com/kubernetes/clusters/cca9imdl0u7csgune5ng/overview?bss_account=ead8711ba2cc4d08a16fd37427f4f01a			
OpenShift Version 4.6_openshift			

2. IBM cloud environment can be accessed from the "Desktop" -> Click "Open Your IBM Cloud environment"

My reservations / Collection

Red Hat OpenShift (ROKS) v4.6 on IBM Cloud for Cloud Pak for Data Custom

Date: Sep 4, 2022 8:14 PM | Sep 7, 2022 8:00 PM | Expires in: 2 days, 22 hours, 27 minutes | Extend limit: 1

Status: Ready

Desktop

Open your IBM Cloud environment

Desktop url: https://cloud.ibm.com/kubernetes/clusters/cca9imdl0u7csgune5ng/overview?bss_account=ead8711ba2cc4d08a16fd37427f4f01a

Purpose
Practice / Self-Education

Notes
Shared Reservation
For full desktop access, connect to: https://cloud.ibm.com/kubernetes/clusters/cca9imdl0u7csgune5ng/overview?bss_account=ead8711ba2cc4d08a16fd37427f4f01a

CP4D Installation

3. OpenShift Web Console can be accessed by click "OpenShift web console"

Note: Enable pop up blocker for the "OpenShift web console" to open.

IBM Cloud | Search resources and products... | Catalog | Docs | Support | Manage | 2112072 - ITZ - V2 | Actions...

Clusters / **itzroks-661003lwek-x5xf4u5e** | Normal | c246313a-56b9-475c-ab9e-41322bf4fb | Help | OpenShift web console | Actions...

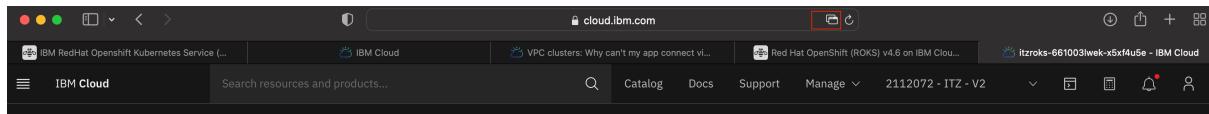
Overview

Worker nodes | Worker pools | DevOps **New**

Deprecated version:
Support will end in 53 days. To continue to receive support, update your version of Kubernetes.
[Review the docs](#) | [Update](#)

Node status 5 of 5 Normal	Add-on status 0 of 0 Normal	Master status Normal	Ingress status Healthy
Details ↓	Details ↓	Docs ↗	Docs ↗

Note: Click the pop-up to open up if it is not enabled previously.



4. Find the cluster details in the overview pane.

The screenshot shows the Red Hat OpenShift Container Platform Overview page. On the left, a sidebar menu includes Home, Overview (selected), Projects, Search, Explore, Events, Operators, Workloads, Networking, Storage, Builds, Monitoring, and Compute. The main content area is titled 'Overview' and has a tab for 'Cluster'. It displays the following information:

- Details:**
 - Cluster API Address: https://c100-e-eu-gb.containers.cloud.ibm.com:31736
 - Cluster ID: 0b8f8a69-1fe2-4be7-a985-440e8c33ze20
 - Provider: IBMCloud
 - OpenShift Version: 4.6.60
 - Update Channel: Not available
- Status:**
 - Cluster: Green checkmark
 - Operators: Green checkmark

A warning message: "Alerts are not configured to be sent to a notification system, meaning that you may not be notified in a timely fashion when important failures occur. Check the OpenShift documentation to learn how to configure notifications with Alertmanager."
- Activity:**
 - Ongoing: There are no ongoing activities.
 - Recent Events: A list of events with NS icons and descriptions like "Server has stop..." and "All pre-shutdown...".
- Cluster Utilization:**
 - 1 Hour chart showing CPU usage from 2:15 to 22:00.
 - Resource Usage table for CPU and Memory.
- Cluster Inventory:**
 - 5 Nodes

5. OpenShift CLI login details can be retrieved by click "IAM#<<userid>>" -> Click "Copy login command".

The screenshot shows the Red Hat OpenShift Container Platform Overview page. The right sidebar shows the user IAM#sujatha.sureshkumar@ibm.com. A red box highlights the 'Copy Login Command' button. Other options in the sidebar include Manage IAM/RBAC and Log out.

6. Click "Display Token".

The screenshot shows a browser window with the URL https://c100-e-eu-gb.containers.cloud.ibm.com. A red box highlights the 'Display Token' button.

7. oc login commands will be displayed.

Your API token is

```
itzyroks-661003lwek-x5x14u5e
```

Log in with this token

```
oc login --token=itzyroks-661003lwek-x5x14u5e --server=https://c100-e.eu-ibm.com:31736
```

Use this token directly against the API

```
curl -H "Authorization: Bearer itzyroks-661003lwek-x5x14u5e" "https://c100-e.eu-ibm.com:31736/apis/user.openshift.io/v1/users/~"
```

Provisioning of IBM Cloud VSI (Classic)

This section covers steps to provision IBM Cloud VSI (Classic). IBM Cloud will be used as bastion server in this scenario. Note: This installation is mandatory either you are installing AWS Openshift Cluster or ROKS.

1. Login to TechZone (<https://techzone.ibm.com>). Login with your IBMID credentials.
2. Identify the right ROKS through : Go to Environments Tab -> Search for "IBM Cloud VSI (Classic)" Indicating "Customizable sidecar VM. Supports self-service request form which allows to choose:". Click "Reserve".

