

Microservices on Kubernetes with Docker Desktop



Dev Thakkar · [Follow](#)

2 min read · Mar 21, 2024



Scenario: Publish 4 microservices on Kubernetes with Docker Desktop

Tech stack: .NET Core, Visual Studio, Kubernetes on Docker Desktop (on Windows)

GitHub: [Ecommerce — Kubernetes Run](#)

(1) Docker desktop includes standalone Kubernetes server and client.

(2) Services and data flow example are similar to explanation in [Microservices on Docker Desktop](#).

- CustomerService
- OrderService
- ProductService
- SearchService

(3) Kubernetes YAML files

- searchservice-deploy.yml

```
## Includes endpoints for customerservice, orderservice and productservice
## searchservice docker image is loaded from Local registry
---
apiVersion: apps/v1
kind: Deployment
```

```

metadata:
  name: searchservice
spec:
  replicas: 1
  template:
    metadata:
      labels:
        app: searchservice
    spec:
      containers:
        - name: searchservice
          image: localhost:5000/searchservice:latest
          imagePullPolicy: Always
          ports:
            - containerPort: 30003
          env:
            - name: ASPNETCORE_URLS
              value: http://*:30003
            - name: CustomersUrl
              value: http://customerservice
            - name: ProductsUrl
              value: http://productservice
            - name: OrdersUrl
              value: http://orderservice
      selector:
        matchLabels:
          app: searchservice
  ---
apiVersion: v1
kind: Service
metadata:
  name: searchservice
spec:
  type: LoadBalancer
  ports:
    - port: 30003
  selector:
    app: searchservice

```

- customerservice-deploy.yml

```

## customerservice docker image is loaded from Local registry

---
apiVersion: apps/v1
kind: Deployment

```

```

metadata:
  name: customerservice #default dns name
spec:
  replicas: 1
  template:
    metadata:
      labels:
        app: customerservice
    spec:
      containers:
        - name: customerservice
          image: localhost:5000/customerservice:latest
          imagePullPolicy: Always
          ports:
            - containerPort: 80
          env:
            - name: ASPNETCORE_URLS
              value: http://*:80
      selector:
        matchLabels:
          app: customerservice
---
apiVersion: v1
kind: Service
metadata:
  name: customerservice
spec:
  ports:
    - port: 80
  type: LoadBalancer
  selector:
    app: customerservice

```

- orderservice-deploy.yml

```

## orderservice docker image is loaded from Local registry

---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: orderservice #default dns name
spec:
  replicas: 1
  template:
    metadata:

```

```

    labels:
      app: orderservice
    spec:
      containers:
      - name: orderservice
        image: localhost:5000/orderservice:latest
        imagePullPolicy: Always
        ports:
        - containerPort: 80
        env:
        - name: ASPNETCORE_URLS
          value: http://*:80
      selector:
        matchLabels:
          app: orderservice
---
apiVersion: v1
kind: Service
metadata:
  name: orderservice
spec:
  ports:
  - port: 80
  type: ClusterIP
  selector:
    app: orderservice

```

- productservice-deploy.yml

```

## productservice docker image is loaded from Local registry

---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: productservice #default dns name
spec:
  replicas: 1
  template:
    metadata:
      labels:
        app: productservice
    spec:
      containers:
      - name: productservice
        image: localhost:5000/productservice:latest

```

```

        imagePullPolicy: Always
        ports:
        - containerPort: 80
        env:
        - name: ASPNETCORE_URLS
          value: http://*:80
    selector:
      matchLabels:
        app: productservice
---
apiVersion: v1
kind: Service
metadata:
  name: productservice
spec:
  ports:
  - port: 80
  type: ClusterIP
  selector:

```

(3) Local registry setup

- Creating local registry in Docker Desktop provides a store for docker images.
- Kubernetes YAML files are setup to load docker images from the local registry.

```
## create registry
```

```
docker run -d -p 5000:5000 --restart=always --name registry registry:2
```

```
## build and push docker images to registry
```

```
docker build -t productservice .
```

```
docker tag productservice localhost:5000/productservice
```

```
docker push localhost:5000/productservice
```

```
docker build -t customerservice .
```

```
docker tag customerservice localhost:5000/customerservice
```

```
docker push localhost:5000/customerservice
```

```
docker build -t orderservice .
```

```
docker tag orderservice localhost:5000/orderservice
```

```
docker push localhost:5000/orderservice
```

```
docker build -t searchservice .
```

```
docker tag searchservice localhost:5000/searchservice
docker push localhost:5000/searchservice
```

(4) Deploy services to Kubernetes on Docker Desktop (after registry is setup)

```
kubectl apply -f customerservice-deploy.yml

kubectl apply -f productservice-deploy.yml

kubectl apply -f orderservice-deploy.yml

kubectl apply -f searchservice-deploy.yml
```

(5) Call SearchService

```
Post HTTP: http://localhost/api/search

Body:
{
  "customerId": 1
}
```

Written by Dev Thakkar

3 Followers · 3 Following

No responses yet



What are your thoughts?

