

# Deploying A Web Application on a Local Kubernetes Cluster

## Deployment Artifacts

### Ensure Kubernetes is Enabled and Running in Docker Desktop

```
Command Prompt
C:\Users\ajayi>kubectl version
Client Version: v1.32.0
Kustomize Version: v5.5.0
Server Version: v1.31.1

C:\Users\ajayi>kubectl get nodes
NAME                STATUS    ROLES          AGE    VERSION
desktop-control-plane  Ready    control-plane  7m47s  v1.31.1
desktop-worker        Ready    <none>         7m34s  v1.31.1
desktop-worker2       Ready    <none>         7m34s  v1.31.1

C:\Users\ajayi>kubectl get pods -A
NAMESPACE   NAME                                     READY   STATUS    RESTARTS   AGE
kube-system  coredns-7c65d6cfc9-6jmfz              1/1     Running   0           7m43s
kube-system  coredns-7c65d6cfc9-f2zqn              1/1     Running   0           7m43s
kube-system  etcd-desktop-control-plane            1/1     Running   0           7m48s
kube-system  kindnet-gdz7r                         1/1     Running   0           7m39s
kube-system  kindnet-hldhn                        1/1     Running   0           7m39s
kube-system  kindnet-s8grc                        1/1     Running   0           7m44s
kube-system  kube-apiserver-desktop-control-plane  1/1     Running   0           7m48s
kube-system  kube-controller-manager-desktop-plane 1/1     Running   0           7m48s
kube-system  kube-proxy-k4fjb                      1/1     Running   0           7m44s
kube-system  kube-proxy-n7qt9                     1/1     Running   0           7m39s
kube-system  kube-proxy-vmzlc                      1/1     Running   0           7m39s
kube-system  kube-scheduler-desktop-control-plane  1/1     Running   0           7m50s
local-path-storage  local-path-provisioner-57c5987fd4-6cgmt 1/1     Running   0           7m43s

C:\Users\ajayi>
```

## Kubernetes Docker Desktop 3—Node Cluster

```
Command Prompt
C:\Users\ajayi\Kubweb\home-listings\appdep>kubectl get nodes
NAME                STATUS    ROLES    AGE   VERSION
desktop-control-plane Ready    control-plane  5h34m v1.31.1
desktop-worker       Ready    <none>      5h34m v1.31.1
desktop-worker2      Ready    <none>      5h34m v1.31.1
C:\Users\ajayi\Kubweb\home-listings\appdep>|
```

## Nginx Deployment with 3 Replicas

```
Command Prompt
C:\Users\ajayi\Kubweb\home-listings\appdep>kubectl get deploy nginx-web
NAME    READY   UP-TO-DATE   AVAILABLE   AGE
nginx-web  3/3     3            3          3h37m
C:\Users\ajayi\Kubweb\home-listings\appdep>|
```

## Pods in the Deployment

```
Command Prompt
C:\Users\ajayi\Kubweb\home-listings\appdep>kubectl get deploy nginx-web
NAME      READY   UP-TO-DATE   AVAILABLE   AGE
nginx-web  3/3     3            3           3h37m

C:\Users\ajayi\Kubweb\home-listings\appdep>kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
nginx-web-7fc866b88f-f6hvd         1/1     Running   0          3h40m
nginx-web-7fc866b88f-fpml5         1/1     Running   0          3h40m
nginx-web-7fc866b88f-x8tfc         1/1     Running   0          3h40m

C:\Users\ajayi\Kubweb\home-listings\appdep>|
```

## Created NodePort Service

```
Command Prompt
C:\Users\ajayi\Kubweb\home-listings\appdep>kubectl get svc
NAME            TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)          AGE
kubernetes      ClusterIP   10.96.0.1    <none>        443/TCP          4h35m
nginx-service    NodePort    10.96.138.10 <none>        80:31693/TCP     3h41m

C:\Users\ajayi\Kubweb\home-listings\appdep>kubectl describe svc nginx-service
Name:          nginx-service
Namespace:     default
Labels:        app=nginx-web
Annotations:    <none>
Selector:      app=nginx-web
Type:          NodePort
IP Family Policy: SingleStack
IP Families:   IPv4
IP:            10.96.138.10
IPs:           10.96.138.10
Port:          <unset> 80/TCP
TargetPort:    80/TCP
NodePort:      <unset> 31693/TCP
Endpoints:     10.244.1.9:80,10.244.2.10:80,10.244.2.11:80
Session Affinity: None
External Traffic Policy: Cluster
Internal Traffic Policy: Cluster
Events:        <none>

C:\Users\ajayi\Kubweb\home-listings\appdep>|
```

## Web browser access of Application (Port forwarding used on 31693)