Title	Description	Infrastructure	Collection	Regions
IBM Cloud VSI (Classic)	creating new template for this collection with more open ports than are provided by default. Open ports: 21,22,25,53,3389,80,443,143,587,993,3000,3306,5000,5432,8000,8080,8443,32122	IBM Cloud	Development base images	ams03 dal13 syd01 lon04 fra02 wdc07 amst03
IBM Cloud VSI (Classic)	Customizable sidecar VM. Supports self-service request form which allows to choose: • OS version: RHEL 7, 8, CentOS 7, 8, or Ubuntu 20.04 • CPU Cores: 2, 4, 8, 16 • RAM: 2 GB, 4 GB, 8 GB, 16 GB, 32 GB, 64 GB • Primary Storage: 100 GB • ...	IBM Cloud	Base Images	dal13 syd01 lon04 fra02 wdc07 amst03

3. Create a reservation by "Select a reservation type" -> Click "reserve now".



Select a environment/infrastructure Select a reservation type Fill out your reservation

Select your reservation type. Do you need this now or later?

Single environment reservation options:

- Reserve now
- Schedule for later

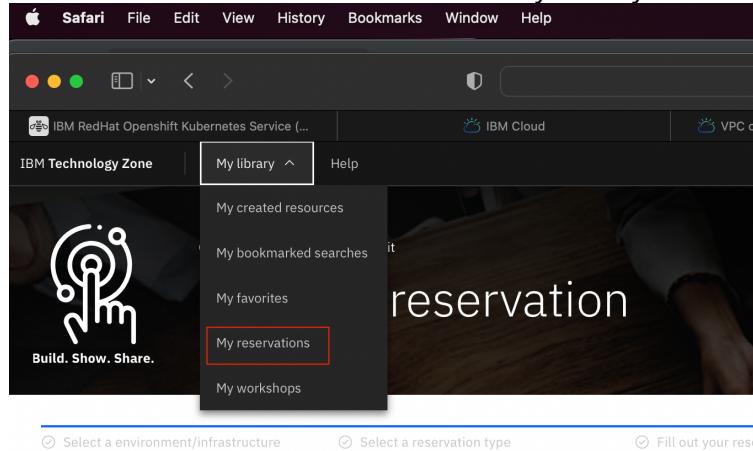
[Cancel](#) [Reset](#) [Submit](#) [Help](#)

- Specify the requirements by "Fill out your reservation" -> Fill in the following mandatory fields -> Click submit.

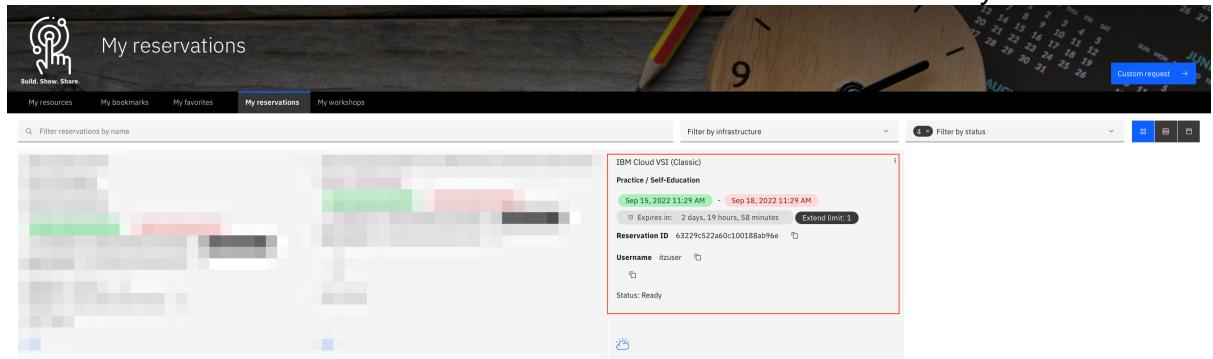
Field Name	Field Value
Name	IBM Cloud VSI (Classic)
Purpose	Practice/self-education
Purpose description	CP4D Installation
Preferred Geography (required)	<<Your nearest location>>
End date and time	Up to 72 hours allowed. You may choose the maximum date time allowed.
Operating System (required)	RHEL 8
Secondary disk size (required)	4.10
OCS/ODF Size (required)	4TiB
VM Flavor (required)	4 CPU x 16 GB

The screenshot shows the 'Create a reservation' form on the IBM Cloud VSI (Classic) environment. The form includes fields for Name (IBM Cloud VSI (Classic)), Purpose (Practice / Self-Education), Preferred Geography (Sydney 01), End date and time (09/18/2022 at 3:23 PM), Operating System (RHEL 8), Secondary disk size (4.10 TiB), and VM Flavor (4 CPU x 16 GB). On the right side, there are sections for 'Collection: Base Images', 'Environment: IBM Cloud VSI (Classic)', 'SSH Connection', and 'Reservation policy: test_self-education'. The 'SSH Connection' section shows options for download, change key file, and connect. The 'Reservation policy' section shows default duration (3 days), maximum duration (3 days), extension duration (5 days), and extension limit (1).

5. Check out the reserved environment: Go to "My library" -> "My reservation"



6. Check on the status of the reservation. Status should be "Ready" to continue.



Access to the VSI

1. Environment details is accessible through Click "Environment" to get the details of provisioned environment and confirm on the choice.

Field Name	Remarks
Public IP	Information used to login to the server
Root Password	Information used to login to the server
Ssh Port	Information used to login to the server
Username	Information used to login to the server
SSH Key	Download the key

2. Add the ssh keys in the known-hosts. Note: Apply these commands from where the pem file is downloaded.

```
eval $(ssh-agent)
chown 0400 <<private_key_file>>
ssh-add <<private_key_file>>
```

3. Login to the VSI using the following commands: Note: Refer to [Access to the VSI Section](#): Step 1 for the necessary details

```
ssh -i <<private key file>> <<username>> @ <<Public IP>> -p <<Port Number>>
```

4. Exit from the VSI Machine to logout from the VSI Machine.

```
exit
```

Download & Install the Command-Line Tools

Download OpenShift CLI on Linux

You can install the OpenShift CLI (`oc`) to interact with OpenShift Container Platform from a web console. You can install `oc` on Linux, Windows, or macOS.

