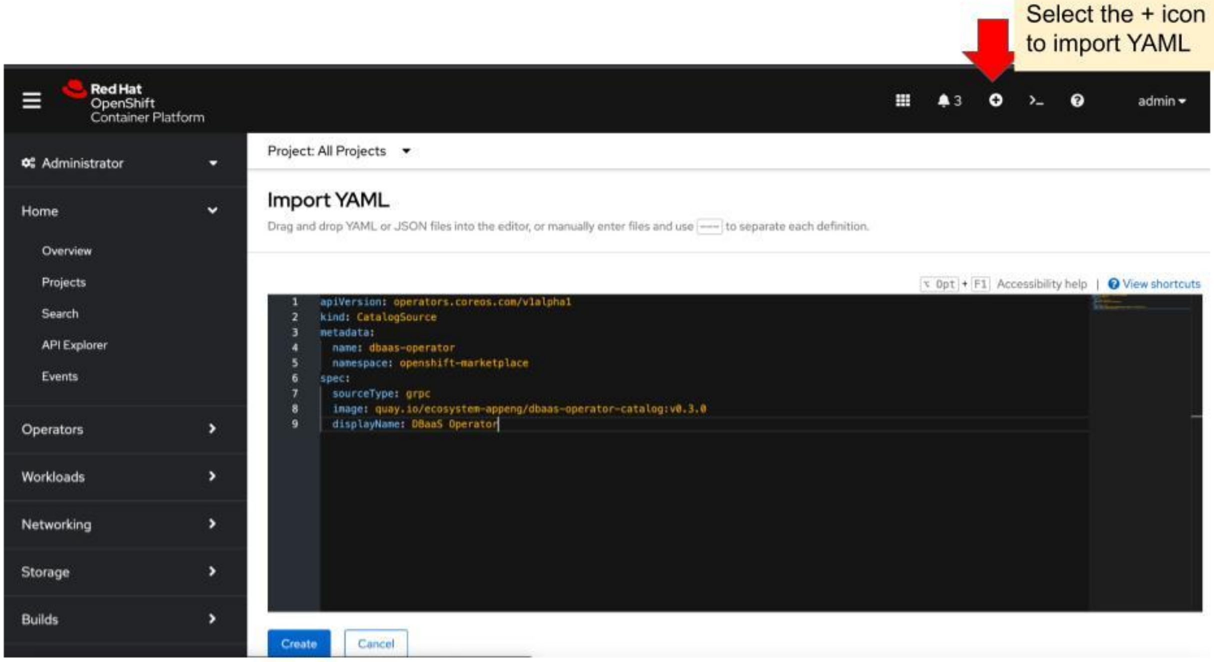
RHODA Workshop Manual

Agenda

Admin Role: Install RHODA Operator

Login as **admin** into the OpenShift cluster and add the YAML text from https://github.com/RHEcosystemAppEng/dbaas-operator/wiki/1-Step-Installation-for-Production-Release for installing the RHODA operator.



