Ghazela Technology Academy

PARCOURS DE FORMATION GHAZELA CERTIFIED DEVOPS /CLOUD OPÉRATIONNEL ENGINER

Houcem KHLIFI

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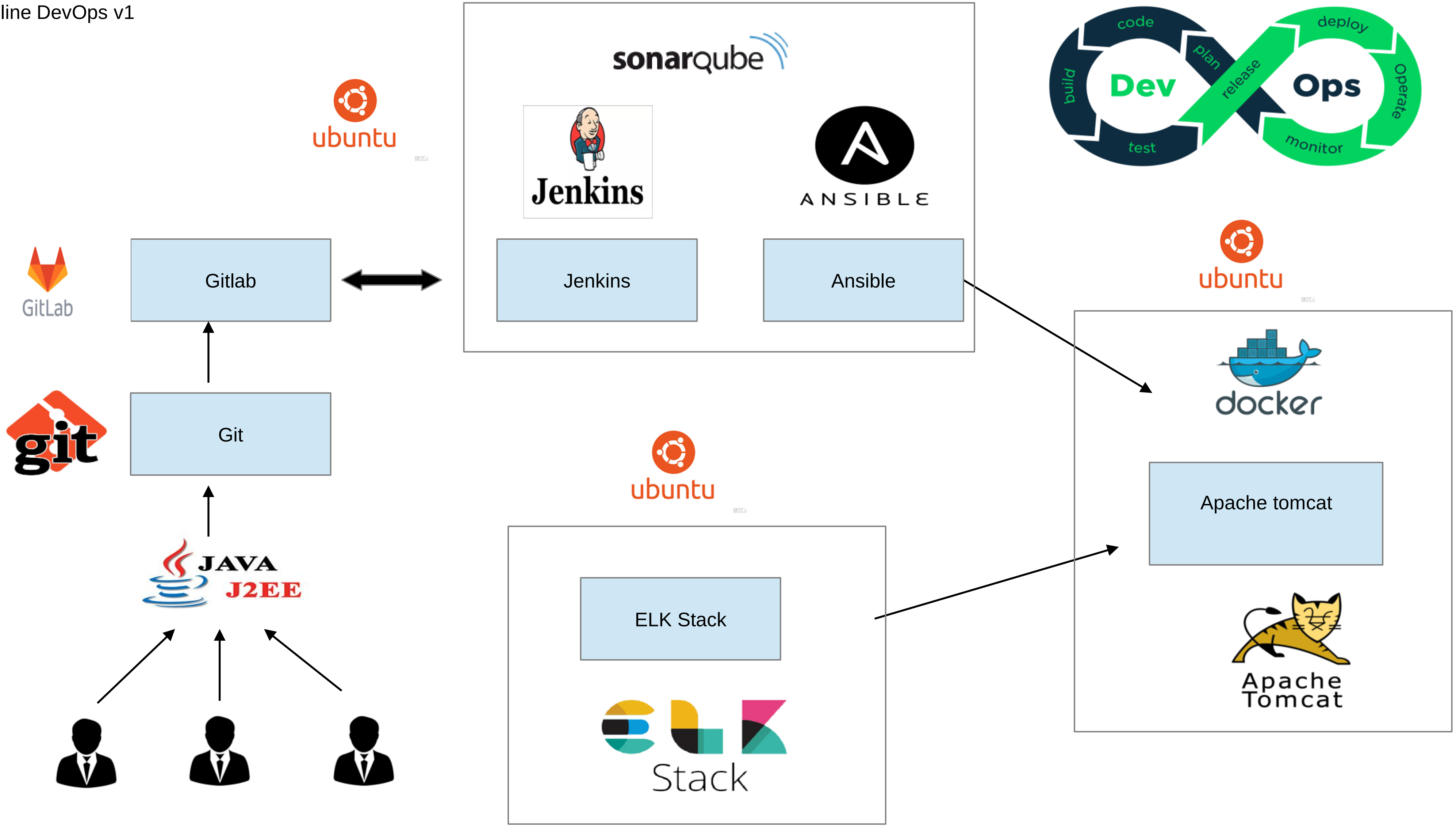
Pipeline DevOps v1



Gitlab

Git

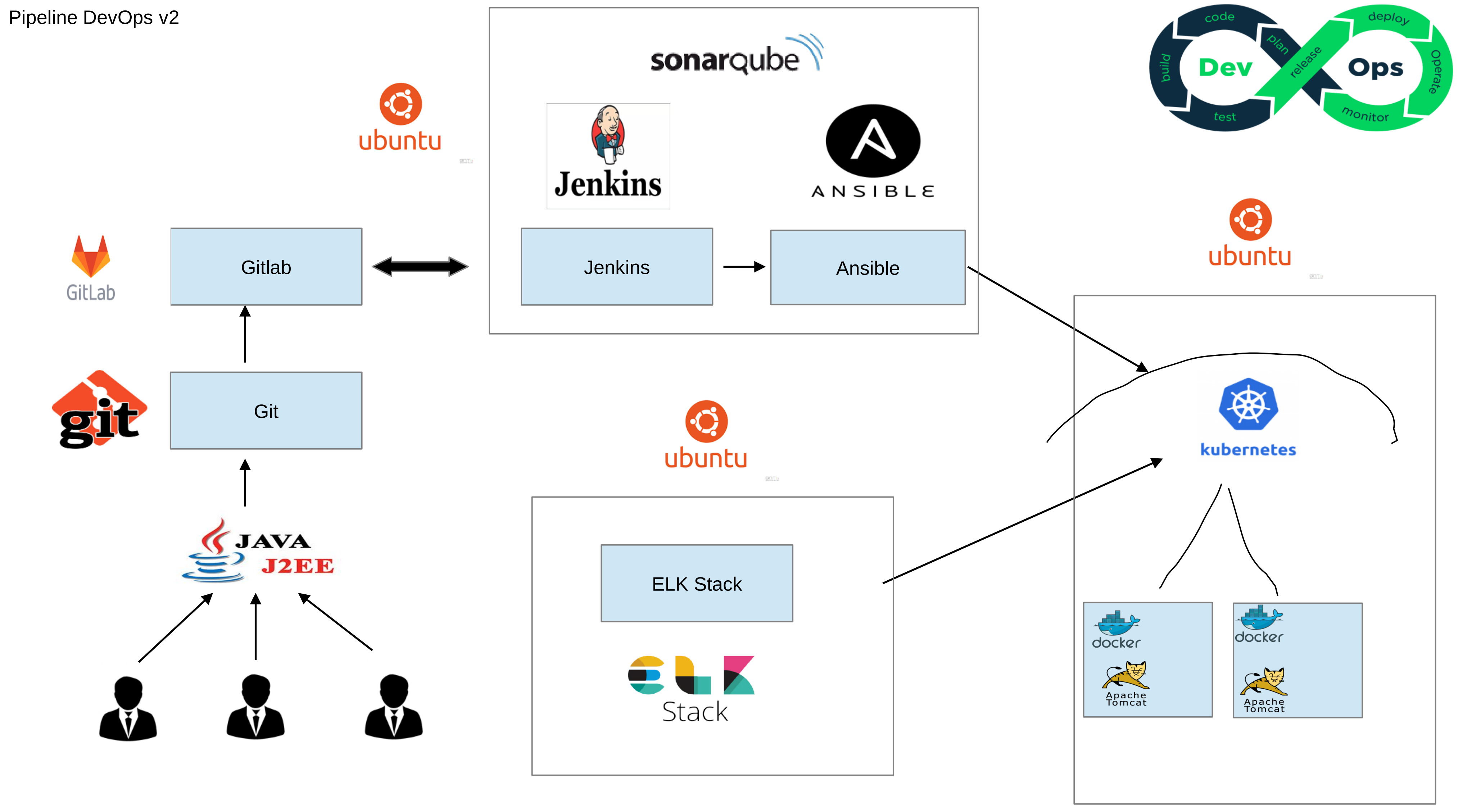
Jenkins

Ansible

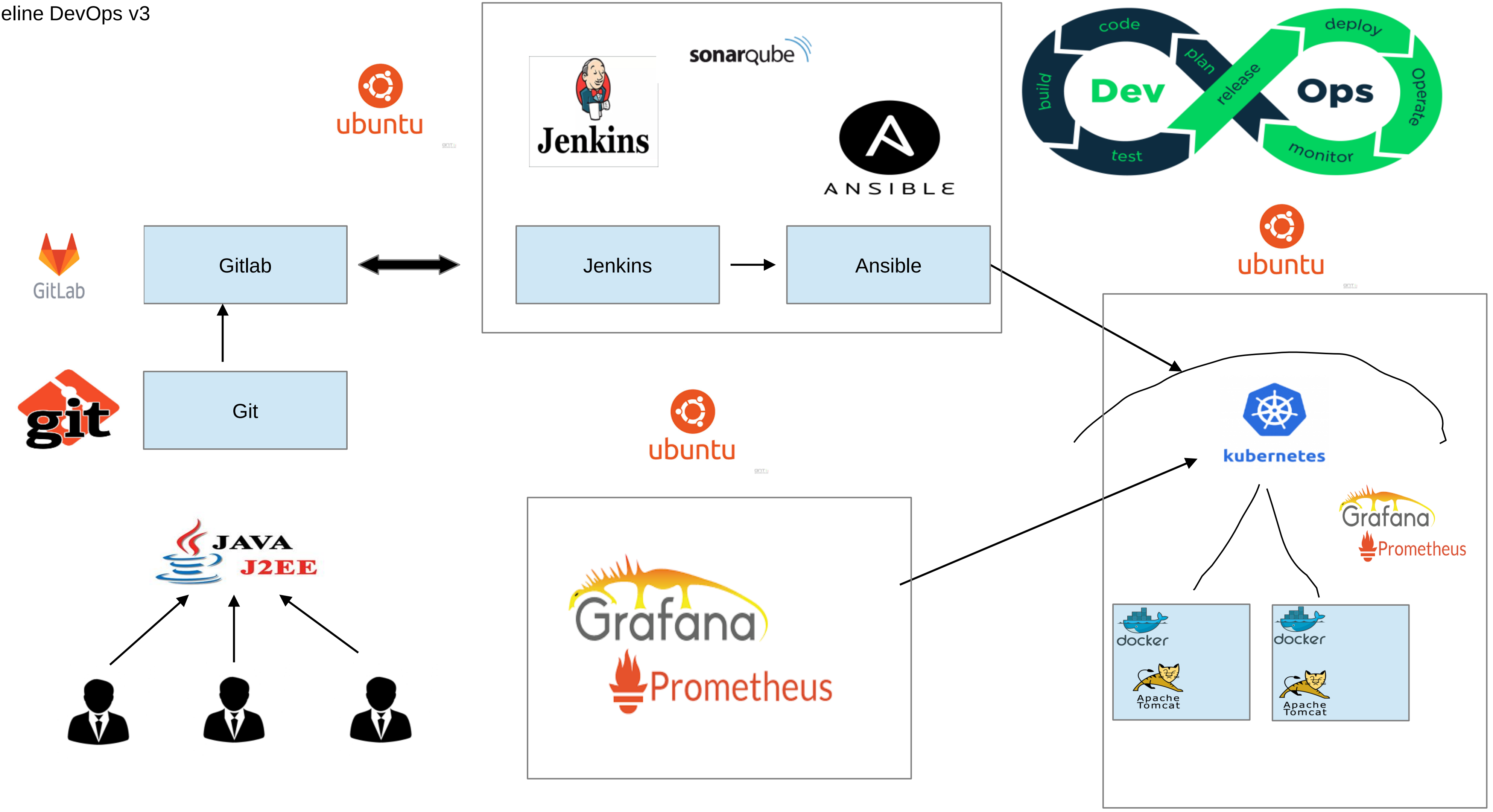
ELK Stack

Apache tomcat

Pipeline DevOps v2



Pipeline DevOps v3



Gitlab