Note: If you installed an earlier version of `oc`, you cannot use it to complete all of the commands in OpenShift Container Platform 4.7. Download and install the new version of `oc`.

1. You can install the OpenShift CLI (`oc`) binary on Linux by using the following procedure. From the web console, click ?.

2. Click Command Line Tools.

3. Select appropriate `oc` binary for your Linux platform, and then click **Download oc for Linux**.
4. Save the file.
5. Go to the command terminal -> Copy the files to the VSI using command given below. Note: [Access to the VSI](#) Section: Step 1 for the necessary details

```
scp -P <>Port number<> -i <>Key file<> oc.tar  
<>username<>@<>PublicIP<>:/home/itzuser/oc.tar
```



Download cmd-cli on Linux

1. Go to >> <https://github.com/IBM/cpd-cli/releases> >> Download the "cpd-cli-linux-SE-11.2.0.tgz" file from Assets section.

system	CLI	Notes
Linux	cpd-cli-linux-*	
Mac OS	cpd-cli-darwin-*	
Windows	cpd-cli-linux-*	Requires Windows Subsystem for Linux.
POWER (ppc64le)	cpd-cli-ppc64le-*	Cannot be used to install or upgrade. Supported only for administrative tasks.
Z (s390x)	cpd-cli-s390x-*	Cannot be used to install or upgrade. Supported only for administrative tasks.

For more information on using `cpd-cli`, see Cloud Pak for Data command-line interface (`cpd-cli`).

Assets 10

- `cpd-cli-darwin-EE-11.2.0.tgz` 138 MB 15 days ago
- `cpd-cli-darwin-SE-11.2.0.tgz` 138 MB 15 days ago
- `cpd-cli-linux-EE-11.2.0.tgz` 141 MB 15 days ago
- `cpd-cli-linux-SE-11.2.0.tgz` 140 MB 15 days ago
- `cpd-cli-ppc64le-EE-11.2.0.tgz` 129 MB 15 days ago
- `cpd-cli-ppc64le-SE-11.2.0.tgz` 129 MB 15 days ago
- `cpd-cli-s390x-EE-11.2.0.tgz` 66.2 MB 15 days ago
- `cpd-cli-s390x-SE-11.2.0.tgz` 66 MB 15 days ago
- `Source code (zip)` 15 days ago
- `Source code (tar.gz)` 15 days ago

2. Go to the command terminal -> Copy the files to the VSI using command given below. Note: [Access to the VSI](#) Section: Step 1 for the necessary details

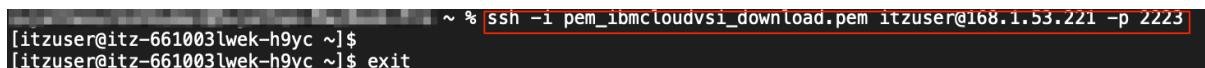
```
scp -P <>Port number>> -i <>Key file>> cpd-cli-darwin-EE-11.2.0.tgz
<>username>>@<>PublicIP>>:/home/itzuser/cpd-cli-darwin-EE-11.2.0.tgz
```



Installation of command-line tools

1. Login to the VSI using the following commands: Note: Refer to [Access to the VSI](#) Section: Step 1 for the necessary details

```
ssh -i <>private key file>> <>username>> @<>Public IP>> -p <>Port Number>>
```



2. Ensure the command line tools are copied. Please go to section [Download OpenShift CLI on Linux](#) & [Download cmd-cli](#) on Linux if the files are not found.

```
[[itzuser@itz-661003lwek-h9yc ~]$ ls
cpd-cli-linux-SE-11.2.0.tgz  oc.tar
```

3. Unzip the files cpd-cli-linux-SE-11.2.0.tgz and oc.tar

```
tar xvf cpd-cli-linux-SE-11.2.0.tgz
tar xvf oc.tar
```

```
[itzuser@itz-661003lwek-qlgx ~]$ tar xvf cpd-cli-linux-SE-11.2.0.tgz  
cpd-cli-linux-SE-11.2.0-40/  
cpd-cli-linux-SE-11.2.0-40/LICENSES/  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LA_sl  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LI_pl  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LA_it  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LI_es  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LA_zh_TW  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LA_tr  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LA_zh  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LA_el  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LI_en  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LA_ja  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LA_de  
cpd-cli-linux-SE-11.2.0-40/LICENSES/notices  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LI_fr  
cpd-cli-linux-SE-11.2.0-40/LICENSES/LI_lt
```

```
[itzuser@itz-661003lwek-qlgx ~]$ tar xvf oc.tar  
oc
```

```
[root@itz-661003lwek-h9yc itzuser]# tar xvf oc.tar  
oc
```

4. Copy the files to the /usr/bin directory.

```
sudo cp oc /usr/bin  
cd cpd-cli-linux-SE-11.2.0-40  
sudo cp -R LICENSES /usr/bin  
sudo cp -R plugins /usr/bin  
sudo cp cpd-cli /usr/bin
```

