Renne Jämsén
Dovile Martinonyte 2025-05-14

Deployment: Spring Boot application with Postgresql database

1 Configuring Java + Maven + Spring project for deployment

Add PostgreSQL driver as dependency in your project's **pom.xml**. Copy and paste the below snippet, place it as a child element of **<dependencies>** element.

```
<dependency>
            <groupId>org.postgresql</groupId>
            <artifactId>postgresql</artifactId>
            <scope>runtime</scope>
</dependency>
```

Create a file named **Dockerfile** (no file extension) in your coding project's root. Content of the **Dockerfile** for a **Java + Maven** project is (use Copy + Paste):

```
FROM eclipse-temurin:17-jdk-focal as builder
WORKDIR /opt/app
COPY .mvn/ .mvn
COPY mvnw pom.xml ./
RUN chmod +x ./mvnw
RUN ./mvnw dependency:go-offline
COPY ./src ./src
RUN ./mvnw clean install -DskipTests
RUN find ./target -type f -name '*.jar' -exec cp {} /opt/app/app.jar \; -quit
FROM eclipse-temurin:17-jre-alpine
COPY --from=builder /opt/app/*.jar /opt/app/
EXPOSE 8080
ENTRYPOINT ["java", "-jar", "/opt/app/app.jar" ]
```

The above content is a generalized **Dockerfile** configuration and can be used for other Spring Boot projects.

Create a new deployment profile for your application. You need to create a new file in the **<your app>/src/main/resources/** directory.

Name the new file **application-rahti.properties**.

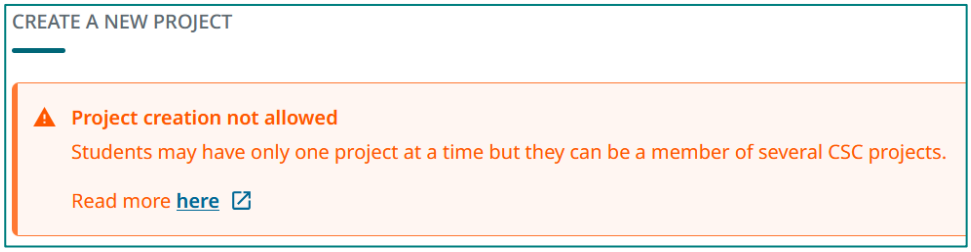
Content of the **application-rahti.properties** is (use Copy + Paste):

```
spring.datasource.url=jdbc:postgresql://${POSTGRESQL_SERVICE_HOST}:${POSTGRESQL_SE
RVICE_PORT}/${DB_NAME}
spring.datasource.username=${DB_USER}
spring.datasource.password=${DB_PASSWORD}
spring.jpa.show-sql=true
spring.jpa.generate-ddl=true
spring.jpa.hibernate.ddl-auto=update
```

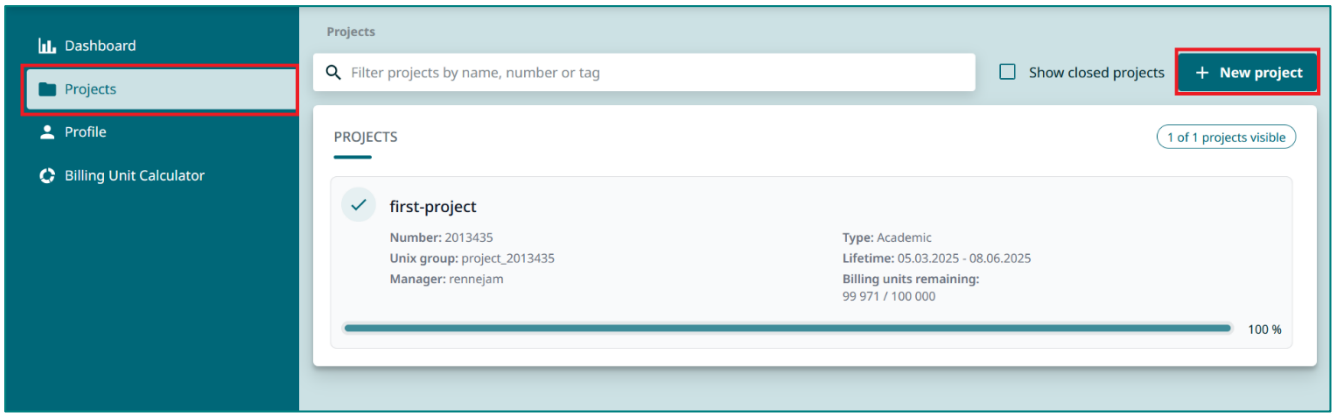
Commit the above changes and push them to your GitHub repository.

