

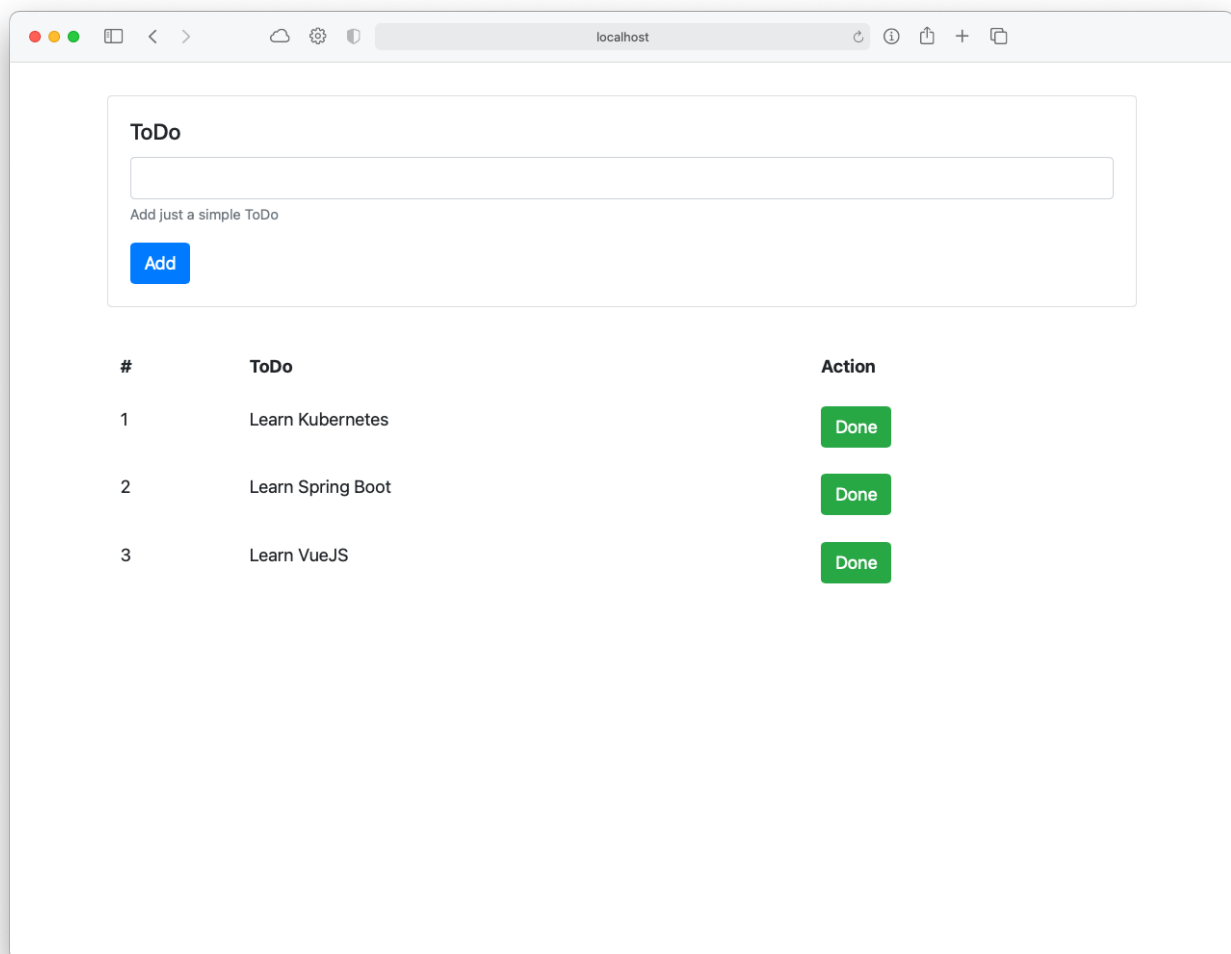
# Simple ToDo App with VueJS and Spring Boot

## Requirements

- [Java 8](#)
- [NodeJS / NPM](#)
- [VueJS CLI](#)
- [Docker / Docker Desktop](#)
- [CodeReady Containers](#)
- IDE: [VS Code](#) | [JetBrains](#) | [Eclipse](#) | [Spring Tools](#)

## VueJS UI

We are going to create a UI for the ToDo Service



### 1. Create the Project and Install Axios

```
vue init webpack todo-ui  
cd todo-ui  
npm install axios
```

### 2. Add the Bootstrap CSS to the `index.html` file.

*index.html*

```
<!DOCTYPE html>  
<html>  
  <head>  
    <meta charset="utf-8">  
    <meta name="viewport" content="width=device-width,initial-scale=1.0">  
    <title>ToDo UI</title>  
  
    <link rel="stylesheet" href=  
"https://cdn.jsdelivr.net/npm/bootstrap@4.6.0/dist/css/bootstrap.min.css"  
    integrity="sha384-  
B0vP5xmATw1+K9KRQjQERJvTumQW0nPEzvF6L/Z6nronJ3oU0FUFPcJEUQouq2+l "  
    crossorigin="anonymous">  
  
  </head>  
  <body>  
    <div id="app"></div>  
  </body>  
</html>
```

### 3. Create the `ToDo.vue` file with the following content:

```

<template>
  <div class="row">
    <div class="col-12">
      <div class="card">
        <div class="card-body">
          <h5 class="card-title">ToDo</h5>
          <form @submit="checkForm">
            <div class="form-group">
              <input type="text" class="form-control" @keyup.enter.prevent=
"checkForm" v-model="todo">
              <small class="form-text text-muted">Add just a simple ToDo</small>
            </div>
            <button class="btn btn-primary" type="submit">Add</button>
          </form>
        </div>
      </div>
    </div>
  </div>
</template>

<script>

import { EventBus } from "../utils/event-bus.js";

export default {
  name: 'ToDo',
  data () {
    return {
      todo: ''
    }
  },
  methods: {
    checkForm: function(e){
      EventBus.$emit("new-todo", { description: this.todo });
    }
  }
}
</script>

<style>

</style>

```

4. Create the `ToDoList.vue` file with the following content:

```

<template>
  <div class="row todo-list">
    <div class="col-12">
      <table class="table table-borderless table-hover">
        <thead>
          <tr>
            <th scope="col">#</th>
            <th scope="col">ToDo</th>
            <th scope="col">Action</th>
          </tr>
        </thead>
        <tbody>

          <tr v-for="(todo, index) in todos" :key="index">
            <td>{{ index + 1 }}</td>
            <td>{{ todo.description }}</td>
            <td>
              <button class="btn btn-success" @click="doneToDo(todo.id,
$event)">Done</button>
            </td>
          </tr>

        </tbody>
      </table>
    </div>
  </div>
</template>

<script>

import axios from "axios"
import { EventBus } from "../utils/event-bus.js";

export default {
  name: "ToDoList",
  data: function() {
    return {
      todos: []
    }
  },
  mounted() {
    EventBus.$on("new-todo", todo => { this.newToDo(todo)});
  },
  created() {
    this.getTodos();
  },
  methods: {
    getTodos: function() {
      axios.get(process.env.ROOT_API)
        .then(response => this.todos = response.data);
    }
  }
}

```

```

    },

    newToDo: function(todo){
      axios.post(process.env.ROOT_API, todo)
        .then(response => this.todos.push(response.data));
    },

    doneToDo: function(id, event){
      axios.delete(process.env.ROOT_API + "/" + id)
        .then(response => console.log(response.data));
      event.preventDefault();
      this.todos = this.remove(id);
    },

    remove: function(value){
      return this.todos.filter(function(ele){
        return ele.id !== value;
      });
    }
  }
}
</script>

<style>

.todo-list {
  margin-top: 30px;
}

</style>

```

5. Create the `event-bus.js` file with the following content:

*src/utils/event-bus.js*

```

import Vue from 'vue';
export const EventBus = new Vue();

```

6. Add the `ROOT_API` variable to the `dev.env.js` and `prod.env.js`.

config/dev.env.js

```
'use strict'
const merge = require('webpack-merge')
const prodEnv = require('./prod.env')

module.exports = merge(prodEnv, {
  NODE_ENV: '"development"',
  ROOT_API: '"http://localhost:8081/todos"'
})
```

config/dev.env.js

```
'use strict'
module.exports = {
  NODE_ENV: '"production"',
  ROOT_API: '"http://todo:8081/todos"'
}
```