More from Dev Thakkar

```
aml > ...  
Fact| Registry - create repository kmtestrepo  
d and push to repository kmtestrepo  
:  
e: 'gcr.io/cloud-builders/docker'  
s: [ 'build', '-t', '${_LOCATION}-docker.pkg.dev/$PROJECT_ID/${_REPOSITORY}/${_IMAGE}'  
s:  
_LOCATION}-docker.pkg.dev/$PROJECT_ID/${_REPOSITORY}/${_IMAGE}'  
  
stitutions:  
LOCATION: "us-east1"  
POSITORY: "kmtestrepo"  
AGE: "my-image"
```

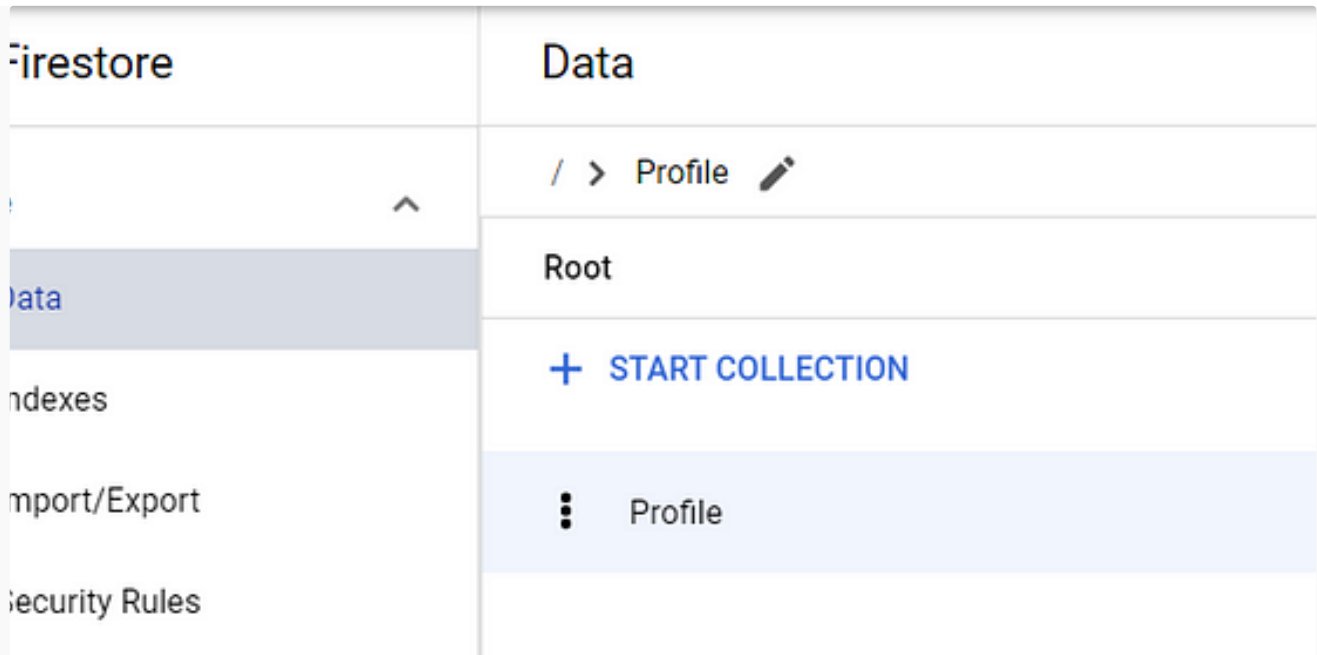
 Dev Thakkar


Deploy To Cloud Run Using Cloud Build And Terraform

This article demonstrates use of Cloud Build and Terraform to deploy python backend service on Google Cloud Run.

Dec 29, 2021  5  1





 Dev Thakkar

Use Cloud KMS To Encrypt Passphrase Part 2

Continued from Part 1

Nov 19, 2021



You have 20 projects remaining in your quota. Request an increase or delete projects. [Learn more](#)

[MANAGE QUOTAS](#)

Project name *


KMSTESTPROJ

Project ID *

kmstestproj




Project ID can have lowercase letters, digits, or hyphens. It must start with a lowercase letter and end with a letter or number.

