Using Helm to Deploy Micro-Services Application

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I. Introduction

I.1. Target

The document shows readers how to deploy applications with **Helm.**

I.2. Demo Overview

In using Helm, we can simplify the process of application deployment.

In this demo, we will create the application on EKS.

The project used in this demo consists of 3 services:

- database
- backend
- frontend

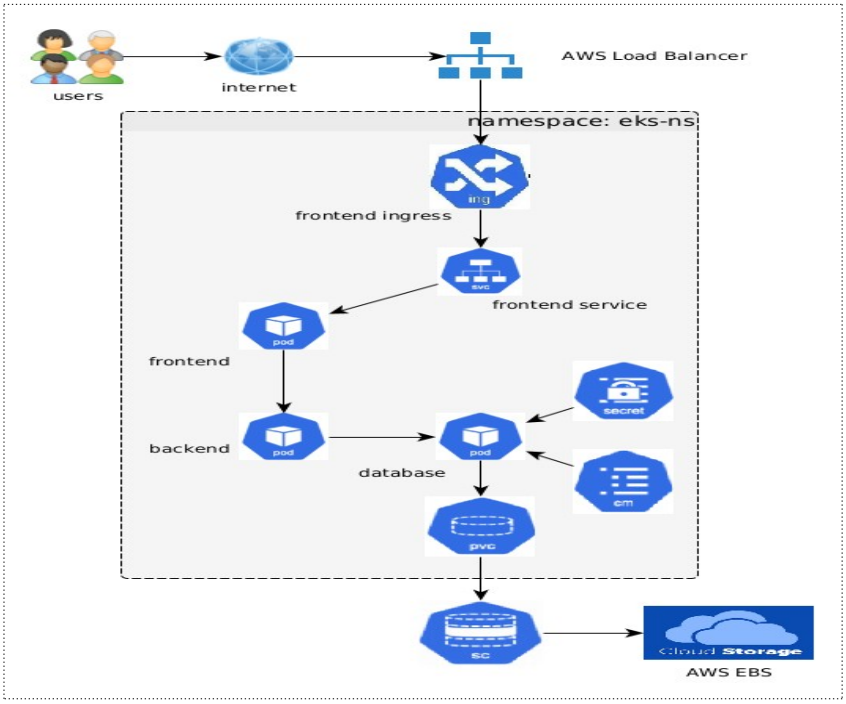


Figure 1: Application Components

We will deploy a helm chart that consists of 3 subcharts (frontend, backend and mongo) and 1 dependency (NGINX controller). They can be found in "Demo source code"

Note: For the production environment, the database should be an external database service.

I.3. Prequiresites

- Helm CLI is locally installed
- EKS cluster is already created (refer to Create EKS Cluster).
- Kubernetes CLI gets configured (kubectl) (refer Configure kubectl)

II. Instruction

II.1. General steps

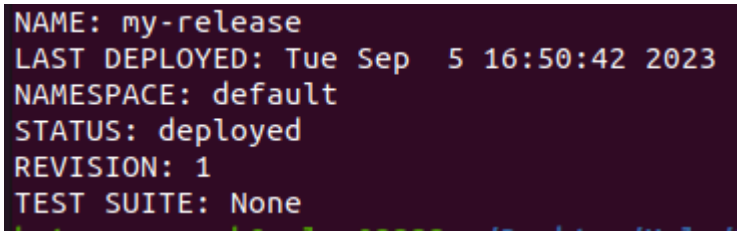
In order to get the application running, the following steps are required:

- Deploy the helm chart
- Verify the chart installation

II.2. Execution

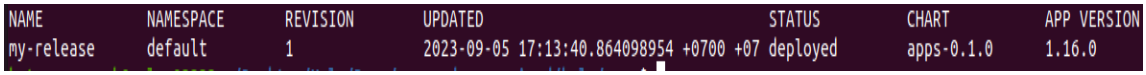
- **Deploy the helm chart:**

  # in the root folder
  helm install my-release .

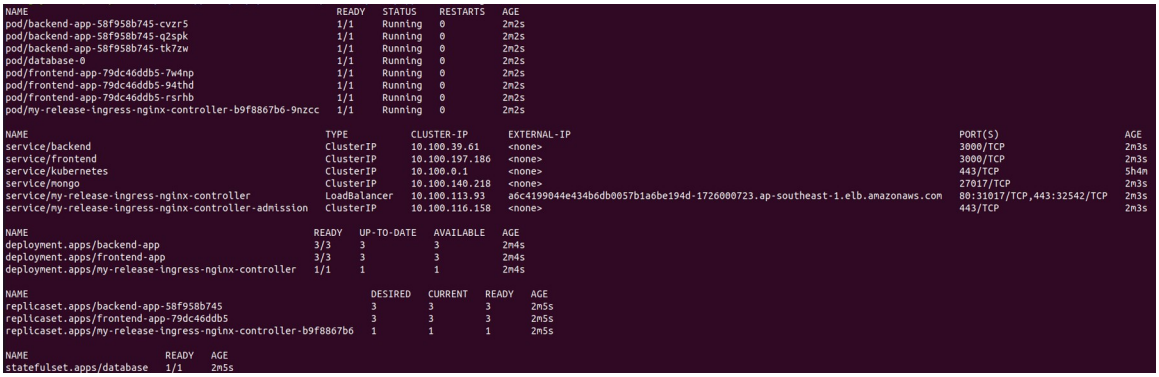


- **Verify the chart installation**

  # verify the release
  helm list



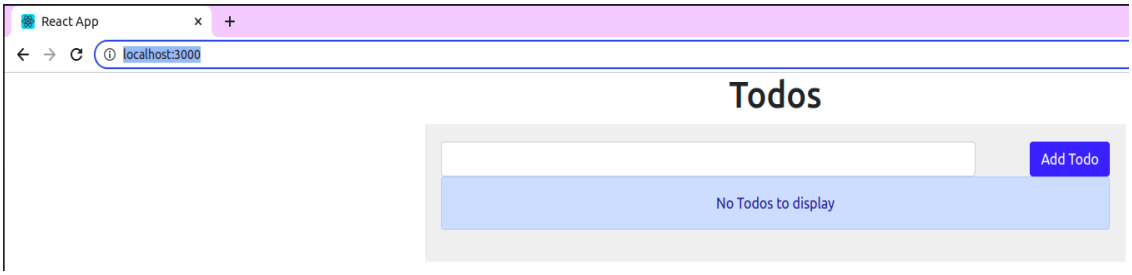
  # verify the application resources
  kubectl get all



expose frontend service to access application
kubectl port-forward service/frontend 3000:3000

```
hatnguyencanh@vnlap03333:~/Documents/K8s/DEMO/k8s$ kubectl port-forward service/frontend 3000:3000
Forwarding from 127.0.0.1:3000 -> 3000
Forwarding from [::1]:3000 -> 3000
```

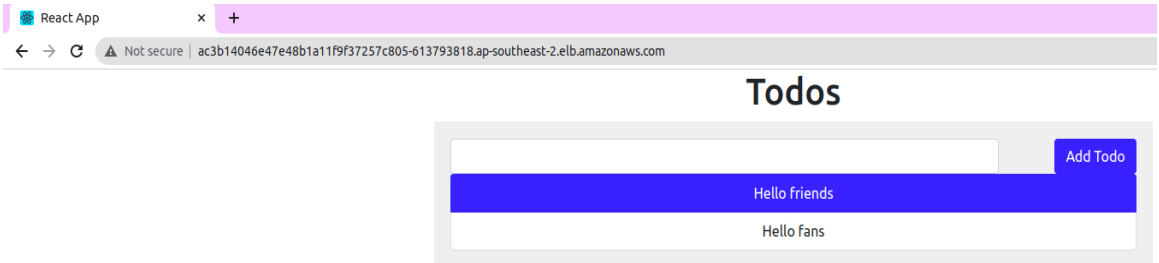
open browser to access application at URL: locahost:3000



verify application ingress
kubectl get ingress -o wide

```
hatnguyencanh@vnlap03333:~/Documents/K8s/DEMO/k8s$ kubectl get ingress -o wide
NAME      CLASS   HOSTS   ADDRESS                                                                  PORTS   AGE
ingress   nginx   *       ac3b14046e47e48b1a11f9f37257c805-613793818.ap-southeast-2.elb.amazonaws.com   80      42s
```

open browser to access application at URL created by ingress controller (e.g: ac3b14046e47e48b1a11f9f37257c805-613793818.ap-southeast-2.elb.amazonaws.com)



III. Frequently Asked Questions

III.1. Demo source code

- https://github.com/nashtech-garage/azure-devops-ci-cd/tree/main/helm

IV. References

- Source code for application: https://github.com/docker/awesome-compose/tree/master/react-express-mongodb