

UE19CS352 : CLOUD COMPUTING LAB

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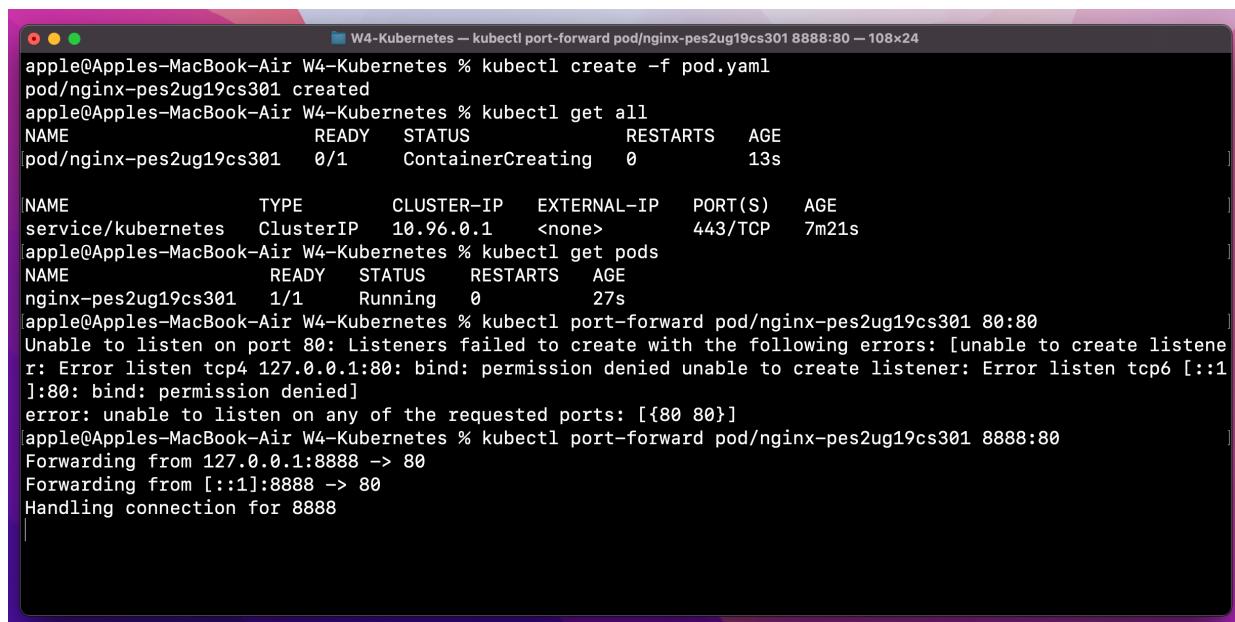
SRN : PES2UG19CS301

SECTION : E

1. Setting up Kubernetes

2. Deploying Kubernetes pods

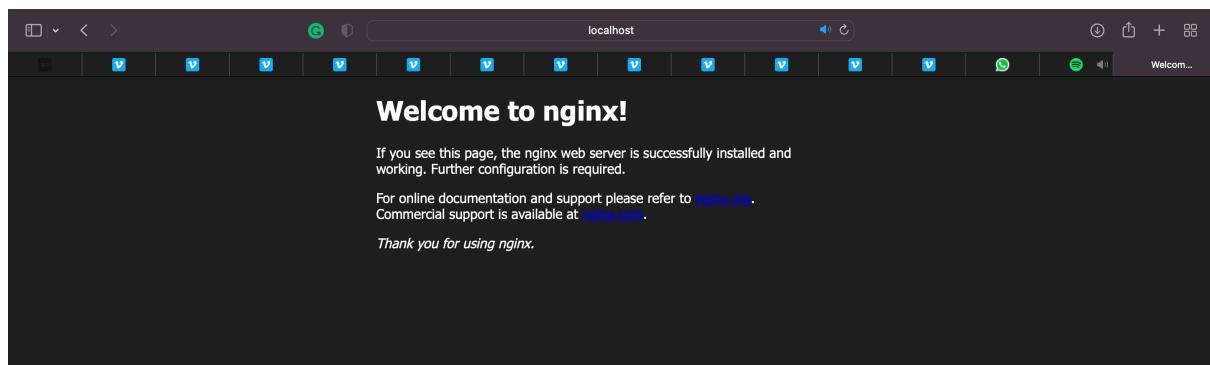
2.1. 2a.jpg Screenshot of kubectl commands and port forwarding



```
apple@Apples-MacBook-Air W4-Kubernetes % kubectl create -f pod.yaml
pod/nginx-pes2ug19cs301 created
apple@Apples-MacBook-Air W4-Kubernetes % kubectl get all
NAME           READY   STATUS    RESTARTS   AGE
pod/nginx-pes2ug19cs301  0/1     ContainerCreating   0          13s

NAME          TYPE      CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
service/kubernetes  ClusterIP  10.96.0.1   <none>        443/TCP   7m21s
apple@Apples-MacBook-Air W4-Kubernetes % kubectl get pods
NAME           READY   STATUS    RESTARTS   AGE
nginx-pes2ug19cs301  1/1     Running   0          27s
apple@Apples-MacBook-Air W4-Kubernetes % kubectl port-forward pod/nginx-pes2ug19cs301 80:80
Unable to listen on port 80: Listeners failed to create with the following errors: [unable to create listener: Error listen tcp4 127.0.0.1:80: bind: permission denied unable to create listener: Error listen tcp6 [::1]:80: bind: permission denied]
error: unable to listen on any of the requested ports: [{80 80}]
apple@Apples-MacBook-Air W4-Kubernetes % kubectl port-forward pod/nginx-pes2ug19cs301 8888:80
Forwarding from 127.0.0.1:8888 -> 80
Forwarding from [::1]:8888 -> 80
Handling connection for 8888
```

