

Containerizing and Deploying Spring Framework PetClinic on Kubernetes Using Minikube

Step 1: Install Maven

Install Apache Maven to build the Spring Boot application.

```
sudo apt update
```

```
sudo apt install -y maven
```

```
mvn -version
```

Step 2: Clone the Repository

Clone the Spring Framework PetClinic project from GitHub.

```
git clone https://github.com/AranganathanPrakash/spring-framework-petclinic.git
```

```
cd spring-framework-petclinic
```

Step 3: Build the Application with Maven

Run the following commands in the project directory:

```
mvn test
```

```
mvn clean
```

```
mvn install
```

```
mvn package
```

✅ This compiles, tests, and packages the Spring Boot application into a JAR file.

Step 4: Build and Tag the Docker Image

Run the following command to build and tag the Docker image:

```
docker build -t dhineshkumaran/spring-petshop:latest .
```

✅ Ensure the . (dot) at the end is included to specify the current directory.

Step 5: Log in to Docker Hub

Log in to your Docker Hub account:

docker login

Enter your Docker Hub username and password when prompted.

Step 6: Push the Image to Docker Hub

Push the containerized application to Docker Hub:

```
docker push dhineshkumaran/spring-petshop:latest
```

✅ Ensure the image is successfully uploaded.

Step 7: Install Minikube and Start Kubernetes

Install Minikube:

```
curl -LO https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64
```

```
sudo install minikube-linux-amd64 /usr/local/bin/minikube
```

Start Minikube:

```
minikube start --driver=docker
```

✅ Verify Minikube is running:

```
kubectl get nodes
```

Step 8: Deploy the Application to Kubernetes

Create the deployment:

```
kubectl create deployment petclinic --image=dhineshkumaran/spring-petshop:latest --port=8080
```

✅ Check if the pods are running:

```
kubectl get pods
```

Step 9: Expose the Application

Expose the application using a NodePort:

```
kubectl expose deployment petclinic --type=NodePort --port=80 --target-port=8080
```

✅ This makes the application accessible externally.

Step 10: Access the Application

Get the Minikube service URL:

```
minikube service petclinic --url
```

Copy and open the URL in your browser to access the application.

