Documentation

This is a simple laravel application deployed in Google Kubernetes Engine, a managed Kubernetes service on the cloud. The application is packed using a Dockerfile and uploaded in an image registry - Google container registry.

The application is deployed using a deployment manifest file with an external loadbalancer. The loadbalancer routes traffic from the internet into the cluster

Setup GCP

- Login to the GCP console
- Create a bucket with a unique name. This bucket will hold the terraform state file.
- Clone the git repository: https://github.com/Chinweoke18/k8-gcp.git/

- cd into the k8-gcp directory
- Open the “variable.tf” file, and replace the “project_id” with your project ID. (Project ID can be obtained from the GCP console)

Deploying the GKE cluster

- Run the following command
- *cd k8-gcp*
- *terraform init*
- *terraform fmt*
- *terraform apply*

This creates the GKE cluster as well as the image repository

Building the image

Access the folder named “microservice” inside the k8-gcp folder

- Copy the files “Dockerfile” and “000.default.conf”
- Place the files inside the root folder of your application (https://github.com/kennedy-osaze/abc-article-api.git) in our case
- Inside the root folder, run the following commands:

- *docker build -t gcr.io/PROJECT_ID/article-api:latest .*
- *docker push gcr.io/PROJECT_ID/article-api:latest*

This pushes your image to the image repository created

NOTE: replace “*PROJECT_ID*” with your project ID.

Deploying the microservice in Kubernetes

Access the “microservice” folder inside the “k8-gcp” folder
Run the command:

- *kubectl apply -f deployment.yaml*

Testing the application

- Obtain the loadbalancer URL/IP Address of the application

kubectl get services

- Copy the loadbalancer URL/IP Address

```
okworchinweoke@cloudshell:~ [redacted]$ kubectl get all
NAME                                             READY   STATUS    RESTARTS   AGE
pod/earticle-api-deployment-6d5668848d-ctbbp     1/1     Running   0          2m32s
pod/earticle-api-deployment-6d5668848d-plbwp     1/1     Running   0          2m32s

NAME                            TYPE           CLUSTER-IP     EXTERNAL-IP    PORT(S)        AGE
service/article-api-service     LoadBalancer   10.52.5.236    34.123.7.145   80:31177/TCP   2m32s
service/kubernetes              ClusterIP      10.52.0.1      <none>         443/TCP        3h14m

NAME                                       READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/earticle-api-deployment    2/2     2            2           2m32s

NAME                                                  DESIRED   CURRENT   READY   AGE
replicaset.apps/earticle-api-deployment-6d5668848d    2         2         2       2m33s
```

- Paste it on your browser and hit enter. You will be able to hit the application endpoint

Infrastructure Diagram

The infrastructure diagram is in the “microservices” folder inside the “k8-gcp” folder. File name: *infra-diagram.png*