🚀 Kubernetes Deployment and Service Setup 🛠️

Let's dive into setting up a Kubernetes deployment and service for your `my-tools` application!

📦 Deployment YAML

Here's the YAML configuration for your deployment:

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: my-tools-deployment
spec:
  replicas: 3 🔄 # Ensures 3 pods are always running
  selector:
    matchLabels:
      app: my-tools 🏷️ # Select pods with this label
  template:
    metadata:
      labels:
        app: my-tools 🏷️ # Label for the pods
    spec:
      containers:
        - name: my-tools-container 🐳 # Container name
          image: my-tools 🖼️ # Docker image
          ports:
            - containerPort: 3000 🚪 # Port exposed by the container
```

🌐 Service YAML

And here's the YAML for your service:

```yaml
apiVersion: v1
kind: Service
metadata:
  name: my-tools-service
spec:
  selector:
    app: my-tools 🏷️ # Select pods with this label
  ports:
    - protocol: TCP 🚦 # 
      port: 3001 🔔 # Cluster IP port
      targetPort: 3000 🎯 # Pod's container port
      nodePort: 9093 🚪 # Node port
  type: NodePort 🚪🌐 # Expose service on each Node's IP at a static port
```

📝 Explanation

📦 Deployment

replicas: 3 : Ensures that there are always 3 pods running, providing redundancy and availability.

selector 🏷️: Matches the pods with the label app: my-tools. This allows the deployment to manage the correct pods.

template 📄: Defines the pod template, including the container image and the port it exposes.

containerPort: 3000 🚪: The port on the container that is exposed.

🌐 Service

selector 🏷️: Matches the same pods as the deployment, ensuring that the service routes traffic to the correct pods.

ports 🚦: Defines the ports for the service:

port: 3001 📡: The port on the cluster IP.

targetPort: 3000 🎯: The port on the pod that the service forwards traffic to.

nodePort: 9093 🚪: The port on each node that will forward traffic to the service.

type: NodePort 🚪🌐: Exposes the service on each Node's IP at a static port (9093).

🚀 What You Get

With these configurations, you will have:

3 pods running the my-tools Docker image, each exposing port 3000. ✅ A Service that exposes these pods on cluster IP port 3001 📡 and node port 9093 🚪, allowing access from both within and outside the Kubernetes cluster.