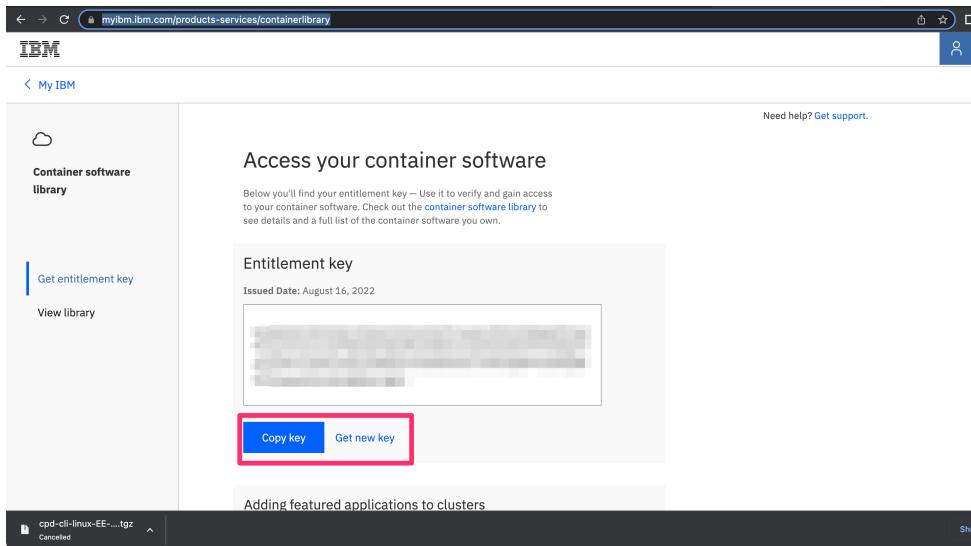
```
[itzuser@itz-661003lwek-qlgx ~]$ sudo cp oc /usr/bin  
[itzuser@itz-661003lwek-qlgx ~]$ cd cpd-cli-linux-SE-11.2.0-40  
[itzuser@itz-661003lwek-qlgx cpd-cli-linux-SE-11.2.0-40]$ sudo cp -R LICENSES /usr/bin  
[itzuser@itz-661003lwek-qlgx cpd-cli-linux-SE-11.2.0-40]$ sudo cp -R plugins /usr/bin  
[itzuser@itz-661003lwek-qlgx cpd-cli-linux-SE-11.2.0-40]$ sudo cp cpd-cli /usr/bin
```

Pre-Installation Steps

The steps outlined below will assist you to prepare the ROKS with various pre-installation steps.

IBM Entitlement Key

1. Go to <https://myibm.ibm.com/products-services/containerlibrary>
2. Click "Copy key" (PS: If empty click "Get new key")



Setup Environment Variables

1. Create a shell script to store the environment variables.

```
vi cp4d_vars.sh
```

2. Following environment variables are declared in "cp4d_vars.sh". Replace the values based on the guide given below.

- IBM Entitlement Key => Refer to section: [IBM Entitlement Key](#).
- OCP Token => Refer to section: [Access to the cluster](#): Step 7 for the login command
- OCP URL => Refer to section: [Access to the cluster](#): Step 7 for the login command

```
export OCP_URL=# enter your Red Hat OpenShift Container Platform URL
export OPENSHIFT_TYPE=rosa # enter your deployment type
#export OCP_USERNAME=# enter your username
#export OCP_PASSWORD=# enter your password>
export OCP_TOKEN=# enter your token
export PROJECT_CPFOPS=ibm-common-services
export PROJECT_CPDOPS=cpd-operators # enter your Cloud Pak for Data operator
installation project
export PROJECT_CATSRC=openshift-marketplace
export PROJECT_CPDINSTANCE=cpd-instance # enter your Cloud Pak for Data
installation project
export STG_CLASS_BLOCK=ocs-storagecluster-ceph-rbd # RWO-storage-class-name
export STG_CLASS_FILE=ocs-storagecluster-cephfs # RWX-storage-class-name
export IBM_ENTITLEMENT_KEY=# enter your IBM entitlement API key
export VERSION=4.5.2
export COMPONENTS=cpfs,cpd_platform # cpfs,scheduler,cpd_platform,component-ID
```

3. Validation of "cp4d_vars.sh" shell script. Note: This step has to be executed every time there is a change in the "cp4d_vars.sh" shell script.

```
bash cp4d_vars.sh
```

- Declaration of the environment variables. Note: This step has to be executed every time there is a change in the "cp4d_vars.sh" shell script.

```
source cp4d_vars.sh
```

```
Cloud-Pak-for-Data-Install % vi cp4d_vars.sh
Cloud-Pak-for-Data-Install % bash cp4d_vars.sh
Cloud-Pak-for-Data-Install % source cp4d_vars.sh
Cloud-Pak-for-Data-Install %
```

Installation of Cloud Pak for Data

Setting up projects (namespaces) on Red Hat OpenShift Container Platform

- Install podman jq

```
yum install -y podman jq
```

```
[root@itz-661003iwek itzuser]# yum install -y podman jq
Updating Subscription Management repositories.
Name   : Red Hat Enterprise Linux 8 for x86_64 - BaseOS (RPMs)
Red Hat Enterprise Linux 8 for x86_64 - AppStream (RPMs)
Dependencies resolved.

=====
Package           Architecture Version          Repository      Size
=====
Installing:
podman            x86_64       1.6-3.el8        rhel-8-for-x86_64-appstream-rpms 282 k
podman            x86_64       2:4.1.1-2.module+el8.6.0+15917+093ca6f8  rhel-8-for-x86_64-appstream-rpms 12 M
=====
Installing dependencies:
common             x86_64       2:2.1.2-2.module+el8.6.0+15917+093ca6f8  rhel-8-for-x86_64-appstream-rpms 65 K
containers-selinux  x86_64       2:2.18.0-1.module+el8.6.0+15917+093ca6f8  rhel-8-for-x86_64-appstream-rpms 59 K
container-networking-plugins  x86_64       1:1.1.-1-3.module+el8.6.0+15917+093ca6f8  rhel-8-for-x86_64-appstream-rpms 18 M
containers-common  x86_64       2:11.35.module+el8.6.0+15917+093ca6f8  rhel-8-for-x86_64-appstream-rpms 169 k
criu               x86_64       3.15-3.module+el8.6.0+15875+dc9a2b96  rhel-8-for-x86_64-appstream-rpms 518 K
fuse-common        x86_64       3:3.0-15.el8        rhel-8-for-x86_64-baseos-rpms 22 K
fuse-overlayofs   x86_64       1:1.4-1.module+el8.6.0+15917+093ca6f8  rhel-8-for-x86_64-appstream-rpms 73 K
fuse3              x86_64       3:3.0-15.el8        rhel-8-for-x86_64-baseos-rpms 54 K
fuse3-libs         x86_64       3:3.0-15.el8        rhel-8-for-x86_64-baseos-rpms 95 K
libnet              x86_64       1.1.6-15.el8        rhel-8-for-x86_64-appstream-rpms 67 K
libslirp             x86_64       4.4.0-1.module+el8.6.0+15875+dc9a2b96  rhel-8-for-x86_64-appstream-rpms 70 K
oniguruma          x86_64       6.1.2-2.el8        rhel-8-for-x86_64-appstream-rpms 187 K
podman-statconit  x86_64       2:0.4.1-2.module+el8.6.0+15917+093ca6f8  rhel-8-for-x86_64-baseos-rpms 350 K
policycoreutils-python-utils  noarch     2:9-19.el8        rhel-8-for-x86_64-baseos-rpms 253 K
protobuf-c          x86_64       1:3.0-6.el8        rhel-8-for-x86_64-appstream-rpms 37 K
runc                x86_64       1:1.1.3-2.module+el8.6.0+15917+093ca6f8  rhel-8-for-x86_64-appstream-rpms 3.0 M
shadow-utils-subid x86_64       2:24.6-16.el8       rhel-8-for-x86_64-baseos-rpms 112 K
systemctl            x86_64       1.2.0-2.module+el8.6.0+15917+093ca6f8  rhel-8-for-x86_64-appstream-rpms 54 K
=====
Enabling module streams:
container-tools

Transaction Summary
=====
Install 20 Packages
```

