

# 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
```

### 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
```

```
HP 15@LAPTOP-PL8DJA30 MINGW64 ~/Desktop/Sem5/Docker
$ kubectl apply -f nodeport-service.yaml
service/nodeport-service created
```

### Verify the Service:

```
kubectl get services
```

```
HP 15@LAPTOP-PL8DJA30 MINGW64 ~/Desktop/Sem5/Docker
$ kubectl get services
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
kubernetes	ClusterIP	10.96.0.1	<none>	443/TCP	59m
nodeport-service	NodePort	10.99.255.112	<none>	80:30007/TCP	97s

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