

Part 3

Deploying a Simple Web Application on Kubernetes

1. Create a Deployment Manifest:

A Deployment ensures that a specified number of pod replicas are running at any given time. Let's create a simple Deployment for a web application using the nginx image. Save the following YAML to a file named `webapp-deployment.yaml`:

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: webapp-deployment
  labels:
    app: webapp
spec:
  replicas: 2
  selector:
    matchLabels:
      app: webapp
  template:
    metadata:
      labels:
        app: webapp
    spec:
      containers:
        - name: nginx
          image: nginx:latest
          ports:
            - containerPort: 80
```

2. Create a Service Manifest:

A Service is an abstraction that defines a logical set of Pods and enables external traffic exposure, load balancing, and service discovery. For our web application, we'll use a NodePort? service.

Save the following YAML to a file named `webapp-service.yaml`:

```
apiVersion: v1
kind: Service
metadata:
  name: webapp-service
spec:
  selector:
    app: webapp
  ports:
    - protocol: TCP
      port: 80
```

```
targetPort: 80
nodePort: 30080
type: NodePort
```

3. Deploy the Application:

Apply the Deployment and Service manifests:

```
kubectl apply -f webapp-deployment.yaml
```

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

4. Verify the Deployment:

Check the status of the Deployment and Service:

```
kubectl get deployments
```

```
kubectl get services
```

You should see your webapp-deployment with 2 replicas. Give it a time to take both replicas online.

5. Access the Web Application:

Since we used a NodePort service, the web application should be accessible on node's IP at port 30080. If you're unsure of your node IPs, you can get them with:

```
kubectl get nodes -o wide
```

Then, in a web browser or using a tool like curl, access the web application:

```
curl http://<MASTER/NODE_IP>:30080
```

You should see the default nginx welcome page, indicating that your web application is running.

Delete all the deployments, run below command:

```
kubectl delete deployment <deployment name>
```

Delete all the Services, run below command:

```
kubectl delete service <service name>
```