2 Creating a project in CSC

NOTE! If you already have created a project in CSC, you are unable to create another one. In that case proceed to chapter 3 of these instructions.



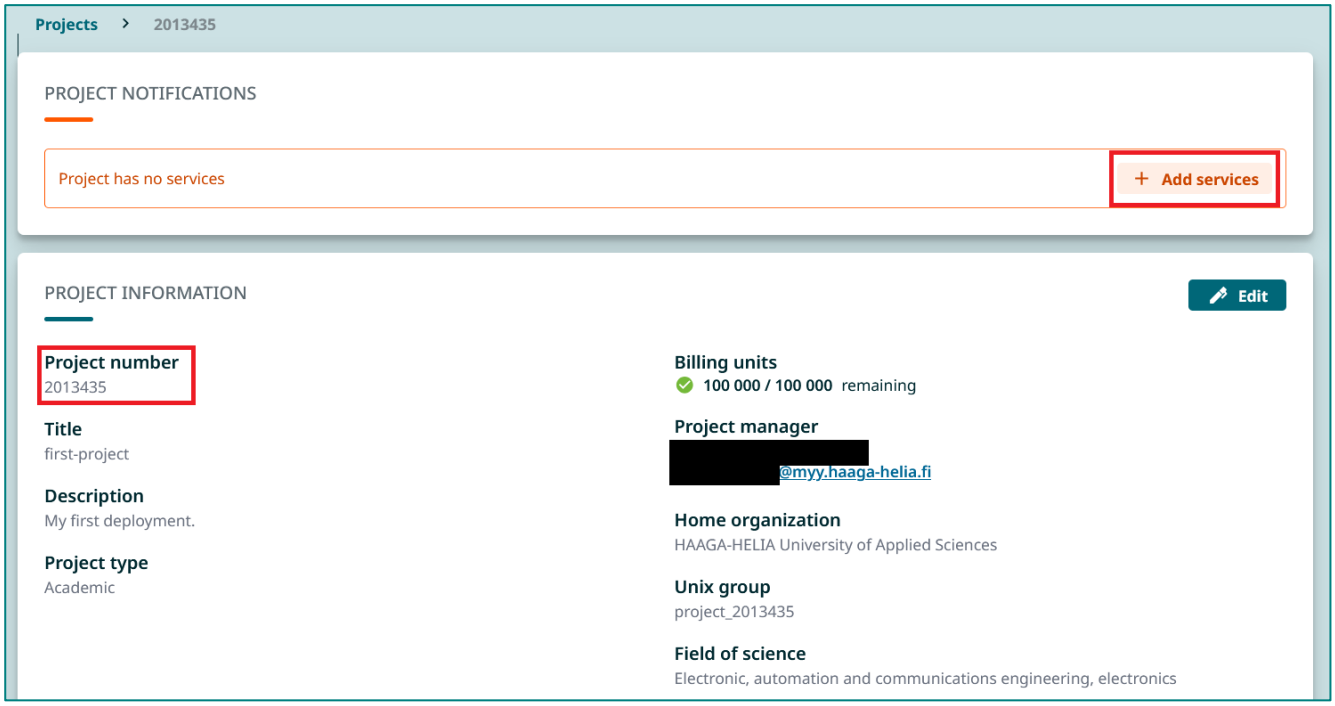
Login to CSC at https://my.csc.fi/login using you Haka user account (Haaga-Helia credentials) or your CSC user account (username sent to your email). Navigate to Projects view and start creating a new project.



Fill in your project's information as instructed in the form. Read and accept all terms of use and privacy notice. Choose **`Create project`** to continue.

You have now created your CSC project. Within this project you can start adding CSC's services. For your deployment you only need **`Rahti - Container Cloud`**. Click **`Add services`** and select **`Rahti`**.

