

In this project we will deploy reddit clone to Kubernetes .

- Checkout code from github to ci server (docker installed in ci server ) .
- Build and test the code and push image to docker hub .
- Deployment server (Kubernetes setup to be done) . – we will deploy here .

<https://trainwithshubham.hashnode.dev/deployed-a-reddit-copy-on-kubernetes-with-ingress-enabled>

- Install docker in CI server.

```
sudo apt-get update
```

```
sudo apt-get install docker.io
```

```
sudo usermod -aG docker ubuntu && newgrp docker – change permission of ubuntu with usermod and add to grp docker
```

- Now checkout code from github to CI server (docker)

<https://github.com/sapnarsy2612/reddit-clone-k8s-ingress.git>

```
git clone https://github.com/sapnarsy2612/reddit-clone-k8s-ingress.git
```

- we will build the code using dockerfile .

```
ubuntu@ip-172-31-12-68:~/reddit-clone-k8s-ingress$ cat Dockerfile
FROM node:19-alpine3.15
```

```
WORKDIR /reddit-clone
```

```
COPY . /reddit-clone
```

```
RUN npm install
```

```
EXPOSE 3000
```

```
CMD ["npm", "run", "dev"]
```

```
ubuntu@ip-172-31-12-68:~/reddit-clone-k8s-ingress$
```

We are deploying node js application . So we will take node base image .

FROM node – will fetch the node image of specified version .

WORDIR – working directory in image .

COPY – to copy files from our instance to image WORKDIR .

RUN npm install – to download all dependencies required for this project .

EXPOSE : To expose port 3000 in a Dockerfile, you can use the **EXPOSE**

npm run dev : is a command that runs a script called "dev" defined in the package.json file of a Node.js project. The script can be used to start a development server or perform other development-related tasks.

When you run npm run dev, NPM looks for the "dev" script in the package.json file and executes the command or series of commands specified under the "dev" key. For example, the script might use a tool like nodemon or webpack-dev-server to automatically restart the server when changes are made to the code.

To create a "dev" script in your package.json file, you would add something like this:

```
"scripts": {  
  "dev": "nodemon server.js"  
}
```

This would run the nodemon package and start your server file (server.js) in development mode. You can customize this command to fit your specific needs.

- 
- Now build dockerfile and create docker image . We will push docker image to docker hub . Build and tag docker image with our dockerhub repo name .

docker build . -t sravtar/reddit-clone

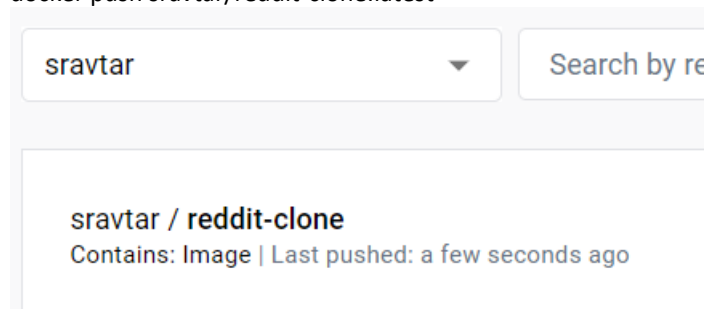
- Login to dockerhub from ci server .

```
ubuntu@ip-172-31-12-68:~/reddit-clone-k8s-ingress$ docker login  
Login with your Docker ID to push and pull images from Docker Hub.  
Username: sravtar  
Password:  
WARNING! Your password will be stored unencrypted in /home/ubuntu/  
Configure a credential helper to remove this warning. See  
https://docs.docker.com/engine/reference/commandline/login/#creden
```

Login Succeeded

- Push image to docker hub .

docker push sravtar/reddit-clone:latest



- Now we will need to deploy image in Kubernetes server
- Deployment server – t2.medium .
- Install minikube in Kubernetes .
- For minikube docker is pre-req , so install docker .

sudo apt-get update

sudo apt-get install docker.io

sudo usermod -aG docker ubuntu && newgrp docker – modify permission for ubuntu user in docker group .