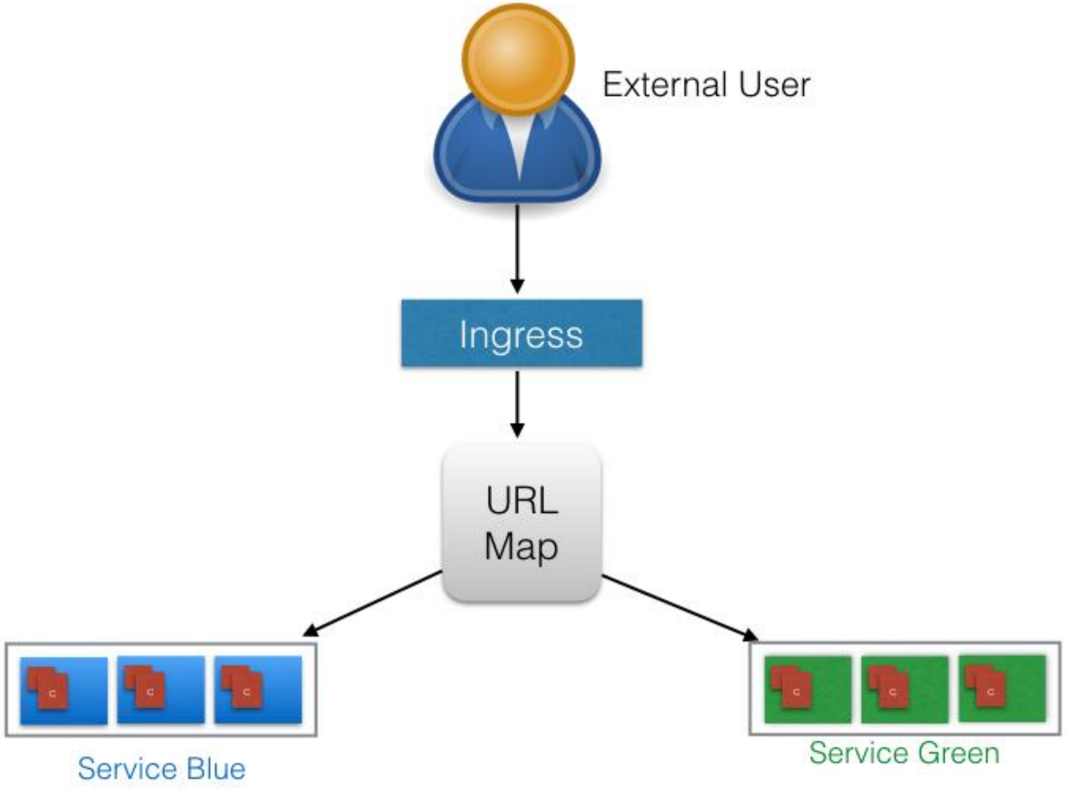
Git

Jenkins

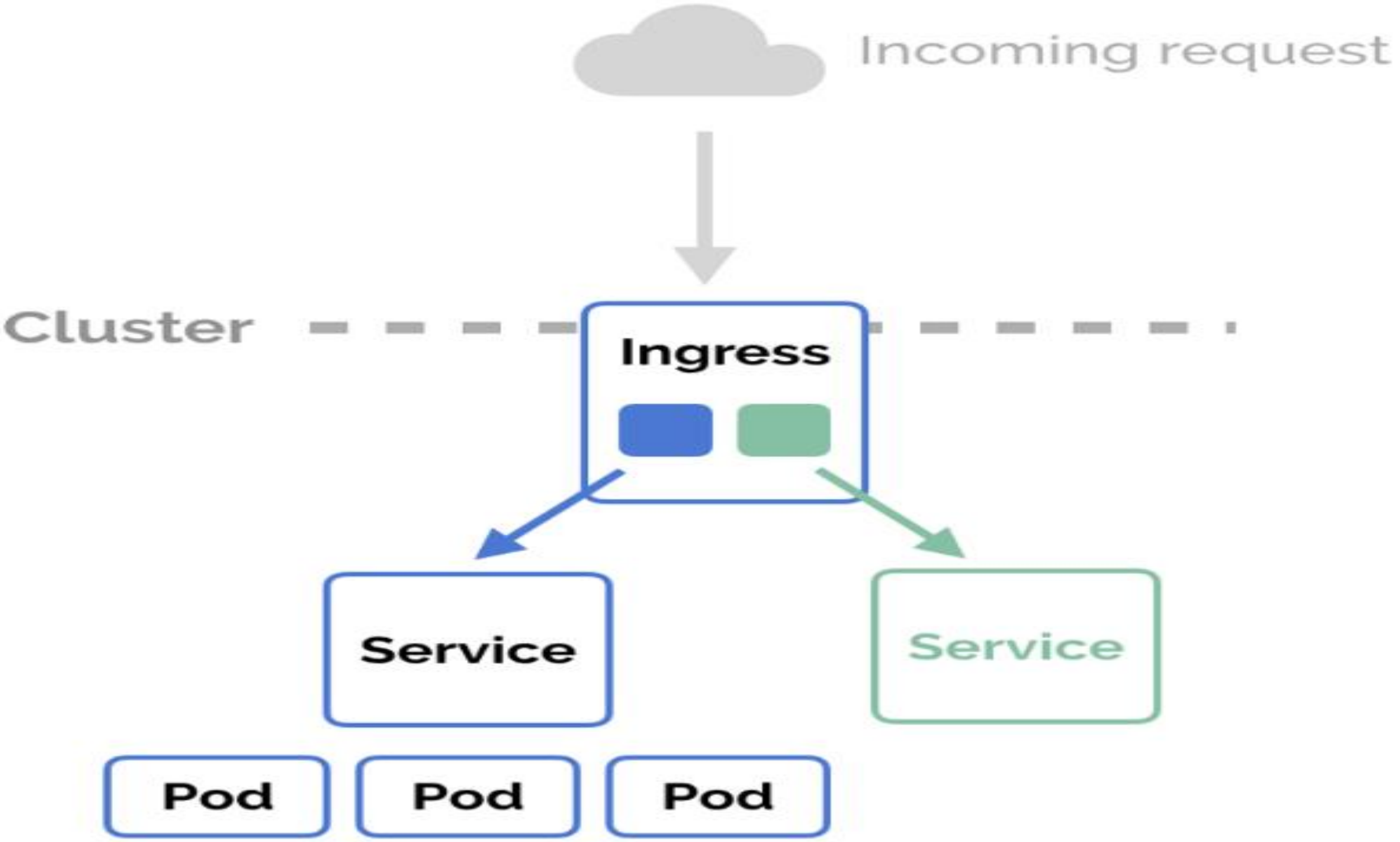
Ansible

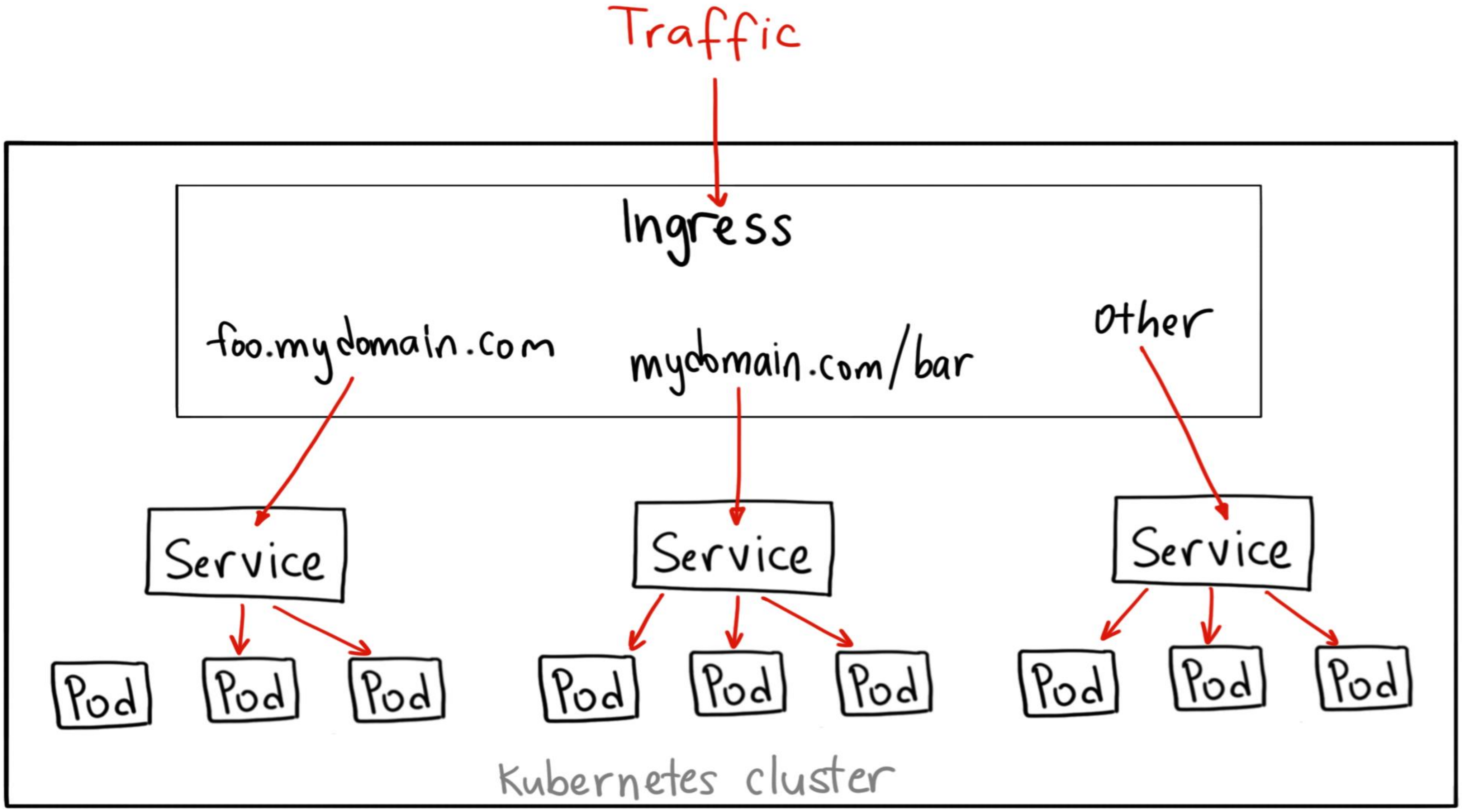
KUBERNETES
INGRESS NGINX

Ingress

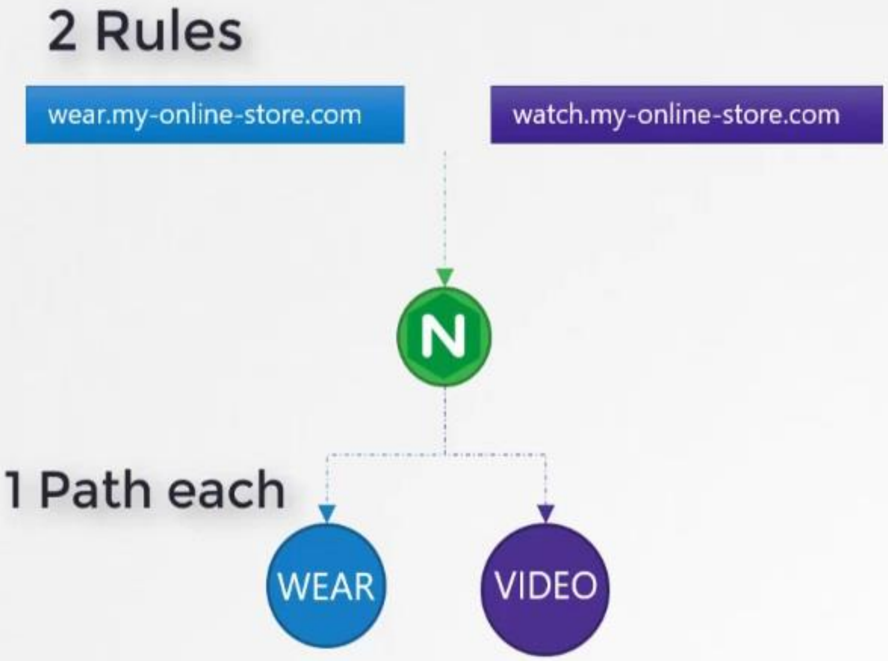


Ingress


Incoming request
Cluster
Ingress
Service
Service
Pod
Pod
Pod


Traffic
Ingress
foo.mydomain.com
mydomain.com/bar
other
Service
Service
Service
Pod
Pod
Pod
Pod
Pod
Pod
Pod
Pod
Pod
Kubernetes cluster

INGRESS RESOURCE

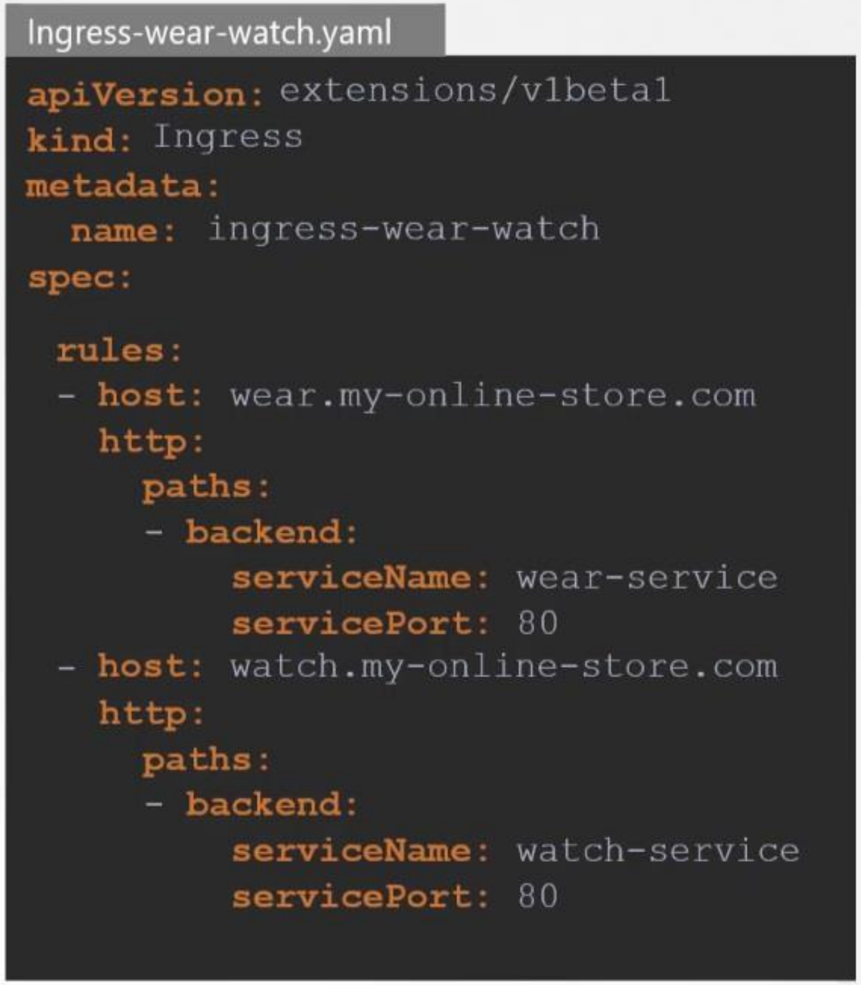


2 Rules

wear.my-online-store.com

watch.my-online-store.com

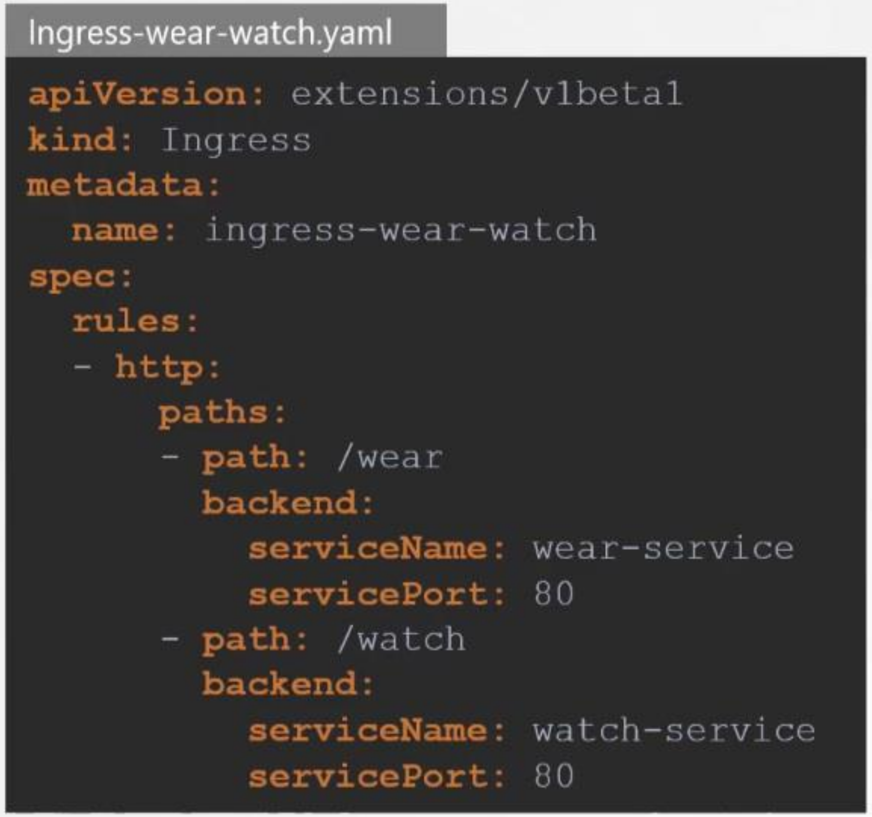
1 Path each



Ingress-wear-watch.yaml

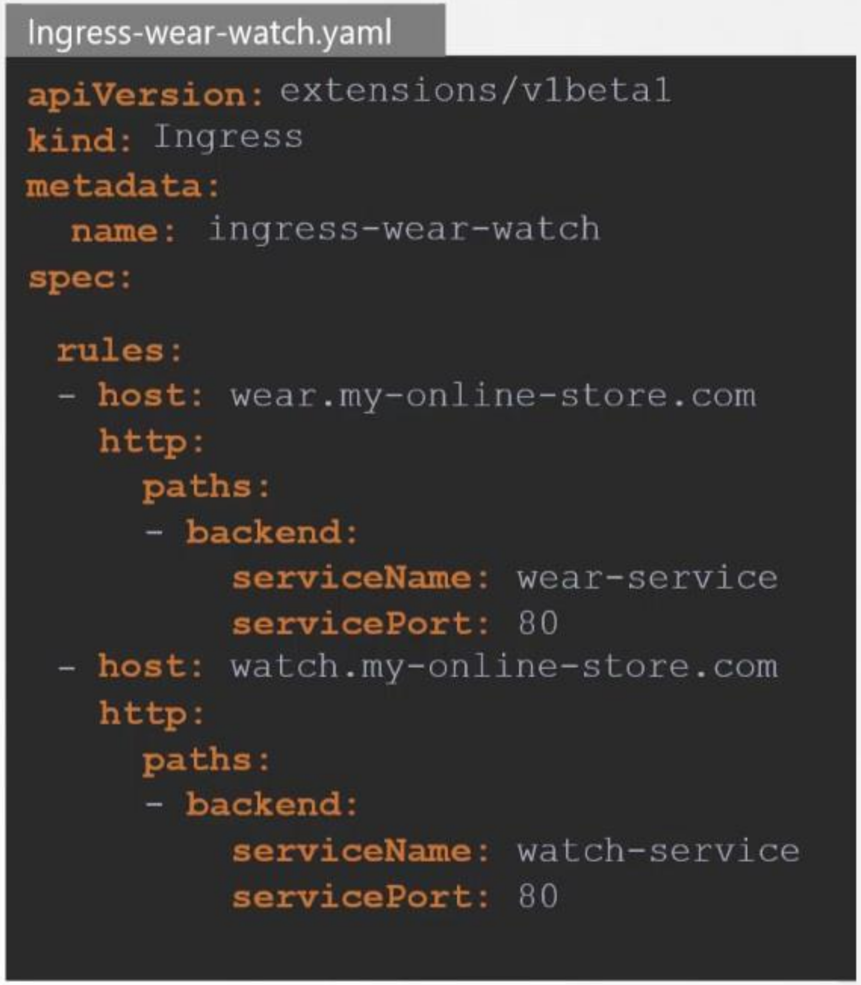
```yaml
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-wear-watch
spec:

  rules:
  - host: wear.my-online-store.com
    http:
      paths:
      - backend:
          serviceName: wear-service
          servicePort: 80
  - host: watch.my-online-store.com
    http:
      paths:
      - backend:
          serviceName: watch-service
          servicePort: 80
```

INGRESS RESOURCE



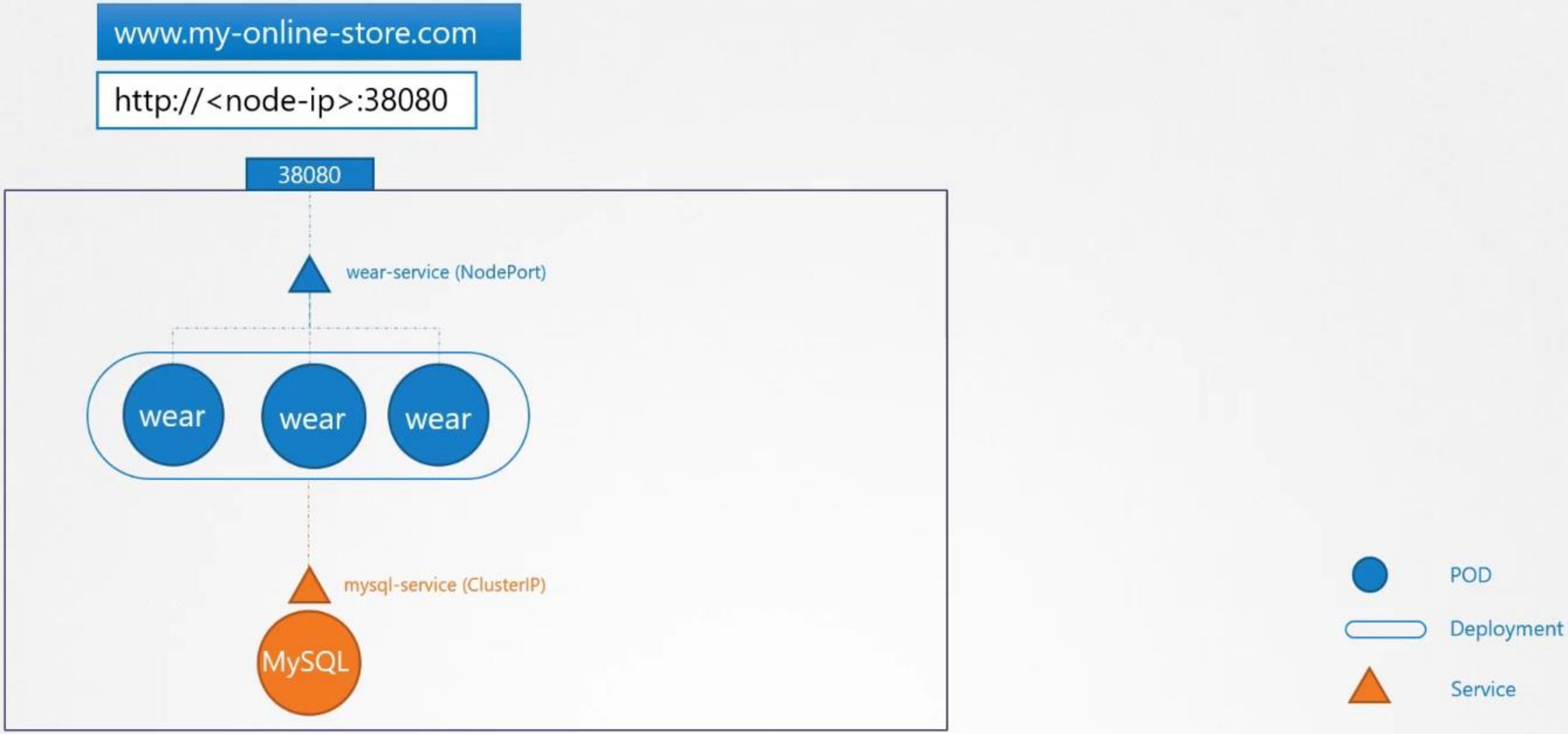
Ingress-wear-watch.yaml

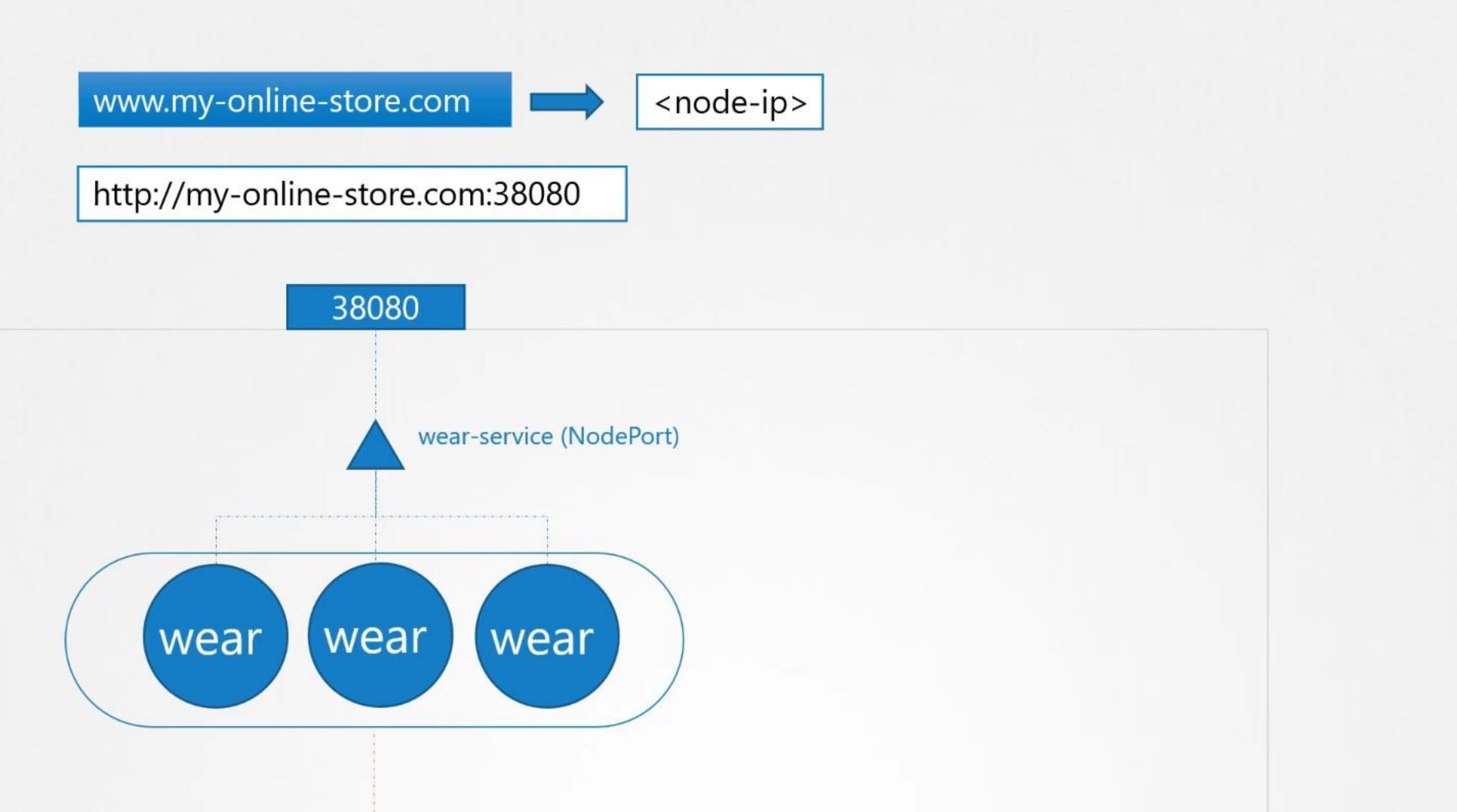
```
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-wear-watch
spec:
  rules:
  - http:
      paths:
      - path: /wear
        backend:
          serviceName: wear-service
          servicePort: 80
      - path: /watch
        backend:
          serviceName: watch-service
          servicePort: 80
```



Ingress-wear-watch.yaml

```
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-wear-watch
spec:

  rules:
  - host: wear.my-online-store.com
    http:
      paths:
      - backend:
          serviceName: wear-service
          servicePort: 80
  - host: watch.my-online-store.com
    http:
      paths:
      - backend:
          serviceName: watch-service
          servicePort: 80
```


www.my-online-store.com
http://<node-ip>:38080
38080
wear-service (NodePort)
wear
wear
wear
mysql-service (ClusterIP)
MySQL
POD
Deployment
Service



