Seneca

Lab 5

Portable Technologies in Cloud

Professor: Irina Geiman

CODE: CLO835

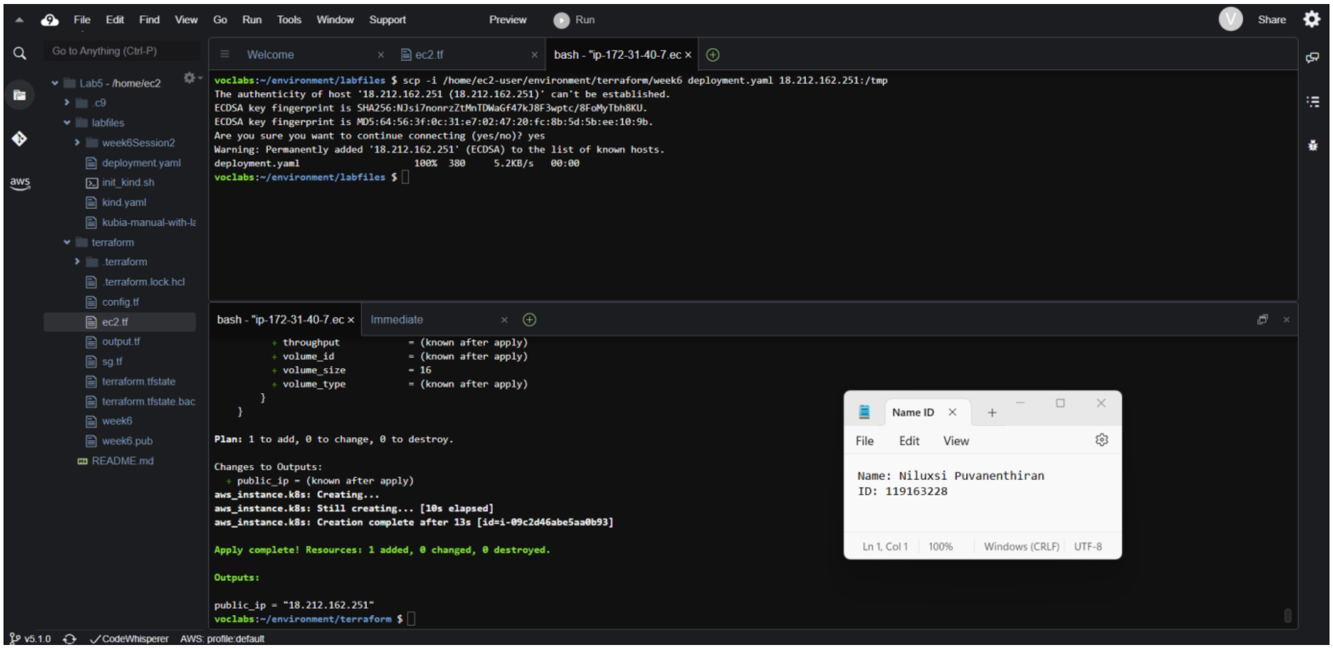
Name: Niluxsi Puvanenthiran

Student Number: 119163228

CONTENTS

WEEK 6 – LAB 5

Workshop 1 – Deployment, Rollouts, Revisions and Rollbacks

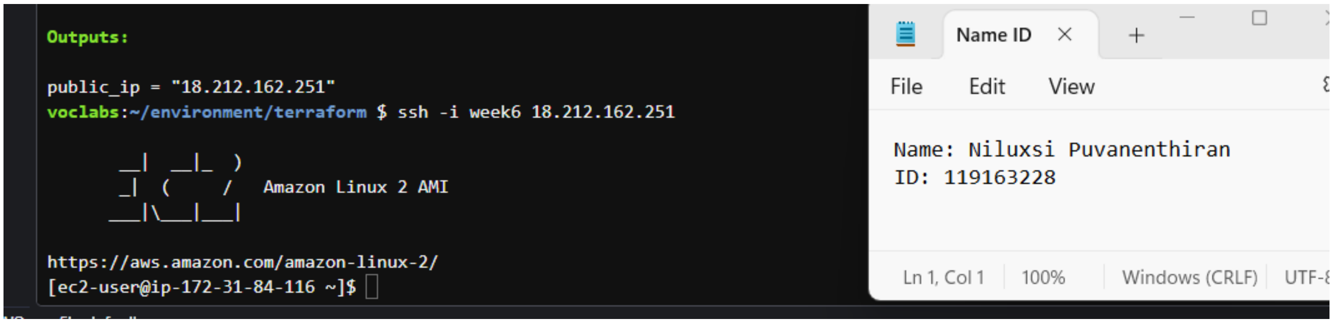


```
voclabs:~/environment/labfiles $ scp -i /home/ec2-user/environment/terraform/week6 deployment.yaml 18.212.162.251:/tmp
The authenticity of host '18.212.162.251 (18.212.162.251)' can't be established.
ECDSA key fingerprint is SHA256:NJsi7nonrzZtMnTDWaGf47kJ8F3wptc/8FoMyTbh8KU.
ECDSA key fingerprint is MD5:64:56:3f:0c:31:e7:02:47:20:fc:8b:5d:5b:ee:10:9b.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '18.212.162.251' (ECDSA) to the list of known hosts.
deployment.yaml                              100%  380     5.2KB/s   00:00
voclabs:~/environment/labfiles $
```

```
          + throughput            = (known after apply)
          + volume_id             = (known after apply)
          + volume_size           = 16
          + volume_type           = (known after apply)
        }
    }

Plan: 1 to add, 0 to change, 0 to destroy.

Changes to Outputs:
  + public_ip = (known after apply)
aws_instance.k8s: Creating...
aws_instance.k8s: Still creating... [10s elapsed]
aws_instance.k8s: Creation complete after 13s [id=i-09c2d46abe5aa0b93]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

Outputs:

public_ip = "18.212.162.251"
voclabs:~/environment/terraform $
```

```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

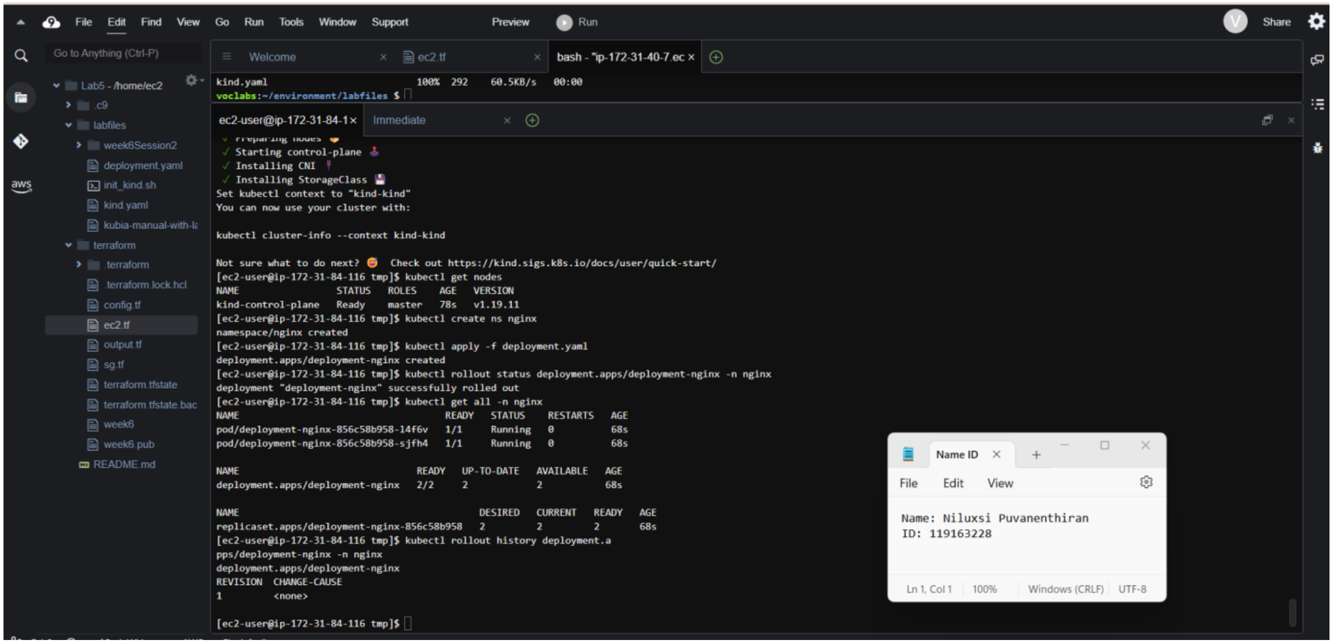
Screenshot 1 Copied deployment file to the machine runnign kind K8s cluster



```
Outputs:

public_ip = "18.212.162.251"
voclabs:~/environment/terraform $ ssh -i week6 18.212.162.251

       __|  __|_  )
       _|  (     /   Amazon Linux 2 AMI
      ___|\___|___|

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-84-116 ~]$
```

```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

Screenshot 2 Logged to instance



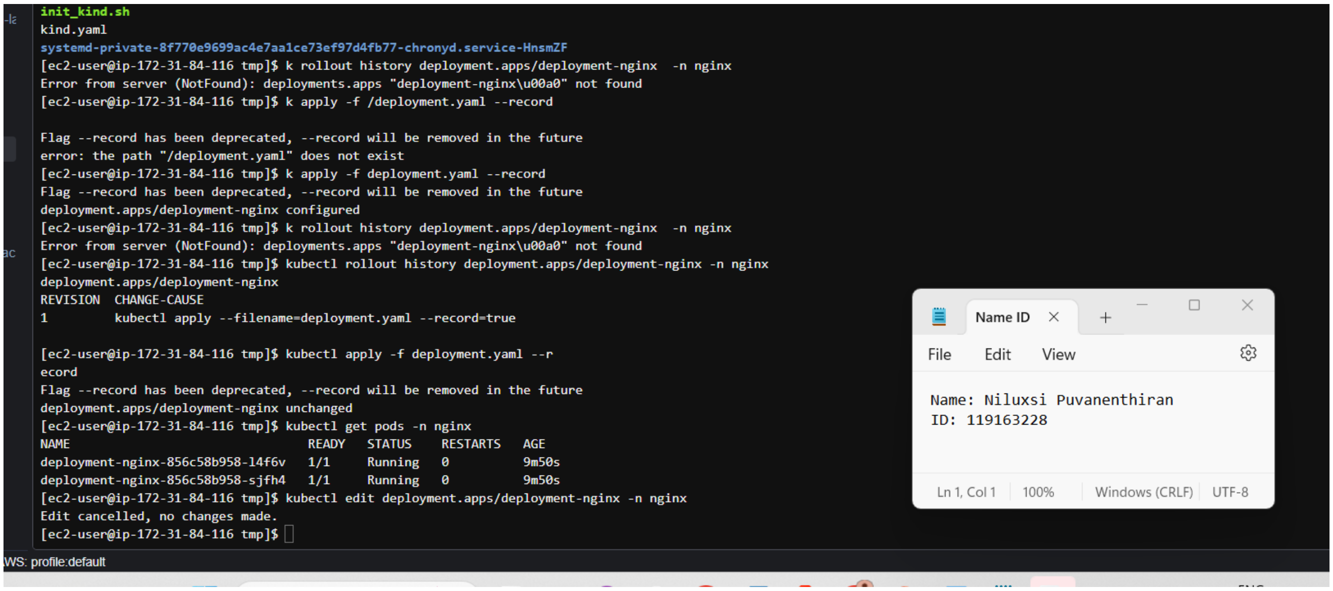
```
kind.yaml                              100%  292    60.5KB/s   00:00
voclabs:~/environment/labfiles $
```

```
 ✓ Preparing nodes 📦
 ✓ Starting control-plane 🕹️
 ✓ Installing CNI 🔌
 ✓ Installing StorageClass 💾
Set kubectl context to "kind-kind"
You can now use your cluster with:

kubectl cluster-info --context kind-kind

Not sure what to do next? 😅  Check out https://kind.sigs.k8s.io/docs/user/quick-start/
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get nodes
NAME                 STATUS   ROLES    AGE   VERSION
kind-control-plane   Ready    master   78s   v1.19.11
[ec2-user@ip-172-31-84-116 tmp]$ kubectl create ns nginx
namespace/nginx created
[ec2-user@ip-172-31-84-116 tmp]$ kubectl apply -f deployment.yaml
deployment.apps/deployment-nginx created
[ec2-user@ip-172-31-84-116 tmp]$ kubectl rollout status deployment.apps/deployment-nginx -n nginx
deployment "deployment-nginx" successfully rolled out
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get all -n nginx
NAME                                   READY   STATUS    RESTARTS   AGE
pod/deployment-nginx-856c58b958-14f6v   1/1     Running   0          68s
pod/deployment-nginx-856c58b958-sjfh4   1/1     Running   0          68s

NAME                               READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/deployment-nginx   2/2     2            2           68s

NAME                                          DESIRED   CURRENT   READY   AGE
replicaset.apps/deployment-nginx-856c58b958   2         2         2       68s
[ec2-user@ip-172-31-84-116 tmp]$ kubectl rollout history deployment.a
pps/deployment-nginx -n nginx
deployment.apps/deployment-nginx
REVISION  CHANGE-CAUSE
1         <none>

[ec2-user@ip-172-31-84-116 tmp]$
```

```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

Screenshot 3 working with deployment

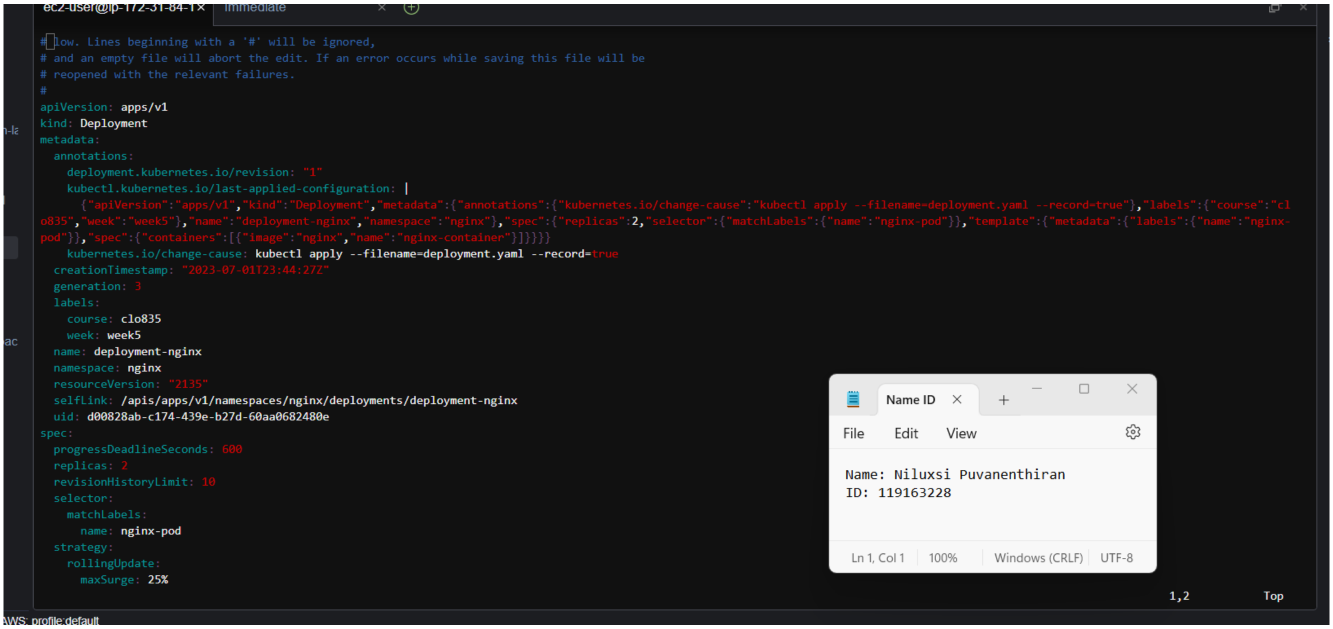
There is only one roll out. As we deployed the deployment.apps/deployment-nginx for the first time, there is only one rollout history entry, representing the initial deployment.