2.2. 2b.jpg Nginx home page access through localhost



3.Seal healing, updates, and rollback with Kubernetes deployment

3.1. 3a.jpg Screenshot showing deleted pod and self healing of pods in a deployment

```
apple@Apples-MacBook-Air W4-Kubernetes % kubectl create -f deploy.yaml
deployment.apps/mynginx-pes2ug19cs301 created
apple@Apples-MacBook-Air W4-Kubernetes % kubectl get deployments
NAME          READY  UP-TO-DATE  AVAILABLE  AGE
mynginx-pes2ug19cs301  3/3    3          3          5s
apple@Apples-MacBook-Air W4-Kubernetes % kubectl rollout status deployment/mynginx-pes2ug19cs301
deployment "mynginx-pes2ug19cs301" successfully rolled out

NAME          READY  STATUS  RESTARTS  AGE
pod/mynginx-pes2ug19cs301-6f44fd8897-78d6s  1/1    Running  0          15s
pod/mynginx-pes2ug19cs301-6f44fd8897-9g9rp  1/1    Running  0          15s
pod/mynginx-pes2ug19cs301-6f44fd8897-lxpvp  1/1    Running  0          15s

NAME          TYPE    CLUSTER-IP  EXTERNAL-IP  PORT(S)  AGE
service/kubernetes  ClusterIP  10.96.0.1  <none>      443/TCP  19h

NAME          READY  UP-TO-DATE  AVAILABLE  AGE
deployment.apps/mynginx-pes2ug19cs301  3/3    3          3          15s

NAME          DESIRED  CURRENT  READY  AGE
replicaset.apps/mynginx-pes2ug19cs301-6f44fd8897  3        3        3        15s
apple@Apples-MacBook-Air W4-Kubernetes % kubectl delete pod/mynginx-pes2ug19cs301-6f44fd8897-78d6s
pod "mynginx-pes2ug19cs301-6f44fd8897-78d6s" deleted

NAME          READY  STATUS  RESTARTS  AGE
pod/mynginx-pes2ug19cs301-6f44fd8897-9g9rp  1/1    Running  0          44s
pod/mynginx-pes2ug19cs301-6f44fd8897-gjfmw  1/1    Running  0          4s
pod/mynginx-pes2ug19cs301-6f44fd8897-lxpvp  1/1    Running  0          44s

NAME          TYPE    CLUSTER-IP  EXTERNAL-IP  PORT(S)  AGE
service/kubernetes  ClusterIP  10.96.0.1  <none>      443/TCP  19h

NAME          READY  UP-TO-DATE  AVAILABLE  AGE
deployment.apps/mynginx-pes2ug19cs301  3/3    3          3          44s

NAME          DESIRED  CURRENT  READY  AGE
replicaset.apps/mynginx-pes2ug19cs301-6f44fd8897  3        3        3        44s
apple@Apples-MacBook-Air W4-Kubernetes % |
```