Import YAML

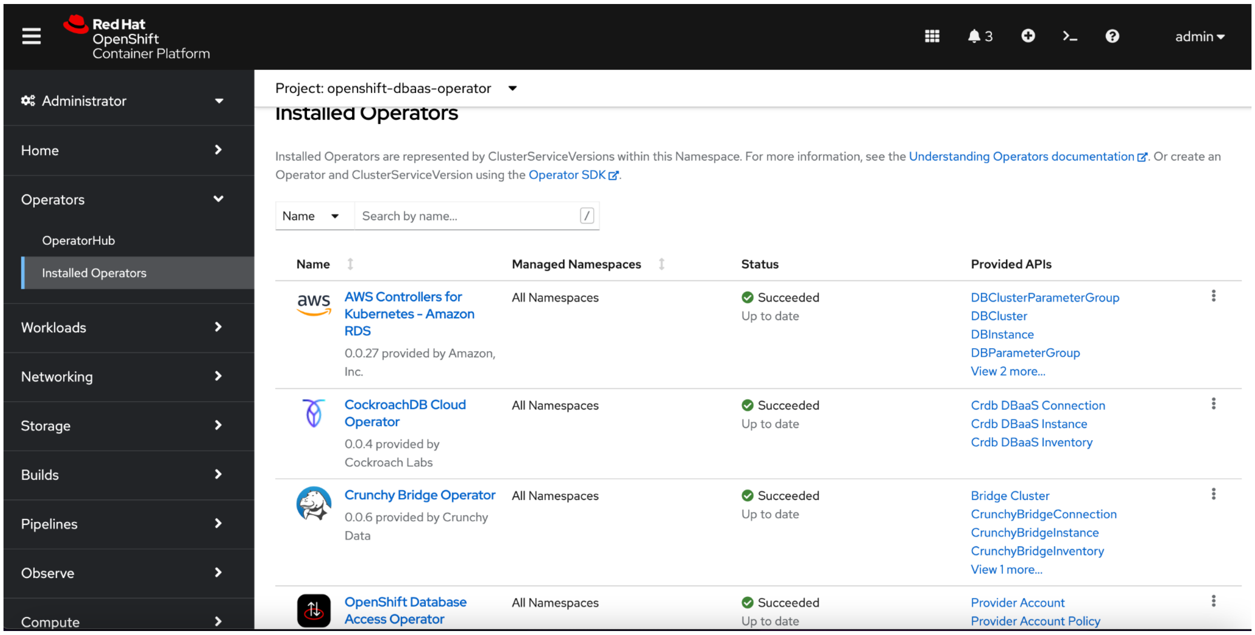
Drag and drop YAML or JSON files into the editor, or manually enter files and use --- to separate each definition.

```
apiVersion: operators.coreos.com/v1alpha1
kind: CatalogSource
metadata:
  name: dbaas-operator
  namespace: openshift-marketplace
spec:
  sourceType: grpc
  image: quay.io/ecosystem-appeng/dbaas-operator-catalog:v0.3.0
  displayName: DBaaS Operator
```

Select the + icon to import YAML

And press **Create**.

On the OpenShift console, go to **Operators -> Installed Operators** and make sure that OpenShift Database Access Operator and database provider operators have installed successfully.