```
init_kind.sh
kind.yaml
systemd-private-8f770e9699ac4e7aa1ce73ef97d4fb77-chronyd.service-HnsmZF
[ec2-user@ip-172-31-84-116 tmp]$ k rollout history deployment.apps/deployment-nginx  -n nginx
Error from server (NotFound): deployments.apps "deployment-nginx\u00a0" not found
[ec2-user@ip-172-31-84-116 tmp]$ k apply -f /deployment.yaml --record

Flag --record has been deprecated, --record will be removed in the future
error: the path "/deployment.yaml" does not exist
[ec2-user@ip-172-31-84-116 tmp]$ k apply -f deployment.yaml --record
Flag --record has been deprecated, --record will be removed in the future
deployment.apps/deployment-nginx configured
[ec2-user@ip-172-31-84-116 tmp]$ k rollout history deployment.apps/deployment-nginx  -n nginx
Error from server (NotFound): deployments.apps "deployment-nginx\u00a0" not found
[ec2-user@ip-172-31-84-116 tmp]$ kubectl rollout history deployment.apps/deployment-nginx -n nginx
deployment.apps/deployment-nginx
REVISION  CHANGE-CAUSE
1         kubectl apply --filename=deployment.yaml --record=true

[ec2-user@ip-172-31-84-116 tmp]$ kubectl apply -f deployment.yaml --r
ecord
Flag --record has been deprecated, --record will be removed in the future
deployment.apps/deployment-nginx unchanged
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get pods -n nginx
NAME                                READY   STATUS    RESTARTS   AGE
deployment-nginx-856c58b958-14f6v   1/1     Running   0          9m50s
deployment-nginx-856c58b958-sjfh4   1/1     Running   0          9m50s
[ec2-user@ip-172-31-84-116 tmp]$ kubectl edit deployment.apps/deployment-nginx -n nginx
Edit cancelled, no changes made.
[ec2-user@ip-172-31-84-116 tmp]$
```

```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

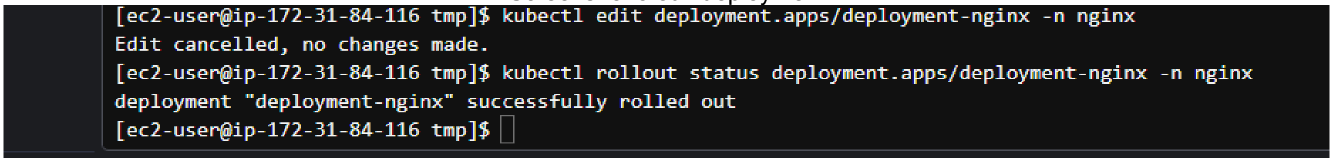
Screenshot 4 Creating revisions



```
# low. Lines beginning with a '#' will be ignored,
# and an empty file will abort the edit. If an error occurs while saving this file will be
# reopened with the relevant failures.
#
apiVersion: apps/v1
kind: Deployment
metadata:
  annotations:
    deployment.kubernetes.io/revision: "1"
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"apps/v1","kind":"Deployment","metadata":{"annotations":{"kubernetes.io/change-cause":"kubectl apply --filename=deployment.yaml --record=true"},"labels":{"course":"cl
o835","week":"week5"},"name":"deployment-nginx","namespace":"nginx"},"spec":{"replicas":2,"selector":{"matchLabels":{"name":"nginx-pod"}},"template":{"metadata":{"labels":{"name":"nginx-
pod"}},"spec":{"containers":[{"image":"nginx","name":"nginx-container"}]}}}}
    kubernetes.io/change-cause: kubectl apply --filename=deployment.yaml --record=true
  creationTimestamp: "2023-07-01T23:44:27Z"
  generation: 3
  labels:
    course: clo835
    week: week5
  name: deployment-nginx
  namespace: nginx
  resourceVersion: "2135"
  selfLink: /apis/apps/v1/namespaces/nginx/deployments/deployment-nginx
  uid: d00828ab-c174-439e-b27d-60aa0682480e
spec:
  progressDeadlineSeconds: 600
  replicas: 2
  revisionHistoryLimit: 10
  selector:
    matchLabels:
      name: nginx-pod
  strategy:
    rollingUpdate:
      maxSurge: 25%
```

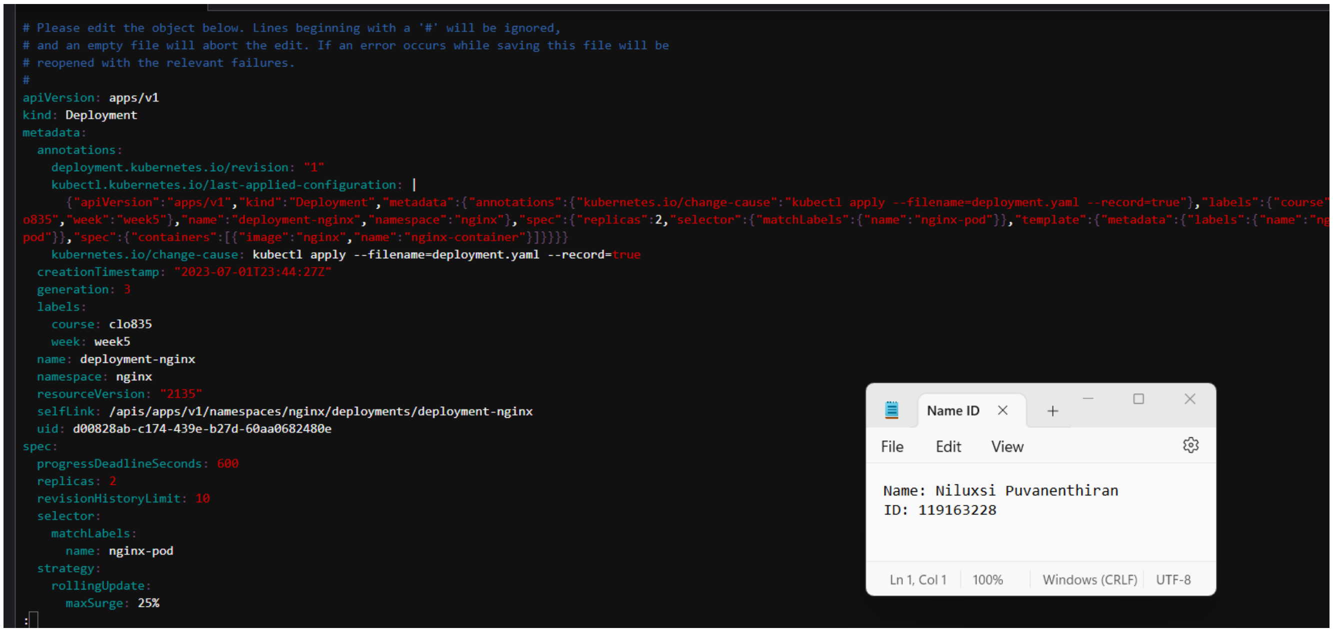
```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

Screenshot 5 edit deployment



```
[ec2-user@ip-172-31-84-116 tmp]$ kubectl edit deployment.apps/deployment-nginx -n nginx
Edit cancelled, no changes made.
[ec2-user@ip-172-31-84-116 tmp]$ kubectl rollout status deployment.apps/deployment-nginx -n nginx
deployment "deployment-nginx" successfully rolled out
[ec2-user@ip-172-31-84-116 tmp]$
```

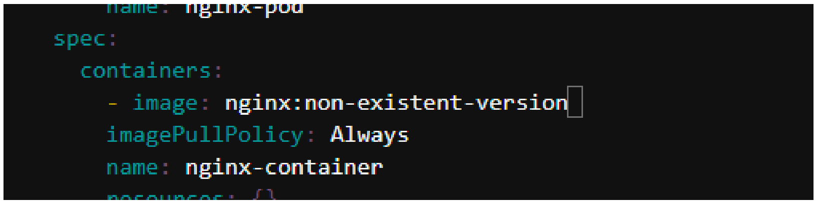
Screenshot 6 nginx successfully rolled out



```
# Please edit the object below. Lines beginning with a '#' will be ignored,
# and an empty file will abort the edit. If an error occurs while saving this file will be
# reopened with the relevant failures.
#
apiVersion: apps/v1
kind: Deployment
metadata:
  annotations:
    deployment.kubernetes.io/revision: "1"
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"apps/v1","kind":"Deployment","metadata":{"annotations":{"kubernetes.io/change-cause":"kubectl apply --filename=deployment.yaml --record=true"},"labels":{"course"
o835","week":"week5"},"name":"deployment-nginx","namespace":"nginx"},"spec":{"replicas":2,"selector":{"matchLabels":{"name":"nginx-pod"}},"template":{"metadata":{"labels":{"name":"ng
pod"}},"spec":{"containers":[{"image":"nginx","name":"nginx-container"}]}}}}
    kubernetes.io/change-cause: kubectl apply --filename=deployment.yaml --record=true
  creationTimestamp: "2023-07-01T23:44:27Z"
  generation: 3
  labels:
    course: clo835
    week: week5
  name: deployment-nginx
  namespace: nginx
  resourceVersion: "2135"
  selfLink: /apis/apps/v1/namespaces/nginx/deployments/deployment-nginx
  uid: d00828ab-c174-439e-b27d-60aa0682480e
spec:
  progressDeadlineSeconds: 600
  replicas: 2
  revisionHistoryLimit: 10
  selector:
    matchLabels:
      name: nginx-pod
  strategy:
    rollingUpdate:
      maxSurge: 25%
:
```

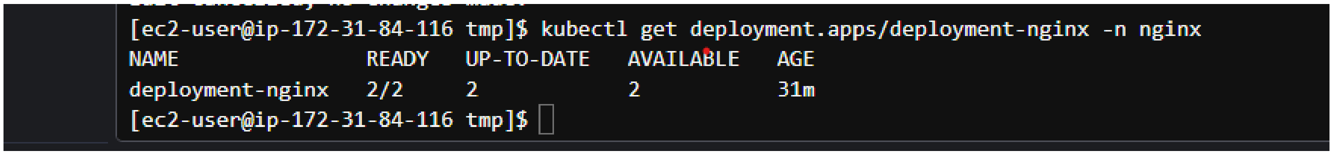
```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

Screenshot 7 edit deployment



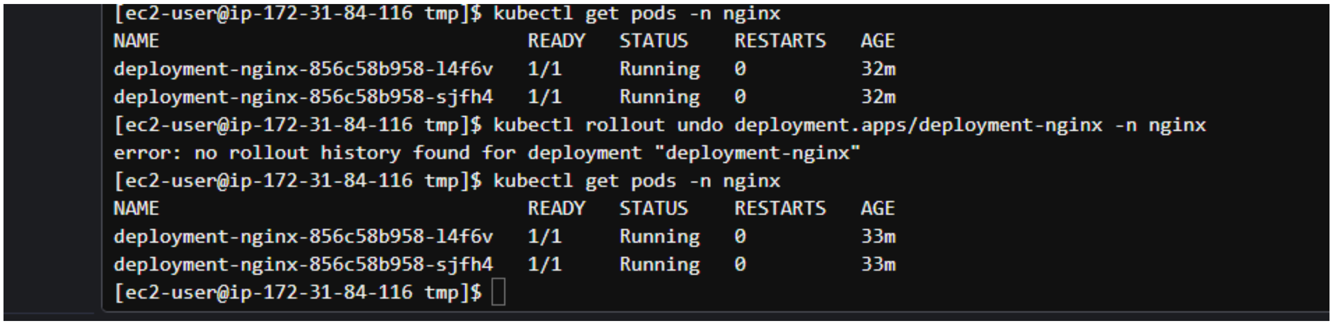
```
        name: nginx-pod
    spec:
      containers:
      - image: nginx:non-existent-version
        imagePullPolicy: Always
        name: nginx-container
        resources: {}
```

Screenshot 8 updated deployment manifest from point to non-exixtent



```
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get deployment.apps/deployment-nginx -n nginx
NAME               READY   UP-TO-DATE   AVAILABLE   AGE
deployment-nginx   2/2     2            2           31m
[ec2-user@ip-172-31-84-116 tmp]$
```

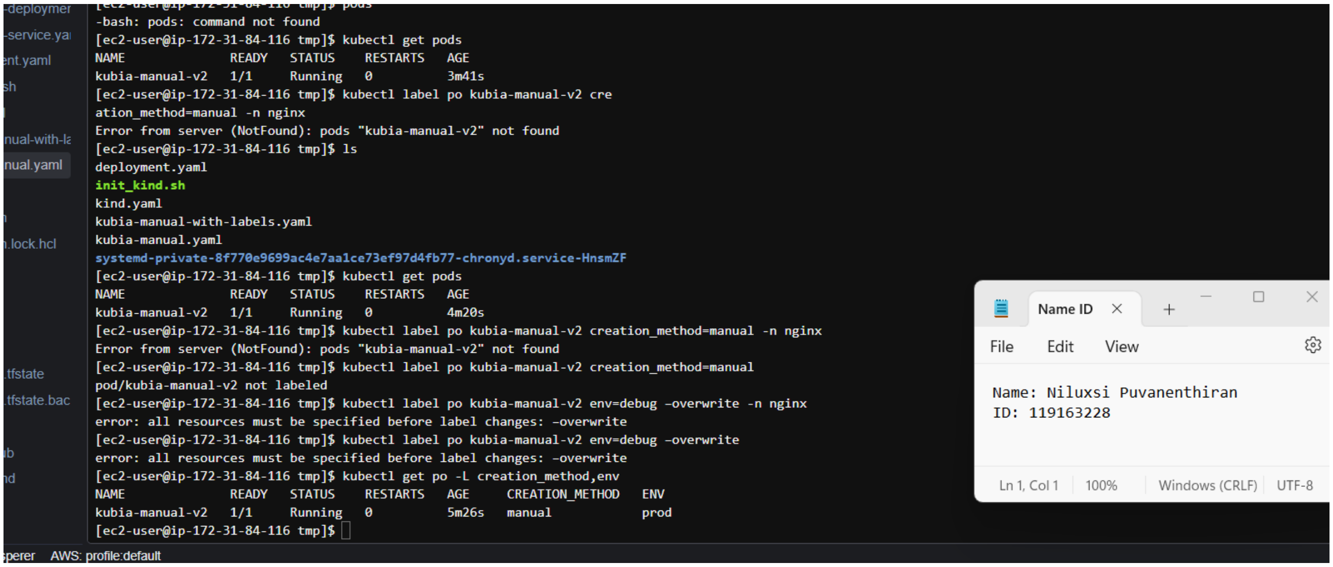
Screenshot 9 pods replaced with new version



```
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get pods -n nginx
NAME                                READY   STATUS    RESTARTS   AGE
deployment-nginx-856c58b958-14f6v   1/1     Running   0          32m
deployment-nginx-856c58b958-sjfh4   1/1     Running   0          32m
[ec2-user@ip-172-31-84-116 tmp]$ kubectl rollout undo deployment.apps/deployment-nginx -n nginx
error: no rollout history found for deployment "deployment-nginx"
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get pods -n nginx
NAME                                READY   STATUS    RESTARTS   AGE
deployment-nginx-856c58b958-14f6v   1/1     Running   0          33m
deployment-nginx-856c58b958-sjfh4   1/1     Running   0          33m
[ec2-user@ip-172-31-84-116 tmp]$
```

Screenshot 10 pods didnt terminated

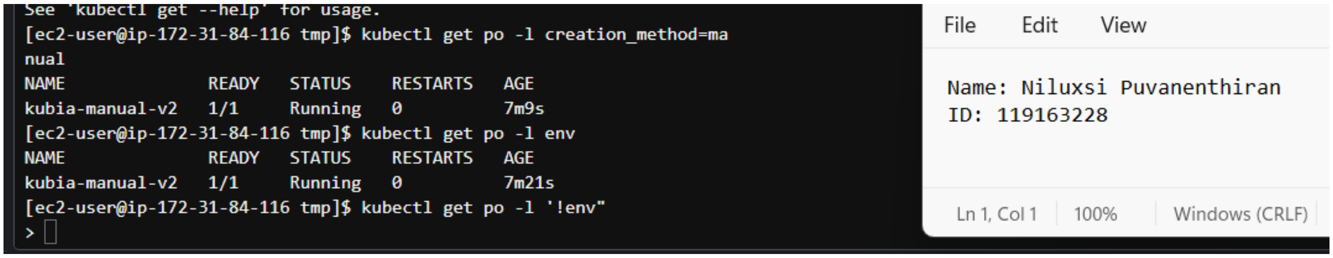
Workshop 2 – Using Labels to Organize K8s Pods



```
[ec2-user@ip-172-31-84-116 tmp]$ pods
-bash: pods: command not found
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get pods
NAME               READY   STATUS    RESTARTS   AGE
kubia-manual-v2    1/1     Running   0          3m41s
[ec2-user@ip-172-31-84-116 tmp]$ kubectl label po kubia-manual-v2 cre
ation_method=manual -n nginx
Error from server (NotFound): pods "kubia-manual-v2" not found
[ec2-user@ip-172-31-84-116 tmp]$ ls
deployment.yaml
init_kind.sh
kind.yaml
kubia-manual-with-labels.yaml
kubia-manual.yaml
systemd-private-8f770e9699ac4e7aa1ce73ef97d4fb77-chronyd.service-HnsmZF
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get pods
NAME               READY   STATUS    RESTARTS   AGE
kubia-manual-v2    1/1     Running   0          4m20s
[ec2-user@ip-172-31-84-116 tmp]$ kubectl label po kubia-manual-v2 creation_method=manual -n nginx
Error from server (NotFound): pods "kubia-manual-v2" not found
[ec2-user@ip-172-31-84-116 tmp]$ kubectl label po kubia-manual-v2 creation_method=manual
pod/kubia-manual-v2 not labeled
[ec2-user@ip-172-31-84-116 tmp]$ kubectl label po kubia-manual-v2 env=debug –overwrite -n nginx
error: all resources must be specified before label changes: –overwrite
[ec2-user@ip-172-31-84-116 tmp]$ kubectl label po kubia-manual-v2 env=debug –overwrite
error: all resources must be specified before label changes: –overwrite
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get po -L creation_method,env
NAME               READY   STATUS    RESTARTS   AGE     CREATION_METHOD   ENV
kubia-manual-v2    1/1     Running   0          5m26s   manual            prod
[ec2-user@ip-172-31-84-116 tmp]$
```

```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

Screenshot 11 Assigning labels to pods

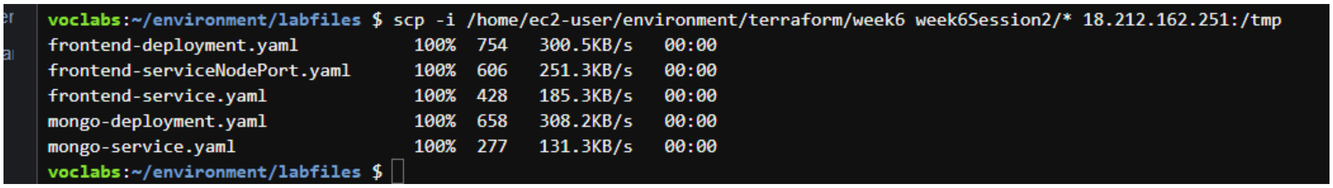


```
See 'kubectl get --help' for usage.
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get po -l creation_method=ma
nual
NAME              READY   STATUS    RESTARTS   AGE
kubia-manual-v2   1/1     Running   0          7m9s
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get po -l env
NAME              READY   STATUS    RESTARTS   AGE
kubia-manual-v2   1/1     Running   0          7m21s
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get po -l '!env"
>
```

```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

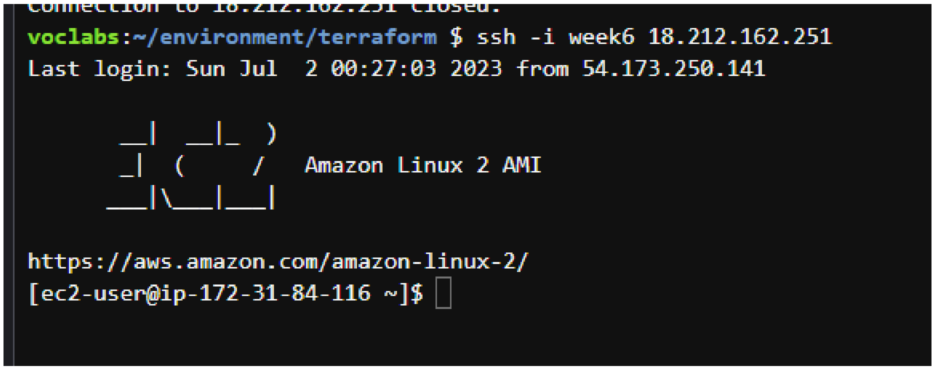
Screenshot 12 using labels

Workshop 3 – Using K8s Services



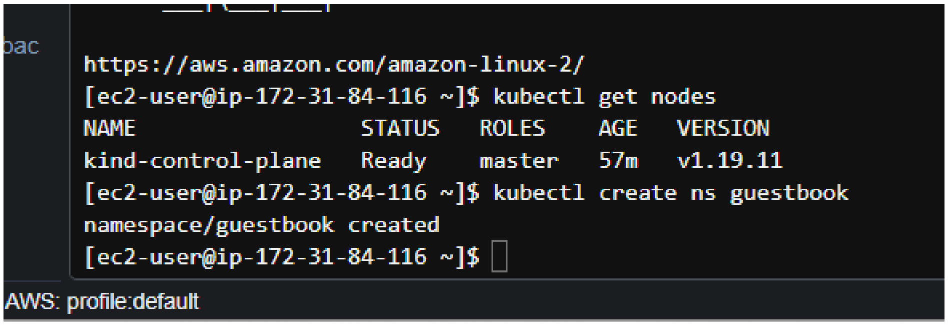
```
voclabs:~/environment/labfiles $ scp -i /home/ec2-user/environment/terraform/week6 week6Session2/* 18.212.162.251:/tmp
frontend-deployment.yaml           100%  754   300.5KB/s   00:00
frontend-serviceNodePort.yaml      100%  606   251.3KB/s   00:00
frontend-service.yaml              100%  428   185.3KB/s   00:00
mongo-deployment.yaml              100%  658   308.2KB/s   00:00
mongo-service.yaml                 100%  277   131.3KB/s   00:00
voclabs:~/environment/labfiles $
```

