2024

Lab 5 - Communiquer avec les Pods via des règles de routage Ingress

COMPTE RENDU

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Introduction

Dans cet exercice, nous explorons les Ingress, une solution pour accéder aux Pods depuis l'extérieur d'un cluster Kubernetes, sans utiliser de Services de type NodePort ou LoadBalancer

Objectifs

- Écrire une configuration Ingress;
- Créer des règles de type fanoutou hôtes virtuels ;
- Gérer des hôtes virtuels.

Étapes à suivre

1. Préparation

- Supprimer le Namespace précédent :

  kubectl delete namespace mynamespaceexercice3

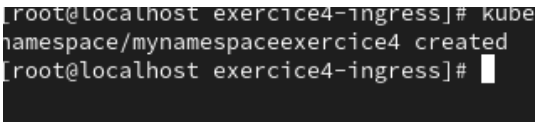
2. Créer un Namespace :

- Créer un fichier appelé mynamespaceexercice4.yaml

```
apiVersion:
v1 kind:
Namespace
metadata:
  name: mynamespaceexercice4
```

- Appliquez le fichier :

```
$ kubectl apply -f exercice4-ingress/mynamespaceexercice4.yaml
```



3. Créer les Deployments et Services

a. Application 1

- Créer app1deployment.yaml :

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name:
```

```
app1deployment
spec:
  replicas: 2
  selector:
    matchLabels
      : app:
      app1pod
  template:
    metadata:
      labels:
        app: app1pod
    spec:
      containers:
      - name:
        app1container
        image:
        nginx:latest
        ports:
        -   containerPo
        rt:          80
        lifecycle:
          postStart:
            exec:
              command:
                - /bin/sh
                - -c
                - >

                  mkdir
                  /usr/share/nginx/html/app1;
                  echo App 1 fanout from
                  $HOSTNAME >
                  /usr/share/nginx/html/app1/index.html;
                  echo App 1 vhosts from $HOSTNAME >
                  /usr/share/nginx/html/index.html
---


apiVersion: v1 kind: Service metadata:
name: app1service spec:
```

```
selector:
app: app1pod type: ClusterIP ports:
-    protocol: TCP targetPort: 80
port: 8080
```

b. Application 2

- Créer app2deployment.yaml

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name:
app2deployment spec:
  replicas: 2
  selector:
    matchLabels:
      app:
      app2pod
  template:
    metadata:
      labels:
        app: app2pod
    spec:
      containers:
      - name:
        app2container
        image:
        nginx:latest
        ports:
        -   containerPor
        t: 80 lifecycle:
          postStart:
            exec:
              command:
                - /bin/sh
                - -c
                - >
                  mkdir /usr/share/nginx/html/app2;
                  echo App 2 fanout from $HOSTNAME >
                  /usr/share/nginx/html/app2/index.html;
                  echo App 2 vhosts from $HOSTNAME >
                  /usr/share/nginx/html/index.html
```

```
apiVersion: v1 kind:
Service metadata:
  name: app2service spec:
  selector:
    app: app2pod
  type: ClusterIP
  ports:
    - protocol: TCP
      targetPort: 80
      port: 8080
```

- **Appliquez la configuration :**

- Appliquer les fichiers :

```
kubectl apply -f exercice4-ingress/app1deployment.yaml -n
mynamespaceexercice4
kubectl apply -f exercice4-ingress/app2deployment.yaml -n
mynamespaceexercice4
```

```
[root@localhost exercice4-ingress]# kubec
deployment.apps/app1deployment created
service/app1service created
```

```
[root@localhost exercice4-ingress]# kube
deployment.apps/app2deployment created
service/app2service created
[root@localhost exercice4-ingress]#
```

4. Créer l'Ingress

- Créer myingressfanout.yaml :

```
apiVersion:
networking.k8s.io/v1 kind:
Ingress
metadata:
  name:
myingressfanout
spec:
  rules:
    - http:
        paths:
        - path: /app1
          pathType:
          Prefix
          backend:
            service:
              name: app1service
              port:
                number: 8080
        - path: /app2
          pathType:
          Prefix
          backend:
            service:
              name: app2service
              port:
               number: 8080
```

- Appliquez la configuration :

```
kubectl apply -f exercice4-ingress/myingressfanout.yaml -n
mynamespaceexercice4
```

```
[root@localhost exercice4-ingress]# kubectl apply -
ingress.networking.k8s.io/myingressfanout created
[root@localhost exercice4-ingress]#
```

5. Tester l'Ingress

- Vérifier la configuration :

```
kubectl describe ingress -n mynamespaceexercice4 myingressfanout
```

```
Name:             myingressfanout
Labels:           <none>
Namespace:        mynamespaceexercice4
Address:          172.18.0.2,172.18.0.3,172.18.0.4
Ingress Class:    traefik
Default backend:  <default>
Rules:
  Host        Path  Backends
  ----        ----  --------
  *
              /app1   app1service:8080 (10.42.0.28:80,10.42.2.21:80)
              /app2   app2service:8080 (10.42.1.27:80,10.42.2.22:80)
Annotations:  <none>
Events:       <none>
```

- Tester les applications :

```
curl localhost:80/app1/
```

```
[root@localhost exercice4-ingress]# curl localhost:80/app1/
App 1 fanout from app1deployment-85f6cdd948-bwslb
[root@localhost exercice4-ingress]#
```

```
curl localhost:80/app2/
```

```
[root@localhost exercice4-ingress]# curl localhost:80/app2/
App 2 fanout from app2deployment-869dc569d-2fkpk
[root@localhost exercice4-ingress]#
```

6. Configurer les Hôtes Virtuels

- Modifier /etc/hosts :

  127.0.0.1 app1.mydomain.test

  127.0.0.1 app2.mydomain.test

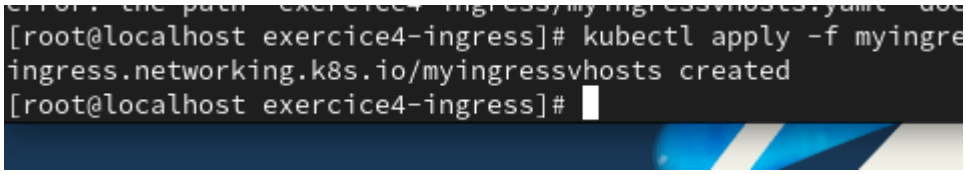
- Créer myingressvhosts.yaml :

```
apiVersion:
networking.k8s.io/v1 kind:
Ingress
metadata:
  name:
myingressvhosts
```

```
spec:
  rules:
    - host:
      "app1.mydomain.test"
      http:
        paths:
          - path: /
            pathType:
            Prefix
            backend:
              service:
                name:
                app1service
                port:
                  number: 8080
    - host:
      "app2.mydomain.test"
      http:
        paths:
          - path: /
            pathType:
            Prefix
            backend:
              service:
                name:
                app2service
                port:
                  number: 8080
```

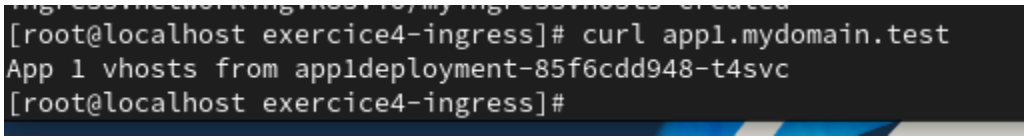
- Appliquez la configuration :

  `kubectl apply -f exercice4-ingress/myingressvhosts.yaml -n mynamespaceexercice4`



- Tester les hôtes virtuels :

  $ curl app1.mydomain.test



  $ curl app2.mydomain.test