As recommendation, the service call should be internal and a different port, in this case it will be <http://todos:8081/todos>

7. Test you app with:

```
npm run dev
```

8. Create a **Dockerfile** with the following content

```
# build stage
FROM node:lts-alpine as build-stage
WORKDIR /app
COPY package*.json ./
RUN npm install
COPY . .
RUN npm run build

# production stage
FROM bitnami/nginx as production-stage
COPY --from=build-stage /app/dist /app
EXPOSE 8080
CMD ["nginx", "-g", "daemon off;"]
```

9. [OPTIONAL] Build your image, test it and push it to your Registry.

```
docker build -t <your-id>/todo-ui:v1 .
docker run -it -p 8080:80 --rm --name todo-ui <your-id>/todo-ui:v1
docker push <your-id>/todo-ui:v1
docker tag <image-id> <your-id>/todo-ui:latest
docker push <your-id>/todo-ui:latest
```



This step is **OPTIONAL**, you **DON'T** need it for deploying in OpenShift.

# Spring Boot

1. Go to <https://start.spring.io/>

Add the following Dependencies: *Web, Data JPA, H2, Lombok, MySQL Driver*

The screenshot shows the Spring Initializr web application in a browser. The interface is divided into several sections:

- Project:** ☒ Maven Project, ☐ Gradle Project
- Language:** ☒ Java, ☐ Kotlin, ☐ Groovy
- Spring Boot:** ☐ 2.5.0 (SNAPSHOT), ☐ 2.5.0 (M2), ☒ 2.4.3, ☐ 2.3.10 (SNAPSHOT), ☐ 2.3.9
- Project Metadata:**
  - Group: com.example
  - Artifact: todo
  - Name: todo
  - Description: Demo project for Spring Boot
  - Package name: com.example.todo
- Dependencies:** 
  - Spring Web** (WEB): Build web, including RESTful, applications using Spring MVC. Uses Apache Tomcat as the default embedded container.
  - Spring Data JPA** (SQL): Persist data in SQL stores with Java Persistence API using Spring Data and Hibernate.
  - Lombok** (DEVELOPER TOOLS): Java annotation library which helps to reduce boilerplate code.
  - H2 Database** (SQL): Provides a fast in-memory database that supports JDBC API and R2DBC access, with a small (2mb) footprint. Supports embedded and server modes as well as a browser based console application.

At the bottom, there are three buttons: **GENERATE** (⌘ + ↵), **EXPLORE** (CTRL + SPACE), and **SHARE...**

2. Add the following classes/interface:

src/main/java/com/example/todo/ToDo.java

```
package com.example.todo;

import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;
import org.hibernate.annotations.GenericGenerator;

import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.Id;
import javax.persistence.Table;

@NoArgsConstructor
@AllArgsConstructor
@Data
@Entity
@Table(name = "todo")
public class ToDo {

    @Id
    @GeneratedValue(generator = "uuid")
    @GenericGenerator(name = "uuid", strategy = "org.hibernate.id.UUIDGenerator")
    private String id;
    private String description;
}
```

src/main/java/com/example/todo/ToDoRepository.java

```
package com.example.todo;

import org.springframework.data.repository.CrudRepository;

public interface ToDoRepository extends CrudRepository<ToDo,String> {
}
```



src/main/java/com/example/todo/ToDoNotFoundException.java

```
package com.example.todo;

public class ToDoNotFoundException extends RuntimeException{

    public ToDoNotFoundException(){
        super("ToDo provided was not found");
    }

    public ToDoNotFoundException(String id){
        super(String.format("ToDo with id: %s was not found",id));
    }
}
```

src/main/java/com/example/todo/ToDoController.java

```
package com.example.todo;

import lombok.RequiredArgsConstructor;
import org.springframework.web.HttpRequestMethodNotSupportedException;
import org.springframework.web.bind.annotation.*;
import org.springframework.web.servlet.mvc.support.DefaultHandlerExceptionResolver;

import javax.servlet.http.HttpServletRequest;
import java.util.HashMap;
import java.util.Map;
import java.util.stream.Collectors;
import java.util.stream.StreamSupport;

@CrossOrigin("*")
@RequiredArgsConstructor
@RequestMapping("/todos")
@RestController
public class ToDoController {

    private final ToDoRepository toDoRepository;

    @GetMapping
    public Iterable<ToDo> getAll(){
        return this.toDoRepository.findAll();
    }

    @GetMapping("/{id}")
    public ToDo getById(@PathVariable String id){
        return this.toDoRepository.findById(id).orElseThrow(() ->new
ToDoNotFoundException(id));
    }

    @PostMapping
```

```

    public Todo newToDo(@RequestBody Todo todo){
        return this.todoRepository.save(todo);
    }

    @DeleteMapping("/{id}")
    public Todo deleteById(@PathVariable String id){
        Todo todo = this.todoRepository.findById(id).orElseThrow(() ->new
        TodoNotFoundException(id));
        this.todoRepository.deleteById(todo.getId());
        return todo;
    }

    @ExceptionHandler({TodoNotFoundException.class})
    public Map<String, String> handleError(HttpServletRequest req, Exception ex){
        Map<String,String> result = new HashMap<>();
        result.put("message",ex.getMessage());
        return result;
    }
}

```

3. Add the `data.sql` for initial data.

*src/main/resources/data.sql*

```

insert into TODO (id,description)
values ('1f31285e-2a4d-4d2c-ba09-9718fc1f3e4c', 'Learn Kubernetes');
insert into TODO (id,description)
values ('aa6d0450-fc8e-4d57-a47c-a7317dac60fc', 'Learn Spring Boot');
insert into TODO (id,description)
values ('bd18b3b8-a803-4d5f-8b97-d1a2298fb563', 'Learn VueJS');

```

4. Add the following content to the `application.properties`

*src/main/resources/application.properties*

```
# Spring
spring.application.name=todo

# MVC
server.error.whitelabel.enabled=false

# Server
server.port=${PORT:8081}

# H2
spring.h2.console.enabled=true

# Info
info.app.name=${spring.application.name}
info.app.developer.name=Felipe Gutierrez
info.app.developer.email=felipeg@email.com

# Data
spring.jpa.generate-ddl=true
spring.jpa.hibernate.ddl-auto=update
spring.jpa.show-sql=true
```

5. Add the `index.html` and `404.html` pages

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>ToDo Service</title>
  <link rel="stylesheet" href=
    "https://cdn.jsdelivr.net/npm/bootstrap@4.6.0/dist/css/bootstrap.min.css"
    integrity="sha384-B0vP5xmATw1+K9KRQjQERJvTumQW0nPEzvF6L/Z6nronJ3oU0FUFPcJEUQouq2+l"
    crossorigin="anonymous">
  <style>
    body {
      font-family: Avenir SansSerif Verdana;
    }
  </style>
</head>
<body>
<div class="container">
  <div class=""row>
    <div class="col-12">
      <div class="card" style="top: 10px;">
        <div class="card-header">
          <h1>Welcome</h1>
        </div>
        <div class="card-body">
          <h5 class="card-title">ToDo Service</h5>
          <p class="card-text">Everything about Todos.</p>
          <a class="btn btn-primary" href="/todos">API</a>
        </div>
      </div>
    </div>
  </div>
</div>
</body>
</html>
```

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>ToDo Service</title>
  <link rel="stylesheet" href=
    "https://cdn.jsdelivr.net/npm/bootstrap@4.6.0/dist/css/bootstrap.min.css"
    integrity="sha384-B0vP5xmATw1+K9KRQjQERJvTumQW0nPEzvF6L/Z6nronJ3oU0FUfPcJEUQouq2+L"
    crossorigin="anonymous">
  <style>
    body {
      font-family: Avenir SansSerif Verdana;
    }
  </style>
</head>
<body>
<div class="container">
  <div class=""row>
    <div class="col-12">
      <div class="card" style="top: 10px;">
        <div class="card-body">
          <div class="alert alert-danger" role="alert">
            There was an Error!
          </div>
          <h5 class="card-title">ToDo Service</h5>
          <p class="card-text">Everything about Todos.</p>
          <a class="btn btn-primary" href="/todos">API</a>
        </div>
      </div>
    </div>
  </div>
</div>
</body>
</html>
```

6. Test you app with:

```
./mvnw spring-boot:run
```

7. [OPTIONAL] Create a Docker image, test and push it to the registry.

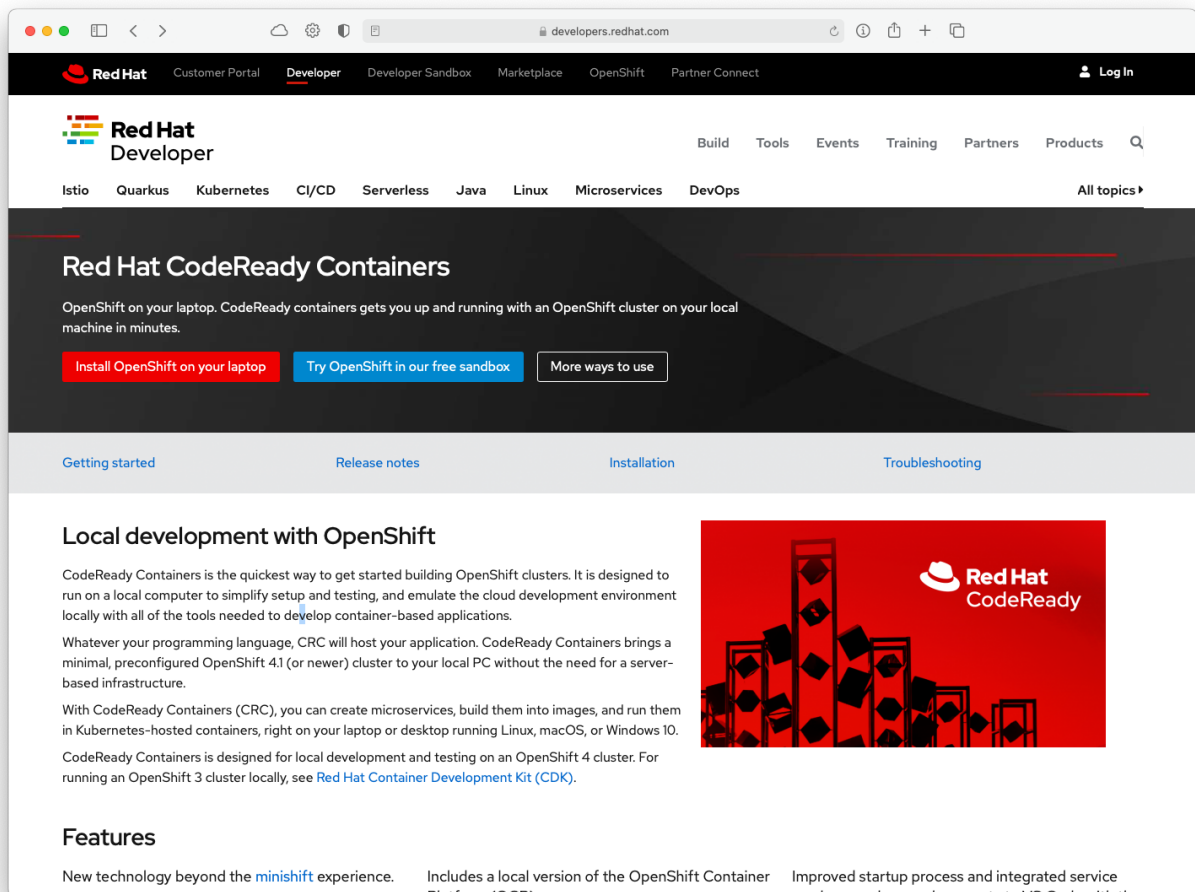
```
./mvnw spring-boot:build-image -Dspring-boot.build-image.imageName=<your-id>/todo:v1
docker run -it -p 8081:8081 --rm --name todo <your-id>/todo:v1
docker push <your-id>/todo:v1
docker tag <image-id> <your-id>/todo:latest
docker push <your-id>/todo:latest
```



This step is **OPTIONAL**, you **DON'T** need it for deploying in OpenShift.

## Deploy the ToDo App in OpenShift

1. Open you account en RedHat con CodeReady Containers: <https://ibm.biz/BdfjCM>



2. Go to the Developer Sandbox and Launch it.

The screenshot shows the Red Hat Developer website. The header includes the Red Hat logo and navigation links for Customer Portal, Developer, Developer Sandbox, Marketplace, OpenShift, and Partner Connect. Below the header, there's a secondary navigation bar with links for Istio, Quarkus, Kubernetes, CI/CD, Serverless, Java, Linux, Microservices, DevOps, and All topics. The main content area features a large banner for the 'Welcome to the Developer Sandbox for Red Hat OpenShift' with a 'Beta' badge. A prominent red button says 'Launch your Developer Sandbox for Red Hat OpenShift'. Below this, a paragraph explains that due to popular demand, the free trial period is increased to 30 days. At the bottom of the banner, there are links for 'Use with OpenShift', 'Use with CodeReady Workspaces', and 'FAQ'. The lower section is titled 'Start your OpenShift experience in four simple steps' and lists four steps: 1. Provision your free Red Hat OpenShift development cluster, 2. Deploy a sample application or bring your own repo, 3. Edit code from the integrated Eclipse Che-based cloud IDE, and 4. Fully explore the Red Hat OpenShift developer experience. To the right of the steps is a screenshot of the OpenShift console showing a 'spring-petclinic' application being deployed.

Red Hat Developer

Build Tools Events Training Partners Products

Istio Quarkus Kubernetes CI/CD Serverless Java Linux Microservices DevOps All topics

## Welcome to the Developer Sandbox for Red Hat OpenShift Beta

[Launch your Developer Sandbox for Red Hat OpenShift](#)

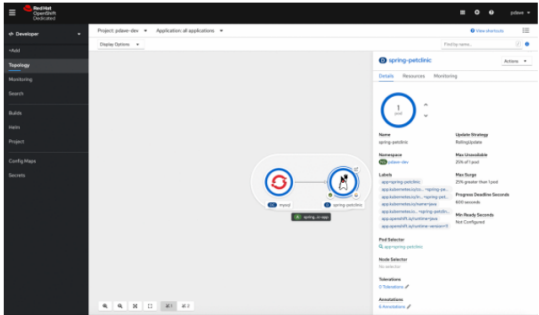
Due to popular demand and repeated sign ups, we are increasing the free trial period to 30 days. Get free access to the Developer Sandbox for Red Hat OpenShift for 30 days and deploy your application code as a container on this self-service, cloud-hosted experience. Skip installations and deployment and jump directly into OpenShift.

[Use with OpenShift](#) [Use with CodeReady Workspaces](#) [FAQ](#)

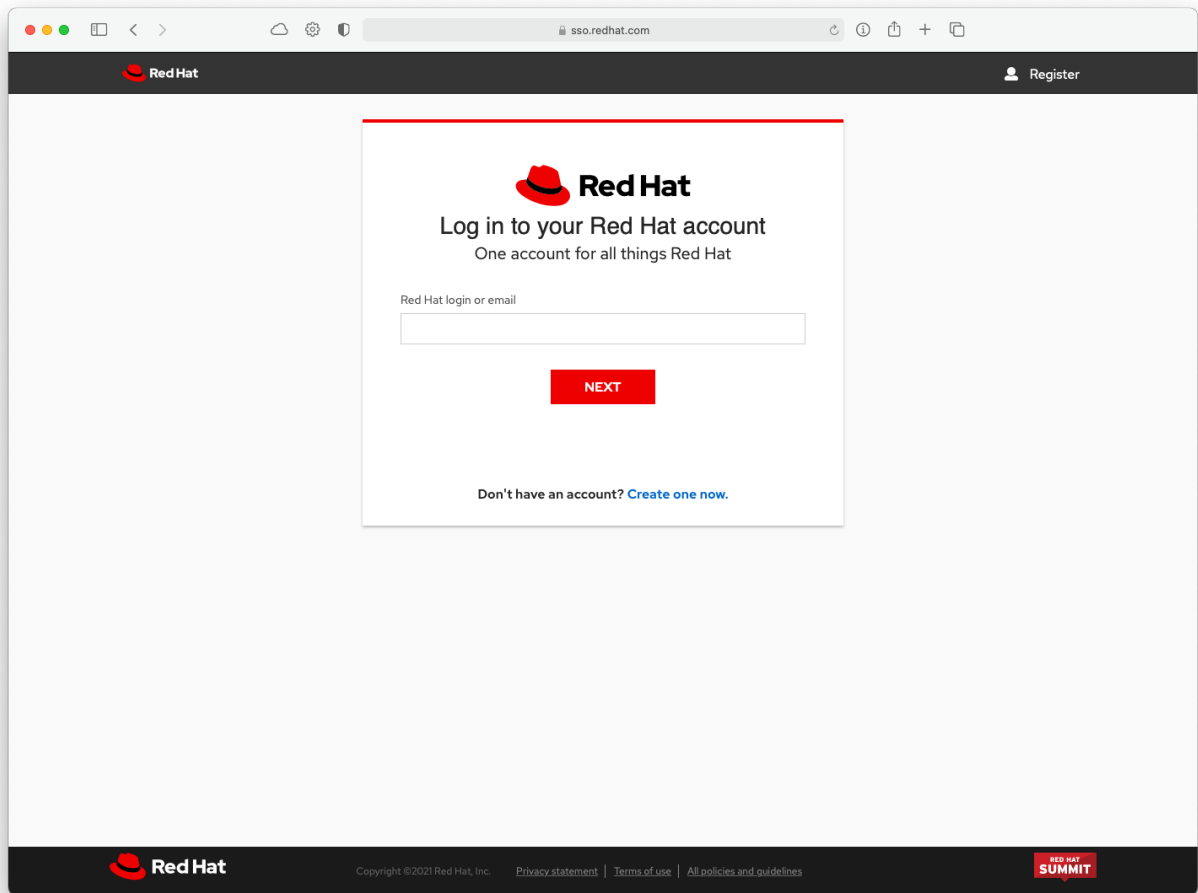
### Start your OpenShift experience in four simple steps

If you're exploring how to run your code in containers, our Developer Sandbox makes it simple. Not only can you easily deploy your application from a Git repo, you can also set up a cloud IDE for your entire team. Follow these four steps to quickly get started:

- 1 Provision your free Red Hat OpenShift development cluster
- 2 Deploy a sample application or bring your own repo
- 3 Edit code from the integrated Eclipse Che-based cloud IDE
- 4 Fully explore the Red Hat OpenShift developer experience

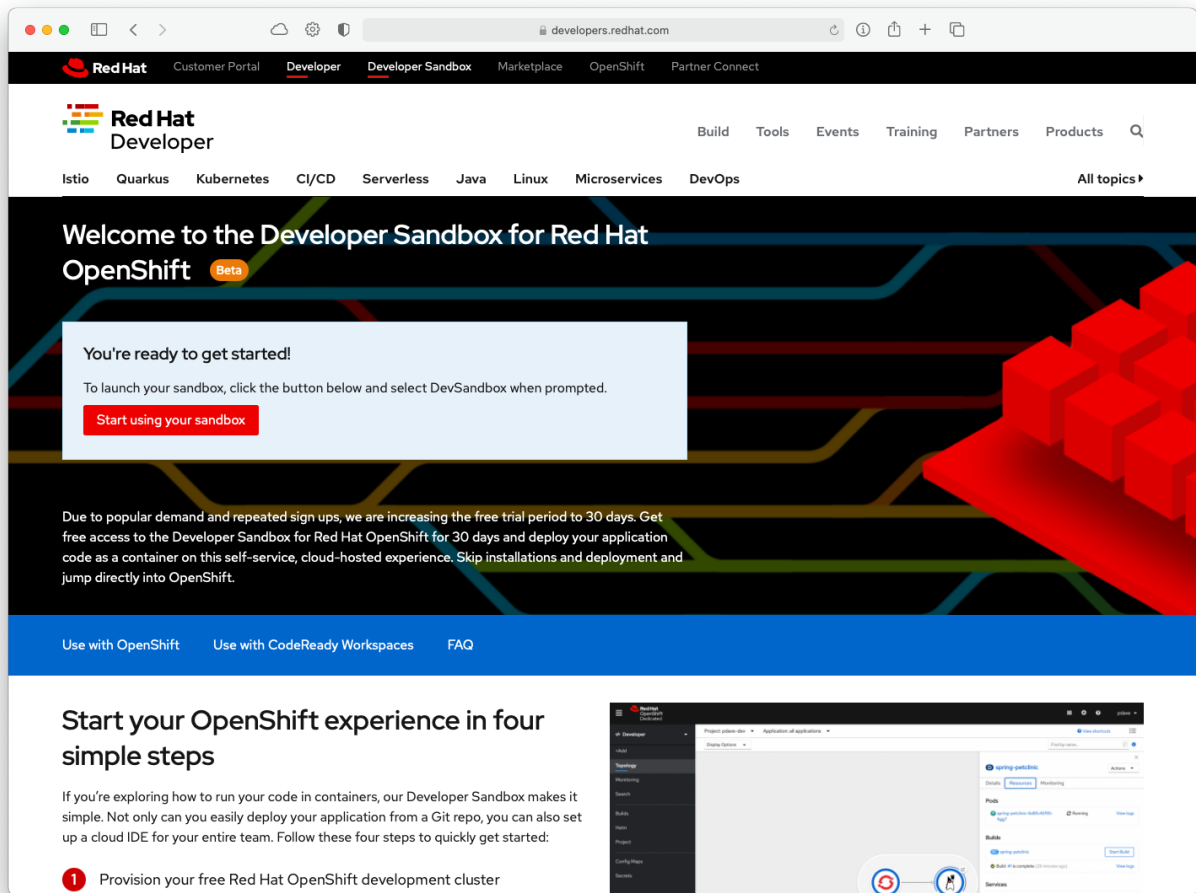


### 3. Create an account or Login into RedHat Portal

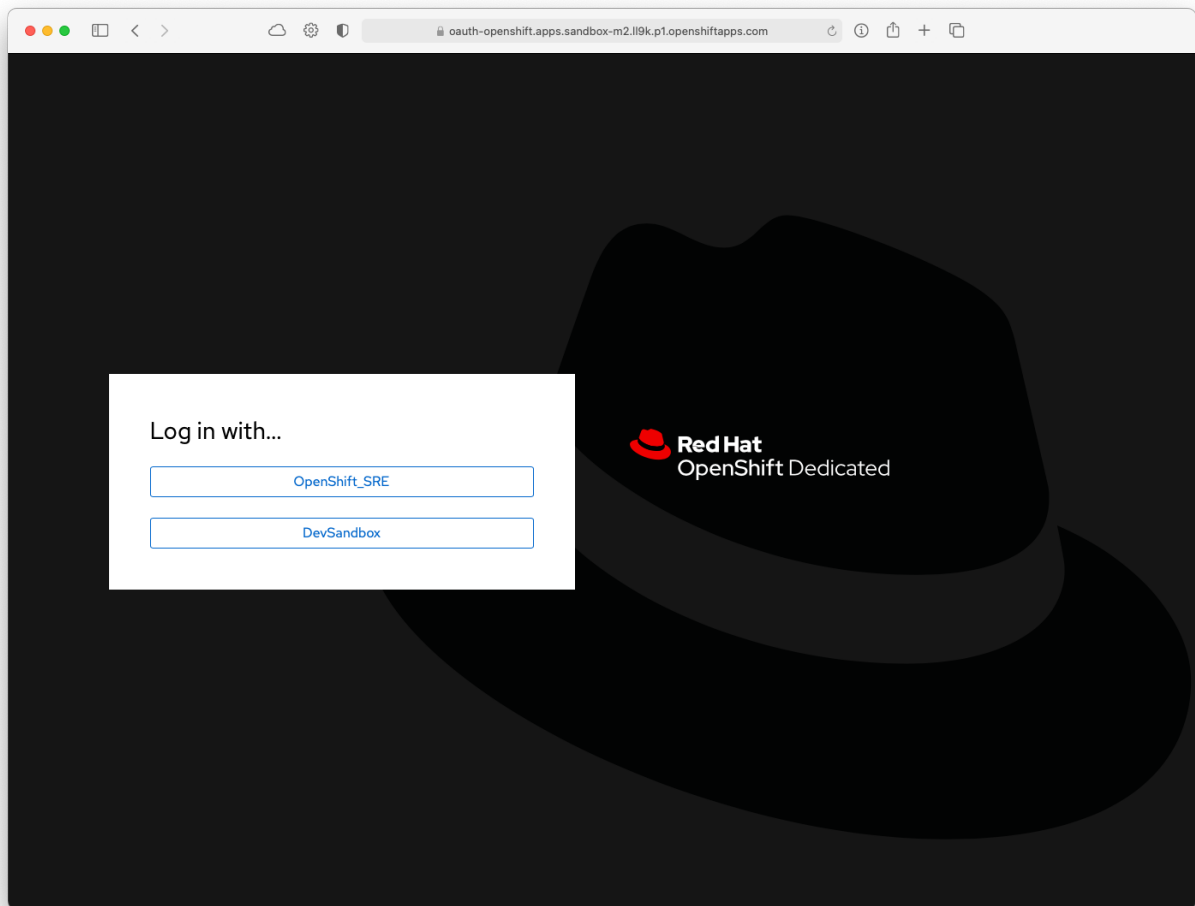


Once you login, click the **Start using your sandbox** button.

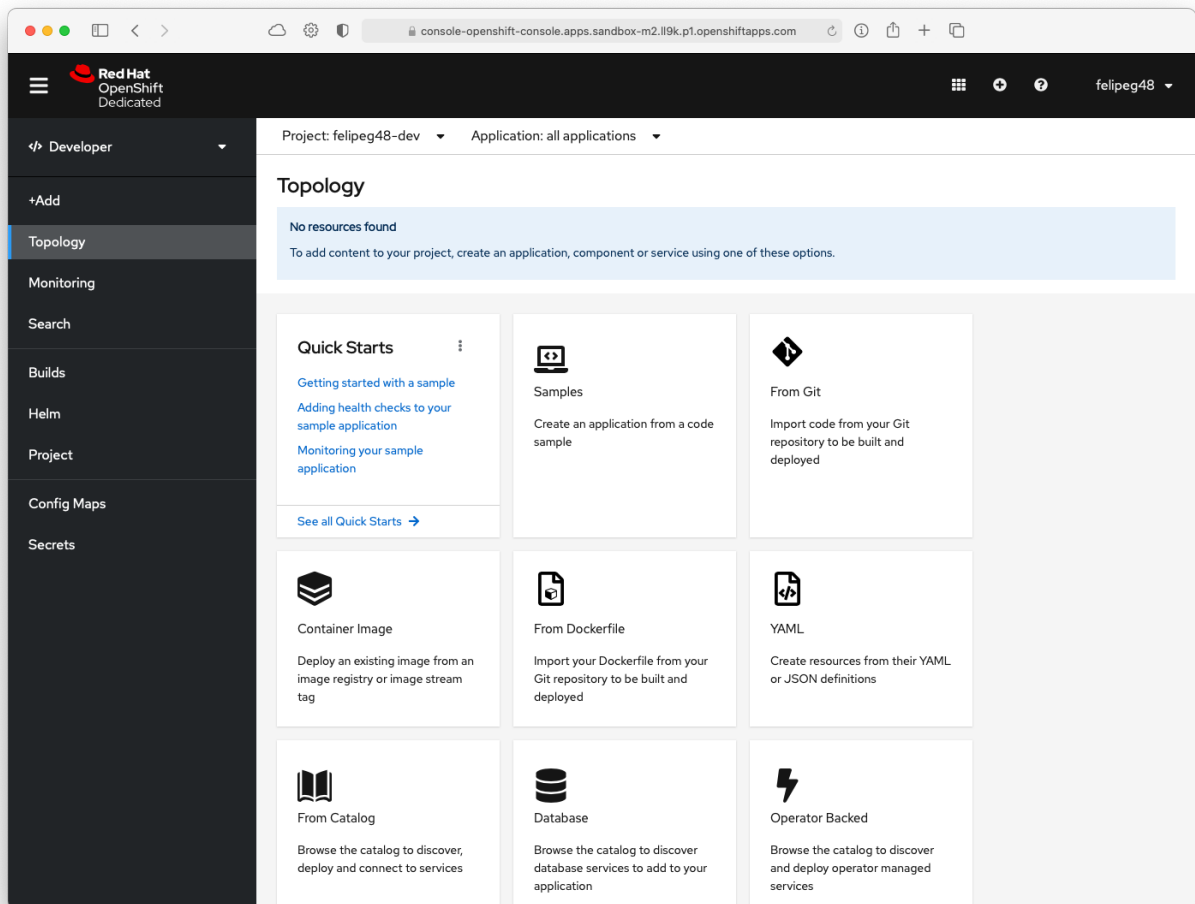


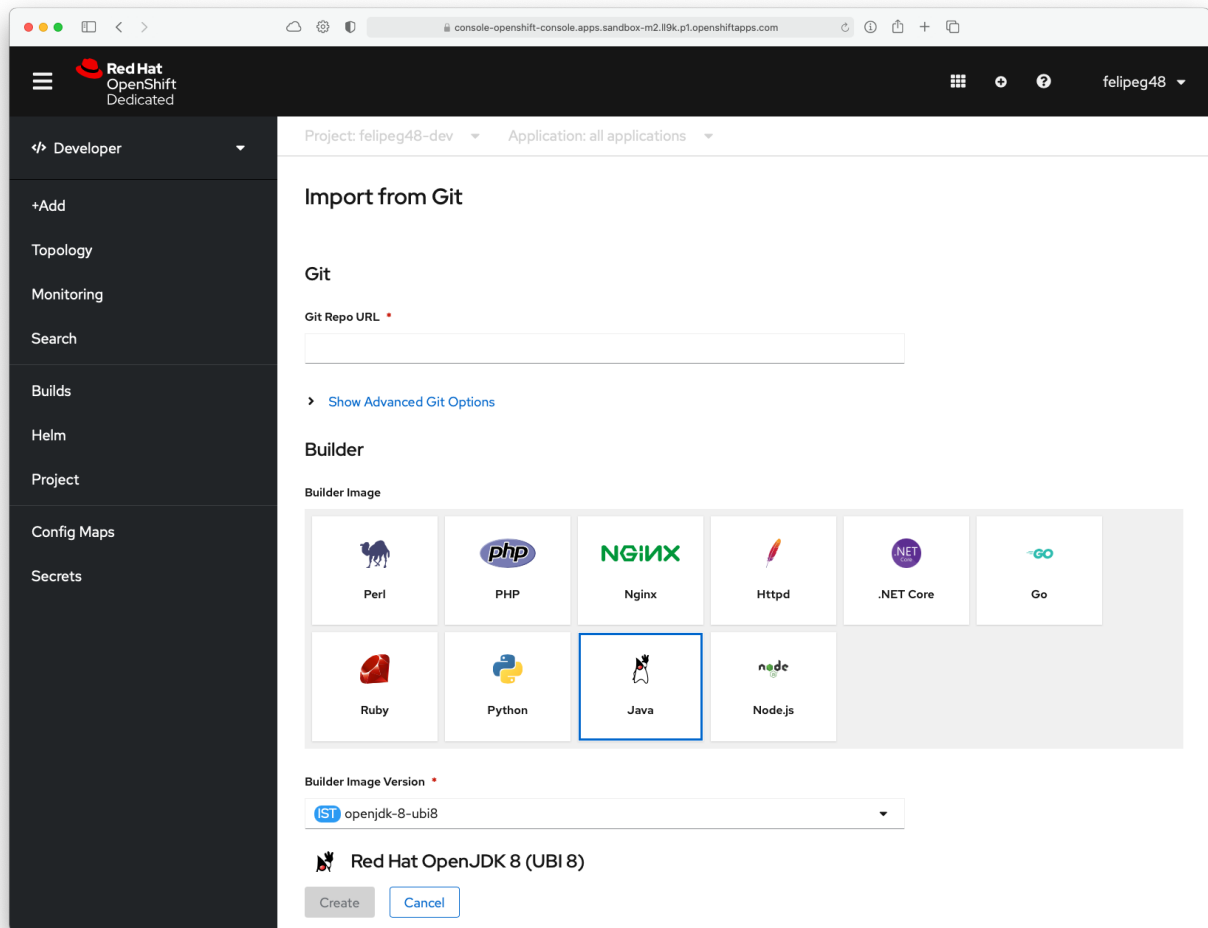


#### 4. Select DevSandBox



5. It will appear the **Topology** Dashboard. Select from **Git** and paste the **todo** git project.





Add the `/todo` in the **Context Dir** in the **Advanced Git Options** section.