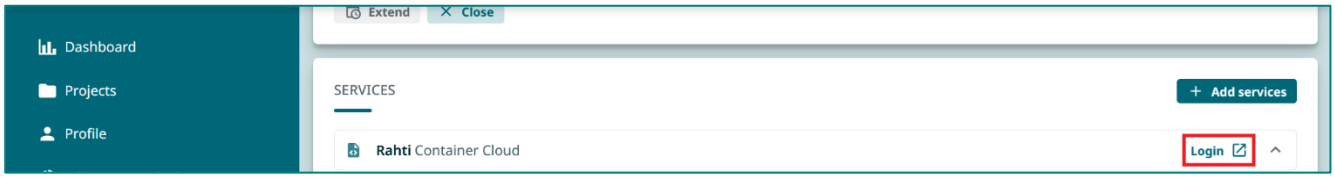
NOTE: check your project number. You will need it later!



Once you have added the **`Rahti`** service you might have to wait up to 60 mins for you to gain access after activation. So be patient!

3 Creating a project in Rahti

After you have gained access to **Rahti** service, you can login to **Rahti** at your CSC project's **Projects** view. Choose your (only) project and scroll down to **Services**. Clicking **Login** will take you to **Rahti** landing page.

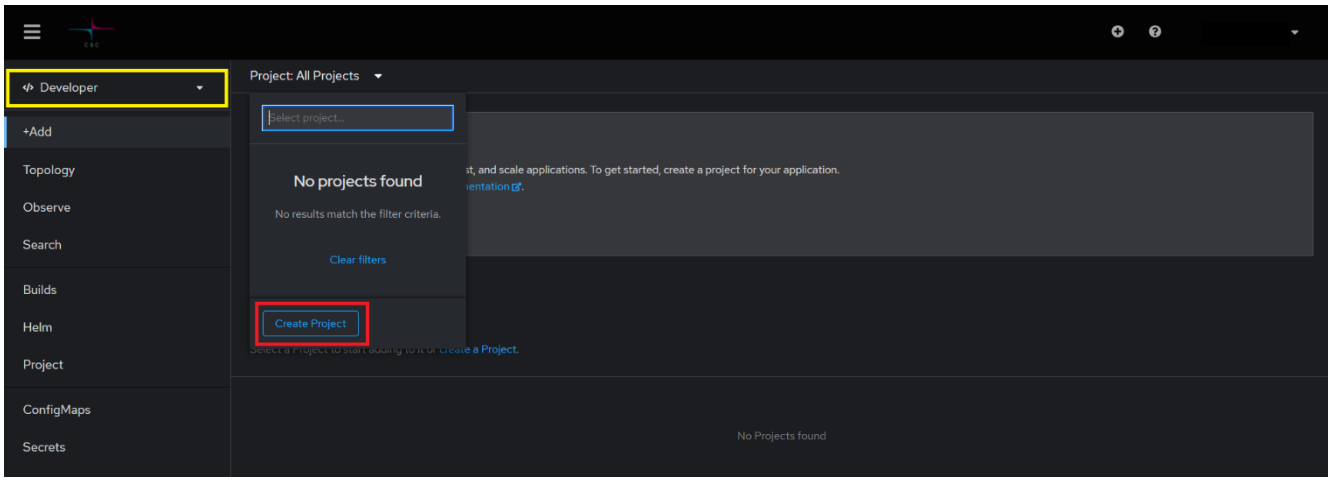


Proceed the login process, you need to click **Login** buttons a few times in different pages. Use either Haka or CSC as your authentication method when prompted.

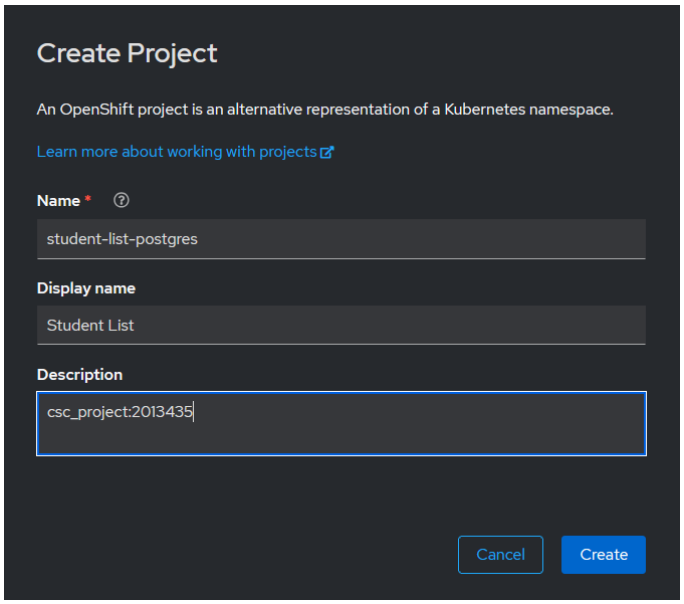
Successfully logging in directs you to **Rahti** console. When starting the console for the first time take the site's tour showing important navigation options. After the tour you are ready to create your **Rahti project**.