Screenshot 13 Copied all deployment files to EC2 with kind cluster



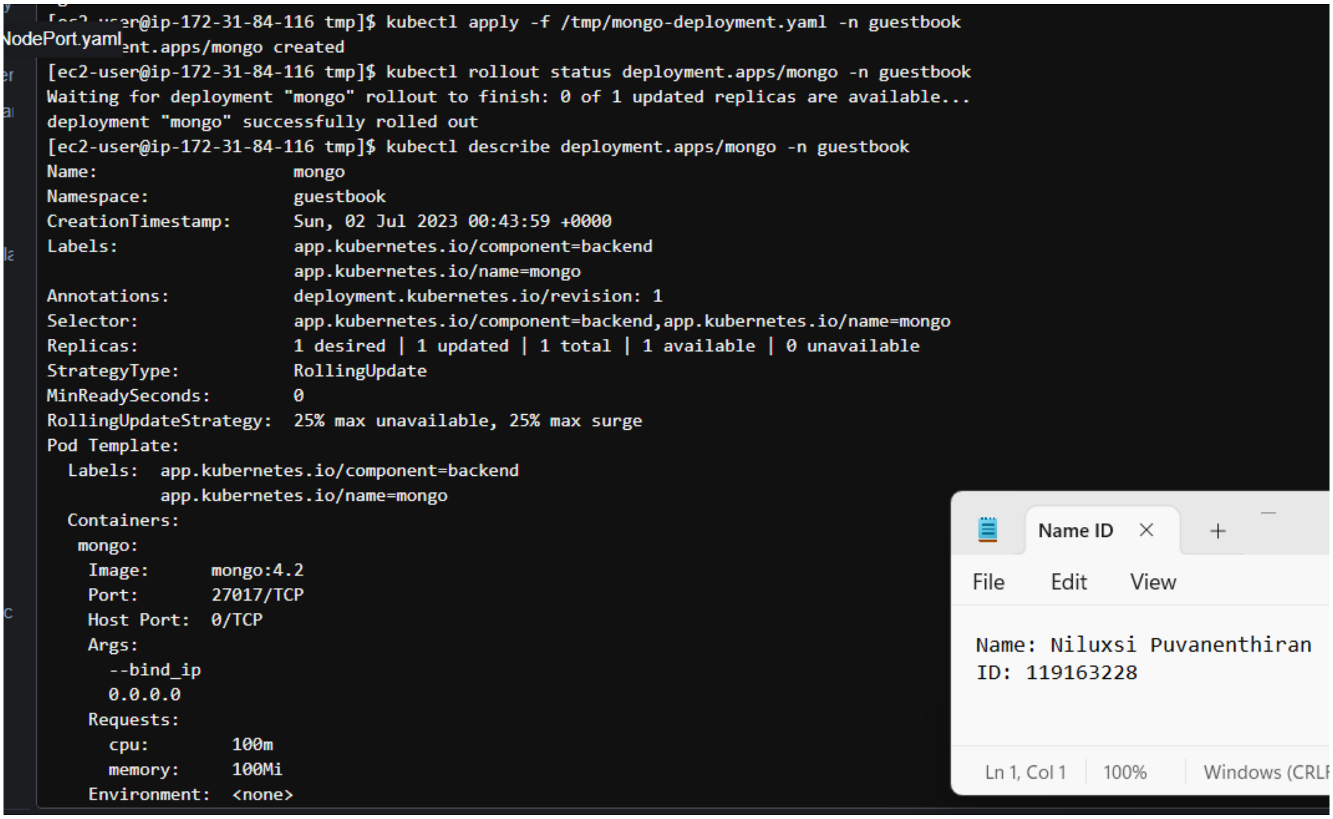
```
Connection to 18.212.162.251 closed.
voclabs:~/environment/terraform $ ssh -i week6 18.212.162.251
Last login: Sun Jul  2 00:27:03 2023 from 54.173.250.141

       __|  __|_  )
       _|  (     /   Amazon Linux 2 AMI
      ___|\___|___|

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-84-116 ~]$
```

Screenshot 14 logged in to ec2



```
https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-84-116 ~]$ kubectl get nodes
NAME                 STATUS   ROLES    AGE   VERSION
kind-control-plane   Ready    master   57m   v1.19.11
[ec2-user@ip-172-31-84-116 ~]$ kubectl create ns guestbook
namespace/guestbook created
[ec2-user@ip-172-31-84-116 ~]$
```

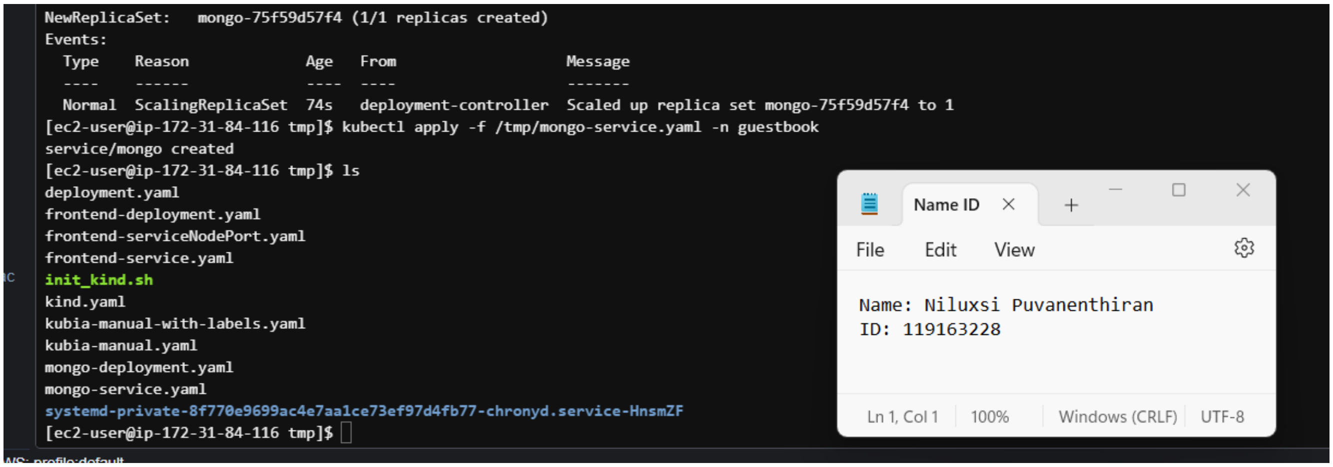
Screenshot 15 name space created



```
[ec2-user@ip-172-31-84-116 tmp]$ kubectl apply -f /tmp/mongo-deployment.yaml -n guestbook
NodePort.yaml ent.apps/mongo created
[ec2-user@ip-172-31-84-116 tmp]$ kubectl rollout status deployment.apps/mongo -n guestbook
Waiting for deployment "mongo" rollout to finish: 0 of 1 updated replicas are available...
deployment "mongo" successfully rolled out
[ec2-user@ip-172-31-84-116 tmp]$ kubectl describe deployment.apps/mongo -n guestbook
Name:                   mongo
Namespace:              guestbook
CreationTimestamp:      Sun, 02 Jul 2023 00:43:59 +0000
Labels:                 app.kubernetes.io/component=backend
                        app.kubernetes.io/name=mongo
Annotations:            deployment.kubernetes.io/revision: 1
Selector:               app.kubernetes.io/component=backend,app.kubernetes.io/name=mongo
Replicas:               1 desired | 1 updated | 1 total | 1 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app.kubernetes.io/component=backend
           app.kubernetes.io/name=mongo
  Containers:
   mongo:
    Image:      mongo:4.2
    Port:       27017/TCP
    Host Port:  0/TCP
    Args:
      --bind_ip
      0.0.0.0
    Requests:
      cpu:        100m
      memory:     100Mi
    Environment:  <none>
```

```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

Screenshot 16 deployed Mongo DB and verified the deployment

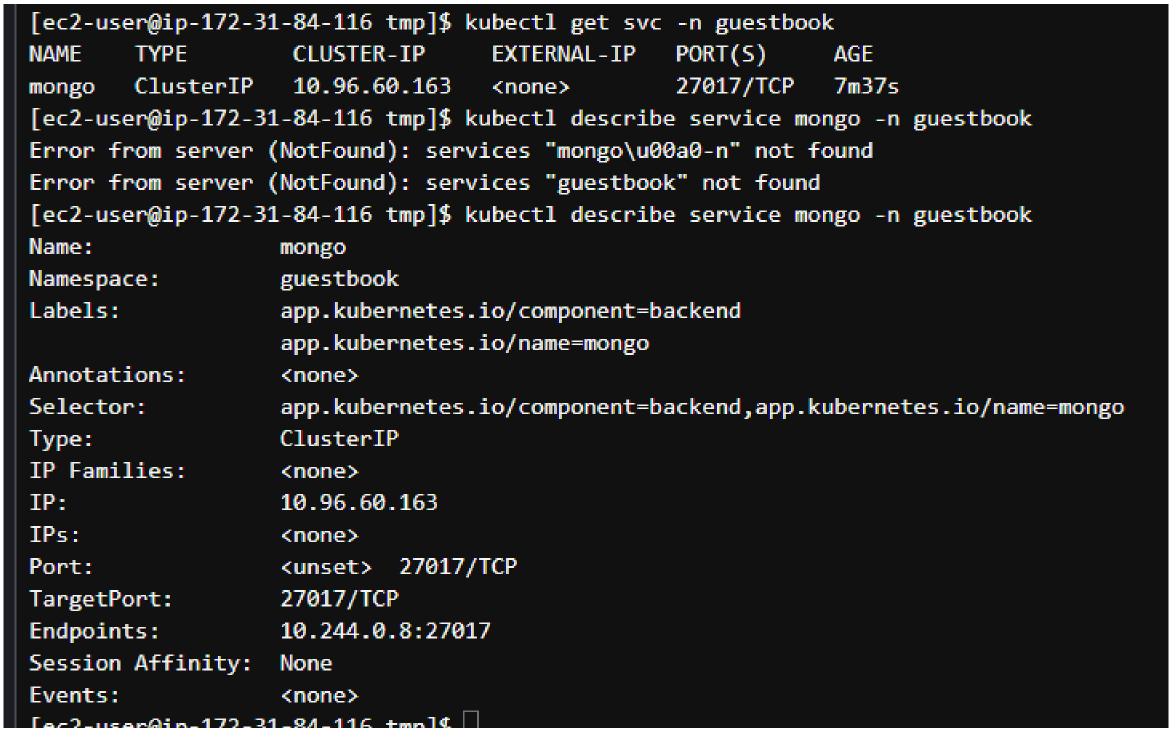


```
NewReplicaSet:   mongo-75f59d57f4 (1/1 replicas created)
Events:
  Type    Reason             Age   From                   Message
  ----    ------             ----  ----                   -------
  Normal  ScalingReplicaSet  74s   deployment-controller  Scaled up replica set mongo-75f59d57f4 to 1
[ec2-user@ip-172-31-84-116 tmp]$ kubectl apply -f /tmp/mongo-service.yaml -n guestbook
service/mongo created
[ec2-user@ip-172-31-84-116 tmp]$ ls
deployment.yaml
frontend-deployment.yaml
frontend-serviceNodePort.yaml
frontend-service.yaml
init_kind.sh
kind.yaml
kubia-manual-with-labels.yaml
kubia-manual.yaml
mongo-deployment.yaml
mongo-service.yaml
systemd-private-8f770e9699ac4e7aa1ce73ef97d4fb77-chronyd.service-HnsmZF
[ec2-user@ip-172-31-84-116 tmp]$
```

```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

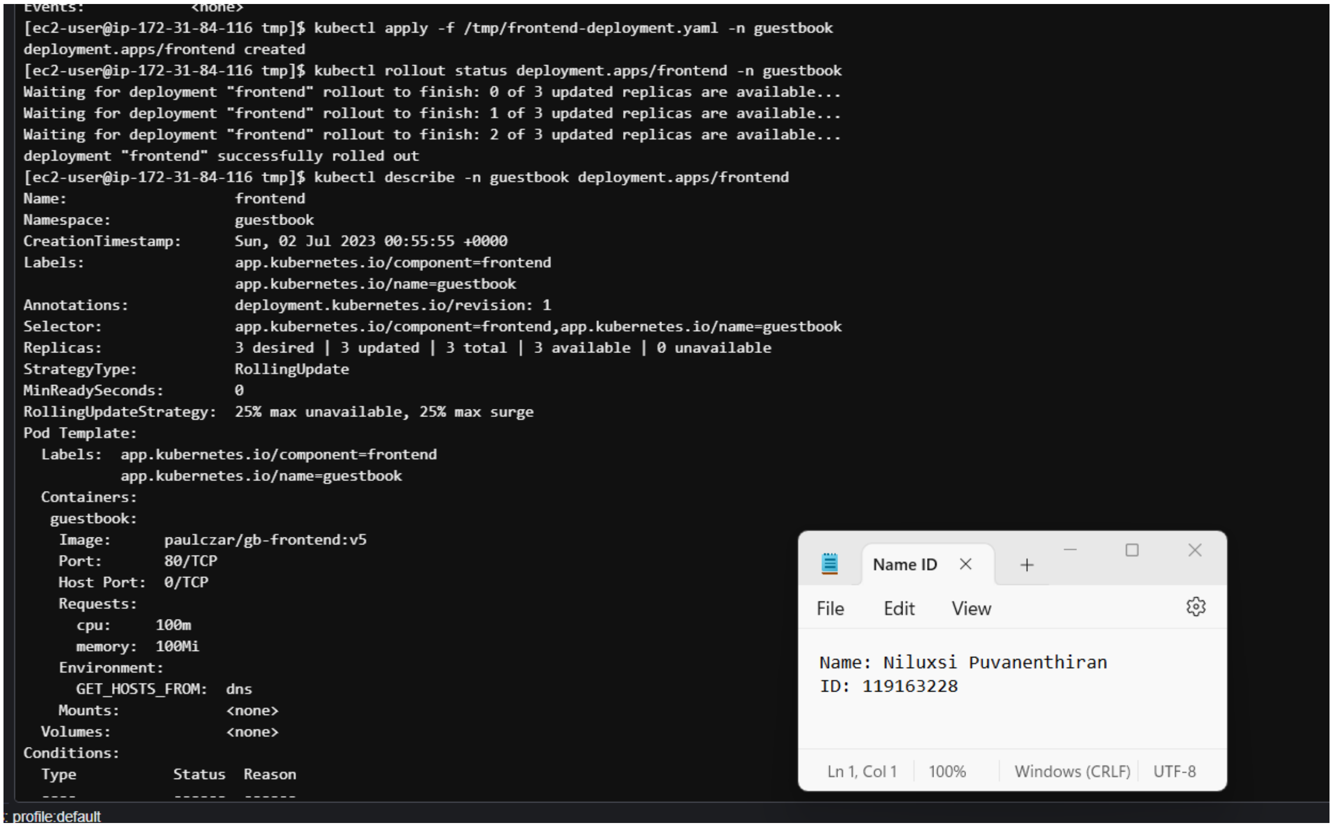
Screenshot 17 created service to expose mongo DB to internal clusters

Explain: what type of service did we create? Why is this the right type of service to use with Mongo DB?
ClusterIP Service was created. This type of service is ideal for load balancing



```
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get svc -n guestbook
NAME    TYPE        CLUSTER-IP     EXTERNAL-IP   PORT(S)     AGE
mongo   ClusterIP   10.96.60.163   <none>        27017/TCP   7m37s
[ec2-user@ip-172-31-84-116 tmp]$ kubectl describe service mongo -n guestbook
Error from server (NotFound): services "mongo\u00a0-n" not found
Error from server (NotFound): services "guestbook" not found
[ec2-user@ip-172-31-84-116 tmp]$ kubectl describe service mongo -n guestbook
Name:              mongo
Namespace:         guestbook
Labels:            app.kubernetes.io/component=backend
                   app.kubernetes.io/name=mongo
Annotations:       <none>
Selector:          app.kubernetes.io/component=backend,app.kubernetes.io/name=mongo
Type:              ClusterIP
IP Families:       <none>
IP:                10.96.60.163
IPs:               <none>
Port:              <unset>  27017/TCP
TargetPort:        27017/TCP
Endpoints:         10.244.0.8:27017
Session Affinity:  None
Events:            <none>
[ec2-user@ip-172-31-84-116 tmp]$
```

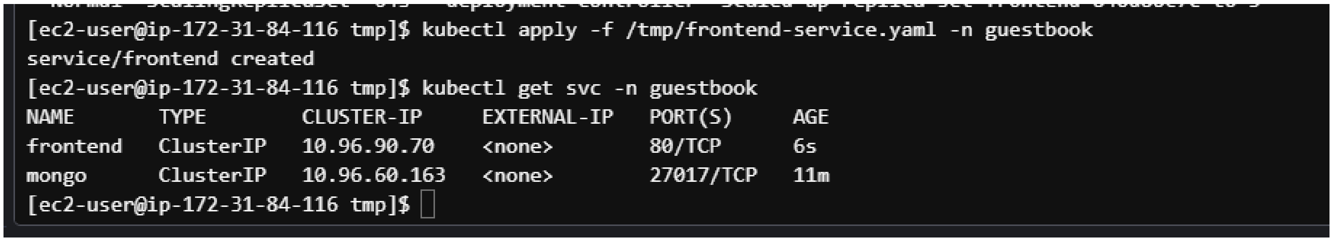
Screenshot 18 examined service end points



```
Events:            <none>
[ec2-user@ip-172-31-84-116 tmp]$ kubectl apply -f /tmp/frontend-deployment.yaml -n guestbook
deployment.apps/frontend created
[ec2-user@ip-172-31-84-116 tmp]$ kubectl rollout status deployment.apps/frontend -n guestbook
Waiting for deployment "frontend" rollout to finish: 0 of 3 updated replicas are available...
Waiting for deployment "frontend" rollout to finish: 1 of 3 updated replicas are available...
Waiting for deployment "frontend" rollout to finish: 2 of 3 updated replicas are available...
deployment "frontend" successfully rolled out
[ec2-user@ip-172-31-84-116 tmp]$ kubectl describe -n guestbook deployment.apps/frontend
Name:                   frontend
Namespace:              guestbook
CreationTimestamp:      Sun, 02 Jul 2023 00:55:55 +0000
Labels:                 app.kubernetes.io/component=frontend
                        app.kubernetes.io/name=guestbook
Annotations:            deployment.kubernetes.io/revision: 1
Selector:               app.kubernetes.io/component=frontend,app.kubernetes.io/name=guestbook
Replicas:               3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app.kubernetes.io/component=frontend
           app.kubernetes.io/name=guestbook
  Containers:
   guestbook:
    Image:      paulczar/gb-frontend:v5
    Port:       80/TCP
    Host Port:  0/TCP
    Requests:
      cpu:     100m
      memory:  100Mi
    Environment:
      GET_HOSTS_FROM:  dns
    Mounts:            <none>
  Volumes:             <none>
Conditions:
  Type           Status  Reason
  ----           ------  ------
```

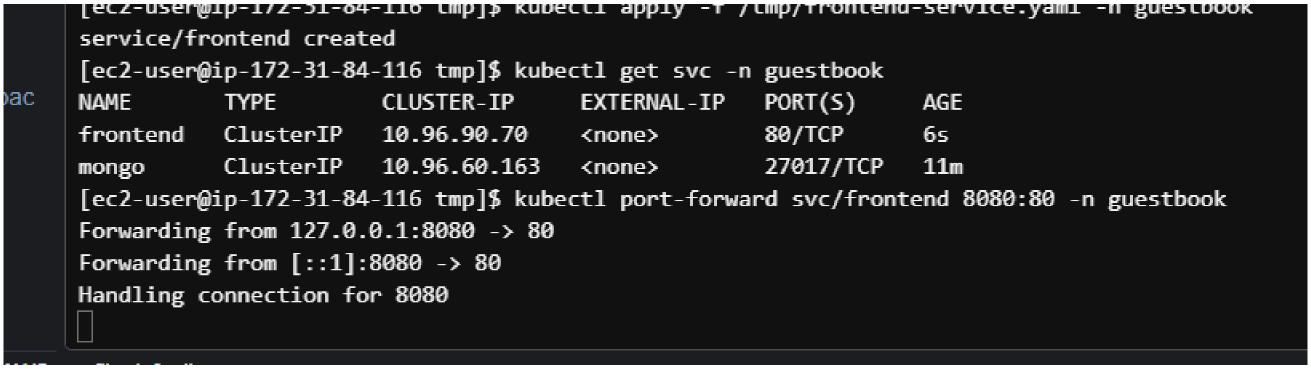
Name: Niluxsi Puvanenthiran
ID: 119163228

Screenshot 19service to expose is created



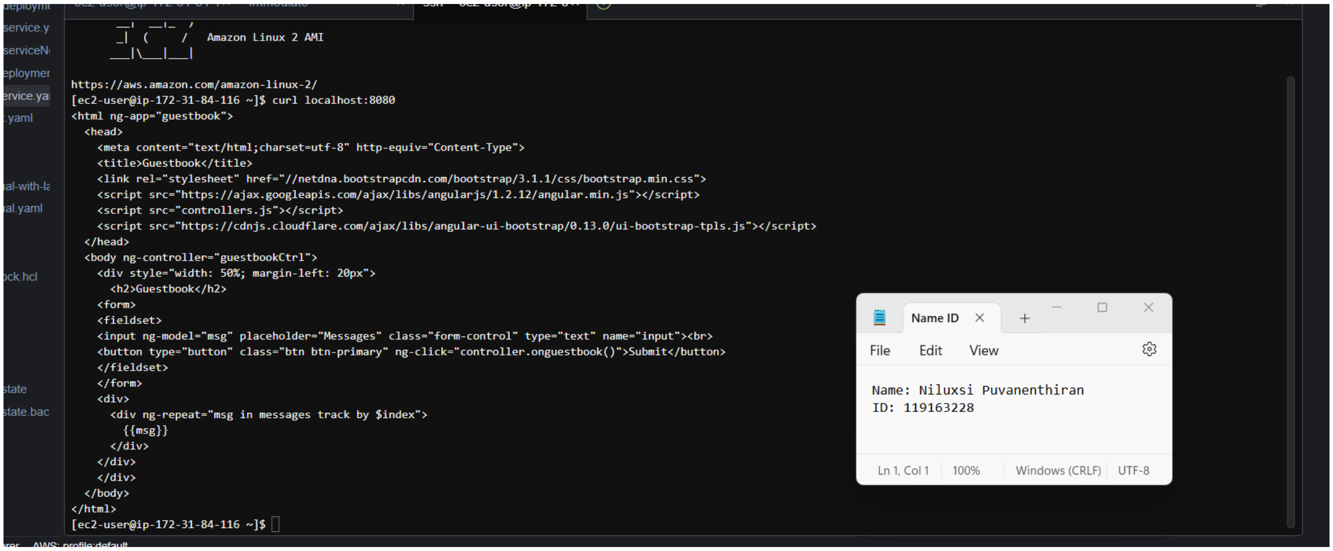
```
[ec2-user@ip-172-31-84-116 tmp]$ kubectl apply -f /tmp/frontend-service.yaml -n guestbook
service/frontend created
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get svc -n guestbook
NAME       TYPE        CLUSTER-IP     EXTERNAL-IP   PORT(S)     AGE
frontend   ClusterIP   10.96.90.70    <none>        80/TCP      6s
mongo      ClusterIP   10.96.60.163   <none>        27017/TCP   11m
[ec2-user@ip-172-31-84-116 tmp]$
```

Screenshot 20 created service is verified



```
[ec2-user@ip-172-31-84-116 tmp]$ kubectl apply -f /tmp/frontend-service.yaml -n guestbook
service/frontend created
[ec2-user@ip-172-31-84-116 tmp]$ kubectl get svc -n guestbook
NAME       TYPE        CLUSTER-IP     EXTERNAL-IP   PORT(S)     AGE
frontend   ClusterIP   10.96.90.70    <none>        80/TCP      6s
mongo      ClusterIP   10.96.60.163   <none>        27017/TCP   11m
[ec2-user@ip-172-31-84-116 tmp]$ kubectl port-forward svc/frontend 8080:80 -n guestbook
Forwarding from 127.0.0.1:8080 -> 80
Forwarding from [::1]:8080 -> 80
Handling connection for 8080
```

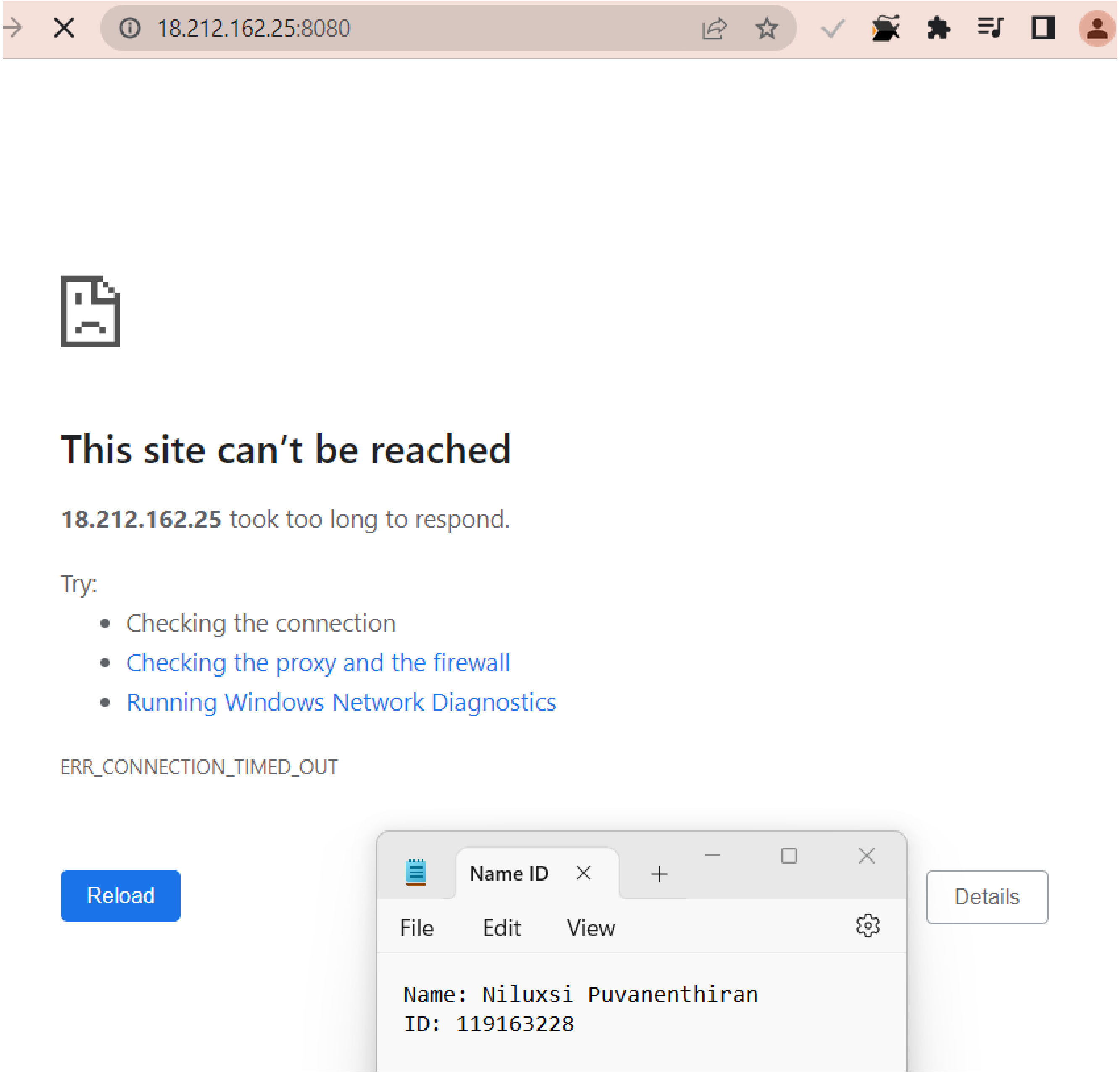
Screenshot 21 forwarded local port 8080 to service port 80 with port-forward



```
       _|  (     /   Amazon Linux 2 AMI
      ___|\___|___|

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-84-116 ~]$ curl localhost:8080
<html ng-app="guestbook">
  <head>
    <meta content="text/html;charset=utf-8" http-equiv="Content-Type">
    <title>Guestbook</title>
    <link rel="stylesheet" href="//netdna.bootstrapcdn.com/bootstrap/3.1.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.2.12/angular.min.js"></script>
    <script src="controllers.js"></script>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/angular-ui-bootstrap/0.13.0/ui-bootstrap-tpls.js"></script>
  </head>
  <body ng-controller="guestbookCtrl">
    <div style="width: 50%; margin-left: 20px">
      <h2>Guestbook</h2>
    <form>
    <fieldset>
    <input ng-model="msg" placeholder="Messages" class="form-control" type="text" name="input"><br>
    <button type="button" class="btn btn-primary" ng-click="controller.onguestbook()">Submit</button>
    </fieldset>
    </form>
    <div>
      <div ng-repeat="msg in messages track by $index">
        {{msg}}
      </div>
    </div>
    </div>
  </body>
</html>
[ec2-user@ip-172-31-84-116 ~]$
```

Name: Niluxsi Puvanenthiran
ID: 119163228

Screenshot 22 verified the access to service



This site can’t be reached

18.212.162.25 took too long to respond.