- Login to your OpenShift cluster by executing the following command. Make sure the user you use has cluster and project admin access.

Refer to section: [Access to the cluster: Step 7 for the login command](#)
`oc login --token=${OCP_TOKEN} --server=${OCP_URL}`

```
Cloud-Pak-for-Data-Install % oc login --token=REDACTED --server=https://REDACTED
[REDACTED]@REDACTED:31736]
Logged into "https://REDACTED.containers.cloud.ibm.com:31736" as "REDACTED"
You have access to 66 projects, the list has been suppressed. You can list all projects with 'oc projects'
Using project "cpd".
```

- Create the projects by running the following commands

```
oc new-project ${PROJECT_CPF_S_OPS}
oc new-project ${PROJECT_CPD_OPS}
oc new-project ${PROJECT_CPD_INSTANCE}
```

```
[root@itz-661003lwek-qlgx itzuser]# oc new-project ${PROJECT_CPFOPS}  
Now using project "ibm-common-services" on server "https://c100-e.jp-tok.containers.cloud.ibm.com:30477".  
  
You can add applications to this project with the 'new-app' command. For example, try:  
  
    oc new-app rails-postgresql-example  
  
to build a new example application in Ruby. Or use kubectl to deploy a simple Kubernetes application:  
  
    kubectl create deployment hello-node --image=k8s.gcr.io/serve_hostname  
  
[root@itz-661003lwek-qlgx itzuser]# oc new-project ${PROJECT_CPDOPS}  
Now using project "cpd-operators" on server "https://c100-e.jp-tok.containers.cloud.ibm.com:30477".  
  
You can add applications to this project with the 'new-app' command. For example, try:  
  
    oc new-app rails-postgresql-example  
  
to build a new example application in Ruby. Or use kubectl to deploy a simple Kubernetes application:  
  
    kubectl create deployment hello-node --image=k8s.gcr.io/serve_hostname  
  
[root@itz-661003lwek-qlgx itzuser]# oc new-project ${PROJECT_CPDINSTANCE}  
Now using project "cpd-instance" on server "https://c100-e.jp-tok.containers.cloud.ibm.com:30477".  
  
You can add applications to this project with the 'new-app' command. For example, try:  
  
    oc new-app rails-postgresql-example  
  
to build a new example application in Ruby. Or use kubectl to deploy a simple Kubernetes application:  
  
    kubectl create deployment hello-node --image=k8s.gcr.io/serve_hostname
```

4. Login to cloud pak for data command line tools

```
cpd-cli manage login-to-ocp --token=${OCP_TOKEN} --server=${OCP_URL}
```

5. Apply the new configuration by running the following command. It will restart master and worker nodes

```
cpd-cli manage add-icr-cred-to-global-pull-secret ${IBM_ENTITLEMENT_KEY}  
cpd-cli manage oc get nodes
```

```
[root@itz-6610031wek-qlgx itzuser]# cpd-cli manage add-icr-cred-to-global-pull-secret ${IBM_ENTITLEMENT_KEY}
[INFO] 2022-09-15T10:25:43.494217Z Checking architecture: amd64
[INFO] 2022-09-15T10:25:43.494217Z Checking podman or docker
[INFO] 2022-09-15T10:25:43.563640Z Dockerexe: podman
[INFO] 2022-09-15T10:25:43.746163Z Container olm-utils-play is running already. Image: icr.io/cpopen/cpd/olm-utils:latest
[INFO] 2022-09-15T10:25:43.746227Z Container olm-utils-play is running already. Image: icr.io/cpopen/cpd/olm-utils:latest
[INFO] 2022-09-15T10:25:43.917292Z Processing subcommand add-icr-cred-to-global-pull-secret
Saved credentials for cp.icr.io
secret/pull-secret data updated
[SUCCESS] 2022-09-15T10:25:47.816293Z You may find output and logs in the "/home/itzuser/cpd-cli-workspace/olm-utils-workspace/work" directory.
[SUCCESS] 2022-09-15T10:25:47.016858Z The add-icr-cred-to-global-pull-secret command ran successfully.
[root@itz-6610031wek-qlgx itzuser]#
```

```
[root@itz-6610031wek-qlgx itzuser]# cpd-cli manage oc get nodes
[INFO] 2022-09-15T10:27:27.631982Z Checking architecture: amd64
[INFO] 2022-09-15T10:27:27.632019Z Checking podman or docker
[INFO] 2022-09-15T10:27:27.699709Z Dockerexe: podman
[INFO] 2022-09-15T10:27:27.699826Z Checking container image
[INFO] 2022-09-15T10:27:27.882159Z Container olm-utils-play is running already. Image: icr.io/cpopen/cpd/olm-utils:latest
[INFO] 2022-09-15T10:27:27.882230Z Container olm-utils-play is running already. Image: icr.io/cpopen/cpd/olm-utils:latest
[INFO] 2022-09-15T10:27:28.059341Z Processing subcommand oc
NAME STATUS AGE VERSION
10.212.218.109 Ready master,worker 115m v1.19.16+8203b20
10.212.218.111 Ready master,worker 116m v1.19.16+8203b20
10.212.218.119 Ready master,worker 115m v1.19.16+8203b20
10.212.218.121 Ready master,worker 116m v1.19.16+8203b20
10.212.218.98 Ready master,worker 116m v1.19.16+8203b20
[SUCCESS] 2022-09-15T10:27:29.046622Z You may find output and logs in the "/home/itzuser/cpd-cli-workspace/olm-utils-workspace/work" directory.
[SUCCESS] 2022-09-15T10:27:29.046828Z The oc command ran successfully.
[root@itz-6610031wek-qlgx itzuser]#
```