# Git

Git Repo URL \*

https://github.com/felipeg48/vuejs-spring-boot.git



Validated

▼ Hide Advanced Git Options

Git Reference

Optional branch, tag, or commit.

Context Dir

/todo

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

Source Secret

Select Secret Name



Secret with credentials for pulling your source code.

Select **Java** icon in the **Builder** section and the **openjdk-8-ubi8** in the **Builder Image Version**.











## Builder

Builder Image



**Unable to detect the builder image.**

Select the most appropriate one from the list to continue.

 Perl	 PHP	 Nginx	 Httpd	 .NET Core	 Go
 Ruby	 Python	 Java	 Node.js		

Builder Image Version \*

IST openjdk-8-ubi8



**Red Hat OpenJDK 8 (UBI 8)**

BUILDER JAVA OPENJDK

Build and run Java applications using Maven and OpenJDK 8.

In the **General** section add the value **todo**.

## General

### Application Name

A unique name given to the application grouping to label your resources.

### Name \*

A unique name given to the component that will be used to name associated resources.

## Resources

Select the resource type to generate

☒ **Deployment**

apps/Deployment

A Deployment enables declarative updates for Pods and ReplicaSets.

☐ **Deployment Config**

apps.openshift.io/DeploymentConfig

A Deployment Config defines the template for a pod and manages deploying new images or configuration changes.

In the **Advanced Options** section click the **Routes** and create/add the port **8081**

## Advanced Options

☒ Create a route to the application  
Exposes your application at a public URL

### Routing

Hostname

Public hostname for the route. If not specified, a hostname is generated.

Path

Path that the router watches to route traffic to the service.

Target Port

Create "8081"

Security

☐ Secure Route

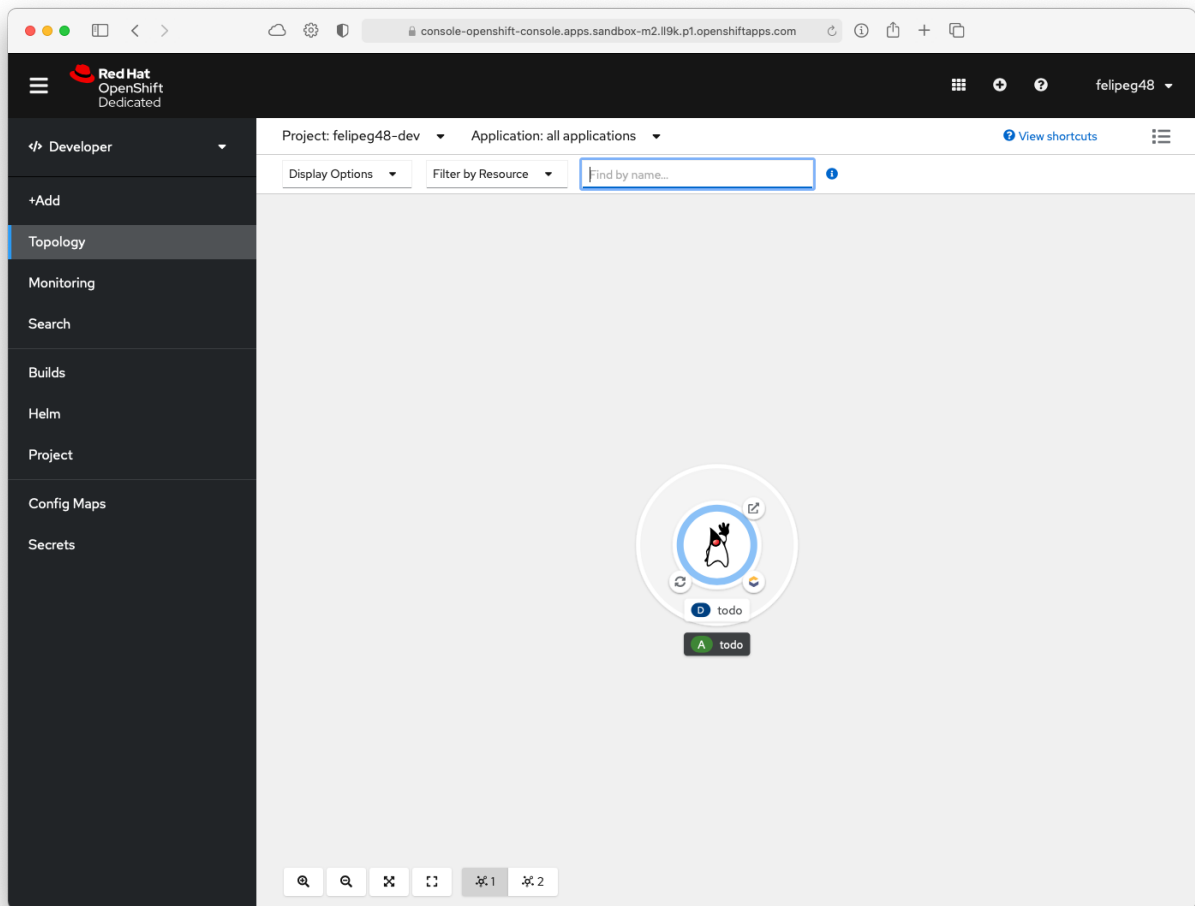
Routes can be secured using several TLS termination types for serving certificates.

Click on the names to access advanced options for [Health Checks](#), [Build Configuration](#), [Deployment](#), [Scaling](#), [Resource Limits](#) and [Labels](#).



Follow the Instructor for other field's metadata.

6. You will present the **Workload** page with your app in the middle. Review the options.



You can click in the **View logs** link in the **Builds** section



Red Hat OpenShift Dedicated

Project: felipe48-dev Application: all applications View shortcuts

Display Options Filter by Resource Find by name...

Developer +Add Topology Monitoring Search Builds Helm Project Config Maps Secrets

Health Checks

Container todo does not have health checks to ensure your application is running correctly. [Add Health Checks](#)

Details Resources Monitoring

Pods

Waiting for the build

Waiting for the first build to run successfully. You may temporarily see "ImagePullBackOff" and "ErrImagePull" errors while waiting.

[Show waiting pods with errors](#)

No Pods found for this resource.