3.2. 3b.jpg Screenshot showing updates and revision history of a deployment

```
apple@Apples-MacBook-Air W4-Kubernetes % kubectl set image --record=true deployment/mynginx-pes2ug19cs301 mynginx-pes2ug19cs301=nginx:1.16.1 --record=true
Flag --record has been deprecated, --record will be removed in the future
Flag --record has been deprecated, --record will be removed in the future
deployment.apps/mynginx-pes2ug19cs301 image updated
apple@Apples-MacBook-Air W4-Kubernetes % kubectl rollout history deployment/mynginx-pes2ug19cs301
deployment.apps/mynginx-pes2ug19cs301
REVISION  CHANGE-CAUSE
1        <none>
2        kubectl set image deployment/mynginx-pes2ug19cs301 mynginx-pes2ug19cs301=nginx:1.16.1 --record=true --record=true
apple@Apples-MacBook-Air W4-Kubernetes % |
```

3.3. 3c.jpg Screenshot showing rollback of deployment

```
apple@Apples-MacBook-Air W4-Kubernetes % kubectl rollout undo deployment/mynginx-pes2ug19cs301
deployment.apps/mynginx-pes2ug19cs301 rolled back
apple@Apples-MacBook-Air W4-Kubernetes % kubectl rollout status deployment/mynginx-pes2ug19cs301
deployment "mynginx-pes2ug19cs301" successfully rolled out
apple@Apples-MacBook-Air W4-Kubernetes % kubectl delete deploy mynginx-pes2ug19cs301
deployment.apps "mynginx-pes2ug19cs301" deleted
apple@Apples-MacBook-Air W4-Kubernetes % |
```

4. Scaling Kubernetes services

4.1. 4a.jpg Screenshot showing:

4.1.1. deployment and service creation

4.1.2. port forwarding

4.1.3. Scaling deployment

```
apple@Apples-MacBook-Air W4-Kubernetes % kubectl create -f deploy_service.yaml
deployment.apps/mynginx-pes2ug19cs301 created
service/nginx-pes2ug19cs301 created
apple@Apples-MacBook-Air W4-Kubernetes % kubectl port-forward service/nginx-pes2ug19cs301 8050:80
error: unable to forward port because pod is not running. Current status=Pending
apple@Apples-MacBook-Air W4-Kubernetes % kubectl port-forward service/nginx-pes2ug19cs301 8050:80
Forwarding from 127.0.0.1:8050 -> 80
Forwarding from [::1]:8050 -> 80
Handling connection for 8050
Handling connection for 8050
^C
apple@Apples-MacBook-Air W4-Kubernetes % kubectl scale deploy mynginx-pes2ug19cs301 --replicas=10
deployment.apps/mynginx-pes2ug19cs301 scaled
apple@Apples-MacBook-Air W4-Kubernetes % kubectl get all
NAME                           READY   STATUS    RESTARTS   AGE
pod/mynginx-pes2ug19cs301-6dd7c694f6-6fr9x  0/1     Pending   0          15s
pod/mynginx-pes2ug19cs301-6dd7c694f6-7nrw4  1/1     Running   0          106s
pod/mynginx-pes2ug19cs301-6dd7c694f6-c4s7b  0/1     Pending   0          15s
pod/mynginx-pes2ug19cs301-6dd7c694f6-dqvzd  0/1     Pending   0          15s
pod/mynginx-pes2ug19cs301-6dd7c694f6-mn4mm  1/1     Running   0          106s
pod/mynginx-pes2ug19cs301-6dd7c694f6-ntmb5  0/1     Pending   0          15s
pod/mynginx-pes2ug19cs301-6dd7c694f6-rkddd  0/1     Pending   0          15s
pod/mynginx-pes2ug19cs301-6dd7c694f6-t7jgd  0/1     Pending   0          15s
pod/mynginx-pes2ug19cs301-6dd7c694f6-vfxp4  0/1     Pending   0          15s
pod/mynginx-pes2ug19cs301-6dd7c694f6-vt2tp  0/1     Pending   0          15s

NAME                TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)    AGE
service/kubernetes  ClusterIP  10.96.0.1   <none>        443/TCP   20h
service/nginx-pes2ug19cs301  LoadBalancer  10.96.30.0  localhost   80:31682/TCP  106s

NAME                           READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/mynginx-pes2ug19cs301  2/10   10          2           106s

NAME          DESIRED   CURRENT   READY   AGE
replicaset.apps/mynginx-pes2ug19cs301-6dd7c694f6  10      10        2        106s
apple@Apples-MacBook-Air W4-Kubernetes % |
```

4.2. 4b.jpg Nginx home page access through localhost