Project: openshift-dbaas-operator

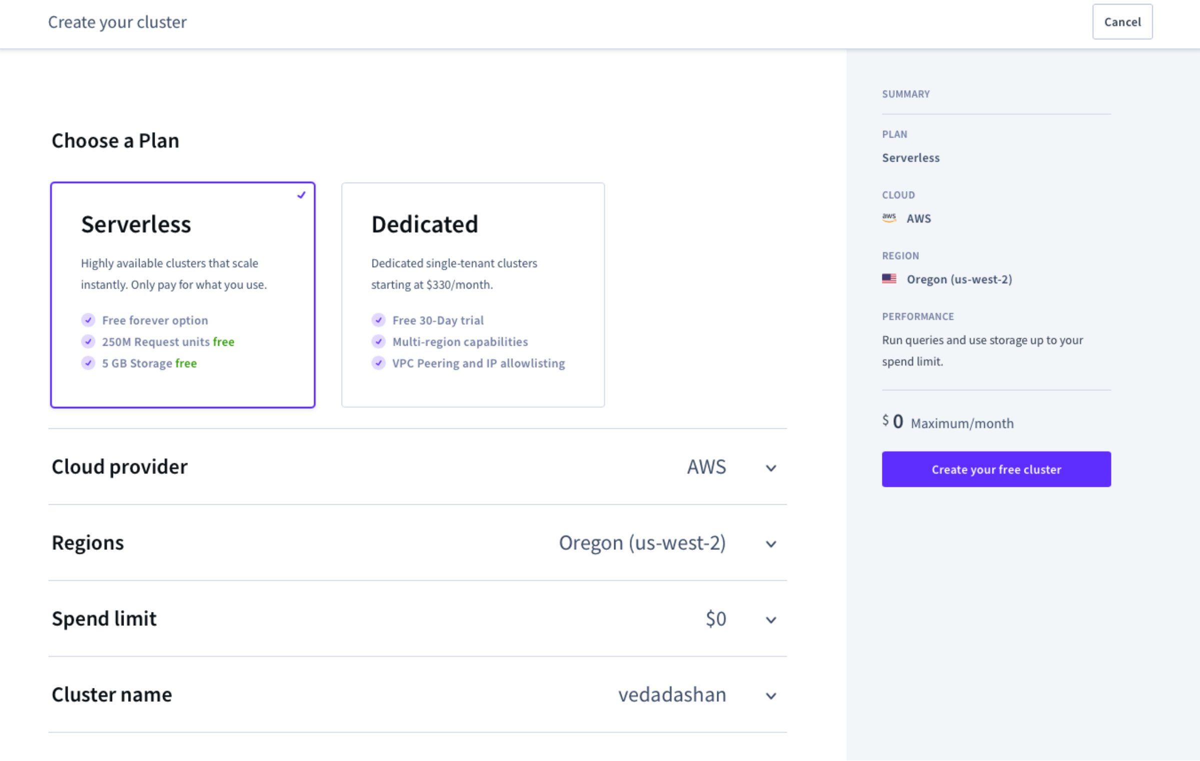
Installed Operators

Installed Operators are represented by ClusterServiceVersions within this Namespace. For more information, see the Understanding Operators documentation. Or create an Operator and ClusterServiceVersion using the Operator SDK.

Name	Managed Namespaces	Status	Provided APIs
AWS Controllers for Kubernetes - Amazon RDS 0.0.27 provided by Amazon, Inc.	All Namespaces	Succeeded Up to date	DBClusterParameterGroup DBCluster DBInstance DBParameterGroup View 2 more...
CockroachDB Cloud Operator 0.0.4 provided by Cockroach Labs	All Namespaces	Succeeded Up to date	Crdb DBaaS Connection Crdb DBaaS Instance Crdb DBaaS Inventory
Crunchy Bridge Operator 0.0.6 provided by Crunchy Data	All Namespaces	Succeeded Up to date	Bridge Cluster CrunchyBridgeConnection CrunchyBridgeInstance CrunchyBridgeInventory View 1 more...
OpenShift Database Access Operator	All Namespaces	Succeeded Up to date	Provider Account Provider Account Policy

Admin Role: Create a CockroachDB Cloud account

Sign up for a free account with Cockroach Labs Cloud. Refer to the Find your CockroachDB account credentials section needed for accessing the account from RHODA.



Create your cluster

Choose a Plan

Serverless
Highly available clusters that scale instantly. Only pay for what you use.
- Free forever option
- 250M Request units free
- 5 GB Storage free

Dedicated
Dedicated single-tenant clusters starting at $330/month.
- Free 30-Day trial
- Multi-region capabilities
- VPC Peering and IP allowlisting

Cloud provider: AWS

Regions: Oregon (us-west-2)

Spend limit: $0

Cluster name: vedadashan

SUMMARY

PLAN
Serverless

CLOUD
AWS

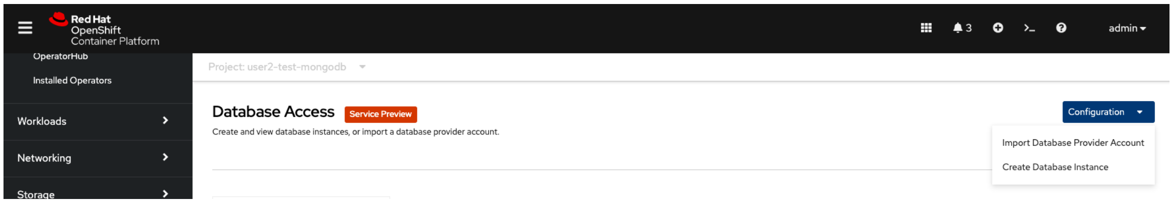
REGION
Oregon (us-west-2)

PERFORMANCE
Run queries and use storage up to your spend limit.

$ 0 Maximum/month

Admin Role: Import Database Provider Account

Follow the procedure detailed in Accessing the Database Access menu for configuring and monitoring to import the CockroachDB provider account you created in the previous step into RHODA.

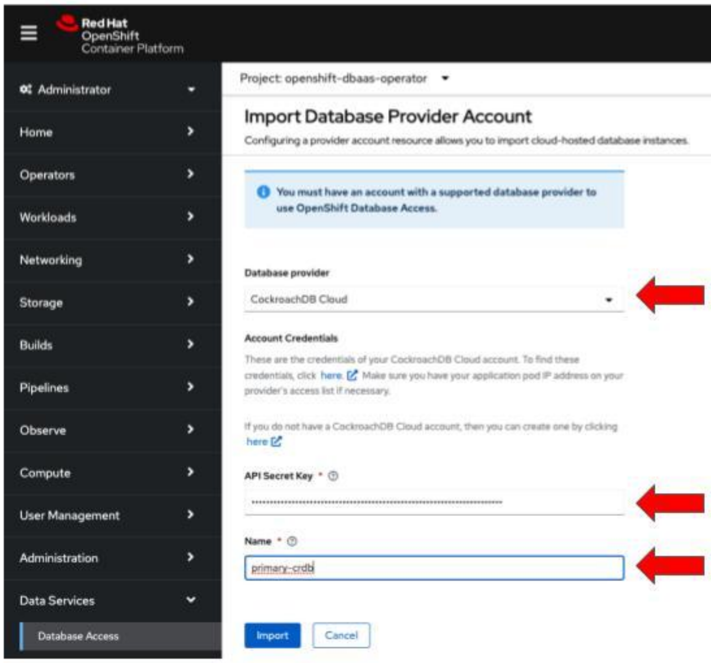


Project: user2-test-mongodb

Database Access Service Preview

Create and view database instances, or import a database provider account.

Select the **Import Database Provider Account** option from the drop down to enter the credentials for the CockroachDB account you created.



Project: openshift-dbaas-operator

Import Database Provider Account

Configuring a provider account resource allows you to import cloud-hosted database instances.

You must have an account with a supported database provider to use OpenShift Database Access.

Database provider: CockroachDB Cloud

Account Credentials

These are the credentials of your CockroachDB Cloud account. To find these credentials, click here. Make sure you have your application pod IP address on your provider's access list if necessary.

If you do not have a CockroachDB Cloud account, then you can create one by clicking here