Click the **Project: All projects** dropdown menu and choose **Create Project** or click the text **Create a Project**. If you don't have these options visible in your page, make sure you are in **Developer** view (marked with yellow).

NOTE! You can have more than one **Rahti projects** in one **CSC Project**.



Give your project a name and a display name. In the description write **`csc_project:<your CSC project number>`**. You will find your **`CSC project number`** in your CSC Project's **`Project information`** view. Proceed by clicking **`Create`**.



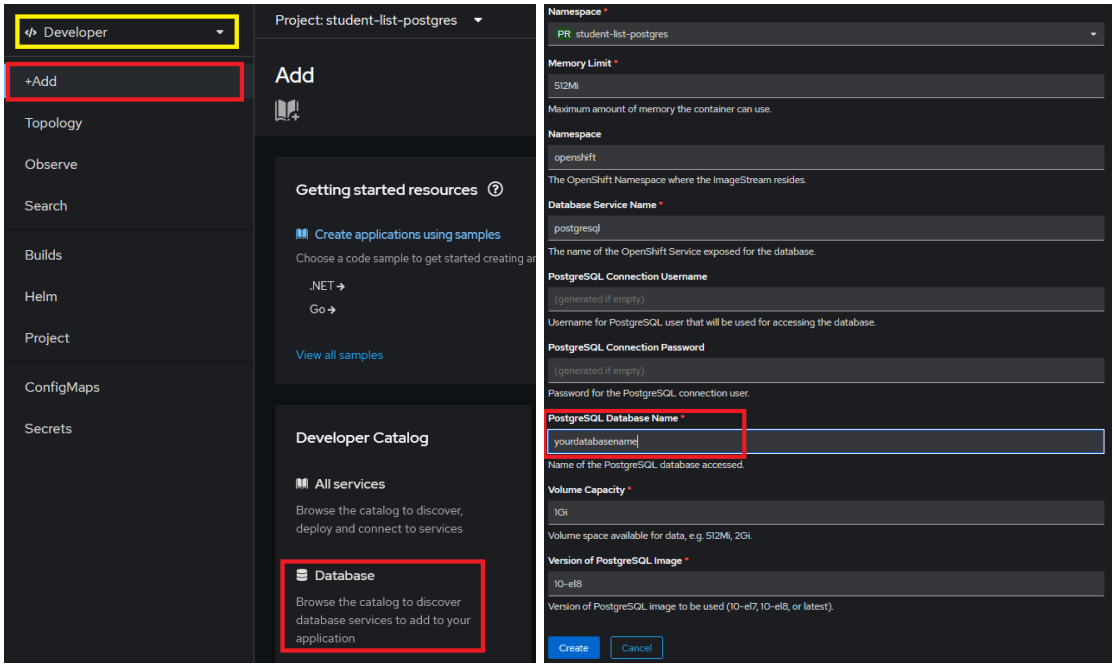
4 Creating a Postgresql database instance

After creating a project in Rahti it's time to create a new database instance for your application.

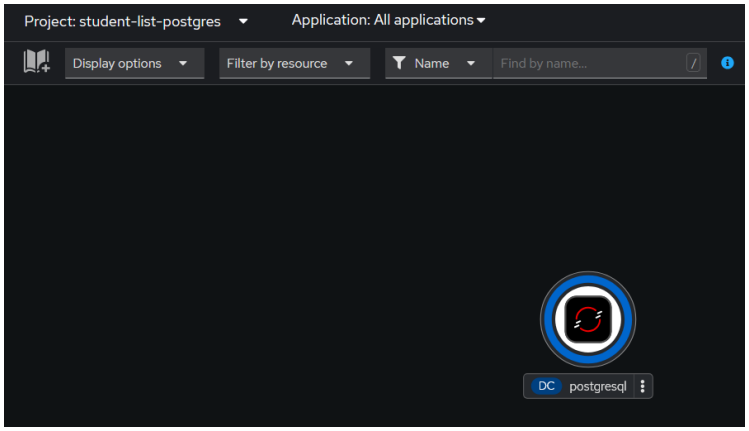
In **`Developer`** view, go to **`+Add`** page and start creating a database for your project. Choose **`PostgreSQL`**. Make sure you **don't select the Ephemeral** version! Click **`Instantiate Template`** to continue the process.

