Criação do namespace do projeto:

kubectl create ns k8sjob

Criação do Manifesto de Deploy:

kubectl create deployment my-app --image nginx:1.27 –namespace k8sjob --dry-run=client -o yaml > deployment.yaml

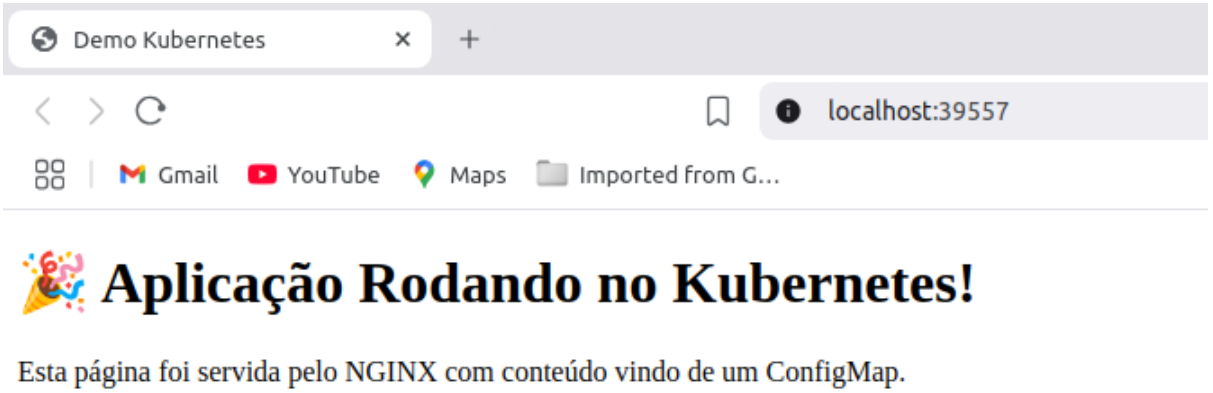
Adicionando limits e requests de cpu e memória no deployment:

```
resources:
  limits:
    memory: 300Mi
  requests:
    cpu: 10m
    memory: 100Mi
```

Criando configmap com a página estática e mapeando como volume no deployment:

kubectl -n k8sjob create configmap nginx-html --from-file=index.html

```
  labels:
    app: my-app
spec:
  containers:
  - image: nginx:1.27
    name: nginx
    ports:
      - containerPort: 80
    volumeMounts:
      - name: html-volume
        mountPath: /usr/share/nginx/html/index.html
        subPath: index.html
    resources:
      limits:
        memory: 300Mi
      requests:
        cpu: 10m
        memory: 100Mi
  volumes:
    - name: html-volume
      configMap:
        name: nginx-html
atus: {}
```



Criando volume do tipo hostPath e mapeando o volume para armazenar os logs do nginx:

```
      ports:
        - containerPort: 80
      volumeMounts:
        - name: html-volume
          mountPath: /usr/share/nginx/html/index.html
          subPath: index.html
        - name: log-volume
          mountPath: /var/log/nginx
      resources:
        limits:
          memory: 300Mi
        requests:
          cpu: 10m
          memory: 100Mi
    volumes:
      - name: html-volume
        configMap:
          name: nginx-html
      - name: log-volume
        hostPath:
          path: /mnt/data/nginx-logs
          type: DirectoryOrCreate
tatus: {}
```

Aplicando o deployment:

kubectl apply -f deployment.yaml

Criando o service:

kubectl -n k8sjob expose deployment my-app

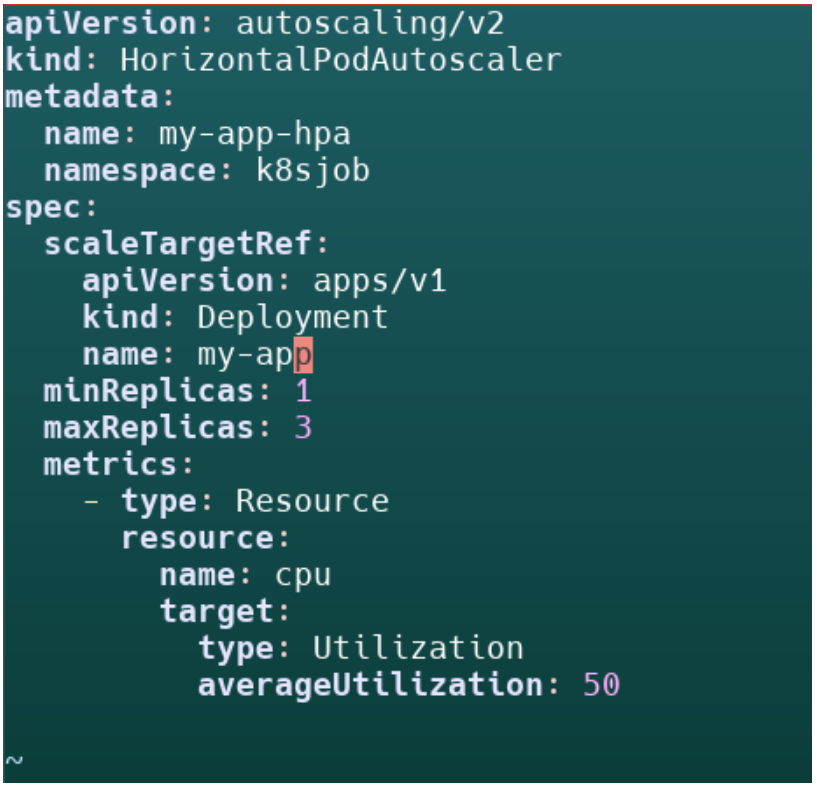
Aplicando o metrics server no cluster para disponibilizar as métricas de cpu e memória para o Horizontal Pod Auto Scaler:

kubectl apply -f https://github.com/kubernetes-sigs/metrics-server/releases/latest/download/components.yaml

Ajuste do metrics server para funcionar no cluster do tipo kind:

```
kubectl -n kube-system patch deployment metrics-server \
 --type=json \
 -p='[{"op": "add", "path": "/spec/template/spec/containers/0/args/-", "value":
"--kubelet-insecure-tls"}]'
kubectl -n kube-system patch deployment metrics-server \
 --type=json \
-p='[{"op": "add", "path": "/spec/template/spec/containers/0/args/-", "value":
"--kubelet-preferred-address-types=InternalIP"}]'
```

Aplicando o Horizontal Pod Auto Scaler:



kubectl apply -f hpa.yaml

Criação de um pod para testar o auto scaling da aplicação:

kubectl run -i --tty load-generator --image=busybox --restart=Never -- sh

Rodando Script de carga para aumentar o consumo de cpu e ativar o auto scaling:

while true; do wget -q -O- http://my-app.k8sjob.svc.cluster.local:8080; done

Evidência do auto scaling funcionando: