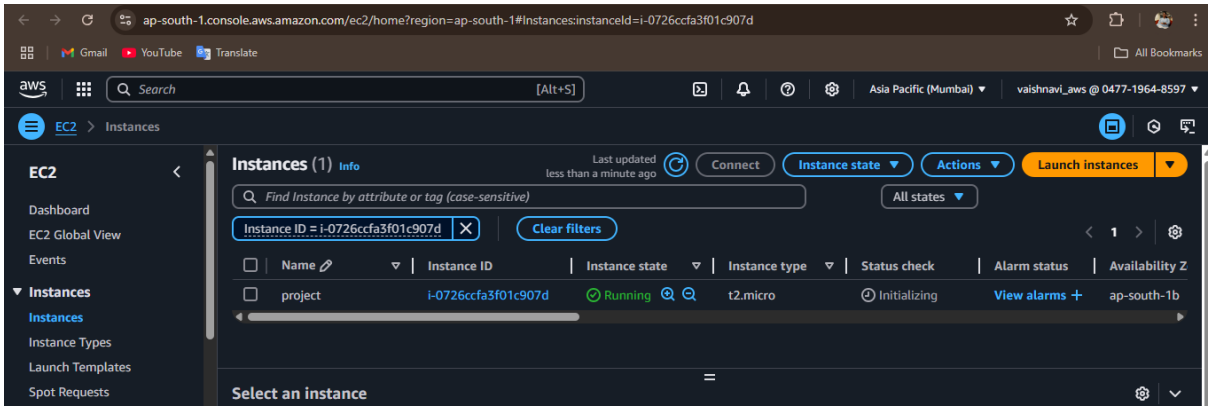
Deploying Spring Boot application on Kubernetes

Step-by-Step Implementation :-

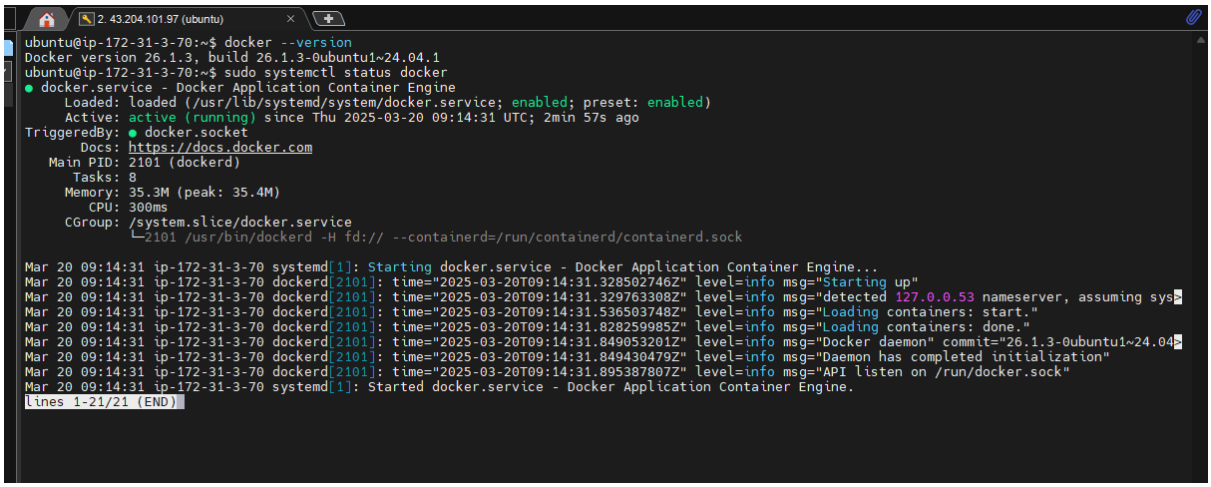
- Create an t2.medium Instance
- Install Required Dependancies
    - Docker
    - Minikube
    - Conntrack
    - Kubectl
    - maven
- Clone Git Repo
    - https://github.com/sushantkapare-dev/SpringBootOnK8S_PS.git
- Setting up Database
- Create an image from Dockerfile && push image to dockerhub
- Apply app-deployment.yml , check pods , deployment and svc
- Port Forwarding
- Check k8s dashboard

1. Create t2.medium Instance on aws



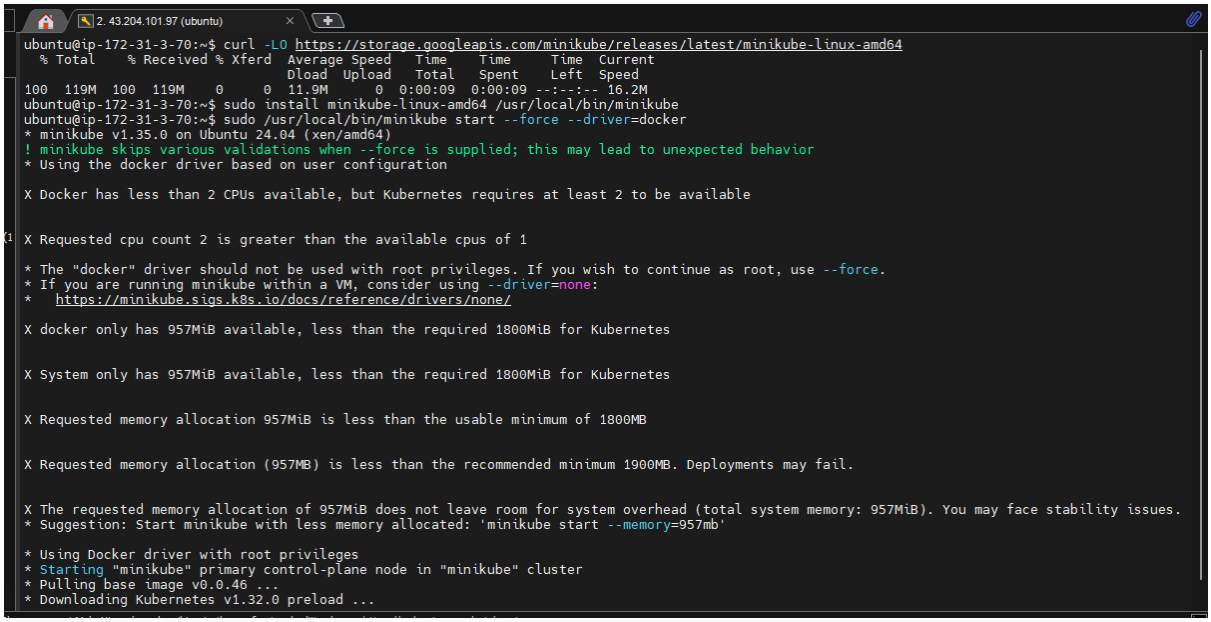
2. Install Required Dependencies

1. Install docker

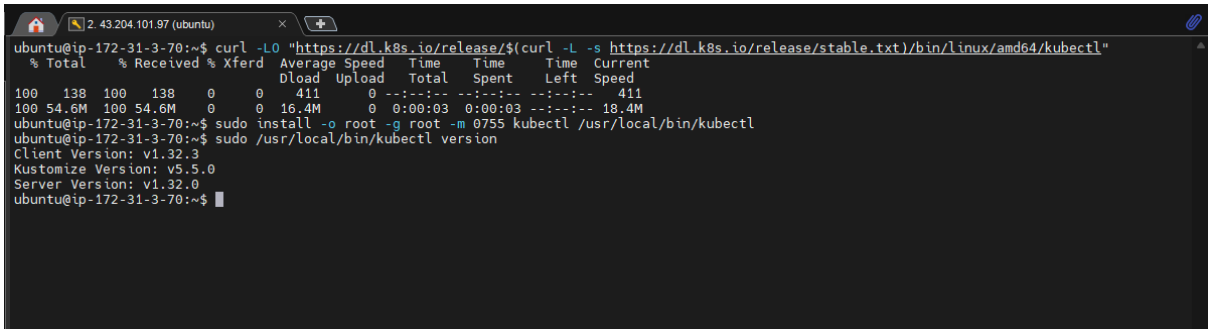


2. Install Contract

3. Install Minikube

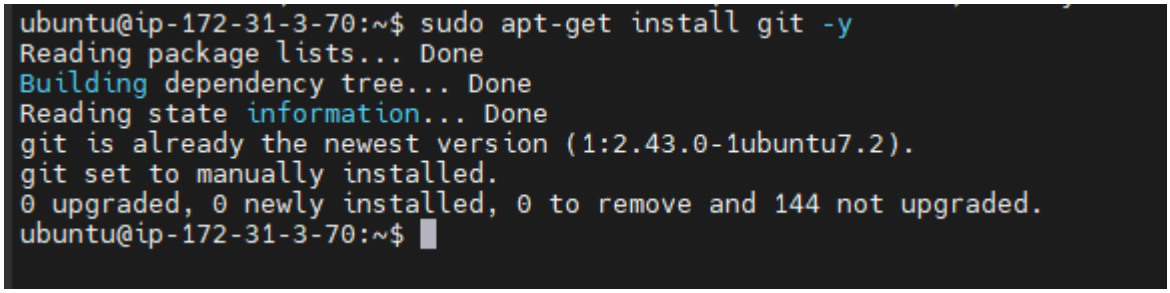


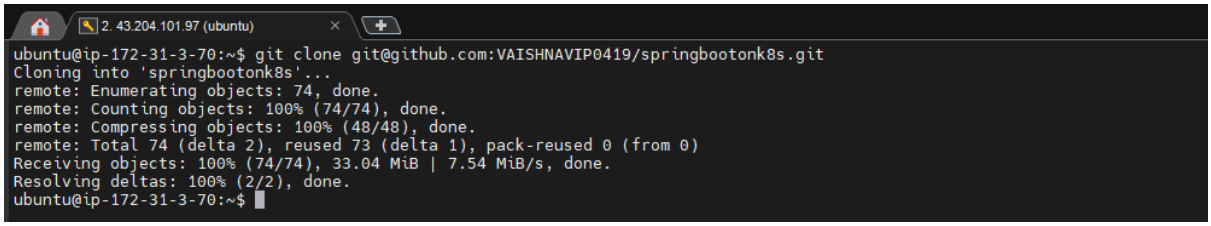
4. Install kubectl



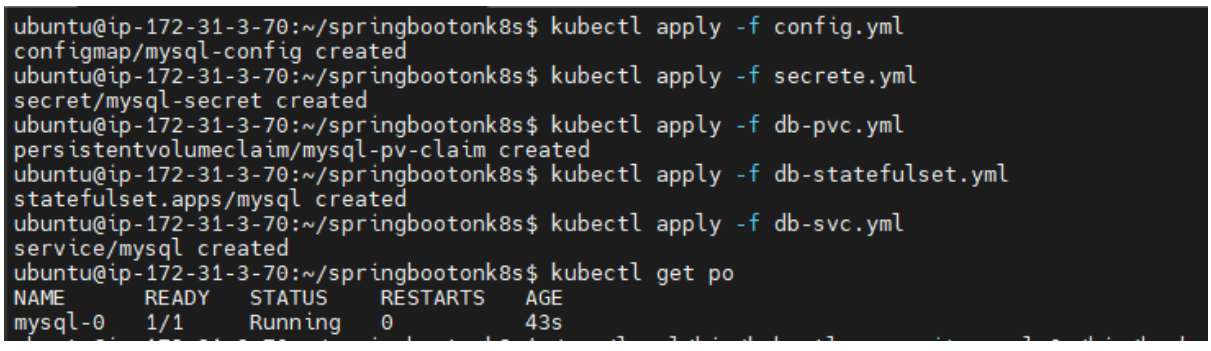
5. Install Maven

3. Clone Git Repo





4. Setting up Database



```
ubuntu@ip-172-31-3-70:~/springbootonk8s$ kubectl exec -it mysql-0 -- /bin/bash
bash-4.2# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 3
Server version: 5.7.44 MySQL Community Server (GPL)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> SHOW DATABASES;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| singamlabs         |
| sys                |
+--------------------+
5 rows in set (0.01 sec)

mysql> USE singamlabs;
Database changed
mysql> SHOW TABLES;
Empty set (0.00 sec)
```

```
mysql> CREATE TABLE orders_tbl (
    ->     id INT AUTO_INCREMENT PRIMARY KEY,
    ->     name VARCHAR(255) NOT NULL,
    ->     price DECIMAL(10,2) NOT NULL,
    ->     qty INT NOT NULL
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> SELECT * FROM orders_tbl;
Empty set (0.00 sec)

mysql> SHOW TABLES;
+----------------------+
| Tables_in_singamlabs |
+----------------------+
| orders_tbl           |
+----------------------+
1 row in set (0.00 sec)

mysql> INSERT INTO orders_tbl (name, price, qty) VALUES ('Laptop', 50000, 2);
Query OK, 1 row affected (0.01 sec)

mysql>
```

```
mysql> SELECT * FROM orders_tbl;
+----+------------+----------+-----+
| id | name       | price    | qty |
+----+------------+----------+-----+
|  1 | Laptop     | 50000.00 |   2 |
|  2 | Mobile     | 20000.00 |   5 |
|  3 | Tablet     | 15000.00 |   3 |
|  4 | Headphones |  3000.00 |  10 |
+----+------------+----------+-----+
4 rows in set (0.00 sec)
```

5. Create an image from Dockerfile && push image to dockerhub

```
ubuntu@ip-172-31-3-70:~/springbootonk8s$ docker build -t vaishnavi2301/springboot-crud-k8s:1.0 .
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
            Install the buildx component to build images with BuildKit:
            https://docs.docker.com/go/buildx/

Sending build context to Docker daemon  73.35MB
Step 1/4 : FROM openjdk:8
8: Pulling from library/openjdk
001c52e26ad5: Pull complete
d9d4b9b6e964: Pull complete
2068746827ec: Pull complete
9daef329d350: Pull complete
d85151f15b66: Pull complete
52a8c426d30b: Pull complete
8754a66e0050: Pull complete
Digest: sha256:86e863cc57215cfb181bd319736d0baf625fe8f150577f9eb58bd937f5452cb8
Status: Downloaded newer image for openjdk:8
 ---> b273004037cc
Step 2/4 : EXPOSE 8080
 ---> Running in 23fca43aca60
 ---> Removed intermediate container 23fca43aca60
 ---> 7aa497a38fa4
Step 3/4 : ADD target/springboot-crud-k8s.jar springboot-crud-k8s.jar
 ---> 16a84bba5dae
Step 4/4 : ENTRYPOINT ["java","-jar","/springboot-crud-k8s.jar"]
 ---> Running in 6c0abcd165ab
 ---> Removed intermediate container 6c0abcd165ab
 ---> 2d7578c56fb0
Successfully built 2d7578c56fb0
Successfully tagged vaishnavi2301/springboot-crud-k8s:1.0
ubuntu@ip-172-31-3-70:~/springbootonk8s$
```