You can leave all the default values in the form where you create your database. Leaving **`PostgreSQL Connection Username`** and **`Password`** empty will make the system generate random credentials for you. This is fine within the scope of Haaga-Helia UAS course work.

If you want to specify **`PostgreSQL Connection Username`** and **`Password`**, **don't use weak a password! Always use strong passwords even when practicing!**



Successful creation of a database will show as a new **`DeploymentConfig`** object in your **`Topology`** view.

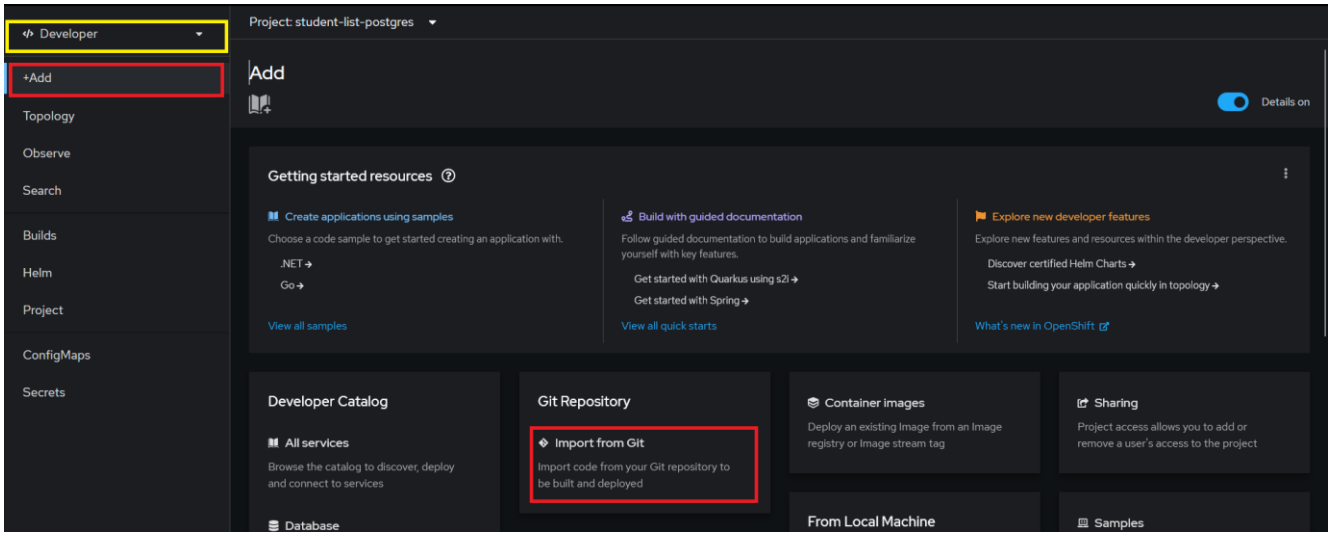


The next step is to include your SpringBoot application into your Rahti project.