Try:

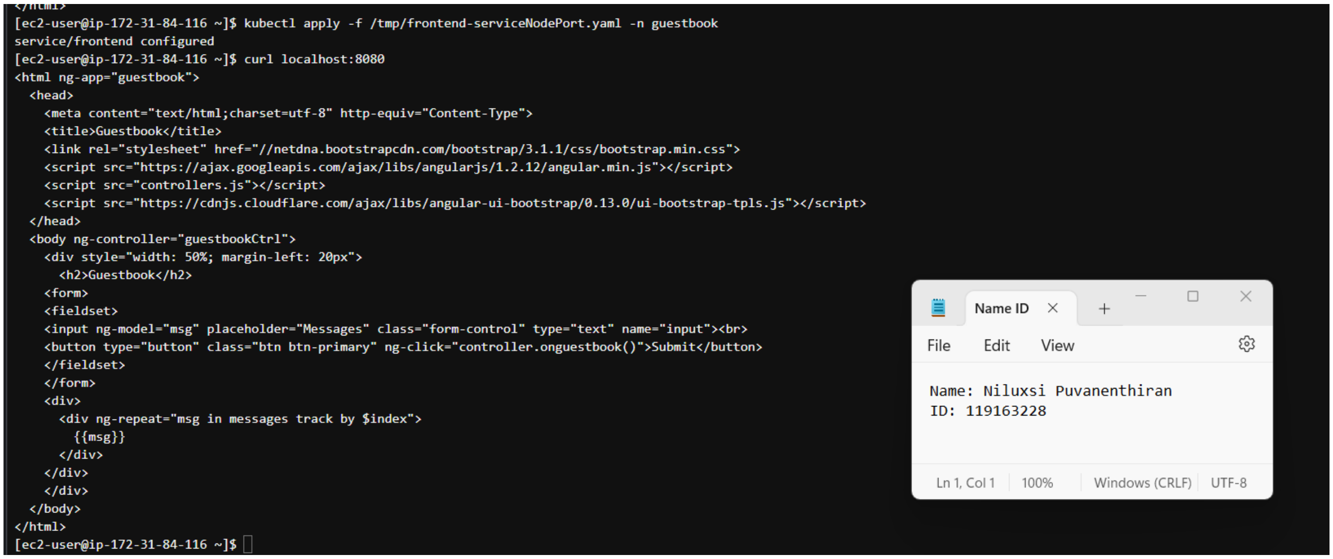
- Checking the connection
- Checking the proxy and the firewall
- Running Windows Network Diagnostics

ERR_CONNECTION_TIMED_OUT

```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

Screenshot 23 Access to port

It was not successful because ClusterIP is designed for internal communication within the cluster and does not provide external access.

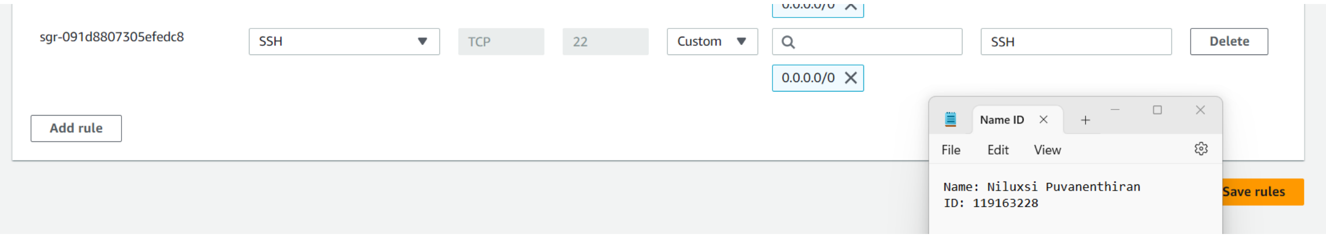


```
</html>
[ec2-user@ip-172-31-84-116 ~]$ kubectl apply -f /tmp/frontend-serviceNodePort.yaml -n guestbook
service/frontend configured
[ec2-user@ip-172-31-84-116 ~]$ curl localhost:8080
<html ng-app="guestbook">
  <head>
    <meta content="text/html;charset=utf-8" http-equiv="Content-Type">
    <title>Guestbook</title>
    <link rel="stylesheet" href="//netdna.bootstrapcdn.com/bootstrap/3.1.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.2.12/angular.min.js"></script>
    <script src="controllers.js"></script>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/angular-ui-bootstrap/0.13.0/ui-bootstrap-tpls.js"></script>
  </head>
  <body ng-controller="guestbookCtrl">
    <div style="width: 50%; margin-left: 20px">
      <h2>Guestbook</h2>
    <form>
    <fieldset>
    <input ng-model="msg" placeholder="Messages" class="form-control" type="text" name="input"><br>
    <button type="button" class="btn btn-primary" ng-click="controller.onguestbook()">Submit</button>
    </fieldset>
    </form>
    <div>
      <div ng-repeat="msg in messages track by $index">
        {{msg}}
      </div>
    </div>
    </div>
  </body>
</html>
[ec2-user@ip-172-31-84-116 ~]$
```

Name: Niluxsi Puvanenthiran
ID: 119163228

Screenshot 24 Service type updated to nodeport

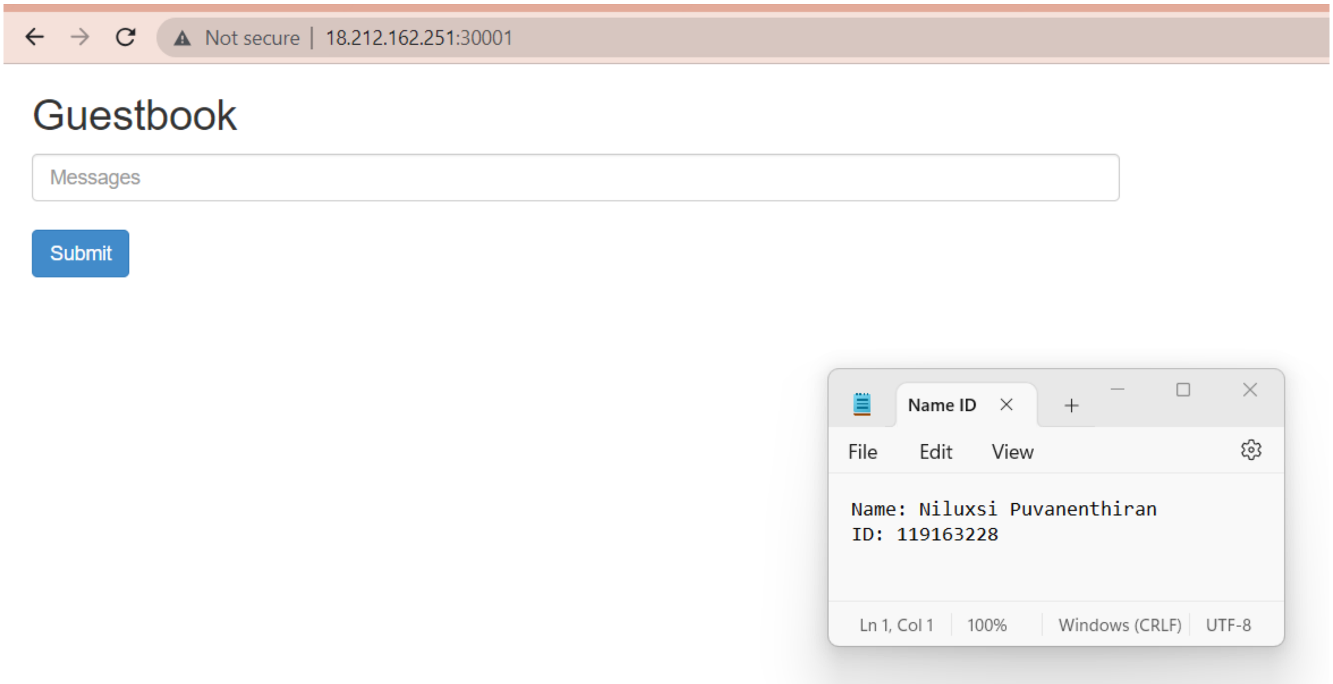
The port fort is running



sgr-091d8807305efedc8 | SSH | TCP | 22 | Custom | 0.0.0.0/0 | SSH | Delete

Name: Niluxsi Puvanenthiran
ID: 119163228

Screenshot 25 sg inbound rule modified



Not secure | 18.212.162.251:30001

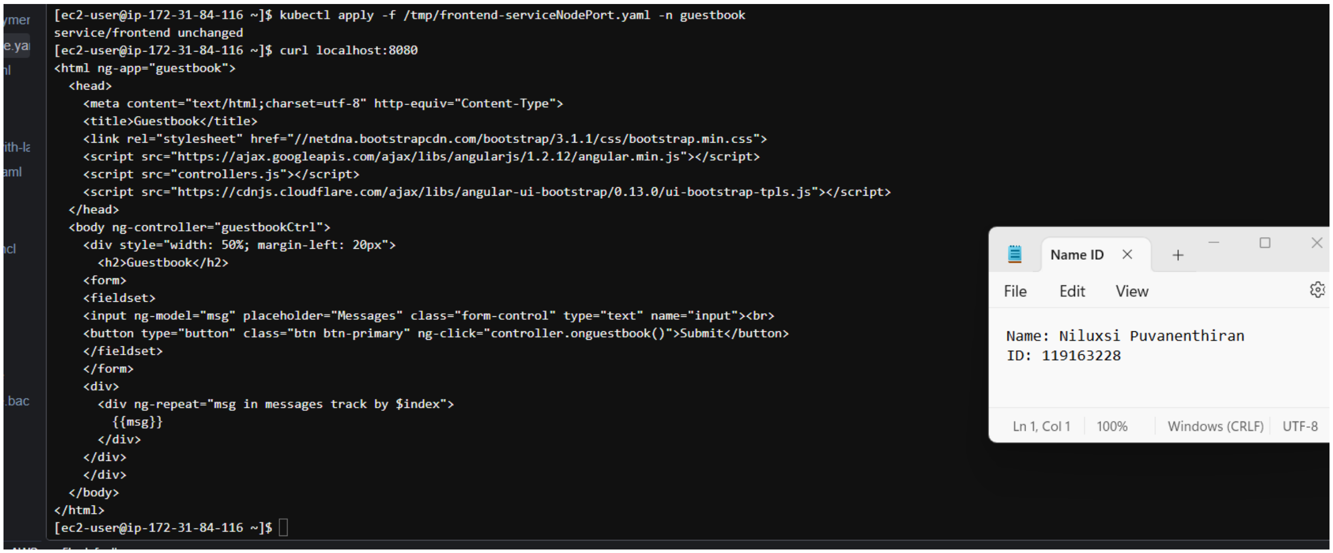
Guestbook

Messages

Submit

Name: Niluxsi Puvanenthiran
ID: 119163228

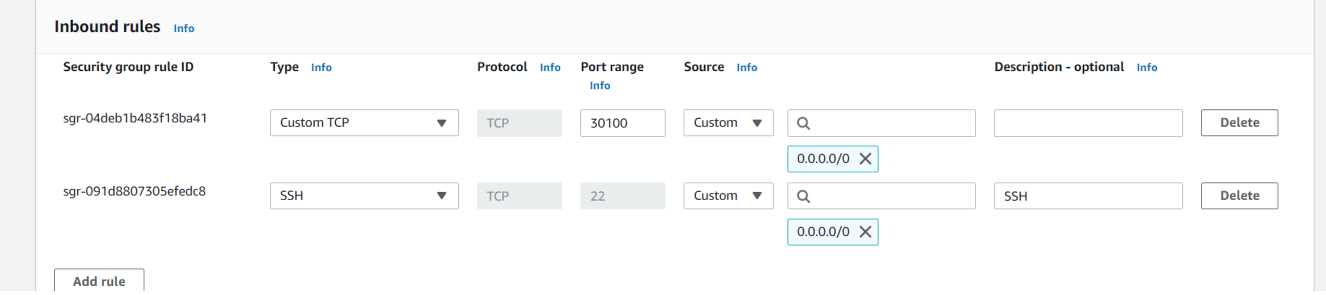
Screenshot 26 connected guestbook application with NodePort