www.my-online-store.com

<node-ip>

http://my-online-store.com:38080

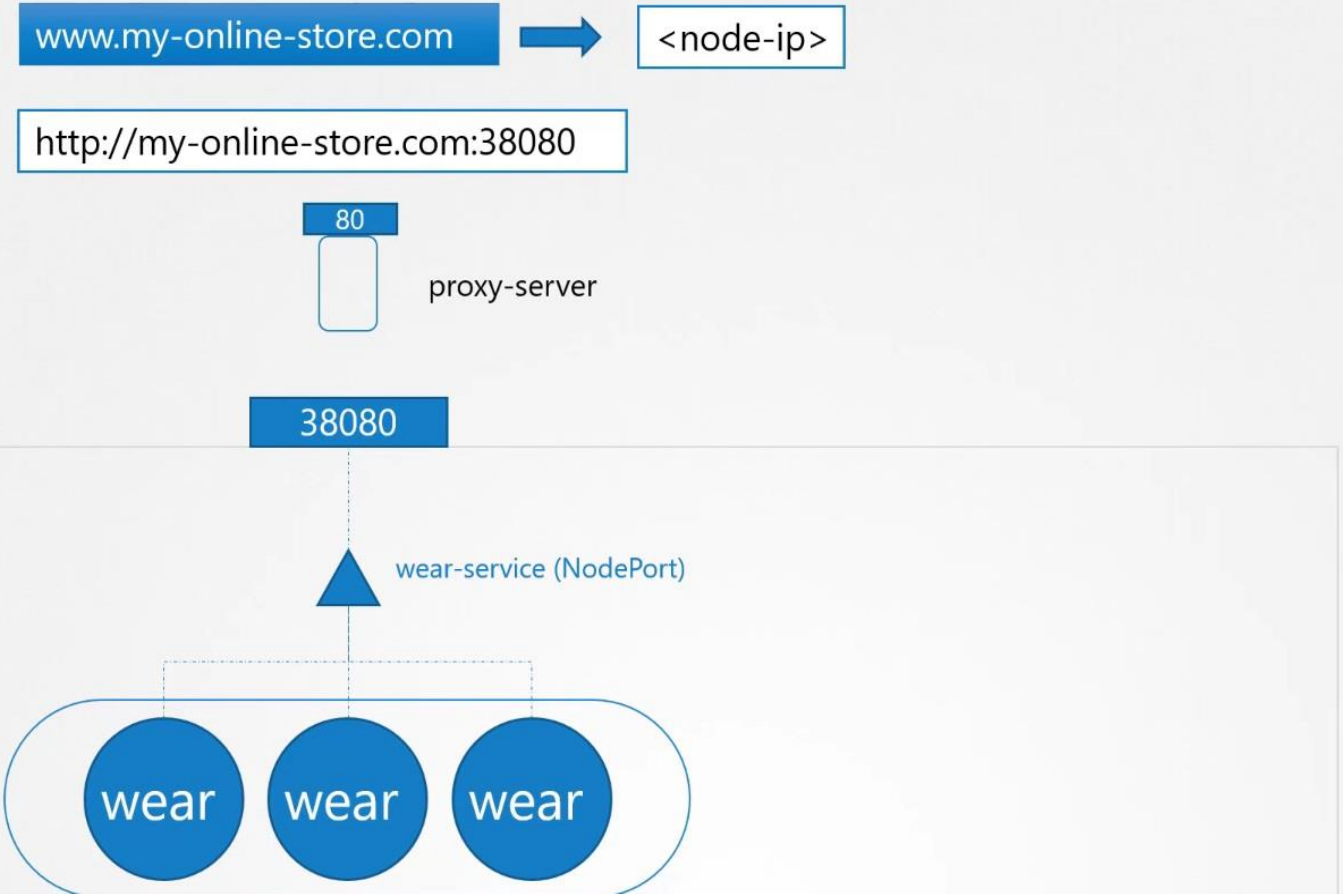
38080

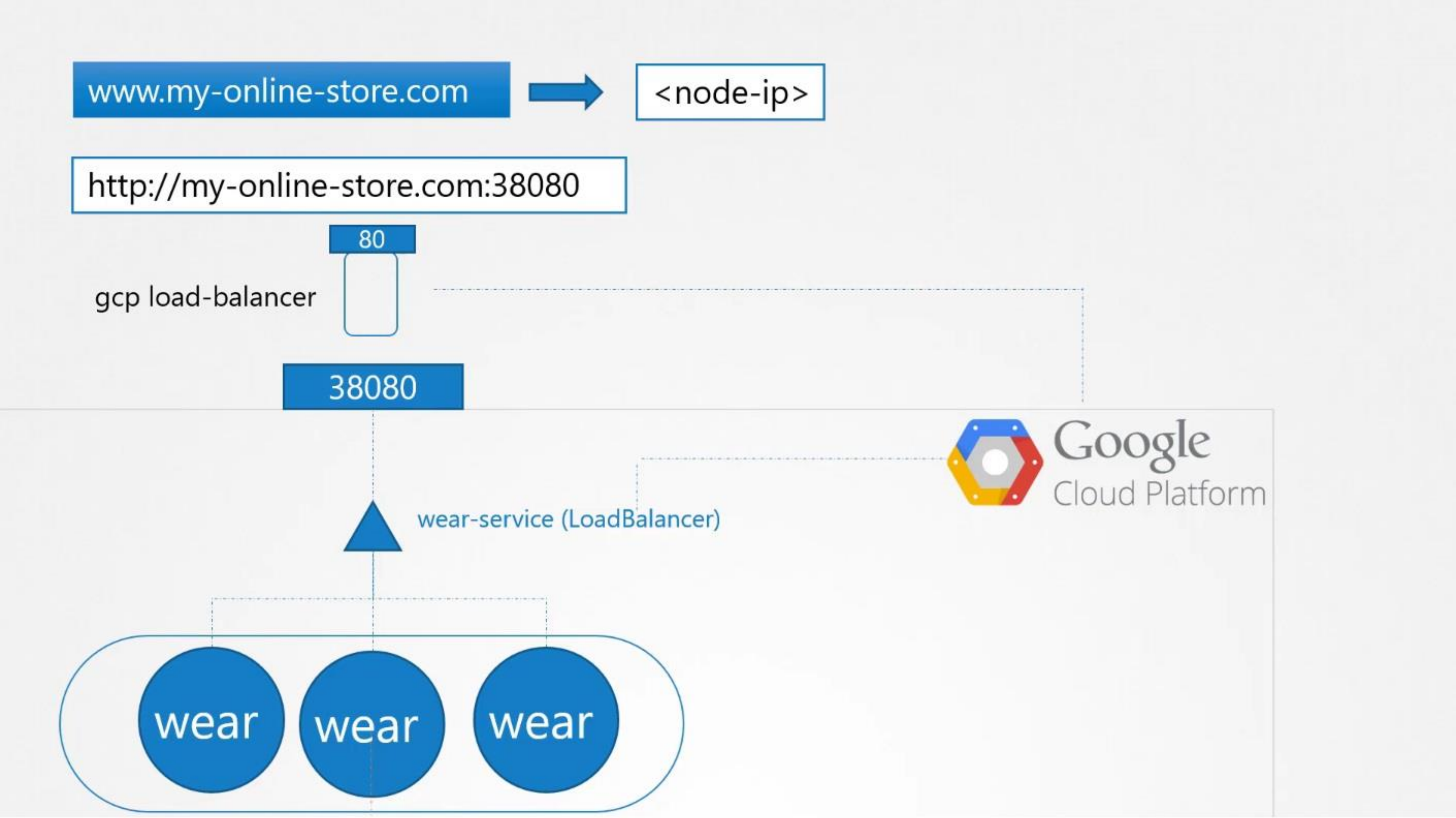
wear-service (NodePort)