6. Create the IBM Cloud Pak foundational services operators and the Cloud Pak for Data operators in the ibm-common-services project.

```
cpd-cli manage apply-olm \
--release=${VERSION} \
--components=${COMPONENTS} \
--cpd operator ns=${PROJECT_CPD_OPS}
```

```
Thursday 15 September 2022 15:52:02 +0000 (0:00:00.048) 0:01:08.926 ****
TASK [utils : waiting for multiple CSVs to be ready] ****
Thursday 15 September 2022 15:52:02 +0000 (0:00:00.044) 0:01:09.015 ****
skipping: [localhost] => [item=utils]
skipping: [localhost] => [item=cpd_platform]
skipping: [localhost] => [item=olm-utils-play]
skipping: [localhost] => [item=olm-utils-play/roles/utils/tasks/wait_for_csv.yml] for localhost => (item=cpd_platform)
TASK [utils : set_fact] ****
Thursday 15 September 2022 15:52:02 +0000 (0:00:00.099) 0:01:09.115 ****
ok: [localhost]
TASK [utils : set_fact] ****
Thursday 15 September 2022 15:52:02 +0000 (0:00:00.099) 0:01:09.115 ****
ok: [localhost]
TASK [utils : set_fact] ****
Thursday 15 September 2022 15:52:02 +0000 (0:00:00.099) 0:01:09.115 ****
ok: [localhost]
TASK [utils : set_fact] ****
Thursday 15 September 2022 15:52:02 +0000 (0:00:00.099) 0:01:09.115 ****
ok: [localhost]
TASK [utils : try to find existing subscription names by package cpd-platform-operator] ****
Thursday 15 September 2022 15:52:02 +0000 (0:00:00.067) 0:01:09.281 ****
changed: [localhost]
TASK [utils : set_fact] ****
Thursday 15 September 2022 15:52:02 +0000 (0:00:00.023) 0:02:09.306 ****
ok: [localhost]
TASK [utils : get installedCSV for Subscription: cpd-operator .v3.1.0] ****
Thursday 15 September 2022 15:52:02 +0000 (0:00:00.076) 0:02:09.376 ****
ok: [localhost]
TASK [utils : check if installedCSV: cpd-platform-operator.v3.1.0 'Succeeded' for Subscription: cpd-operator] ****
Thursday 15 September 2022 15:52:02 +0000 (0:00:00.943) 0:02:09.379 ****
ok: [localhost]
TASK [utils : confirm the Operator Deployment is ready for csv cpd-platform-operator.v3.1.0] ****
Thursday 15 September 2022 15:52:13 +0000 (0:00:02.093) 0:02:09.412 ****
ok: [localhost]
TASK [debug] ****
Thursday 15 September 2022 15:52:12 +0000 (0:00:07.093) 0:02:09.412 ****
skipping: [localhost]
PLAY RECAP ****
localhost : ok=129 changed=0 unreachable=0 failed=0 skipped=17 rescued=0 ignored=0
Thursday 15 September 2022 15:52:21 +0000 (0:00:00.058) 0:02:17.346 ****
utils waiting for ODLM and Namespace Scope Operators to come online
utils : Check if namespacescope configmap is already present in cpd-operators
utils : Create CPFS namespace if not present ibm-common-services
utils : Create Catalog Source object 'ibm-cp-common-services' in ibm-common-services namespace
utils : check existing operator group in ibm-common-services namespace
utils : Create Catalog Source object 'ibm-cp-common-services' if not present in ibm-common-services
utils : check existing operator group in cpd-operators namespace
utils : Create Catalog Source object 'ibm-cp-common-services' if not present in cpd-operators
utils : install catalog source 'cpd-platform' using /tmp/work/offline/4.6.2/cpfs/ibm-cp-common-services-1.16.0.tgz
utils : install catalog source 'cpd-platform' using /tmp/work/offline/4.6.2/cpd_platform/ibm-cp-datasource-2.1.0.tgz
utils : workaround file permissions in case package /tmp/work/offline/4.6.2/cpd_platform/ibm-cp-datasource-2.1.0.tgz
utils : check if installedCSV cpd-platform-operator.v3.1.0 'Succeeded' for Subscription: cpd-operator
utils : fetch NamespaceScope CR in cpd-operators
utils : Confirm existence of Catalog Source object 'ibm-cp-common-services'
utils : Confirm existence of Catalog Source object 'cpd-platform'
utils : check if ODLM subscription is present in ibm-common-services
[SUCCESS] 2022-09-15T10:22:21.049622Z You may find output and logs in the "/home/itzuser/cpd-cli-workspace/olm-utils-workspace/work" directory.
[SUCCESS] 2022-09-15T10:22:21.049622Z The apply command ran successfully.
[root@itz-6610031wek-qlgx itzuser]#
```