- **Install minikube**

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

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

sudo snap install kubectl --classic

minikube start --driver=docker

- To deploy docker image on Kubernetes – we need deployment.yaml file in Kubernetes .  
Deployment should be scalable . So we have to add multiple replication controller in deployment . Eg : if we want our pod to keep on running even when traffic spikes or when pod gets destroyed (pod should be able to regenerate ) then we have to add autohealing configuration in deployment file .

- Kubernetes manifest file :

```
name: reddit-clone-deployment
labels:
  app: reddit-clone
spec:
  replicas: 2
  selector:
    matchLabels:
      app: reddit-clone
  template:
    metadata:
      labels:
        app: reddit-clone
    spec:
      containers:
      - name: reddit-clone
        image: trainwithshubham/reddit-clone
        ports:
        - containerPort: 3000
```

1. Replica : number of pod we need in our deployment .
2. Spec : deployment type is specified here .
3. Container – to specify that we need to create container with name reddit-clone and image specified .

- Add deployment file in Kubernetes server :

mkdir k8s , cd k8s

Deployment.yml

- Deploy the application defined in Deployment.yml file .

kubectl apply -f Deployment.yml

- View the deployed application .

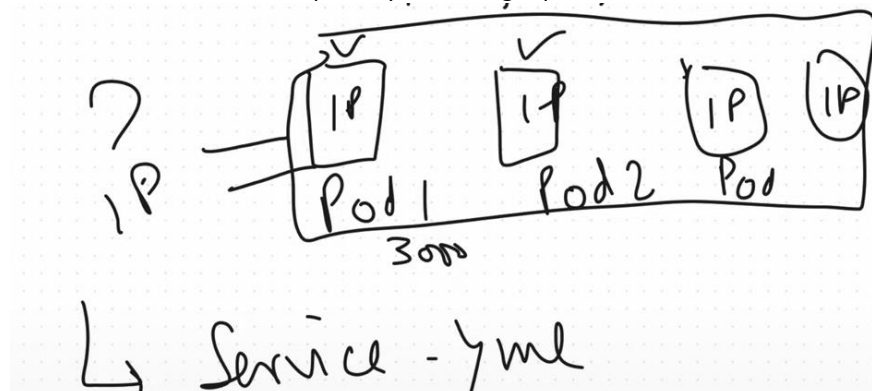
kubectl get deployment

ubuntu@ip-172-31-17-226:~/k8s\$ kubectl get deployment

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
reddit-clone-deployment	2/2	2	2	4m37s

So our container is running on 2 pods .

We can increase number of pods by increasing replica count .



- To access all pods we need service.yml file . Now create service in Kubernetes .  
kubectl apply -f Service.yml

- To get the url for our service :  
minikube service reddit-clone-service --url

- Access url using curl :  
curl -L <http://192.168.49.2:31000> (url we got from above command)

- Expose the application so that it can be accessible from browser .Configure ingress  
kubectl get deployment  
kubectl expose deployment reddit-clone-deployment --type=NodePort

Now our application is exposed globally .

- Enable 3000 port before port forwarding in security group .

Inbound rules <a href="#">Info</a>					
Security group rule ID	Type <a href="#">Info</a>	Protocol <a href="#">Info</a>	Port range <a href="#">Info</a>	Source <a href="#">Info</a>	
sgr-0c5be85a8f0cad0d4	SSH ▼	TCP	22	Custom ▼	<input type="text" value="0.0.0.0"/> X
sgr-0db8d4c1fd76c0aa6	All traffic ▼	All	All	Custom ▼	<input type="text" value="sg-0e565019f66cd6bd4"/> X
-	Custom TCP ▼	TCP	3000	Anywh... ▼	<input type="text" value="0.0.0.0"/> X

- We need to do port forwarding of port on which our pod is running .  
kubectl get services  
kubectl port-forward svc/reddit-clone-service 3000:3000 --address 0.0.0.0

Application will be accessible .

- Ingress

First we have to enable ingress if we want to use it .  
minikube addons enable ingress

With ingress we can add domain for our cluster ip .

- Add ingress.yml file .
  - Create ingress service  
kubectl apply -f ingress.yml
  - Now do curl to endpoint defined in ingress file  
curl -L domain.com/test (host/path mentioned in ingress file)
- Our apps should open in server