# Kubernetes NGINX Ingress Setup Guide (3-node Cluster)

## Step 1: Prerequisites

* Kubernetes cluster (3 nodes)
* kubectl access configured
* Networking (CNI) and internet connectivity

## Step 2: Install NGINX Ingress Controller

**Create Namespace**

kubectl create namespace ingress-nginx

**Deploy Controller**

kubectl apply -f https://raw.githubusercontent.com/kubernetes/ingress-nginx/controller-v1.10.1/deploy/static/provider/cloud/deploy.yaml

**Wait for Ready**

kubectl get pods -n ingress-nginx -w

## Step 3: Expose the Ingress Controller

**Get the Service**

kubectl get svc -n ingress-nginx

**If LoadBalancer:** Use EXTERNAL-IP.

**If NodePort:** Patch to NodePort if needed:

kubectl patch svc ingress-nginx-controller -n ingress-nginx -p '{"spec": {"type": "NodePort"}}'

Check assigned port:

kubectl get svc -n ingress-nginx

## Step 4: Deploy a Sample NGINX App

**nginx-deployment.yaml**

apiVersion: apps/v1  
kind: Deployment  
metadata:  
 name: nginx-app  
spec:  
 replicas: 2  
 selector:  
 matchLabels:  
 app: nginx-app  
 template:  
 metadata:  
 labels:  
 app: nginx-app  
 spec:  
 containers:  
 - name: nginx  
 image: nginx:latest  
 ports:  
 - containerPort: 80  
---  
apiVersion: v1  
kind: Service  
metadata:  
 name: nginx-service  
spec:  
 selector:  
 app: nginx-app  
 ports:  
 - protocol: TCP  
 port: 80  
 targetPort: 80

**Apply:**

kubectl apply -f nginx-deployment.yaml

## Step 5: Create an Ingress Resource

**nginx-ingress.yaml**

apiVersion: networking.k8s.io/v1  
kind: Ingress  
metadata:  
 name: nginx-ingress  
 namespace: default  
 annotations:  
 nginx.ingress.kubernetes.io/rewrite-target: /  
spec:

ingressClassName: nginx  
 rules:  
 - host: example.local  
 http:  
 paths:  
 - path: /  
 pathType: Prefix  
 backend:  
 service:  
 name: nginx-service  
 port:  
 number: 80

**Apply:**

kubectl apply -f nginx-ingress.yaml

## Step 6: Test Ingress Routing

**Get Node IPs:**

kubectl get nodes -o wide

**Update /etc/hosts:**

<ACCESS\_IP> example.local

**Test:**

* If LoadBalancer: curl http://example.local/
* If NodePort: curl http://example.local:<NodePort>/

You should see the NGINX welcome page.

## Step 7: Troubleshooting

* Describe Ingress:

kubectl describe ingress nginx-ingress

* Ingress Controller logs:

kubectl logs -n ingress-nginx -l app.kubernetes.io/name=ingress-nginx

* Check endpoints:

kubectl get endpoints nginx-service

## Cleanup

kubectl delete -f nginx-ingress.yaml  
kubectl delete -f nginx-deployment.yaml  
kubectl delete namespace ingress-nginx