7. Get the list of catalog sources and operator subscriptions that are on the cluster and apply to common services.

```
cpd-cli manage get-olm-artifacts \
--subscription_ns=${PROJECT_CPF_S_OPS}
```

- Get the list of catalog sources and operator subscriptions that are on the cluster and apply to cpd folder.

```
cpd-cli manage get-olm-artifacts \
--subscription ns=${PROJECT CPD OPS}
```

9. Data operators are installed to the project where the control plane and services are being installed

```
cpd-cli manage setup-instance-ns \
--cpd_instance_ns=${PROJECT_CPD_INSTANCE} \
--cpd_operator_ns=${PROJECT_CPD_OPS}
```

```

[AND:utils : checking if preview] *****
Thursday 15 September 2022 15:58:07 +0000 (0:00:00.071)   0:01:01.485 *****
skipping: [localhost]
TASK [utils : checking if yaml dry run case] *****
Thursday 15 September 2022 15:58:07 +0000 (0:00:00.051)   0:01:01.536 *****
skipping: [localhost]
TASK [utils : check if must run ..] *****
Thursday 15 September 2022 15:58:07 +0000 (0:00:00.049)   0:01:01.586 *****
ok: [localhost]
TASK [utils : if not to run..] *****
Thursday 15 September 2022 15:58:07 +0000 (0:00:00.053)   0:01:01.659 *****
skipping: [localhost]
TASK [utils : add the instance namespace to the NSS CR if specialized install] *****
Thursday 15 September 2022 15:58:07 +0000 (0:00:00.057)   0:01:01.697 *****
changed: [localhost]
TASK [utils : lineinfile] *****
Thursday 15 September 2022 15:58:07 +0000 (0:00:02.052)   0:01:03.779 *****
skipping: [localhost]
TASK [utils : lineinfile] *****
Thursday 15 September 2022 15:58:07 +0000 (0:00:00.066)   0:01:03.848 *****
skipping: [localhost]
TASK [utils : debug] *****
Thursday 15 September 2022 15:58:10 +0000 (0:00:00.057)   0:01:03.967 *****
ok: [localhost]
PLAY RECAP *****
localhost : ok=23 changed=4 unreachable=0 failed=0 skipped=28 rescued=0 ignored=0
Thursday 15 September 2022 15:58:10 +0000 (0:00:00.054)   0:01:03.962 *****
skipping: [localhost]

PLAY RECAP *****
localhost : ok=23 changed=4 unreachable=0 failed=0 skipped=28 rescued=0 ignored=0
Thursday 15 September 2022 15:58:10 +0000 (0:00:00.057)   0:01:04.059 *****
skipping: [localhost]
***** waiting for ODLM and Namespace Scope operators to come online *****
jtitl : Create cpd operator namespace if not present cpd-operators
jtitl : Create cpd instance namespace if not present cpd-instance
jtitl : Check if namespacescope configmap is already present in cpd-operators
jtitl : Create namespacescope configmap if not present in cpd-operators
jtitl : Add namespacescope configmap to cpd-operators
jtitl : Add the instance namespace to the NSS CR if specialized install
jtitl : Check cpd operator information
jtitl : Checking cpd cluster connection status
jtitl : get cluster arch
jtitl : merge with override_components_meta
jtitl : merging release_components.meta and global_components.meta
jtitl : merge with override_components.meta
jtitl : read components meta from previous yaml file
jtitl : check if cpd-instance in NSS
jtitl : including cpd-instance into the namespacescope in the operator namespace: cpd-operators
jtitl : include_vars
jtitl : include existing generated preview.sh script
jtitl : include_role.sh script
|INCLUDE| 2022-09-15T01:00:18.299640Z You may Find output and logs in the ~/home/itruuser/cpd-cli-workspace/clm-utils-workspace/wok directory.
|INCLUDE| 2022-09-15T01:00:18.299702Z The setup-instance command was successful.

```

10. Install or upgrade the specified components. The command creates or updates the custom resource objects with the appropriate settings.

```

cpd-cli manage apply-cr \
--components=${COMPONENTS} \
--release=${VERSION} \
--cpd_instance_ns=${PROJECT_CPD_INSTANCE} \
--block_storage_class=${STG_CLASS_BLOCK} \
--file_storage_class=${STG_CLASS_FILE} \
--license acceptance=true