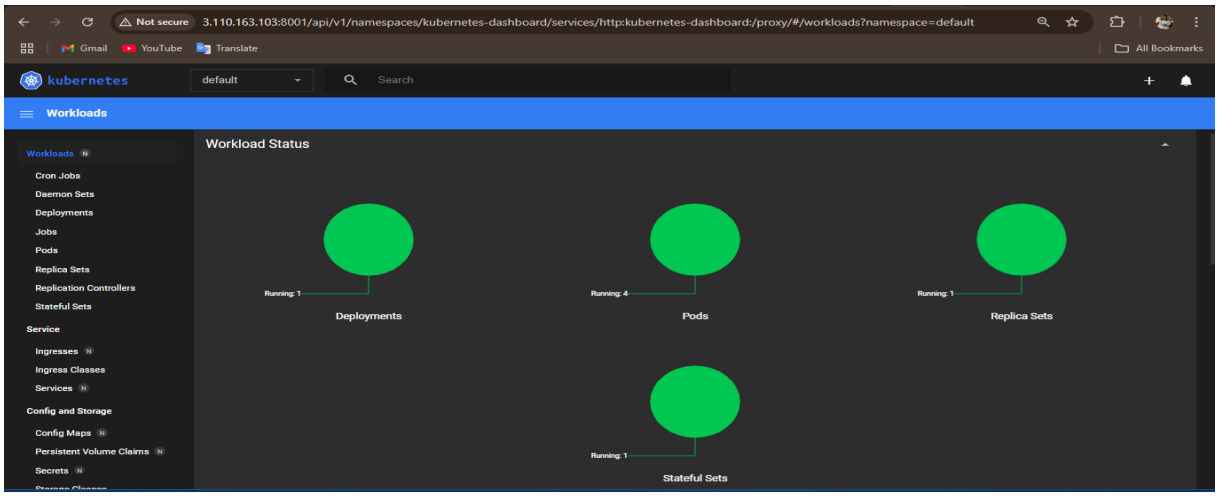
6. Apply app-statefulset.yml and check pods

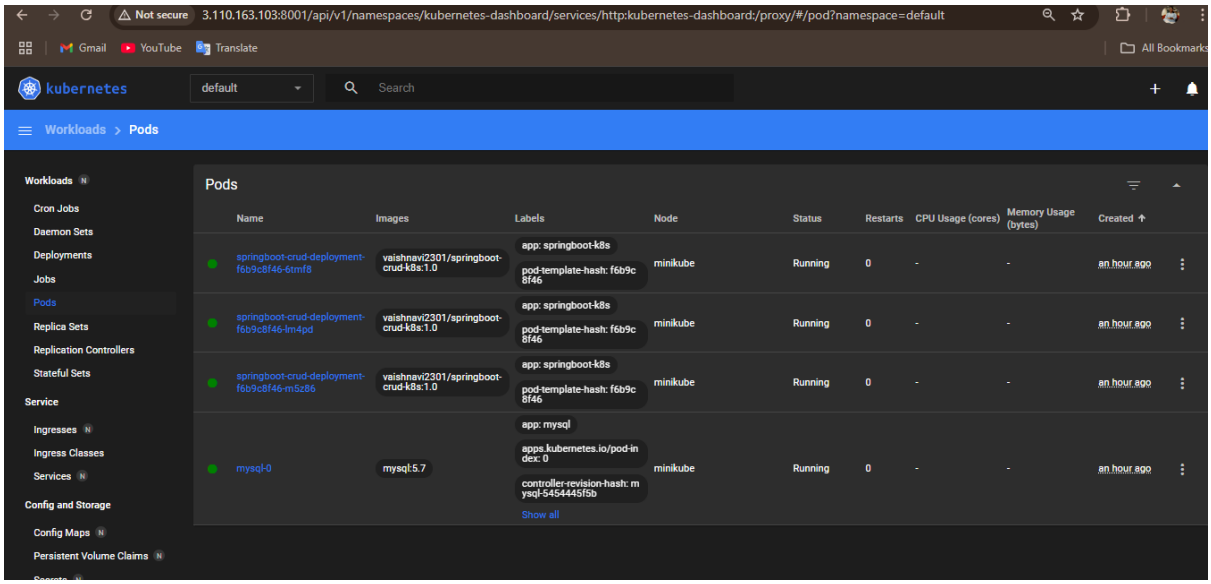
```
5. 3.110.163.103 (ubuntu)
ubuntu@ip-172-31-3-70:~/springbootonk8s$ kubectl apply -f app-deployment.yml
deployment.apps/springboot-crud-deployment created
ubuntu@ip-172-31-3-70:~/springbootonk8s$ kubectl apply -f app-svc.yml
service/springboot-crud-svc created
ubuntu@ip-172-31-3-70:~/springbootonk8s$ kubectl get po
NAME                                        READY   STATUS            RESTARTS   AGE
mysql-0                                     1/1     Running           0          26m
springboot-crud-deployment-f6b9c8f46-6tmf8  0/1     PodInitializing   0          22s
springboot-crud-deployment-f6b9c8f46-lm4pd  0/1     PodInitializing   0          22s
springboot-crud-deployment-f6b9c8f46-m5z86  0/1     PodInitializing   0          22s
ubuntu@ip-172-31-3-70:~/springbootonk8s$ kubectl get deployment
NAME                        READY   UP-TO-DATE   AVAILABLE   AGE
springboot-crud-deployment  3/3     3            3           61s
ubuntu@ip-172-31-3-70:~/springbootonk8s$ kubectl get svc
NAME                TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)          AGE
kubernetes          ClusterIP   10.96.0.1       <none>        443/TCP          28m
mysql               ClusterIP   None            <none>        3306/TCP         27m
springboot-crud-svc NodePort    10.109.13.106   <none>        8080:30770/TCP   54s
ubuntu@ip-172-31-3-70:~/springbootonk8s$
```