```
[ec2-user@ip-172-31-84-116 ~]$ kubectl apply -f /tmp/frontend-serviceNodePort.yaml -n guestbook
service/frontend unchanged
[ec2-user@ip-172-31-84-116 ~]$ curl localhost:8080
<html ng-app="guestbook">
  <head>
    <meta content="text/html;charset=utf-8" http-equiv="Content-Type">
    <title>Guestbook</title>
    <link rel="stylesheet" href="//netdna.bootstrapcdn.com/bootstrap/3.1.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.2.12/angular.min.js"></script>
    <script src="controllers.js"></script>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/angular-ui-bootstrap/0.13.0/ui-bootstrap-tpls.js"></script>
  </head>
  <body ng-controller="guestbookCtrl">
    <div style="width: 50%; margin-left: 20px">
      <h2>Guestbook</h2>
    <form>
    <fieldset>
    <input ng-model="msg" placeholder="Messages" class="form-control" type="text" name="input"><br>
    <button type="button" class="btn btn-primary" ng-click="controller.onguestbook()">Submit</button>
    </fieldset>
    </form>
    <div>
      <div ng-repeat="msg in messages track by $index">
        {{msg}}
      </div>
    </div>
    </div>
  </body>
</html>
[ec2-user@ip-172-31-84-116 ~]$
```

```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

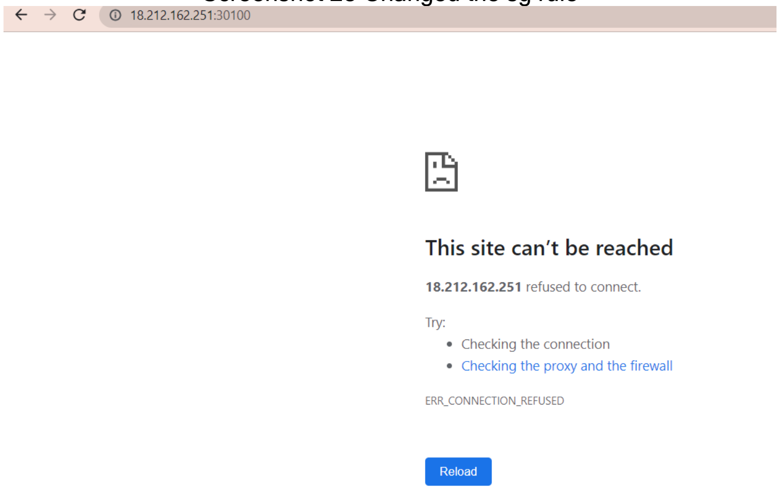
Screenshot 27 still able to connect after changing nodeport



Inbound rules Info

Security group rule ID	Type Info	Protocol Info	Port range Info	Source Info		Description - optional Info	
sgr-04deb1b483f18ba41	Custom TCP	TCP	30100	Custom	0.0.0.0/0		Delete
sgr-091d8807305efedc8	SSH	TCP	22	Custom	0.0.0.0/0	SSH	Delete

Screenshot 28 Changed the sg rule



This site can't be reached

18.212.162.251 refused to connect.

Try:

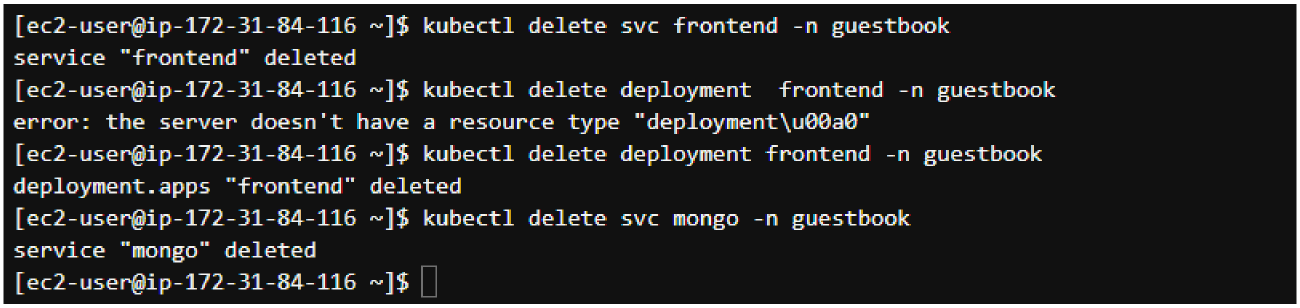
- Checking the connection
- Checking the proxy and the firewall

ERR_CONNECTION_REFUSED

Screenshot 29 not successful

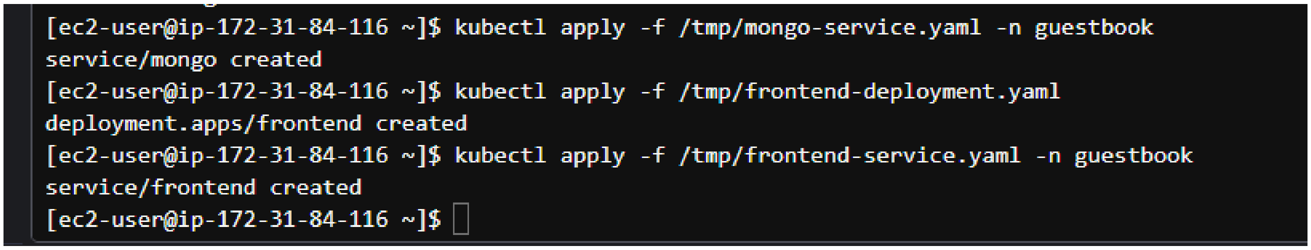
- **Would our application work if we give our MongoDB service a *different* name?**

It may or may not work depending on how the application is configured to connect to the MongoDB service.



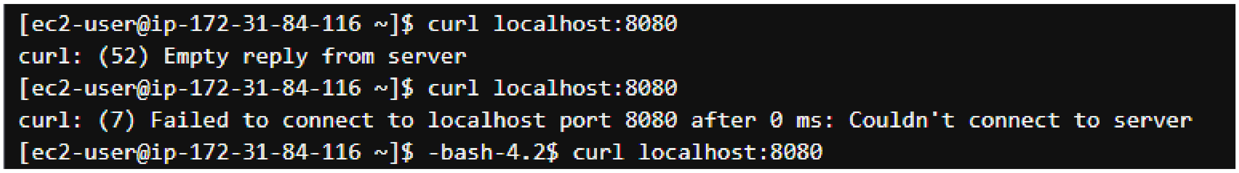
```
[ec2-user@ip-172-31-84-116 ~]$ kubectl delete svc frontend -n guestbook
service "frontend" deleted
[ec2-user@ip-172-31-84-116 ~]$ kubectl delete deployment  frontend -n guestbook
error: the server doesn't have a resource type "deployment\u00a0"
[ec2-user@ip-172-31-84-116 ~]$ kubectl delete deployment frontend -n guestbook
deployment.apps "frontend" deleted
[ec2-user@ip-172-31-84-116 ~]$ kubectl delete svc mongo -n guestbook
service "mongo" deleted
[ec2-user@ip-172-31-84-116 ~]$ 
```

Screenshot 30 Deleted Mongo Service



```
[ec2-user@ip-172-31-84-116 ~]$ kubectl apply -f /tmp/mongo-service.yaml -n guestbook
service/mongo created
[ec2-user@ip-172-31-84-116 ~]$ kubectl apply -f /tmp/frontend-deployment.yaml
deployment.apps/frontend created
[ec2-user@ip-172-31-84-116 ~]$ kubectl apply -f /tmp/frontend-service.yaml -n guestbook
service/frontend created
[ec2-user@ip-172-31-84-116 ~]$ 
```

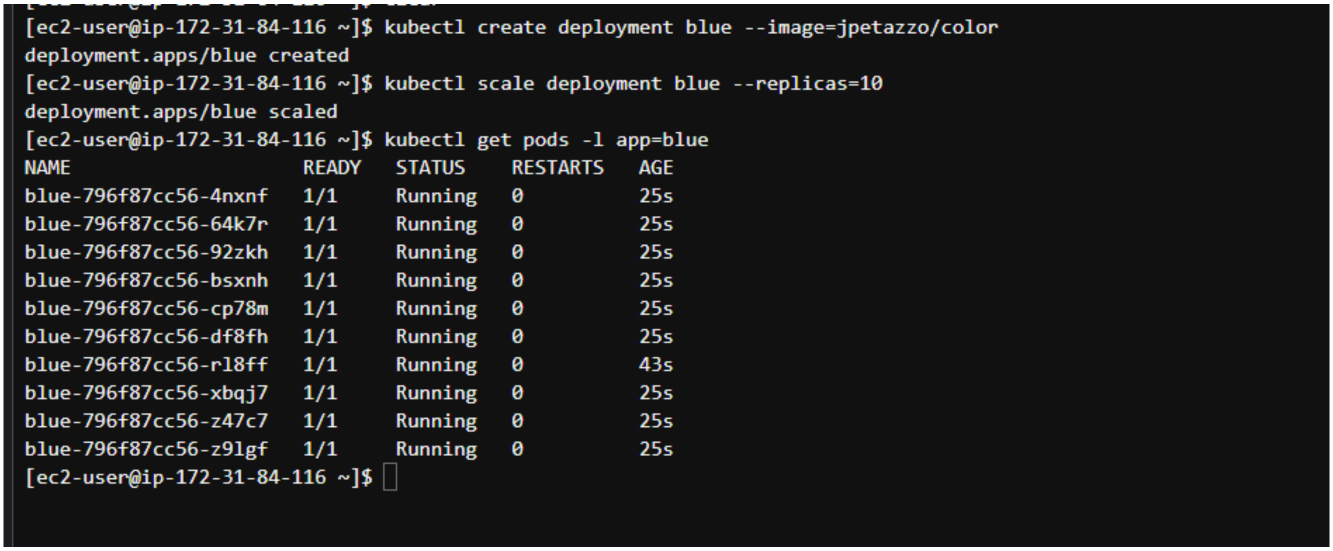
Screenshot 31 renamed the mongo service



```
[ec2-user@ip-172-31-84-116 ~]$ curl localhost:8080
curl: (52) Empty reply from server
[ec2-user@ip-172-31-84-116 ~]$ curl localhost:8080
curl: (7) Failed to connect to localhost port 8080 after 0 ms: Couldn't connect to server
[ec2-user@ip-172-31-84-116 ~]$ -bash-4.2$ curl localhost:8080
```

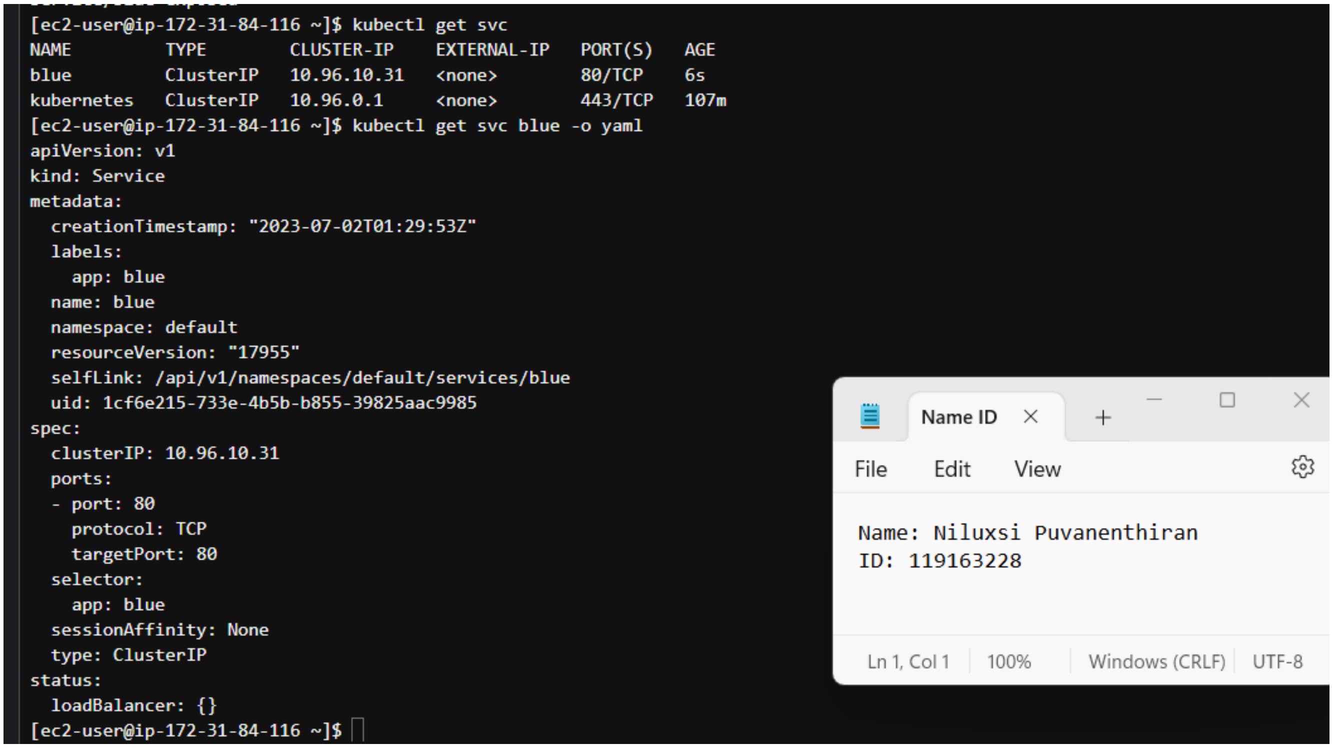
Screenshot 32 Was not able to connect with ClusterIP after rename