API Secret Key *: ••

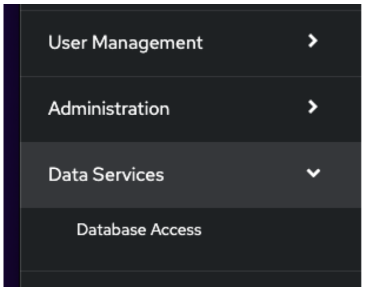
Name *: primary-crdb

Select CockroachDB

Enter the Secret Key

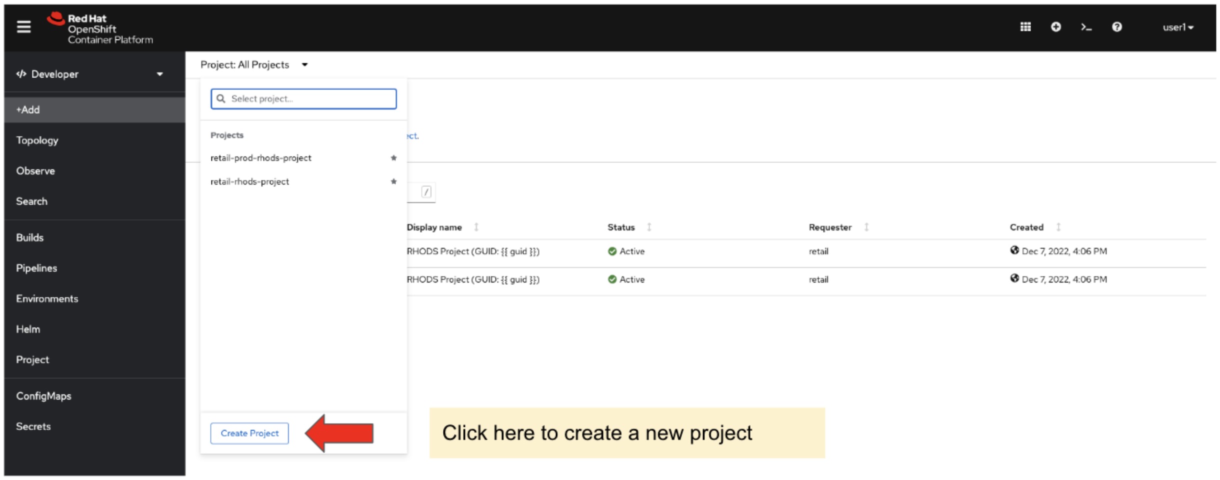
Give a logical name for the DBaaS

Confirm that the CockroachDB provider account now shows up on the Database Access dashboard.



Developer Role: Create Spring Boot application and connect to CockroachDB instance

Login to the OpenShift console using User1 credentials (login = **user1** / password = **openshift**). On the OpenShift console under the **Developer** perspective, create a new project called **user1-crdb-test**.



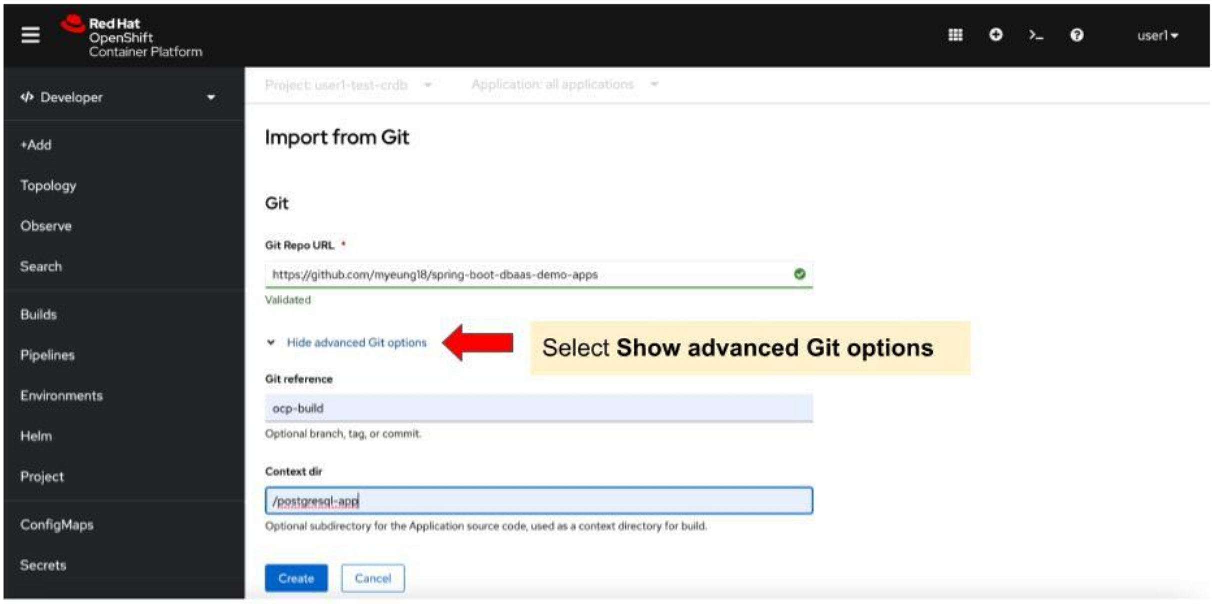
Display name	Status	Requester	Created
RHODS Project (GUID: {{ guid }})	Active	retail	Dec 7, 2022, 4:06 PM
RHODS Project (GUID: {{ guid }})	Active	retail	Dec 7, 2022, 4:06 PM