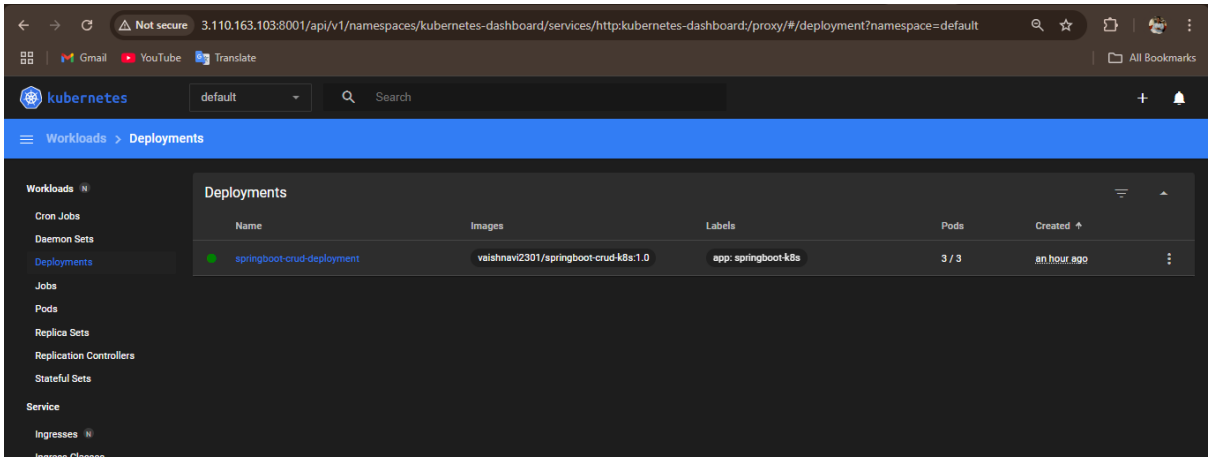
7. Port-Forwarding

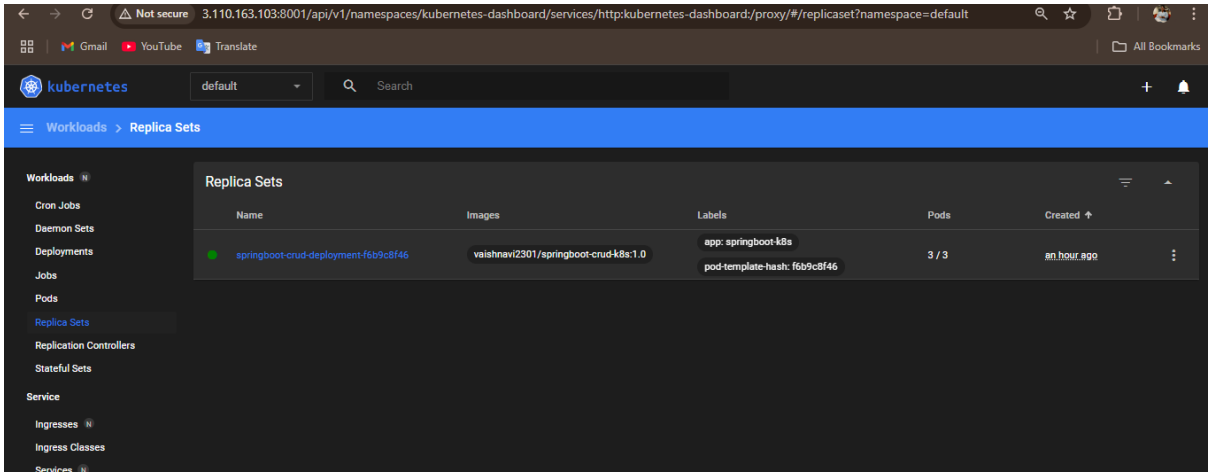
```
ubuntu@ip-172-31-3-70:~$ kubectl port-forward --address 0.0.0.0 svc/springboot-crud-svc 8080:8080 &
[1] 22880
ubuntu@ip-172-31-3-70:~$ Forwarding from 0.0.0.0:8080 -> 8080
Handling connection for 8080
Handling connection for 8080
```

8. Check k8s dashboard






Not secure
3.110.163.103:8001/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/#/deployment?namespace=default
Gmail
YouTube
Translate
All Bookmarks
kubernetes
default
Search
Workloads > Deployments
Workloads
Cron Jobs
Daemon Sets
Deployments
Jobs
Pods
Replica Sets
Replication Controllers
Stateful Sets
Service
Ingresses
Deployments
Name
Images
Labels
Pods
Created
springboot-crud-deployment
vaishnavi2301/springboot-crud-k8s:1.0
app: springboot-k8s
3 / 3
an hour ago


