

minikube start kubectl get nodes kubectl taint nodes minikube
key1=value1:NoSchedule kubectl get services kubectl api-resources

```
Windows PowerShell
PS C:\Users\gaman\OneDrive\Desktop> minikube start --driver hyperkit --nodes 4
W0324 19:31:48.248119 2824 main.go:291] Unable to resolve the current Docker CLI context "default": context "default": context not found: open C:\Users\gaman\.docker\contexts\meta\37a8ee1ce19687d132fa29851dca629d164e2c4958ba141d5f4133a33f0688f\meta.json: The system cannot find the path specified.
🐳 minikube v1.32.0 on Microsoft Windows 11 Home Single Language 10.0.22631.3296 Build 22631.3296

❌ Exiting due to GUEST_DRIVER_MISMATCH: The existing "minikube" cluster was created using the "virtualbox" driver, which is incompatible with requested "hyperkit" driver.
💡 Suggestion: Delete the existing 'minikube' cluster using: 'minikube delete', or start the existing 'minikube' cluster using: 'minikube start --driver=virtualbox'

PS C:\Users\gaman\OneDrive\Desktop> kubectl get nodes
NAME      STATUS   ROLES    AGE   VERSION
minikube  Ready    control-plane  34d   v1.28.3
PS C:\Users\gaman\OneDrive\Desktop> kubectl taint nodes node_name key1=value1:NoSchedule
Error from server (NotFound): nodes "node_name" not found
PS C:\Users\gaman\OneDrive\Desktop> kubectl taint nodes minikube key1=value1:NoSchedule
node/minikube tainted
PS C:\Users\gaman\OneDrive\Desktop> kubectl get services
NAME      TYPE          CLUSTER-IP   EXTERNAL-IP   PORT(S)          AGE
kubernetes  ClusterIP      10.96.0.1     <none>         443/TCP           34d
nginx-service  NodePort       10.96.57.117  <none>         80:24:28581/TCP   27d
nginx1      LoadBalancer  10.110.89.66  <pending>      80:31708/TCP      27d
tmp2        NodePort       10.107.76.189 <none>         80:31346/TCP      27d
PS C:\Users\gaman\OneDrive\Desktop> cd exp6
PS C:\Users\gaman\OneDrive\Desktop\exp6> cd ..
PS C:\Users\gaman\OneDrive\Desktop\exp6> cd .\EXP7\
PS C:\Users\gaman\OneDrive\Desktop\EXP7> kubectl api-resources
NAME                SHORTNAMES  APIVERSION  NAMESPACED  KIND
bindings            cs          v1          false       Binding
componentstatuses    cs          v1          false       ComponentStatus
configmaps           cm          v1          true        ConfigMap
endpoints            ep          v1          true        Endpoints
events               ev          v1          true        Event
limitranges          limits      v1          true        LimitRange
namespaces           ns          v1          false       Namespace
nodes               no          v1          false       Node
persistentvolumeclaims  pvc         v1          true        PersistentVolumeClaim
persistentvolumes     pv          v1          false       PersistentVolume
pods                 po          v1          true        Pod
podtemplates         pt          v1          true        PodTemplate
replicationcontrollers  rc          v1          true        ReplicationController
```

frontend-kube-app:

```
---      apiVersion:
apps/v1      kind:
Deployment metadata:
  name: web-httpd-deployment

spec:
  selector:
    matchLabels:
      app: web-httpd
  replicas: 10
  template:
    metadata:
      labels:
        app: web-httpd
    spec:
      containers:
        - name: web-httpd
          image:
            httpd:2.4.55
          ports:
        - containerPort: 80
```

backend-kube-app.yml:

```
apiVersion:
apps/v1      kind:
Deployment
metadata:
  name: nodejs-app-deployment
spec:
  selector:
    matchLabels:
      app: nodejs-app
  replicas: 4
  template:
    metadata:
      labels:
        app: nodejs-app
    spec:
      containers:
        - name: nodejs-app  image:
            node:19-alpine3.16  command:
                ["sleep", "100000"]
```

database-kube-app.yml:

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: postgres-db-deployment # Sets Deployment name
spec:
  replicas: 1
  selector:
    matchLabels:
      app: postgres-db
  template:
    metadata:
      labels:
        app: postgres-db
    spec:
      containers:
        - name: postgres-db
          image: postgres:10.1 # Sets Image
          imagePullPolicy: "IfNotPresent"
          ports:
            - containerPort: 5432 # Exposes container port
          envFrom:
            - configMapRef: # Maps env variable from ConfigMap
              name: postgres-config
          volumeMounts:
            - mountPath: /var/lib/postgresql/data
              name: postgres-volume
      volumes:
        - name: postgres-volume
          persistentVolumeClaim:
            claimName: postgres-pv-claim # Maps claim from
            PersistentVolumeClaim
```

postgres-config.yml:

```
apiVersion: v1
kind: ConfigMap
metadata: name:
postgres-config
labels:
  app: postgres-db
data:
  POSTGRES_DB: postgresdb
  POSTGRES_USER: admin
  POSTGRES_PASSWORD: mypass
```

postgres-pvc-pv.yml:

```
kind: PersistentVolume apiVersion: v1 metadata: name:
postgres-pv-volume # Sets PV's name labels:
  type: local # Sets PV's type to local app: postgres-db
spec:
  storageClassName: manual capacity:
    storage: 5Gi # Sets PV Volume
  accessModes:
    - ReadWriteMany hostPath:
      path: "/mnt/data"
--- kind: PersistentVolumeClaim apiVersion: v1 metadata: name:
postgres-pv-claim # Sets name of PVC labels:
  app: postgres-db
spec:
  storageClassName: manual
```

```
accessModes:
- ReadWriteMany # Sets read and write access resources:
requests:
storage: 5Gi # Sets volume size
```

kubectl apply -f frontend-kube-
app.yml kubectl get nodes -o
wide kubectl apply -f backend-
kube-app.yml kubectl get all -o
wide

```
PS C:\Users\gaman\OneDrive\Desktop\EXP7> kubectl apply -f frontend-kube-app.yml
deployment.apps/web-httpd-deployment created
PS C:\Users\gaman\OneDrive\Desktop\EXP7> kubectl get nodes -o wide
NAME        STATUS    ROLES    AGE   VERSION   INTERNAL-IP   EXTERNAL-IP   OS-IMAGE      KERNEL-VERSION   CONTAINER-RUNTIME
minikube    Ready    control-plane   34d   v1.28.3   192.168.59.100 <none>        Buildroot 2021.02.12   5.10.57   docker://24.0.7
PS C:\Users\gaman\OneDrive\Desktop\EXP7> kubectl apply -f backend-kube-app.yml
deployment.apps/nodejs-app-deployment created
PS C:\Users\gaman\OneDrive\Desktop\EXP7> kubectl get all -o wide
```

NAME	READY	STATUS	RESTARTS	AGE	IP	NODE	NOMINATED	NODE	READINESS GATES
pod/nginx-deployment-854bc88786-52crt	1/1	Running	1 (22m ago)	27d	10.244.0.16	minikube	<none>	<none>	<none>
pod/nginx-deployment-854bc88786-plzh6	1/1	Running	1 (22m ago)	27d	10.244.0.18	minikube	<none>	<none>	<none>
pod/nginx1-694bb5f8-24m2r	1/1	Running	1 (22m ago)	27d	10.244.0.24	minikube	<none>	<none>	<none>
pod/nginx1-694bb5f8-qm7df	1/1	Running	1 (22m ago)	27d	10.244.0.20	minikube	<none>	<none>	<none>
pod/nginx1-694bb5f8-zjfps	1/1	Running	1	27d	10.244.0.19	minikube	<none>	<none>	<none>
pod/nodejs-app-deployment-5c454d76b6-66tmq	0/1	Pending	0	10s	<none>	<none>	<none>	<none>	<none>
pod/nodejs-app-deployment-5c454d76b6-cf55d	0/1	Pending	0	9s	<none>	<none>	<none>	<none>	<none>
pod/nodejs-app-deployment-5c454d76b6-pxtvf	0/1	Pending	0	10s	<none>	<none>	<none>	<none>	<none>
pod/nodejs-app-deployment-5c454d76b6-v9t94	0/1	Pending	0	10s	<none>	<none>	<none>	<none>	<none>
pod/tmp2-8599c9d84c-7j85q	1/1	Running	1 (22m ago)	27d	10.244.0.22	minikube	<none>	<none>	<none>
pod/web-httpd-deployment-6c444f58db-28b2d	0/1	Pending	0	3m44s	<none>	<none>	<none>	<none>	<none>
pod/web-httpd-deployment-6c444f58db-7cddb	0/1	Pending	0	3m45s	<none>	<none>	<none>	<none>	<none>
pod/web-httpd-deployment-6c444f58db-lcqj6	0/1	Pending	0	3m44s	<none>	<none>	<none>	<none>	<none>
pod/web-httpd-deployment-6c444f58db-q574f	0/1	Pending	0	3m44s	<none>	<none>	<none>	<none>	<none>
pod/web-httpd-deployment-6c444f58db-tgown	0/1	Pending	0	3m44s	<none>	<none>	<none>	<none>	<none>
pod/web-httpd-deployment-6c444f58db-v5tjf	0/1	Pending	0	3m45s	<none>	<none>	<none>	<none>	<none>
pod/web-httpd-deployment-6c444f58db-w8rnt	0/1	Pending	0	3m44s	<none>	<none>	<none>	<none>	<none>
pod/web-httpd-deployment-6c444f58db-wbtz7	0/1	Pending	0	3m45s	<none>	<none>	<none>	<none>	<none>
pod/web-httpd-deployment-6c444f58db-mlx7j	0/1	Pending	0	3m44s	<none>	<none>	<none>	<none>	<none>
pod/web-httpd-deployment-6c444f58db-xpdz	0/1	Pending	0	3m44s	<none>	<none>	<none>	<none>	<none>

```
NAME                TYPE          CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE   SELECTOR
service/kubernetes  ClusterIP      10.96.0.1        <none>            443/TCP          34d   <none>
service/nginx-service  NodePort      10.96.57.117     <none>            8024:30501/TCP   27d   app=nginx
service/nginx1        LoadBalancer 10.110.89.66     <pending>         80:31708/TCP     27d   app=nginx1
service/tmp2          NodePort      10.107.76.109    <none>            80:31346/TCP     27d   app=tmp2
```

NAME	READY	UP-TO-DATE	AVAILABLE	AGE	CONTAINERS	IMAGES	SELECTOR
deployment.apps/nginx-deployment	2/2	2	2	27d	nginx	nginx:1.16	app=nginx
deployment.apps/nginx1	3/3	3	3	27d	nginx	nginx	app=nginx1
deployment.apps/nodejs-app-deployment	0/4	4	0	10s	nodejs-app	node:19-alpine3.16	app=nodejs-app
deployment.apps/tmp2	1/1	1	1	27d	welcome-to-docker	docker/welcome-to-docker	app=tmp2

kubectl apply -f postgres-
config.yml kubectl apply -f
postgres-pvc-pv.yml kubectl

apply -f postgres-pvc-pv.yml

kubectl get all -o wide