Workshop 4 – DNS in K8s



```
[ec2-user@ip-172-31-84-116 ~]$ kubectl create deployment blue --image=jpetazzo/color
deployment.apps/blue created
[ec2-user@ip-172-31-84-116 ~]$ kubectl scale deployment blue --replicas=10
deployment.apps/blue scaled
[ec2-user@ip-172-31-84-116 ~]$ kubectl get pods -l app=blue
NAME                    READY   STATUS    RESTARTS   AGE
blue-796f87cc56-4nxnf   1/1     Running   0          25s
blue-796f87cc56-64k7r   1/1     Running   0          25s
blue-796f87cc56-92zkh   1/1     Running   0          25s
blue-796f87cc56-bsxnh   1/1     Running   0          25s
blue-796f87cc56-cp78m   1/1     Running   0          25s
blue-796f87cc56-df8fh   1/1     Running   0          25s
blue-796f87cc56-rl8ff   1/1     Running   0          43s
blue-796f87cc56-xbqj7   1/1     Running   0          25s
blue-796f87cc56-z47c7   1/1     Running   0          25s
blue-796f87cc56-z9lgf   1/1     Running   0          25s
[ec2-user@ip-172-31-84-116 ~]$ 
```

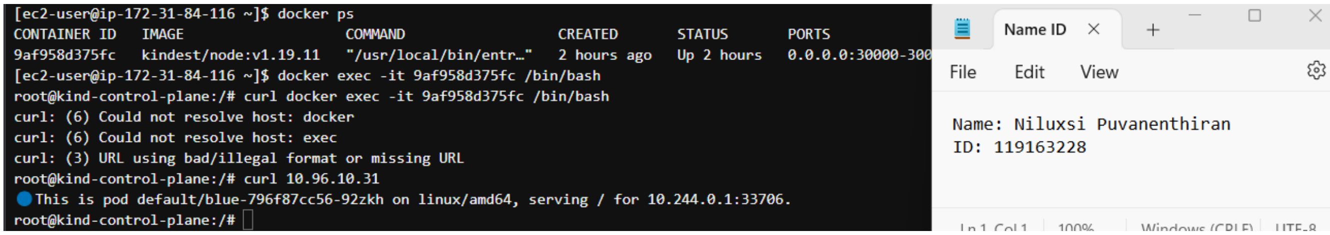
Screenshot 33 Creating deployment for out http server



```
[ec2-user@ip-172-31-84-116 ~]$ kubectl get svc
NAME         TYPE        CLUSTER-IP    EXTERNAL-IP   PORT(S)   AGE
blue         ClusterIP   10.96.10.31   <none>        80/TCP    6s
kubernetes   ClusterIP   10.96.0.1     <none>        443/TCP   107m
[ec2-user@ip-172-31-84-116 ~]$ kubectl get svc blue -o yaml
apiVersion: v1
kind: Service
metadata:
  creationTimestamp: "2023-07-02T01:29:53Z"
  labels:
    app: blue
  name: blue
  namespace: default
  resourceVersion: "17955"
  selfLink: /api/v1/namespaces/default/services/blue
  uid: 1cf6e215-733e-4b5b-b855-39825aac9985
spec:
  clusterIP: 10.96.10.31
  ports:
  - port: 80
    protocol: TCP
    targetPort: 80
  selector:
    app: blue
  sessionAffinity: None
  type: ClusterIP
status:
  loadBalancer: {}
[ec2-user@ip-172-31-84-116 ~]$
```

Name: Niluxsi Puvanenthiran
ID: 119163228

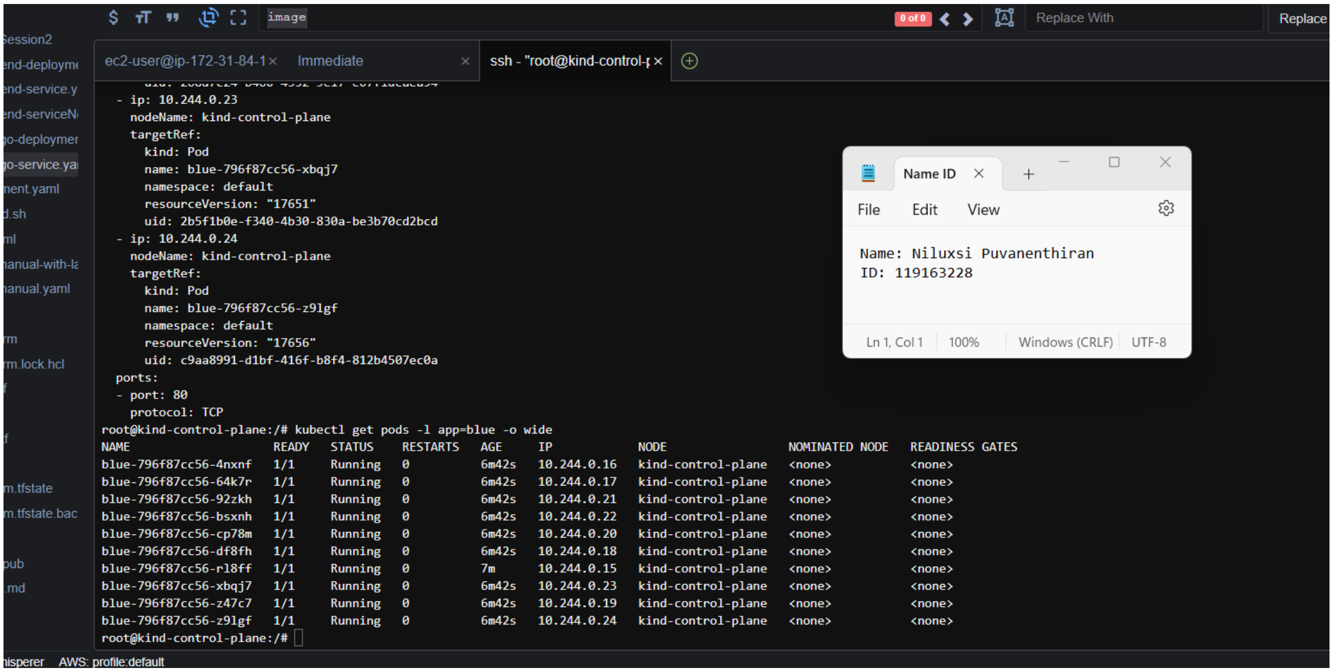
Screenshot 34 Deployment is exposed



```
[ec2-user@ip-172-31-84-116 ~]$ docker ps
CONTAINER ID   IMAGE                  COMMAND                  CREATED       STATUS       PORTS
9af958d375fc   kindest/node:v1.19.11  "/usr/local/bin/entr…"   2 hours ago   Up 2 hours   0.0.0.0:30000-300
[ec2-user@ip-172-31-84-116 ~]$ docker exec -it 9af958d375fc /bin/bash
root@kind-control-plane:/# curl docker exec -it 9af958d375fc /bin/bash
curl: (6) Could not resolve host: docker
curl: (6) Could not resolve host: exec
curl: (3) URL using bad/illegal format or missing URL
root@kind-control-plane:/# curl 10.96.10.31
🔵This is pod default/blue-796f87cc56-92zkh on linux/amd64, serving / for 10.244.0.1:33706.
root@kind-control-plane:/#
```

Name: Niluxsi Puvanenthiran
ID: 119163228

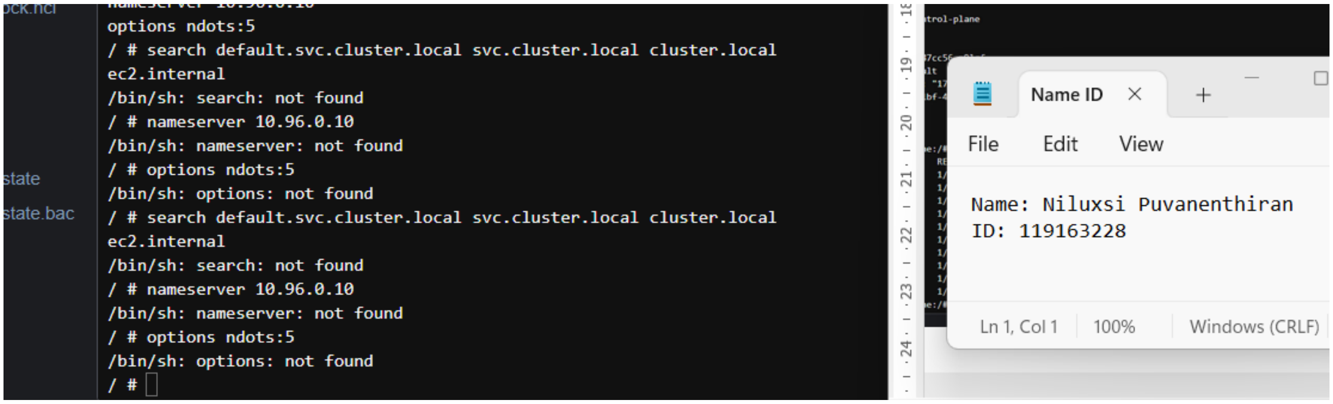
Screenshot 35Access to the application tested successfully



```
  - ip: 10.244.0.23
    nodeName: kind-control-plane
    targetRef:
      kind: Pod
      name: blue-796f87cc56-xbqj7
      namespace: default
      resourceVersion: "17651"
      uid: 2b5f1b0e-f340-4b30-830a-be3b70cd2bcd
  - ip: 10.244.0.24
    nodeName: kind-control-plane
    targetRef:
      kind: Pod
      name: blue-796f87cc56-z9lgf
      namespace: default
      resourceVersion: "17656"
      uid: c9aa8991-d1bf-416f-b8f4-812b4507ec0a
  ports:
  - port: 80
    protocol: TCP
root@kind-control-plane:/# kubectl get pods -l app=blue -o wide
NAME                    READY   STATUS    RESTARTS   AGE     IP            NODE                 NOMINATED NODE   READINESS GATES
blue-796f87cc56-4nxnf   1/1     Running   0          6m42s   10.244.0.16   kind-control-plane   <none>           <none>
blue-796f87cc56-64k7r   1/1     Running   0          6m42s   10.244.0.17   kind-control-plane   <none>           <none>
blue-796f87cc56-92zkh   1/1     Running   0          6m42s   10.244.0.21   kind-control-plane   <none>           <none>
blue-796f87cc56-bsxnh   1/1     Running   0          6m42s   10.244.0.22   kind-control-plane   <none>           <none>
blue-796f87cc56-cp78m   1/1     Running   0          6m42s   10.244.0.20   kind-control-plane   <none>           <none>
blue-796f87cc56-df8fh   1/1     Running   0          6m42s   10.244.0.18   kind-control-plane   <none>           <none>
blue-796f87cc56-rl8ff   1/1     Running   0          7m      10.244.0.15   kind-control-plane   <none>           <none>
blue-796f87cc56-xbqj7   1/1     Running   0          6m42s   10.244.0.23   kind-control-plane   <none>           <none>
blue-796f87cc56-z47c7   1/1     Running   0          6m42s   10.244.0.19   kind-control-plane   <none>           <none>
blue-796f87cc56-z9lgf   1/1     Running   0          6m42s   10.244.0.24   kind-control-plane   <none>           <none>
root@kind-control-plane:/#
```

Name: Niluxsi Puvanenthiran
ID: 119163228

Screenshot 36 Services and Endpoints



```
nameserver 10.96.0.10
options ndots:5
/ # search default.svc.cluster.local svc.cluster.local cluster.local
ec2.internal
/bin/sh: search: not found
/ # nameserver 10.96.0.10
/bin/sh: nameserver: not found
/ # options ndots:5
/bin/sh: options: not found
/ # search default.svc.cluster.local svc.cluster.local cluster.local
ec2.internal
/bin/sh: search: not found
/ # nameserver 10.96.0.10
/bin/sh: nameserver: not found
/ # options ndots:5
/bin/sh: options: not found
/ #
```

```
Name: Niluxsi Puvanenthiran
ID: 119163228
```

Screenshot 37 name server not found

REFERENCES

Geiman, I. (2023, Summer). Lectures and Slides, CLO835_Portable Technologies in cloud. Seneca Newham Campus, North York.

Learner Lab. (2023). Retrieved from https://awsacademy.instructure.com/.