Not secure
3.110.163.103:8001/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/#/replicaset?namespace=default
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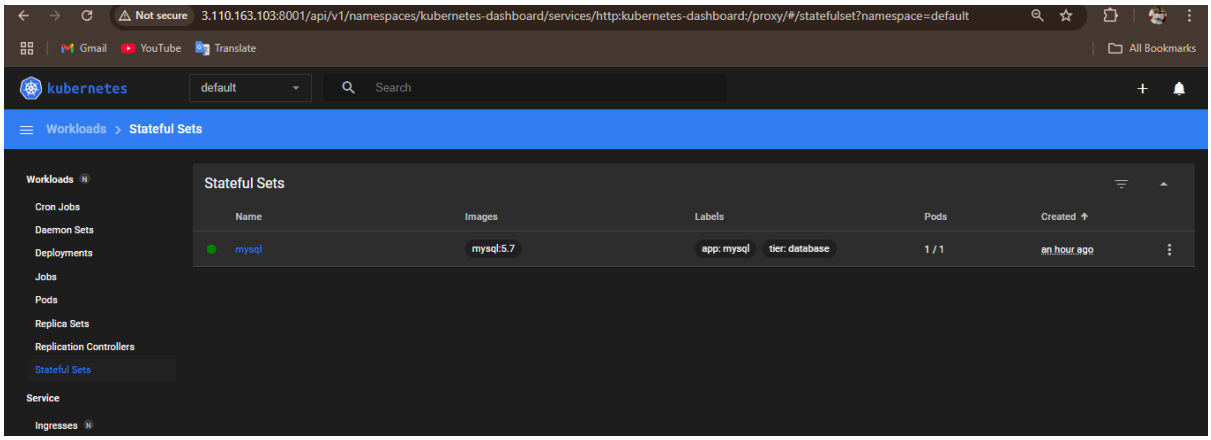
kubernetes
default
Search
Workloads > Replica Sets
Workloads
Cron Jobs
Daemon Sets
Deployments
Jobs
Pods
Replica Sets
Replication Controllers
Stateful Sets
Service
Ingresses
Ingress Classes
Replica Sets
Name
Images
Labels
Pods
Created
springboot-crud-deployment-f6b9c8f46
vaishnavi2301/springboot-crud-k8s:1.0
app: springboot-k8s
pod-template-hash: f6b9c8f46
3 / 3
an hour ago


Not secure
3.110.163.103:8001/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/#/statefulset?namespace=default
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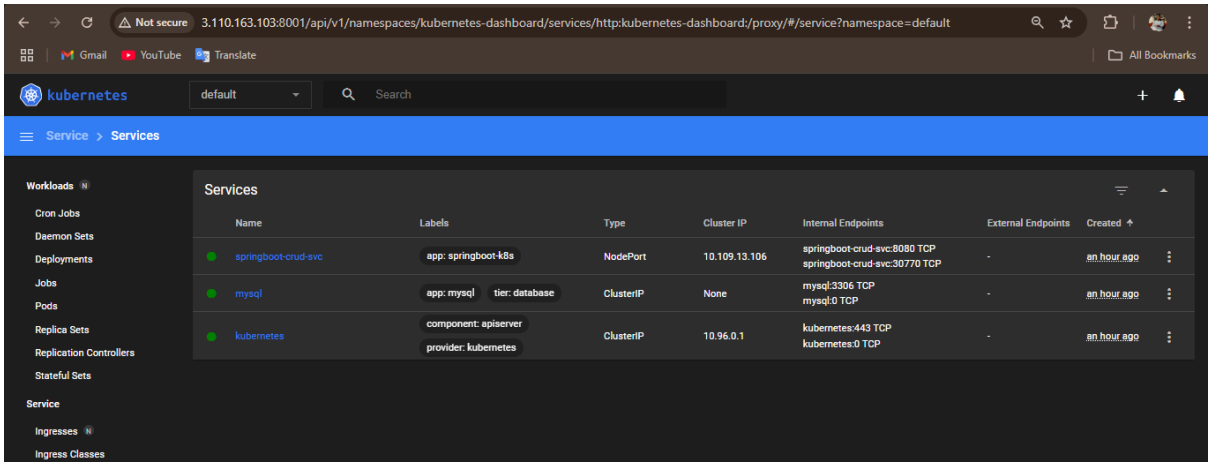
kubernetes
default
Search
Workloads > Stateful Sets
Workloads
Cron Jobs
Daemon Sets
Deployments
Jobs
Pods
Replica Sets
Replication Controllers
Stateful Sets
Service
Ingresses
Stateful Sets
Name
Images
Labels
Pods
Created
mysql
mysql:5.7
app: mysql
tier: database
1 / 1
an hour ago