Click here to create a new project

On the OpenShift console left-side menu, select **+Add** and the **Import from Git** tile. Fill the following Git fields:

```
Git Repo URL = https://github.com/myeung18/spring-boot-dbaas-demo-apps
Git reference = ocp-build
Context dir = /postgresql-app
```

Use the default values for the other fields and **Create** the application.



Import from Git

Git

Git Repo URL *

https://github.com/myeung18/spring-boot-dbaas-demo-apps

Validated

Hide advanced Git options

Select **Show advanced Git options**

Git reference

ocp-build

Optional branch, tag, or commit.

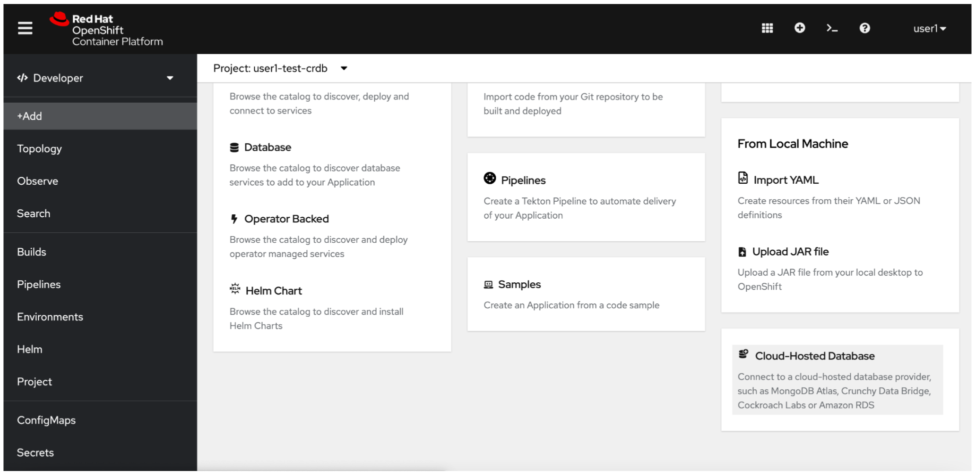
Context dir

/postgresql-app

Optional subdirectory for the Application source code, used as a context directory for build.

Building the application pod will take approximately 30 seconds. Once the pod starts running, it will keep restarting till it finds a valid database connection.

On the OpenShift console left-side menu, select **+Add** and the **Cloud Hosted Databases** tile. Choose CockroachDB tile and select the database instance that you want to use. You will see that a database connection instance has been added to the Topology view of your project.