Builds

todo Start Build

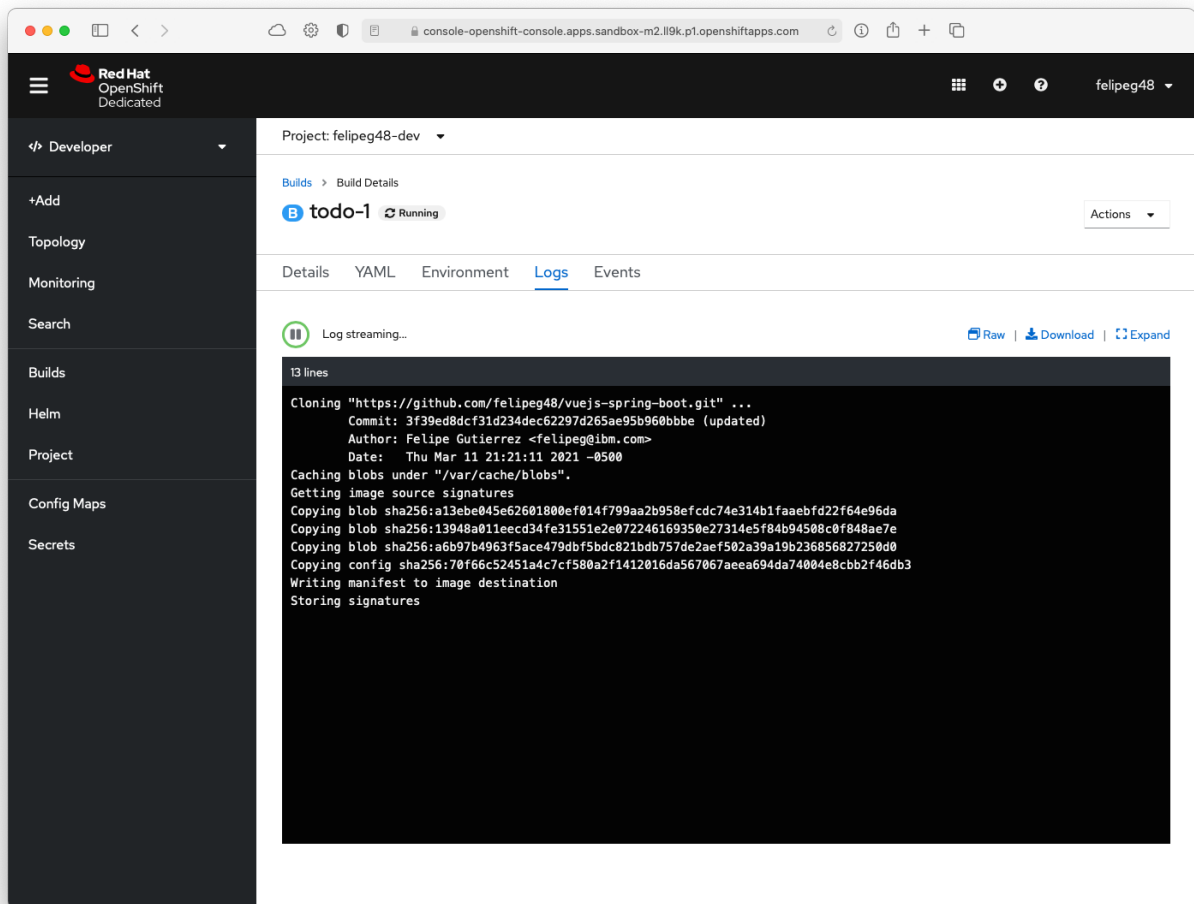
Build #1 is running (less than a minute ago) View logs

Services

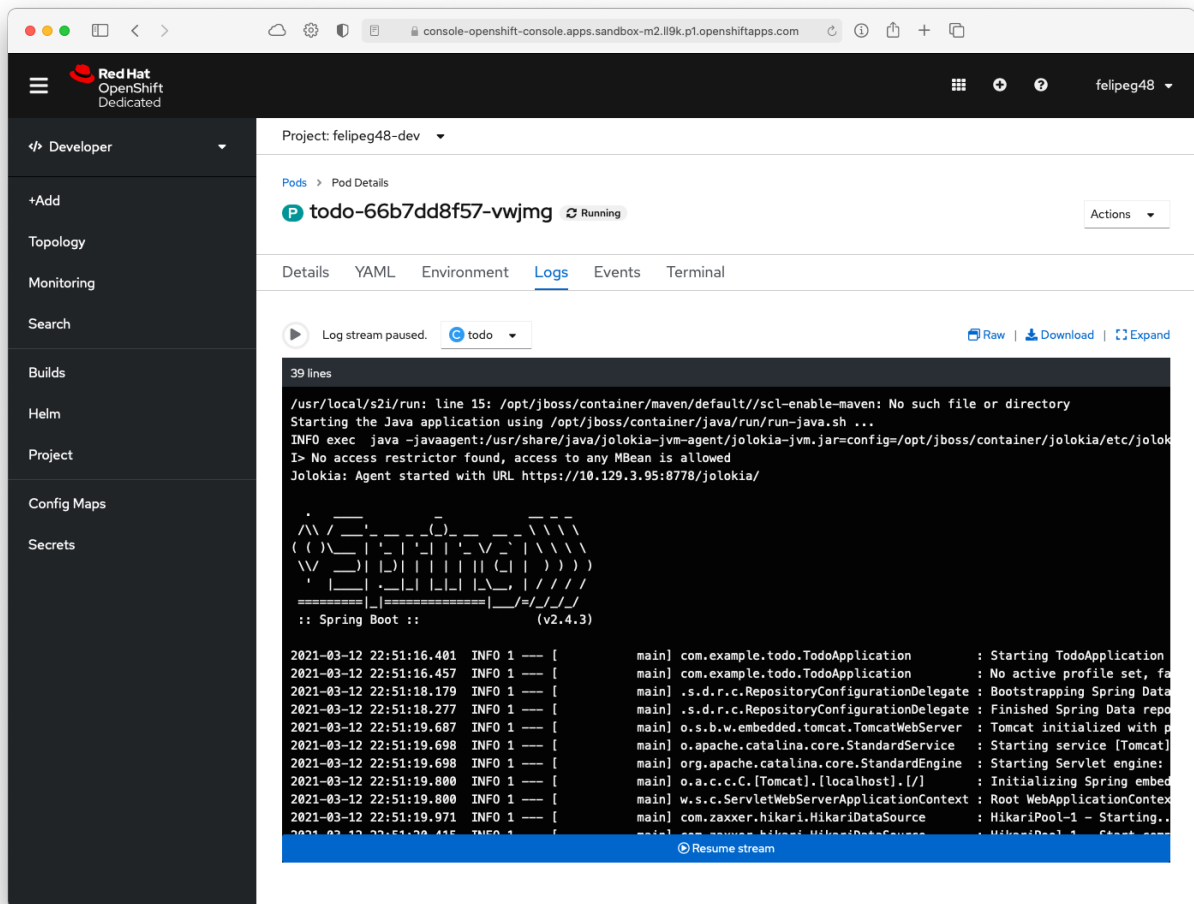
todo

Service port: 8080-tcp → Pod Port: 8080  
Service port: 8443-tcp → Pod Port: 8443  
Service port: 8778-tcp → Pod Port: 8778