Not secure
3.110.163.103:8001/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/#/service?namespace=default
Gmail
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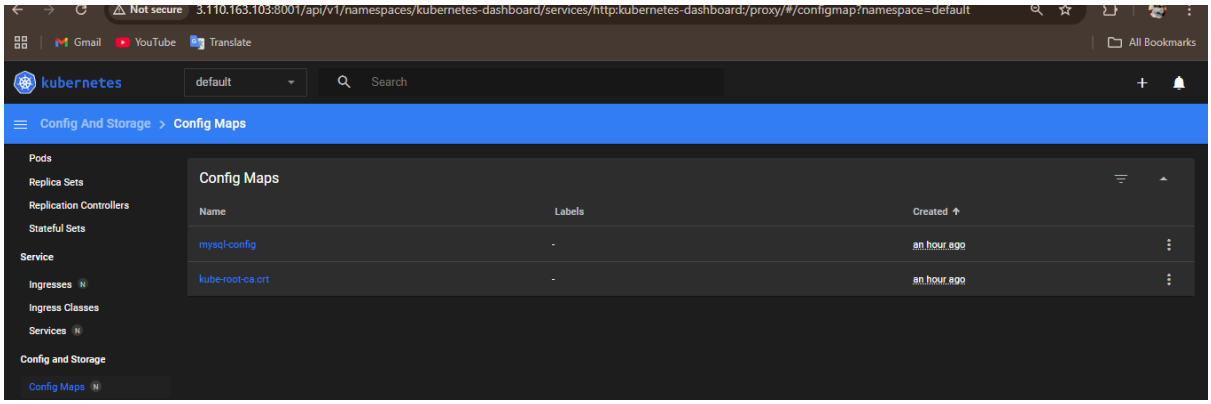
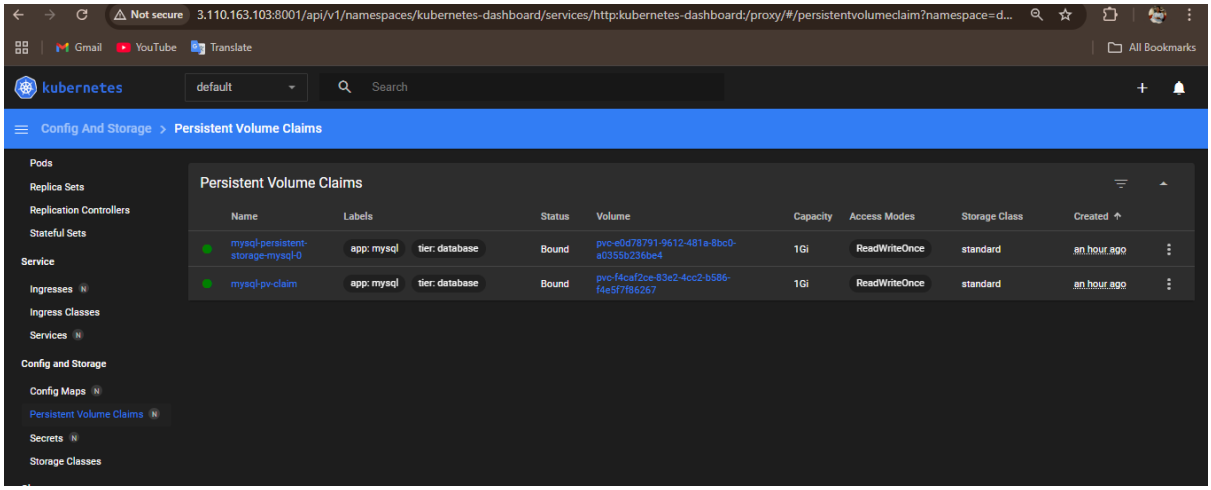
kubernetes
default
Search
Service > Services
Workloads
Cron Jobs
Daemon Sets
Deployments
Jobs
Pods
Replica Sets
Replication Controllers
Stateful Sets
Service
Ingresses
Ingress Classes
Services
Name
Labels
Type
Cluster IP
Internal Endpoints
External Endpoints
Created
springboot-crud-svc
app: springboot-k8s
NodePort
10.109.13.106
springboot-crud-svc:8080 TCP
springboot-crud-svc:30770 TCP
an hour ago
mysql
app: mysql
tier: database
ClusterIP
None
mysql:3306 TCP
mysql:0 TCP
an hour ago
kubernetes
component: apiserver
provider: kubernetes
ClusterIP
10.96.0.1
kubernetes:443 TCP
kubernetes:0 TCP
an hour ago


Not secure
3.110.163.103:8001/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/#/configmap?namespace=default
Gmail
YouTube
Translate
All Bookmarks
kubernetes
default
Search
Config And Storage > Config Maps
Pods
Replica Sets
Replication Controllers
Stateful Sets
Service
Ingresses
Ingress Classes
Services
Config and Storage
Config Maps
Name
Labels
Created
mysql-config
-
an hour ago
kube-root-ca.crt
-
an hour ago


