

Dockerized CI/CD Pipeline using Jenkins and Kubernetes

```
master@master-vm:~/Desktop$ sudo apt update
sudo apt install -y apt-transport-https ca-certificates curl
[sudo] password for master:
Hit:1 https://download.docker.com/linux/ubuntu jammy InRelease
Get:2 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:3 http://ln.archive.ubuntu.com/ubuntu jammy InRelease
Get:4 http://ln.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:5 http://ln.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:6 http://ln.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [2,377 kB]
Get:7 http://ln.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,193 kB]
Get:8 http://ln.archive.ubuntu.com/ubuntu jammy-updates/universe i386 Packages [760 kB]
Fetched 4,587 kB in 8s (578 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
2 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ca-certificates is already the newest version (20240203-22.04.1).
curl is already the newest version (7.81.0-1ubuntu1.20).
apt-transport-https is already the newest version (2.4.13).
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
master@master-vm:~/Desktop$ curl -LO "https://dl.k8s.io/release/stable.txt"
ubctl
chmod +x kubectl
sudo mv kubectl /usr/local/bin/
kubectl version -client
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 138 100 138 0 0 373 0 --:--:-- --:--:-- --:--:-- 373
100 54.6M 100 54.6M 0 0 13.9M 0 0:00:03 0:00:03 --:--:-- 16.4M
```

```
master@master-vm:~/Desktop$ kubectl version
Client Version: v1.32.2
Kustomize Version: v5.5.0
The connection to the server localhost:8080 was refused - did you specify the right host or port?
master@master-vm:~/Desktop$ curl -LO https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64
chmod +x minikube-linux-amd64
sudo mv minikube-linux-amd64 /usr/local/bin/minikube
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 119M 100 119M 0 0 13.8M 0 0:00:08 0:00:08 --:--:-- 19.9M
```

```
master@master-vm:~/Desktop$ sudo systemctl start docker
master@master-vm:~/Desktop$ minikube start --driver=docker
🌻 minikube v1.35.0 on Ubuntu 22.04
🔧 Using the docker driver based on user configuration
🔧 Using Docker driver with root privileges
👉 Starting "minikube" primary control-plane node in "minikube" cluster
📦 Pulling base image v0.0.46 ...
📦 Downloading Kubernetes v1.32.0 preload ...
> preloaded-images-k8s-v18-v1...: 333.57 MiB / 333.57 MiB 100.00% 9.04 Mi
> gcr.io/k8s-minikube/kicbase...: 500.06 MiB / 500.31 MiB 99.95% 9.39 MiB
🔥 Creating docker container (CPUs=2, Memory=2200MB) ...
📦 Preparing Kubernetes v1.32.0 on Docker 27.4.1 ...
   ▪ Generating certificates and keys ...
   ▪ Booting up control plane ...
   ▪ Configuring RBAC rules ...
🔗 Configuring bridge CNI (Container Networking Interface) ...
🔍 Verifying Kubernetes components...
   ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
🌟 Enabled addons: storage-provisioner, default-storageclass
🎉 Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
master@master-vm:~/Desktop$ kubectl cluster-info
Kubernetes control plane is running at https://192.168.49.2:8443
CoreDNS is running at https://192.168.49.2:8443/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy

To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.
master@master-vm:~/Desktop$ git clone https://github.com/Bhargavkulla/flask-ci-cd.git
Cloning into 'flask-ci-cd'...
remote: Enumerating objects: 24, done.
remote: Counting objects: 100% (24/24), done.
remote: Compressing objects: 100% (21/21), done.
remote: Total 24 (delta 7), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (24/24), 8.05 KiB | 30.00 KiB/s, done.
Resolving deltas: 100% (7/7), done.
master@master-vm:~/Desktop$ cd flask-ci-cd
```

```
master@master-vm:~/Desktop/flask-ci-cd$ docker build -t bhargavakulla/flask-ci-cd:latest .
[+] Building 36.7s (11/11) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 181B
=> [internal] load metadata for docker.io/library/python:3.9
=> [auth] library/python:pull token for registry-1.docker.io
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [1/5] FROM docker.io/library/python:3.9@sha256:5ea663a1c6ba266dfcac5949d1d2ea364ce30a2da92a3df95bb3c01437633ad9
=> [internal] load build context
=> => transferring context: 39.89kB
=> CACHED [2/5] WORKDIR /app
=> [3/5] COPY requirements.txt requirements.txt
=> [4/5] RUN pip install -r requirements.txt
=> [5/5] COPY . .
=> exporting to image
=> => exporting layers
=> => writing image sha256:c2f321e0bf8503af270f3e696f1cc153bfa588df5f5db79288c07c3d2894b830
=> => naming to docker.io/bhargavakulla/flask-ci-cd:latest
master@master-vm:~/Desktop/flask-ci-cd$ docker login
```

```

master@master-vm:~/Desktop/flask-ci-cd$ docker push bhargavakulla/flask-ci-cd:latest
The push refers to repository [docker.io/bhargavakulla/flask-ci-cd]
fcb06d065311: Pushed
483f75c11cb0: Pushed
61f89a992ae8: Pushed
ca69466f8515: Pushed
01db3e67097a: Mounted from library/python
e49d0c94aa2a: Mounted from library/python
1c86760c5c93: Mounted from library/python
4b017a36fd9c: Mounted from library/python
20a9b386e10e: Mounted from library/python
f8217d7865d2: Mounted from library/python
01c9a2a5f237: Mounted from library/python
latest: digest: sha256:2fe24326b55261c01127bccc0f6619b73b0e483a629a96d8ffc27b5c8c128d7a size: 2629
master@master-vm:~/Desktop/flask-ci-cd$ kubectl create secret docker-registry docker-hub-secret \
--docker-server=https://index.docker.io/v1/ \
--docker-username=bhargavakulla \
--docker-password="Bharu@12345" \
--docker-email=bhargavaramcloud@gmail.com
secret/docker-hub-secret created
master@master-vm:~/Desktop/flask-ci-cd$ Create k8s-deployment.yaml
Create: command not found
master@master-vm:~/Desktop/flask-ci-cd$ kubectl apply -f k8s-deployment.yaml
deployment.apps/flask-app created
service/flask-service created

```

```

master@master-vm:~/Desktop/flask-ci-cd$ kubectl get pods

```

NAME	READY	STATUS	RESTARTS	AGE
flask-app-dc55b55f7-6wxzb	1/1	Running	0	7m2s
flask-app-dc55b55f7-q5zwk	1/1	Running	0	7m2s

```

master@master-vm:~/Desktop/flask-ci-cd$

```