Lab13 – Defining and using an Ingress

In this exercise, you will create an Ingress with rules that routes traffic to 2 Services.

Ingress Controller setup

The Kubernetes documentation (https://kubernetes.io/docs/concepts/services-networking/ingress-controllers/) lists a wide range of Ingress Controller implementations.

1. Use command bellow to implement an ingress controller.
   kubectl apply -f https://raw.githubusercontent.com/kubernetes/ingress-nginx/controller-v1.1.1/deploy/static/provider/cloud/deploy.yaml

```
brahim@Training:~/lab13-ingress$ kubectl apply -f https://raw.githubusercontent.com/kubernetes/ingress-nginx/controller-v1.1.1/deploy/static/p
rovider/cloud/deploy.yaml
namespace/ingress-nginx created
serviceaccount/ingress-nginx created
configmap/ingress-nginx-controller created
clusterrole.rbac.authorization.k8s.io/ingress-nginx created
clusterrolebinding.rbac.authorization.k8s.io/ingress-nginx created
role.rbac.authorization.k8s.io/ingress-nginx created
rolebinding.rbac.authorization.k8s.io/ingress-nginx created
service/ingress-nginx-controller-admission created
service/ingress-nginx-controller created
deployment.apps/ingress-nginx-controller created
ingressclass.networking.k8s.io/nginx created
validatingwebhookconfiguration.admissionregistration.k8s.io/ingress-nginx-admission created
serviceaccount/ingress-nginx-admission created
clusterrole.rbac.authorization.k8s.io/ingress-nginx-admission created
clusterrolebinding.rbac.authorization.k8s.io/ingress-nginx-admission created
role.rbac.authorization.k8s.io/ingress-nginx-admission created
rolebinding.rbac.authorization.k8s.io/ingress-nginx-admission created
job.batch/ingress-nginx-admission-create created
job.batch/ingress-nginx-admission-patch created
brahim@Training:~/lab13-ingress$
```

2. The Ingress controller will run as a Pod in the `ingress-nginx` namespace. Make sure that the Pod `ingress-nginx-controller-...` transitions into the "Running" status.

```
brahim@Training:~/lab13-ingress$ kubectl get pod -n ingress-nginx
NAME                                        READY   STATUS      RESTARTS   AGE
ingress-nginx-admission-create-cx8cv        0/1     Completed   0          28m
ingress-nginx-admission-patch-8smgg         0/1     Completed   2          28m
ingress-nginx-controller-594555f486-vcn2k   1/1     Running     0          28m
brahim@Training:~/lab13-ingress$
brahim@Training:~/lab13-ingress$
```

Using Ingress

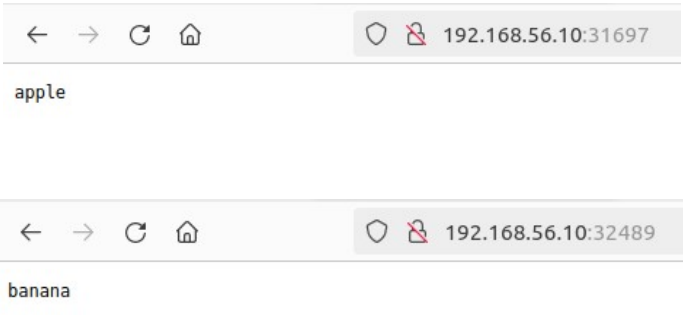
3. Create create two pods that output a slightly different response :
   - *apple-app* : execute image *hashicorp/http-echo*, print apple
   - *banana-app* : execute image *hashicorp/http-echo*, print banana

```
brahim@Training:~/lab13-ingress$ vim apple-app.yaml
brahim@Training:~/lab13-ingress$ cat apple-app.yaml
kind: Pod
apiVersion: v1
metadata:
  name: apple-app
  labels:
    app: apple
spec:
  containers:
    - name: apple-app
      image: hashicorp/http-echo
      args:
        - "-text=apple"
brahim@Training:~/lab13-ingress$
brahim@Training:~/lab13-ingress$ kubectl apply -f apple-app.yaml
pod/apple-app created
brahim@Training:~/lab13-ingress$
brahim@Training:~/lab13-ingress$ vim banana-app.yaml
brahim@Training:~/lab13-ingress$ cat banana-app.yaml
kind: Pod
apiVersion: v1
metadata:
  name: banana-app
  labels:
    app: banana
spec:
  containers:
    - name: banana-app
      image: hashicorp/http-echo
      args:
        - "-text=banana"
brahim@Training:~/lab13-ingress$ kubectl apply -f banana-app.yaml
pod/banana-app created
brahim@Training:~/lab13-ingress$
```

4. Expose the pods with a Services named `apple` and `banana` of type `NodePort`. The Services routes trafic, respectively, to the Pods `apple-app` and `banana-app`.

```
brahim@Training:~/lab13-ingress$ kubectl expose pod apple-app --port=5678 --type=NodePort --selector app=apple
service/apple-app exposed
brahim@Training:~/lab13-ingress$
brahim@Training:~/lab13-ingress$ kubectl expose pod banana-app --port=5678 --type=NodePort --selector app=banana
service/banana-app exposed
brahim@Training:~/lab13-ingress$
brahim@Training:~/lab13-ingress$ kubectl get svc
NAME         TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)          AGE
apple-app    NodePort    10.108.188.115   <none>        5678:31697/TCP   25s
banana-app   NodePort    10.109.222.212   <none>        5678:32489/TCP   5s
kubernetes   ClusterIP   10.96.0.1        <none>        443/TCP          8m25s
brahim@Training:~/lab13-ingress$
```

5. Make a request to the endpoints of the applications to test services.



6. Create an Ingress that exposes the paths `/apple` and `/banana` for the host `fruit.exposed`. The traffic should be routed to the Services created earlier.

```
brahim@Training:~/lab13-ingress$ vim ingress.yaml
brahim@Training:~/lab13-ingress$ cat ingress.yaml
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: fruit-ingress
  annotations:
    ingress.kubernetes.io/rewrite-target: /
spec:
  rules:
  - host: fruit.exposed
    http:
      paths:
        - path: /apple
          pathType: Prefix
          backend:
            service:
              name: apple-service
              port:
                number: 5678
        - path: /banana
          pathType: Prefix
          backend:
            service:
              name: banana-service
              port:
                number: 5678
brahim@Training:~/lab13-ingress$ kubectl apply -f ingress.yaml
ingress.networking.k8s.io/fruit-ingress created
brahim@Training:~/lab13-ingress$
```

7. List the Ingress object. The value for the IP address will populate after waiting for a little while. You may have to run the command multiple times.

```
brahim@Training:~/lab13-ingress$ kubectl  get ing fruit-ingress
NAME            CLASS    HOSTS           ADDRESS   PORTS   AGE
fruit-ingress   <none>   fruit.exposed             80      91s
brahim@Training:~/lab13-ingress$
```

8. Add an entry in `/etc/hosts` that maps the virtual node IP address to the host `fruit.exposed`.