Lesson 04 Demo 05

Understanding Static Pods

Objective: To demonstrate the creation, management, and deletion of static pods in Kubernetes, highlighting its operational independence from the control plane

Tools required: kubeadm, kubectl, kubelet, and containerd

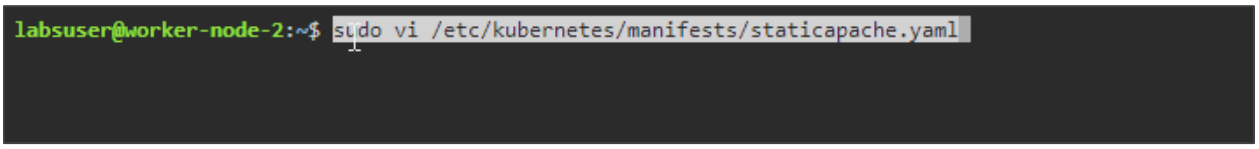
Prerequisites: A Kubernetes cluster should already be set up (refer to the steps provided in Lesson 02, Demo 01 for guidance).

Steps to be followed:

1. Create a static pod in the worker node
2. Try to delete the pod from the control plane
3. Delete the static pod in the worker node

Step 1: Create a static pod in the worker node

1.1 In the **worker-node-2**, run the following command to create a YAML file, which will define the static pod:
sudo vi /etc/kubernetes/manifests/staticapache.yaml



1.2 Write the following code inside the **staticapache.yaml** file:

```
apiVersion: v1
kind: Pod
metadata:
  name: staticapache
  labels:
    Type: static
spec:
  containers:
  - name: mycontainer
    image: docker.io/httpd
    ports:

    - containerPort: 80
```

```
apiVersion: v1
kind: Pod
metadata:
  name: staticapache
  labels:
    Type: static
spec:
  containers:
  - name: mycontainer
    image: docker.io/httpd
    ports:
    - containerPort: 80
~
~
~
~
~
~
```

1.3 Execute the following code to check the pod status in the control plane:

kubectl get pods | grep staticapache

```
labsuser@master:~$ kubectl get pods | grep staticapache
staticapache-worker-node-2.example.com   1/1     Running   0          52s
labsuser@master:~$
```

Step 2: Try to delete the pod from the control plane

2.1 Execute the following command to delete the static pod from the control plane:
kubectl delete pod staticapache-worker-node-2.example.com

```
labsuser@master:~$ kubectl delete pod staticapache-worker-node-2.example.com
pod "staticapache-worker-node-2.example.com" deleted
```

> **Note:** Although it is showing that the static pod is deleted, the static pod actually cannot be controlled by the control plane, as it is managed by the kubelet service running in the **worker-node-2**. Hence, the pod will be recreated again.

2.2 Run the following command to check the existence of the static pod:
kubectl get pods | grep staticapache

```
labsuser@master:~$ kubectl get pods | grep staticapache
staticapache-worker-node-2.example.com   1/1     Running   0          42s
labsuser@master:~$
```

The pod is created again.

Step 3: Delete the static pod in the worker node

3.1 In the **worker-node-2**, execute the following command to delete the pod YAML file:
sudo rm /etc/kubernetes/manifests/staticapache.yaml

```
labsuser@worker-node-2:/$ sudo rm /etc/kubernetes/manifests/staticapache.yaml
labsuser@worker-node-2:/$
```

3.2 In the control plane, execute the following command to check whether the pod is removed:
kubectl get pods | grep staticapache

```
labsuser@master:~$ kubectl get pods | grep staticapache
No resources found in default namespace.
labsuser@master:~$
```

The pod **staticapache-worker-node-2.example.com** is not found as the kubelet service in the **worker-node-2** is removed.

By following these steps, you have successfully demonstrated the creation, management, and deletion of static pods in Kubernetes, highlighting its operational independence from the control plane.