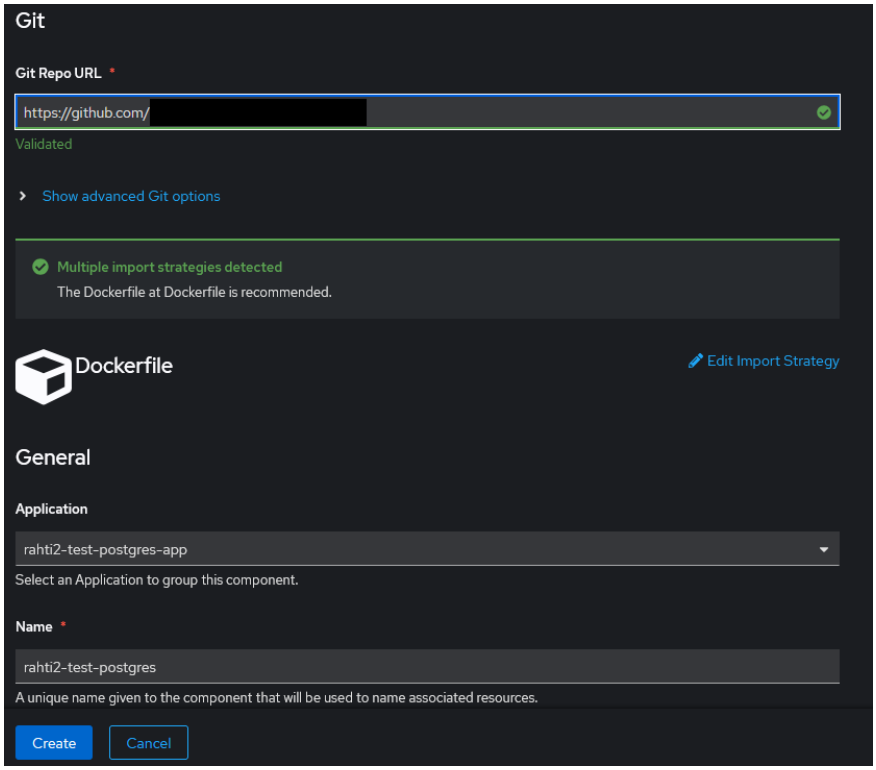
5 Including SpringBoot application into Rahti

You will need to have your SpringBoot application in GitHub before continuing these instructions. The following instructions assume that you have set your GitHub repository **`Public`**.

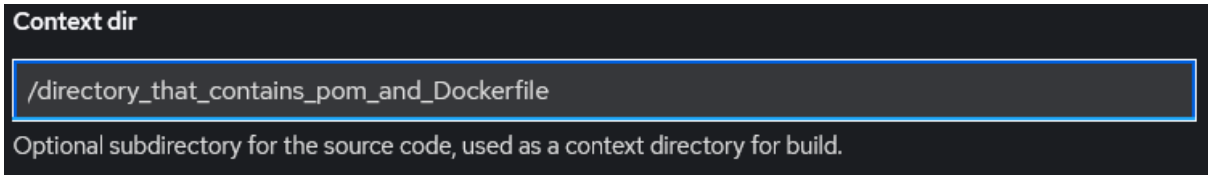
In **`Rahti`** dashboard make sure you are in **`Developer`** view: go to **`+Add`** page and choose **`Import from Git`**.



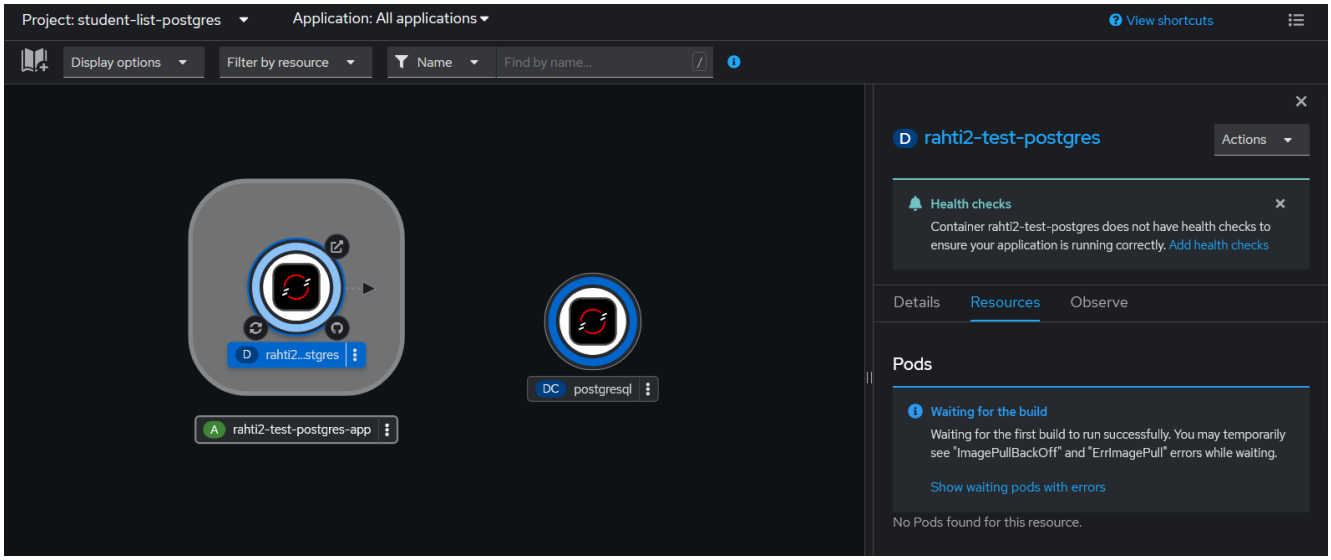
Copy and paste your GitHub repository's URL into the corresponding form field and choose **`Dockerfile`** as your **`Import Strategy`** if it is not the suggested one. You can leave rest of the form fields to their default values. Move on to **`Create`**.