```

```

Thursday 15 September 2022 16:02:22 +0000 (0:00:00.054)   0:00:00.356 *****
skipping: [localhost]
TASK [utils : Reconcile storage.vendor selection] *****
Thursday 15 September 2022 16:02:22 +0000 (0:00:00.053)   0:00:00.408 *****
included: /opt/ansible/ansible-play/roles/utils/tasks/handle_storage_vendor.yml for localhost
TASK [utils : set_fact] *****
Thursday 15 September 2022 16:02:22 +0000 (0:00:00.056)   0:00:00.445 *****
ok: [localhost]
TASK [utils : debug] *****
Thursday 15 September 2022 16:02:22 +0000 (0:00:00.056)   0:00:00.520 *****
skipping: [localhost]
TASK [utils : set_fact] *****
Thursday 15 September 2022 16:02:22 +0000 (0:00:00.056)   0:00:00.579 *****
skipping: [localhost]
TASK [utils : set_fact] *****
Thursday 15 September 2022 16:02:22 +0000 (0:00:00.056)   0:00:00.629 *****
skipping: [localhost]
TASK [utils : set_fact] *****
Thursday 15 September 2022 16:02:22 +0000 (0:00:00.060)   0:00:00.649 *****
skipping: [localhost]
TASK [utils : debug] *****
Thursday 15 September 2022 16:02:23 +0000 (0:00:00.061)   0:00:00.758 *****
skipping: [localhost]
TASK [utils : debug] *****
Thursday 15 September 2022 16:02:23 +0000 (0:00:00.062)   0:00:00.803 *****
skipping: [localhost]
TASK [utils : set_fact] *****
Thursday 15 September 2022 16:02:23 +0000 (0:00:00.068)   0:00:00.841 *****
skipping: [localhost]
TASK [utils : print preview CR] *****
Thursday 15 September 2022 16:02:23 +0000 (0:00:00.047)   0:00:00.888 *****
skipping: [localhost]
TASK [utils : verify if the package cpd-platform-operator is available for use in the cpd-instance namespace] *****
Thursday 15 September 2022 16:02:23 +0000 (0:00:00.055)   0:00:00.943 *****
ok: [localhost]
TASK [utils : verify if the CRD is present cpd.ibm.com v1 Ibmcpd] *****
Thursday 15 September 2022 16:02:28 +0000 (0:00:00.045)   0:00:01.009 *****
ok: [localhost]
TASK [utils : applying CR ibmcpd-cr for Cloud Pak for Data Control Plane] *****
Thursday 15 September 2022 16:02:27 +0000 (0:00:00.964)   0:01:00.953 *****
ok: [localhost]
TASK [utils : Pause for ** seconds to let OLM trigger changes (to avoid getting confused by existing state)] *****
Thursday 15 September 2022 16:02:39 +0000 (0:00:02.063)   0:01:02.406 *****
Pausing for 5 seconds
[ctrl+d then 'C' = continue early, ctrl+c then 'A' = abort]
ok: [localhost]
TASK [utils : check if CR status indicates completion for ibmcpd-cr in cpd-instance, max retry 25 times 300s delay] *****
Thursday 15 September 2022 16:02:46 +0000 (0:00:02.062)   0:01:02.580 *****

```

11. Get status for all installed components

```

cpd-cli manage get-cr-status

```

Validation of Cloud Pak for Data Installation

Access the Cloud Pak for Data

1. Get the URL for the Cloud Pak for Data web client and the credentials of the default administrator (admin).

```
cpd-cli manage get-cpd-instance-details \
--cpd_instance_ns=${PROJECT_CPD_INSTANCE} \
--get_admin_initial_credentials=true
```

1. Get the URL of the Cloud Pak for Data web client.

```
oc get ZenService lite-cr -o jsonpath=".status.url\n"
```

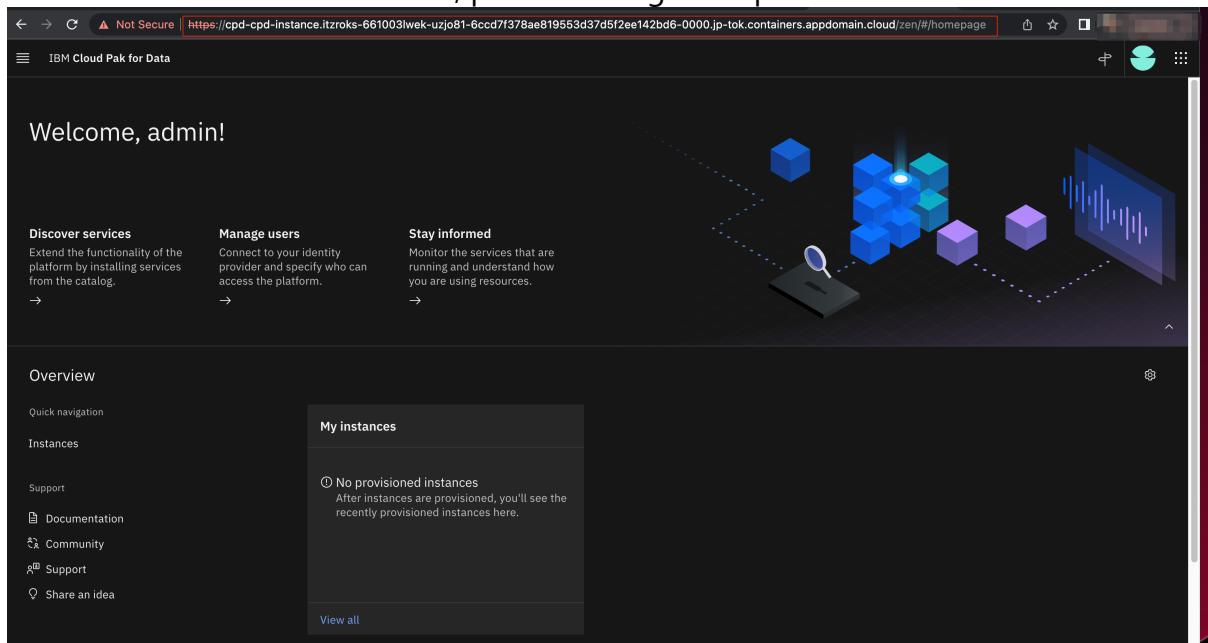
```
CP4D % oc get ZenService lite-cr -o jsonpath=".status.url\n"
cpd-cpd-instance.itzroks-661003lwek-uzjo81-6ccd7f378ae819553d37d5f2ee142bd6-0000.jp-tok.containers.appdomain.cloud
CP4D % oc extract secret/admin-user-details --keys=initial_admin_password --to=-
# initial_admin_password
7aPSV8LbWKTg
```

2. Get the initial password for the admin user.

```
oc extract secret/admin-user-details --keys=initial_admin_password --to=-
```

```
CP4D % oc get ZenService lite-cr -o jsonpath=".status.url\n"
cpd-cpd-instance.itzroks-661003lwek-uzjo81-6ccd7f378ae819553d37d5f2ee142bd6-0000.jp-tok.containers.appdomain.cloud
CP4D % oc extract secret/admin-user-details --keys=initial_admin_password --to=-
# initial_admin_password
7aPSV8LbWKTg
```

3. With the URL and user id, password Login to cp4d



4. You are now logged into Cloud Pak for Data(CP4D). Now you can move to Scenario 1 or 2 or 3 and start doing your Practicum Lab exercise.