Not secure
3.110.163.103:8001/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/#/persistentvolumeclaim?namespace=d...
Gmail
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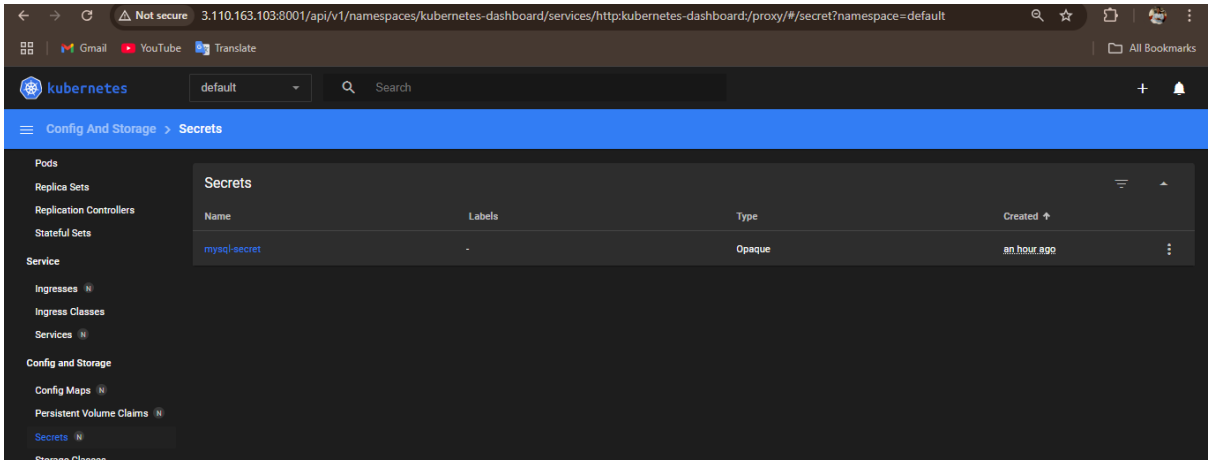
Translate
All Bookmarks
kubernetes
default
Search
Config And Storage > Persistent Volume Claims
Pods
Replica Sets
Replication Controllers
Stateful Sets
Service
Ingresses
Ingress Classes
Services
Config and Storage
Config Maps
Persistent Volume Claims
Secrets
Storage Classes
Name
Labels
Status
Volume
Capacity
Access Modes
Storage Class
Created
mysql-persistent-storage-mysql-0
app: mysql
tier: database
Bound
pvc-e0d78791-9612-481a-8bc0-a0355b236be4
1Gi
ReadWriteOnce
standard
an hour ago
mysql-pv-claim
app: mysql
tier: database
Bound
pvc-f4caf2ce-83e2-4cc2-b586-f4e5f7f86267
1Gi
ReadWriteOnce
standard
an hour ago


Not secure
3.110.163.103:8001/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/#/secret?namespace=default
Gmail
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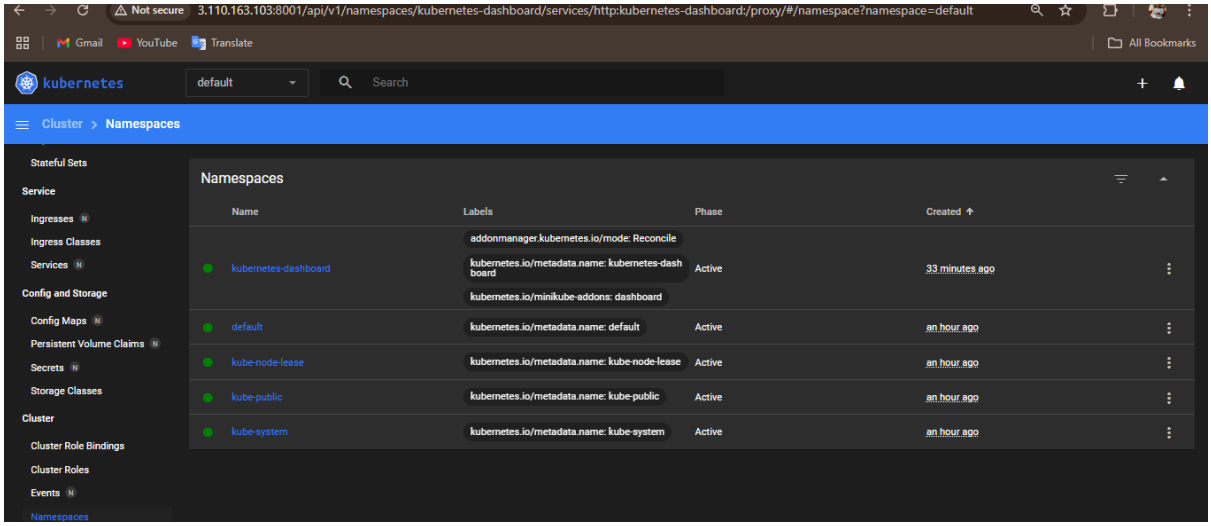
Translate
All Bookmarks
kubernetes
default
Search
Config And Storage > Secrets
Pods
Replica Sets
Replication Controllers
Stateful Sets
Service
Ingresses
Ingress Classes
Services
Config and Storage
Config Maps
Persistent Volume Claims
Secrets
Secrets
Name
Labels
Type
Created
mysql-secret
-
Opaque
an hour ago


Not secure
3.110.163.103:8001/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/#/namespace?namespace=default
Gmail
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All Bookmarks
kubernetes
default
Search
Cluster > Namespaces
Stateful Sets
Service
Ingresses
Ingress Classes
Services
Config and Storage
Config Maps
Persistent Volume Claims
Secrets
Storage Classes
Cluster
Cluster Role Bindings
Cluster Roles
Events
Namespaces
Namespaces
Name
Labels
Phase
Created
kubernetes-dashboard
addonmanager.kubernetes.io/mode: Reconcile
kubernetes.io/metadata.name: kubernetes-dashboard
kubernetes.io/minikube-addons: dashboard
Active
33 minutes ago
default
kubernetes.io/metadata.name: default
Active
an hour ago
kube-node-lease
kubernetes.io/metadata.name: kube-node-lease
Active
an hour ago
kube-public
kubernetes.io/metadata.name: kube-public
Active
an hour ago
kube-system
kubernetes.io/metadata.name: kube-system
Active
an hour ago