NOTE! `Rahti` might not detect the `Dockerfile` if it is not in your GitHub project's root. In this case open `Show advanced Git options` under `Git Repo URL` form field. In `Context dir` form field update the value to the name of the subdirectory that contains `pom.xml` and `Dockerfile`.



Successful creation will take you to your project's `Topology` view. Click the graphical representation of your deployment to open your deployment controls.

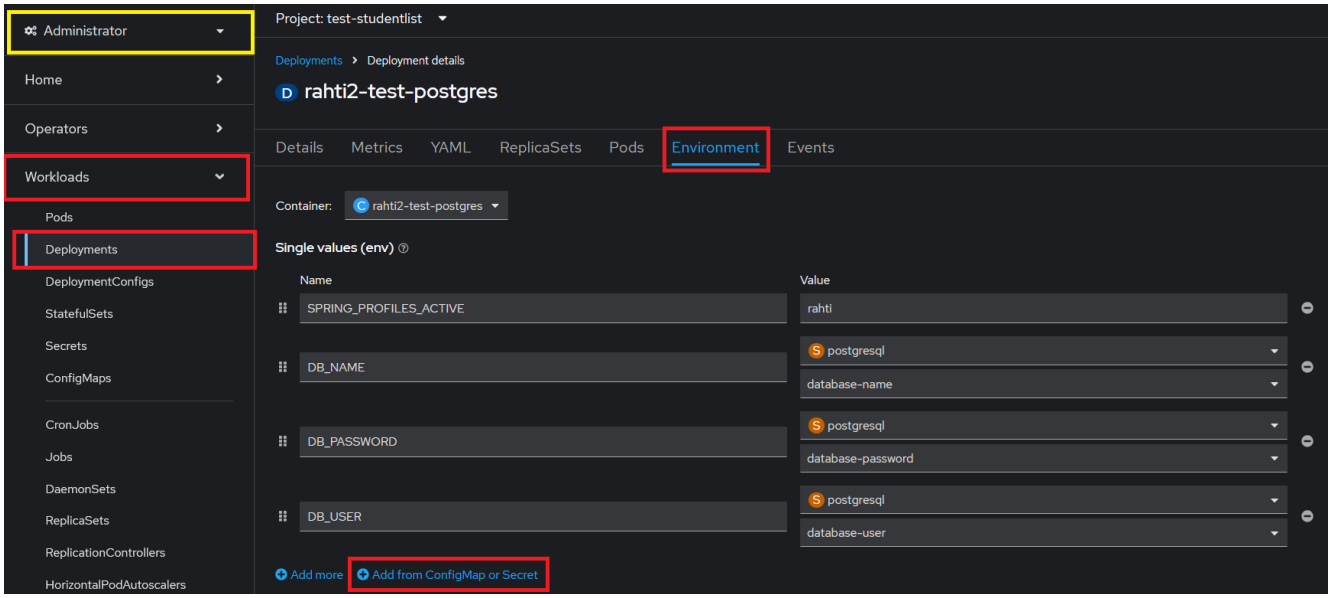


You have now deployed your application into `Rahti`. But it is not in working condition yet. You still need to configure the environment variables for the JDBC connection.

6 Configuring environment variables

In **Administrator** view: **Workloads** → **Deployments** → **<your deployment>** → **Environment**.

Set your environment variables as shown below. Click the circled **Add from ConfigMap or Secret** to get more form fields. Click **Save** at the bottom of the page to activate your changes.



Congratulations! You have now deployed your Spring application with a proper database to CSC/Rahti!

To get the URL for your app go back to **Developer** view → **Topology**. Click your application's **Open URL** shortcut or navigate to deployment's quick controls (navigation pane on the right) and scroll down to **Routes**. It might take few minutes before you are able to access your deployment's URL in browser.