Browse the catalog to discover, deploy and connect to services

Database

Browse the catalog to discover database services to add to your Application

Operator Backed

Browse the catalog to discover and deploy operator managed services

Helm Chart

Browse the catalog to discover and install Helm Charts

Import code from your Git repository to be built and deployed

Pipelines

Create a Tekton Pipeline to automate delivery of your Application

Samples

Create an Application from a code sample

From Local Machine

Import YAML

Create resources from their YAML or JSON definitions

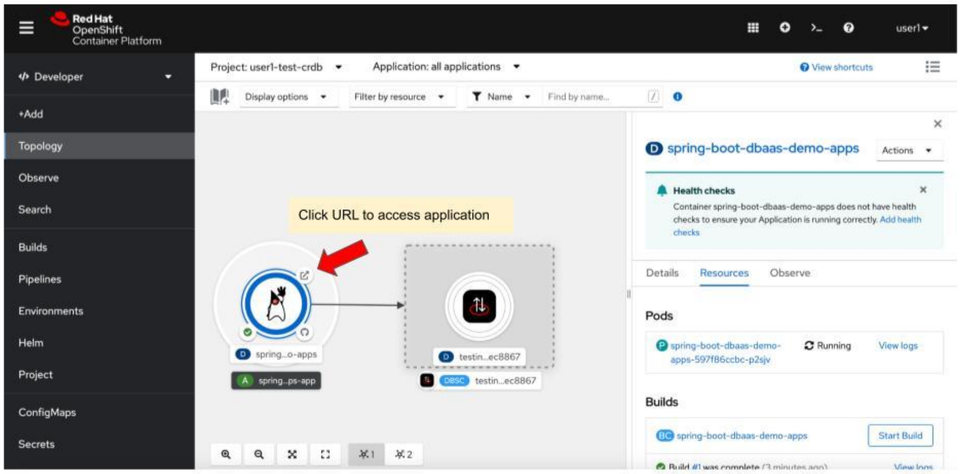
Upload JAR file

Upload a JAR file from your local desktop to OpenShift

Cloud-Hosted Database

Connect to a cloud-hosted database provider, such as MongoDB Atlas, Crunchy Data Bridge, Cockroach Labs or Amazon RDS

Follow the steps detailed in [Connecting an application to a database instance using the topology view](). The application pod should continue running once a service binding to the database has been created successfully. Test the application by clicking the URL sign as indicated below.



Click URL to access application

Health checks

Container spring-boot-dbaas-demo-apps does not have health checks to ensure your Application is running correctly. Add health checks

Build #1 was complete (3 minutes ago)

Developer Role: Create NodeJS application and connect to the CockroachDB instance

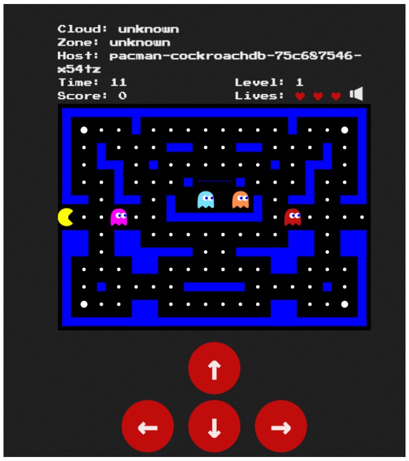
Create a Pacman game application that is written in NodeJS and uses a Postgres database for tracking the scores.

On the OpenShift console left-side menu, select **+Add** and the **Import from Git** tile. Fill the following Git fields:

```
Git Repo URL = https://github.com/RHODA-lab/pacman-cockroachdb
(Advanced Git options are not needed)
```

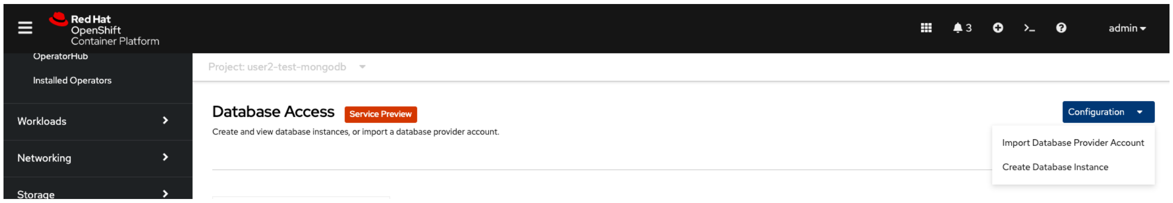
Use the default values for the other fields and **Create** the application.

Follow the same steps as the SpringBoot application to connect the database instance to the application. The Pacman application will create a separate database table for storing the game scores.



```
Cloud: unknown
Zone: unknown
Host: pacman-cockroachdb-75c687546-
x54tz
Time: 11                 Level: 1
Score: 0                 Lives:
```

NOTE: You can also create a new database instance for testing the application by using the **Create Database Instance** option from the **Database Access** menu.

