

# Lab Exercise 7- Create Service in Kubernetes

## 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
```

```
Dell@Dell MINGW64 ~/Desktop/docker/exp/exp7
$ touch nodeport-service.yaml

Dell@Dell MINGW64 ~/Desktop/docker/exp/exp7
$ nano nodeport-service.yaml

Dell@Dell MINGW64 ~/Desktop/docker/exp/exp7
$ cat nodeport-service.yaml
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

Dell@Dell MINGW64 ~/Desktop/docker/exp/exp7
$
```

### 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
```

**Verify the Service:**

```
kubectl get services
```

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

```
Dell@Dell MINGW64 ~/Desktop/docker/exp/exp7
$ kubectl apply -f nodeport-service.yaml
service/nodeport-service created

Dell@Dell MINGW64 ~/Desktop/docker/exp/exp7
$ kubectl get services
NAME                TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)          AGE
kubernetes          ClusterIP   10.96.0.1    <none>        443/TCP          20m
nodeport-service    NodePort    10.98.68.5   <none>        80:30007/TCP     11s

Dell@Dell MINGW64 ~/Desktop/docker/exp/exp7
$
```