```
Windows PowerShell
PS C:\Users\gaman\OneDrive\Desktop\EXP7> kubectl apply -f postgres-config.yml
configmap/postgres-config created
PS C:\Users\gaman\OneDrive\Desktop\EXP7> kubectl apply -f postgres-pvc-pv.yml
persistentvolume/postgres-pv-volume created
persistentvolumeclaim/postgres-pv-claim created
PS C:\Users\gaman\OneDrive\Desktop\EXP7> kubectl apply -f postgres-pvc-pv.yml
persistentvolume/postgres-pv-volume unchanged
persistentvolumeclaim/postgres-pv-claim unchanged
PS C:\Users\gaman\OneDrive\Desktop\EXP7> kubectl exec -it [pod-name] -- psql -h localhost -U admin --password -p 5432 postgresdb
Error from server (NotFound): pods "[pod-name]" not found
PS C:\Users\gaman\OneDrive\Desktop\EXP7> kubectl get all -o wide
NAME                                READY    STATUS    RESTARTS   AGE    IP            NODE     NOMINATED NODE   READINESS GATES
pod/nginx-deployment-854bc88786-52crt 1/1      Running   1 (25m ago) 27d    10.244.0.16   minikube <none>          <none>
pod/nginx-deployment-854bc88786-plzh6 1/1      Running   1 (25m ago) 27d    10.244.0.18   minikube <none>          <none>
pod/nginx1-694bb5f8-24m2r             1/1      Running   1 (25m ago) 27d    10.244.0.24   minikube <none>          <none>
pod/nginx1-694bb5f8-qn7df             1/1      Running   1 (25m ago) 27d    10.244.0.20   minikube <none>          <none>
pod/nginx1-694bb5f8-zjfgs             1/1      Running   1           27d    10.244.0.19   minikube <none>          <none>
pod/nodejs-app-deployment-5c454d76b6-66tmq 0/1      Pending   0           2m53s <none> <none>          <none>
pod/nodejs-app-deployment-5c454d76b6-cf55d 0/1      Pending   0           2m52s <none> <none>          <none>
pod/nodejs-app-deployment-5c454d76b6-pxtvf 0/1      Pending   0           2m53s <none> <none>          <none>
pod/nodejs-app-deployment-5c454d76b6-v9t94 0/1      Pending   0           2m53s <none> <none>          <none>
pod/tmp2-8599c9d84c-7j8sq             1/1      Running   1 (25m ago) 27d    10.244.0.22   minikube <none>          <none>
pod/web-httpd-deployment-6c444f58db-28b2d 0/1      Pending   0           6m27s <none> <none>          <none>
pod/web-httpd-deployment-6c444f58db-7cddb 0/1      Pending   0           6m28s <none> <none>          <none>
pod/web-httpd-deployment-6c444f58db-lcqj6 0/1      Pending   0           6m27s <none> <none>          <none>
pod/web-httpd-deployment-6c444f58db-q574f 0/1      Pending   0           6m27s <none> <none>          <none>
pod/web-httpd-deployment-6c444f58db-tgpnw 0/1      Pending   0           6m27s <none> <none>          <none>
pod/web-httpd-deployment-6c444f58db-v5tjf 0/1      Pending   0           6m28s <none> <none>          <none>
pod/web-httpd-deployment-6c444f58db-w8vnt 0/1      Pending   0           6m27s <none> <none>          <none>
pod/web-httpd-deployment-6c444f58db-wbtz7 0/1      Pending   0           6m28s <none> <none>          <none>
pod/web-httpd-deployment-6c444f58db-xx7j 0/1      Pending   0           6m27s <none> <none>          <none>
pod/web-httpd-deployment-6c444f58db-xpdxz 0/1      Pending   0           6m27s <none> <none>          <none>

NAME                                TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE    SELECTOR
service/kubernetes                  ClusterIP      10.96.0.1     <none>          443/TCP          34d    <none>
service/nginx-service              LoadBalancer 10.96.57.117  <none>          8024:30501/TCP   27d    app=nginx
service/nginx1                     LoadBalancer 10.110.89.66 <pending>       80:31708/TCP     27d    app=nginx1
service/tmp2                       LoadBalancer 10.107.76.109 <none>          80:31346/TCP     27d    app=tmp2

NAME                                READY    UP-TO-DATE    AVAILABLE    AGE    CONTAINERS    IMAGES          SELECTOR
deployment.apps/nginx-deployment    2/2      2              2            27d    nginx         nginx:1.16      app=nginx
```