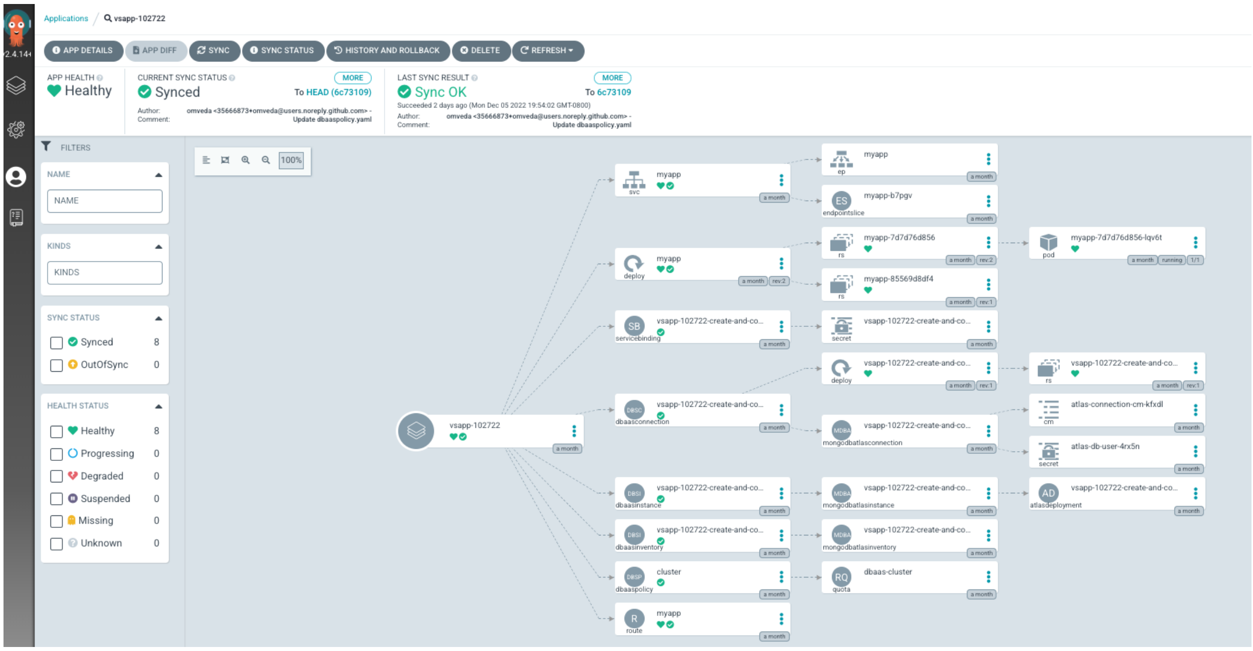


Database Access Service Preview

Create and view database instances, or import a database provider account.

DEMO: ArgoCD GitOps using MongoDB Atlas

A gitops workflow demo that leverages the RHODA API for provisioning a new database instance and connecting an application to it.



APP HEALTH Healthy

CURRENT SYNC STATUS Synced To HEAD (6c73109)
Author: omveda <35666873+omveda@users.noreply.github.com> -
Comment: Update dbaaspolicy.yaml

LAST SYNC RESULT Sync OK To 6c73109
Succeeded 2 days ago (Mon Dec 05 2022 19:54:02 GMT-0800)
Author: omveda <35666873+omveda@users.noreply.github.com> -
Comment: Update dbaaspolicy.yaml

SYNC STATUS
- □ Synced 8
- □ OutOfSync 0

HEALTH STATUS
- □ Healthy 8
- □ Progressing 0
- □ Degraded 0
- □ Suspended 0
- □ Missing 0
- □ Unknown 0

RHODA Blogs

- Simplifying Managed Database Access on OpenShift
- A Guide to Namespace Access to Managed Databases from OpenShift
- RHODA Integration with Jupyter Notebook