Routes

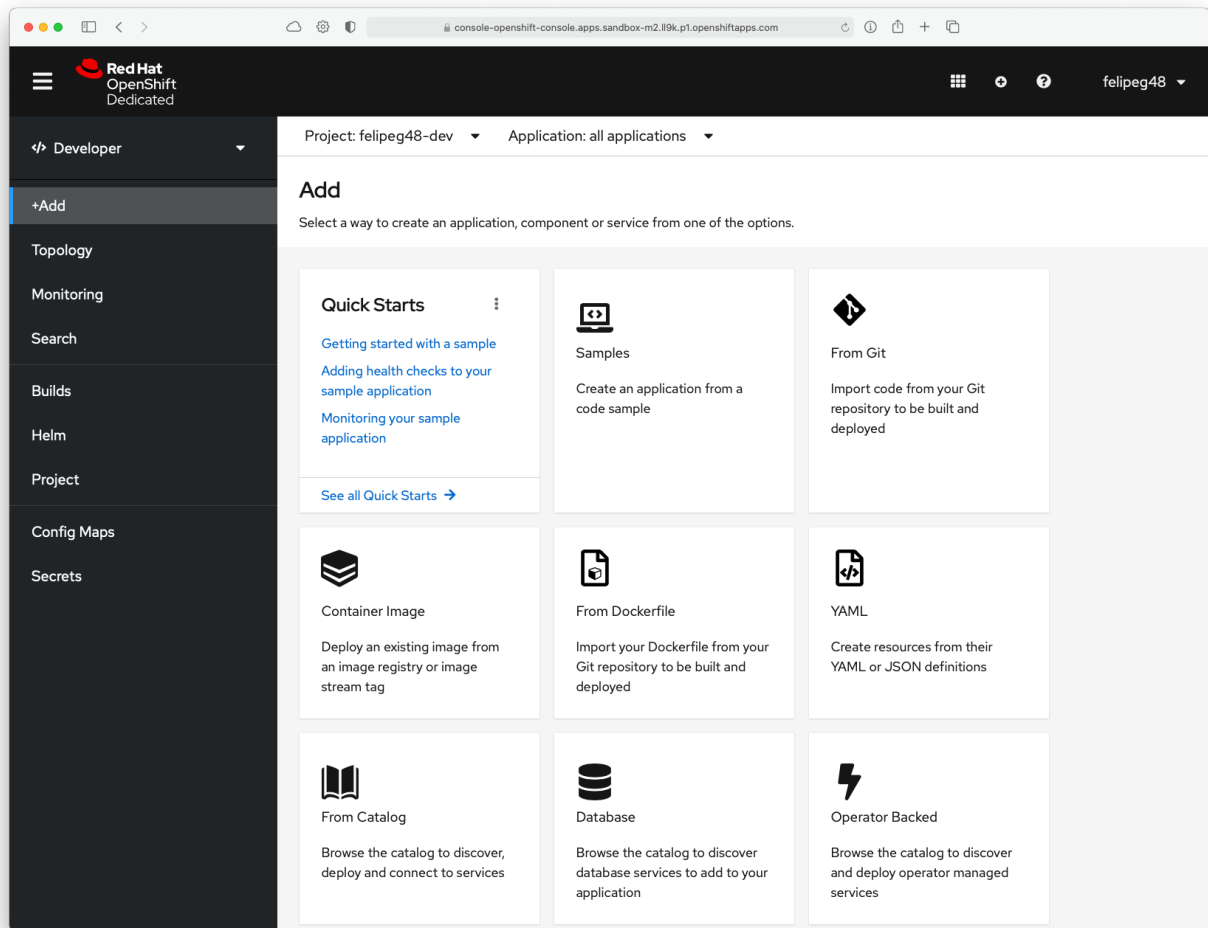


You can also see the logs of the Pods running.



# Deploy the ToDo UI App in OpenShift

1. Open your OpenShift Cluster page.
2. Click the **+Add** button.
3. Select the **Dockerfile** square.



Add the `/todo-ui` in the **Context Dir** in the **Advanced Git Options** section.

## Git

Git Repo URL \*

https://github.com/felipeg48/vuejs-spring-boot.git



Validated

▼ Hide Advanced Git Options

Git Reference

Optional branch, tag, or commit.

Context Dir

/todo-ui

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

Source Secret

Select Secret Name



Secret with credentials for pulling your source code.

Add **todo** in the **Application** and **todo-ui** in the **Name** fields in the **General** section.

## General

Application

todo



Select an application for your grouping or no application group to not use an application grouping.

Name \*

todo-ui

A unique name given to the component that will be used to name associated resources.

In the **Docker** section just make sure the **Dockerfile Path** is **Dockerfile** and the **Container Port** is **8080**.

# Dockerfile

## Dockerfile Path

Dockerfile

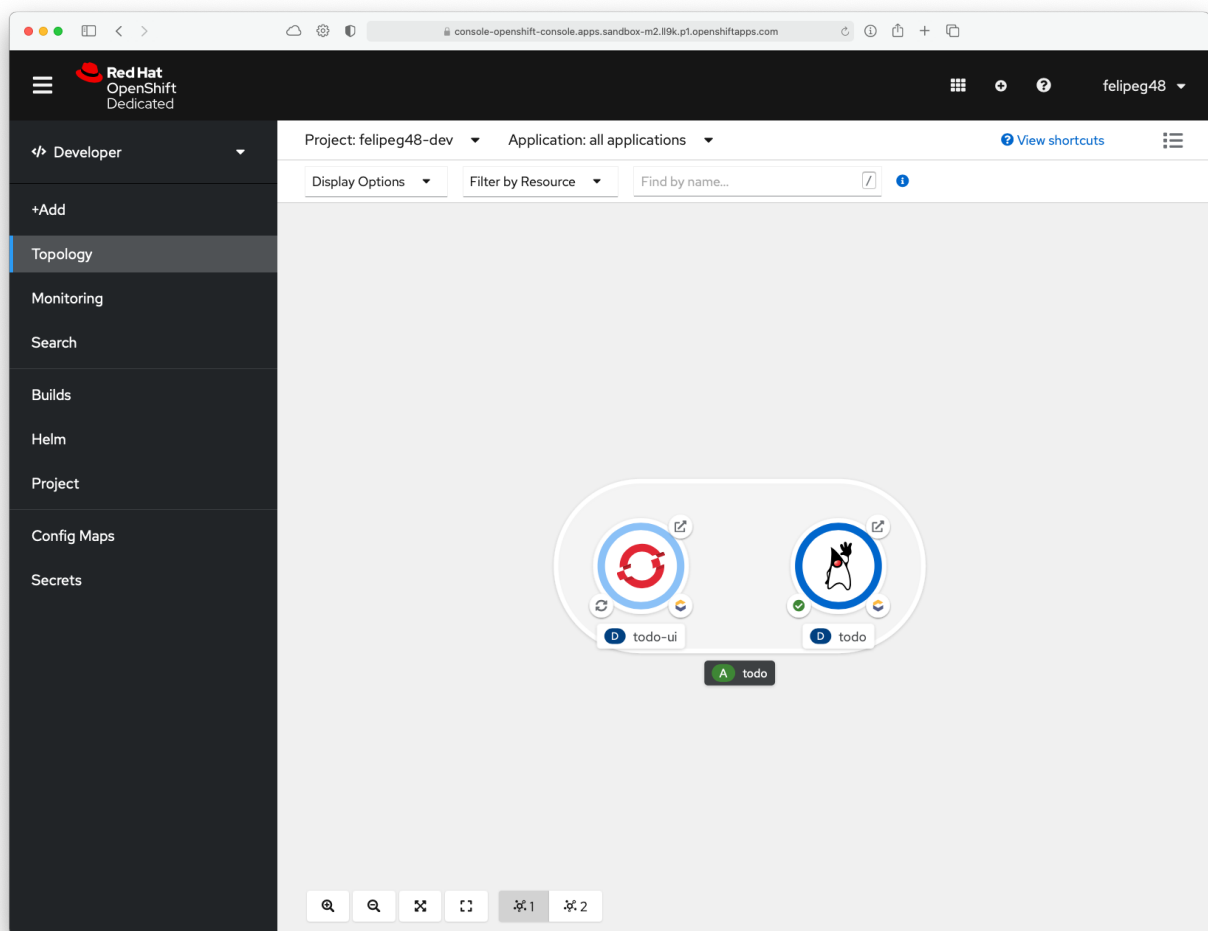
Allows the builds to use a different path to locate your Dockerfile, relative to the Context Dir field.

## Container Port

8080


Port number the container exposes.

You should get the **Topology** Dashboard with the two apps.





Take a look at the logs. If fails, you can always re-do the **Build**

# Builds

 todo-ui

Start Build

 Build #2 is running (less than a minute ago) [View logs](#)

 Build #1 failed (a minute ago) [View logs](#)

Failed pulling builder image.

```
Pulling image nginx:stable-alpine ...
Warning: Pull failed, retrying in 5s ...
Warning: Pull failed, retrying in 5s ...
Warning: Pull failed, retrying in 5s ...
error: build error: failed to pull image: After retrying
2...g and upgrading: https://www.docker.com/increase-rate
```

Finally in the **Advanced Options** make sure the **Target Port** is set to 8080

## Advanced Options

☒ Create a route to the application  
Exposes your application at a public URL

## Routing

Hostname

Public hostname for the route. If not specified, a hostname is generated.

Path

Path that the router watches to route traffic to the service.

Target Port

Target port for traffic.

Security

☐ Secure Route

Routes can be secured using several TLS termination types for serving certificates.

Click on the names to access advanced options for [Health Checks](#), [Build Configuration](#), [Deployment](#), [Scaling](#), [Resource Limits](#) and [Labels](#).

4. Make sure the App is working.

# Challenge

- If they apps are not running as it suppose to, fix them!
- The Spring Boot app is still using **H2** Database, how can we use **MySQL** what part of the code you need to change? What part of the Steps you need to re-do?