 Dev Thakkar

Use Cloud KMS To Encrypt Passphrase Part 1

Scenario: User requiring application to encrypt “passphrase” before it is stored in database



 Dev Thakkar

Microsoft Defender XDR Components

(1) XDR (Extended Detection and Response)—What does it do?

Mar 15

See all from Dev Thakkar

Recommended from Medium

Always Free

24 GB RAM + 4 CPU + 200 GB



@harendraverma2



@harendra21



@harendra21



Harendra

How I Am Using a Lifetime 100% Free Server

Get a server with 24 GB RAM + 4 CPU + 200 GB Storage + Always Free



Oct 26



8.3K



132



In Yatri Cloud by Yatharth Chauhan

How to Install Kubernetes (kubectl) on Windows: Step-by-Step Guide

Setup Kubernetes on Windows

Lists



Staff picks

791 stories · 1532 saves



Stories to Help You Level-Up at Work

19 stories · 901 saves



Self-Improvement 101

20 stories · 3167 saves



Productivity 101

20 stories · 2681 saves



Austin Starks

I just tried OpenAI's updated o1 model. This technology will BREAK Wall Street

All of my articles are 100% free to read! Non-members can read for free by checking out this link.

Dec 22 2.1K 48




Ömer Naci Soydemir

Local Kafka Environment with Docker Compose

The Docker Compose tool is useful for managing multiple service installations. The Kafka cluster requires Zookeeper and Kafka brokers...

★ Sep 26 🖱 12

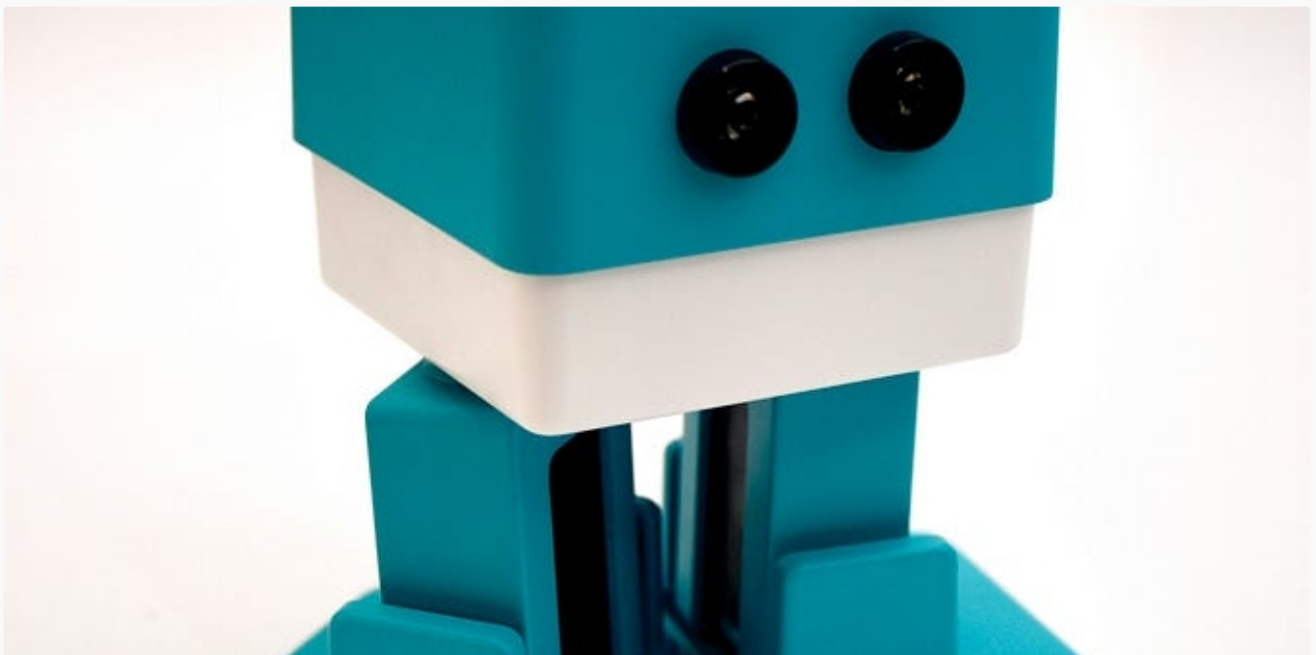


 Lal Zada

Setup GitLab Using Docker Compose: A Beginner's Guide

Continuing the series of Dockerized GitLab, in this post i'll show you how to set up your custom GitLab on your host machine using docker...

Sep 5 🖱 52





Akhilesh Mishra

You should stop writing Dockerfiles today— Do this instead

Using docker init to write Dockerfile and docker-compose configs



Feb 8



7.5K



66



See more recommendations