

Lab Exercise 7- Create Service in Kubernetes

Name – Sujal Bhandari

SAP_ID – 500106865

Roll_No – R2142220181

Objective:

- Understand the syntax and structure of a Kubernetes Service definition file (YAML).
- Learn to create different types of Services: ClusterIP, NodePort, and LoadBalancer.
- Comprehend how Services operate independently of specific Pods.

Prerequisites

- Kubernetes Cluster: Have a running Kubernetes cluster (locally using Minikube or kind, or a cloud-based service).
- kubectl: Install and configure kubectl to interact with your Kubernetes cluster.
- Basic Knowledge of YAML: Familiarity with YAML format will be helpful for understanding Kubernetes resource definitions.

Step-by-Step Guide

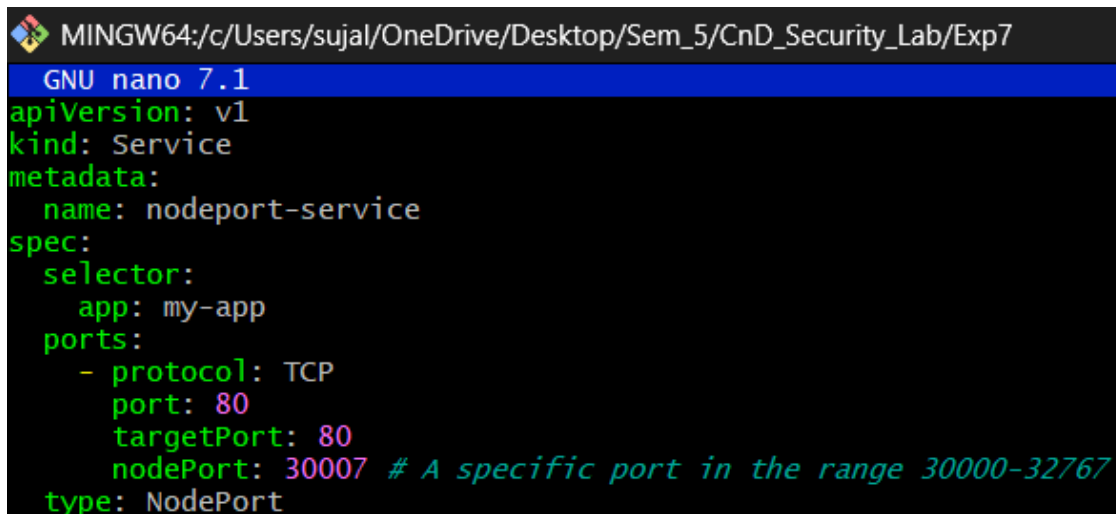
NodePort Service

To expose the Service on a port on each Node in the cluster, modify the Service type to NodePort.

Create a YAML file named nodeport-service.yaml with the following content:

```
apiVersion: v1
kind: Service
```

```
metadata:
  name: nodeport-service
spec:
  selector:
    app: my-app
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80
      nodePort: 30007 # A specific port in the range 30000-32767
  type: NodePort
```



The screenshot shows a terminal window with the title bar "MINGW64:/c/Users/sujal/OneDrive/Desktop/Sem_5/CnD_Security_Lab/Exp7". The terminal displays the content of a file being edited in nano 7.1. The content is a Kubernetes Service manifest for "nodeport-service". The manifest includes a metadata section with the name "nodeport-service", a spec section with a selector for "my-app", and a list of ports. The first port is configured with protocol "TCP", port "80", targetPort "80", and nodePort "30007". A comment "# A specific port in the range 30000-32767" is placed next to the nodePort value. The service type is set to "NodePort".

```
GNU nano 7.1
apiVersion: v1
kind: Service
metadata:
  name: nodeport-service
spec:
  selector:
    app: my-app
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80
      nodePort: 30007 # A specific port in the range 30000-32767
  type: NodePort
```

Explanation:

- The primary difference from the ClusterIP Service is the addition of nodePort, which specifies the static port on each Node.
- type: Set to NodePort, exposing the Service on a specific port across all Nodes.

Apply this YAML to create the NodePort Service:

```
kubectl apply -f nodeport-service.yaml
```

```
suja1@HP-Victus MINGW64 ~/OneDrive/Desktop/Sem_5/CnD_Security_Lab/Exp7
$ kubectl apply -f nodeport-service.yaml
service/nodeport-service created
```

Verify the Service:

```
kubectl get services
```

```
suja1@HP-Victus MINGW64 ~/OneDrive/Desktop/Sem_5/CnD_Security_Lab/Exp7
$ kubectl get services
```

| NAME | TYPE | CLUSTER-IP | EXTERNAL-IP | PORT(S) | AGE |
|------------------|-----------|-------------|-------------|--------------|-----|
| kubernetes | ClusterIP | 10.96.0.1 | <none> | 443/TCP | 27m |
| nodeport-service | NodePort | 10.97.3.245 | <none> | 80:30007/TCP | 40s |

You should see the nodeport-service listed with a NodePort and details about the port exposed.