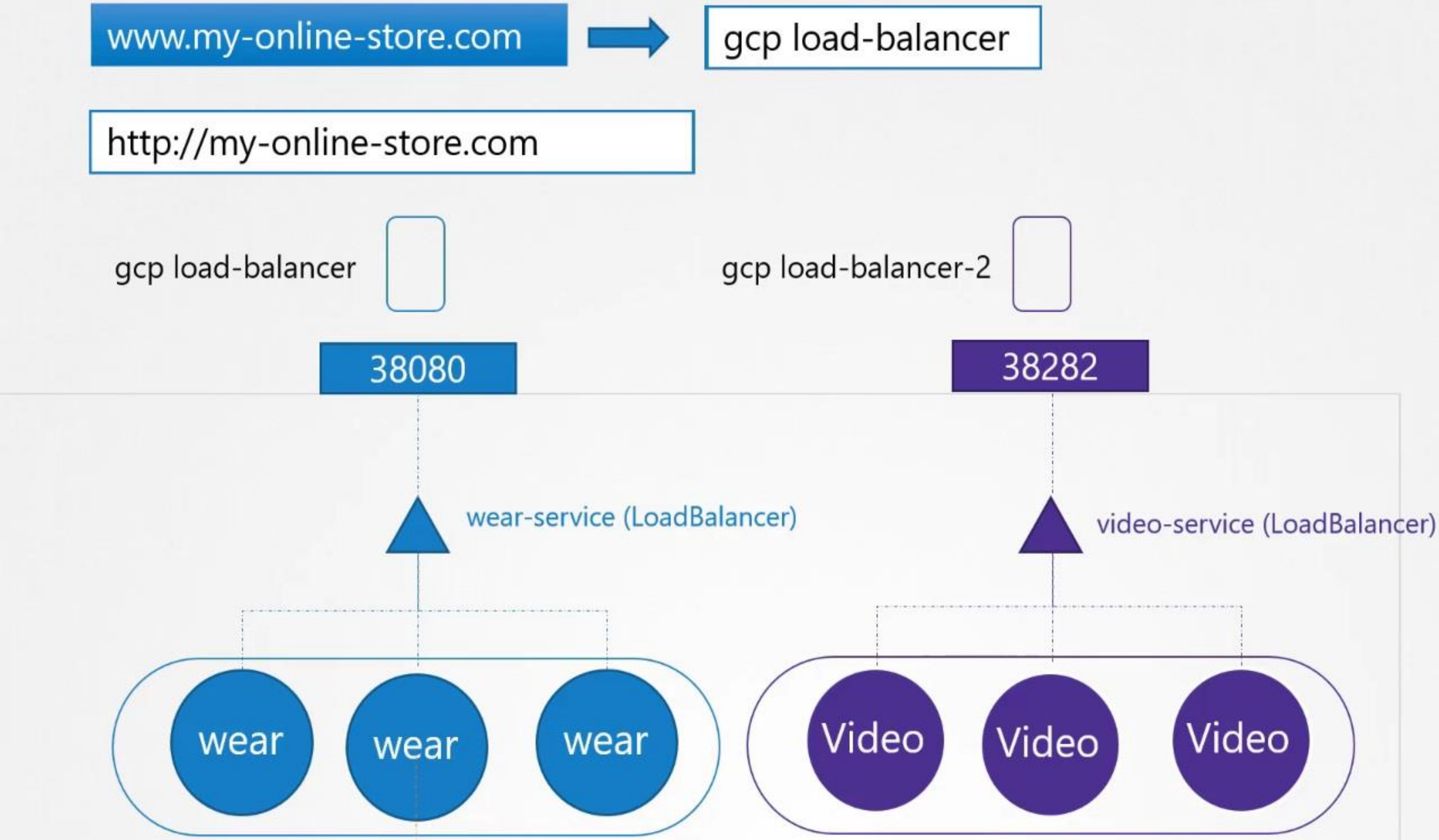
wear

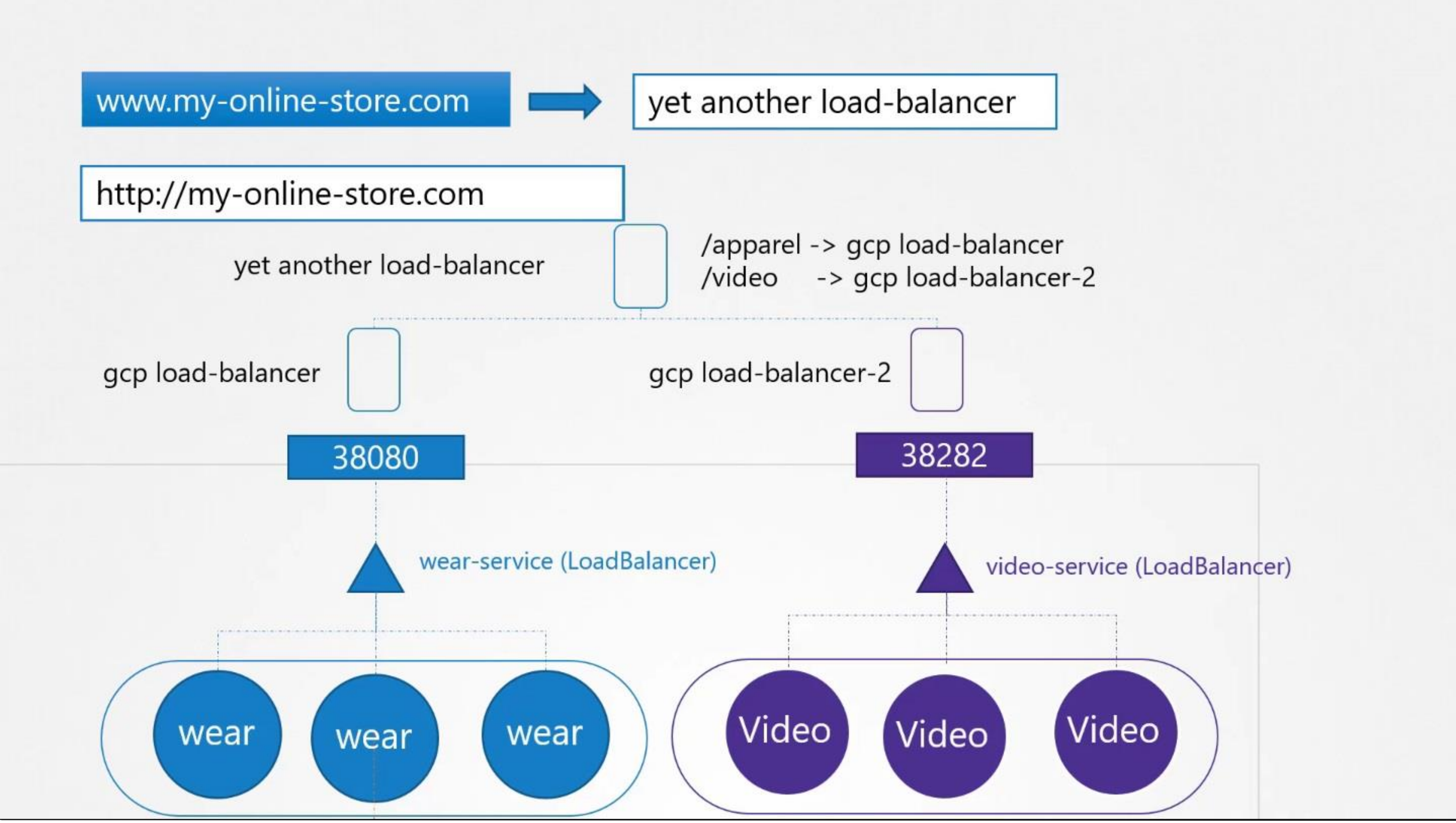
wear

wear


www.my-online-store.com
<node-ip>
http://my-online-store.com:38080
80
proxy-server
38080
wear-service (NodePort)
wear
wear
wear


www.my-online-store.com
<node-ip>
http://my-online-store.com:38080
80
gcp load-balancer
38080
Google
Cloud Platform
wear-service (LoadBalancer)
wear
wear
wear


www.my-online-store.com
gcp load-balancer
http://my-online-store.com
gcp load-balancer
gcp load-balancer-2
38080
38282
wear-service (LoadBalancer)
video-service (LoadBalancer)
wear
wear
wear
Video
Video
Video



www.my-online-store.com → yet another load-balancer

http://my-online-store.com

yet another load-balancer

/apparel -> gcp load-balancer
/video -> gcp load-balancer-2

gcp load-balancer

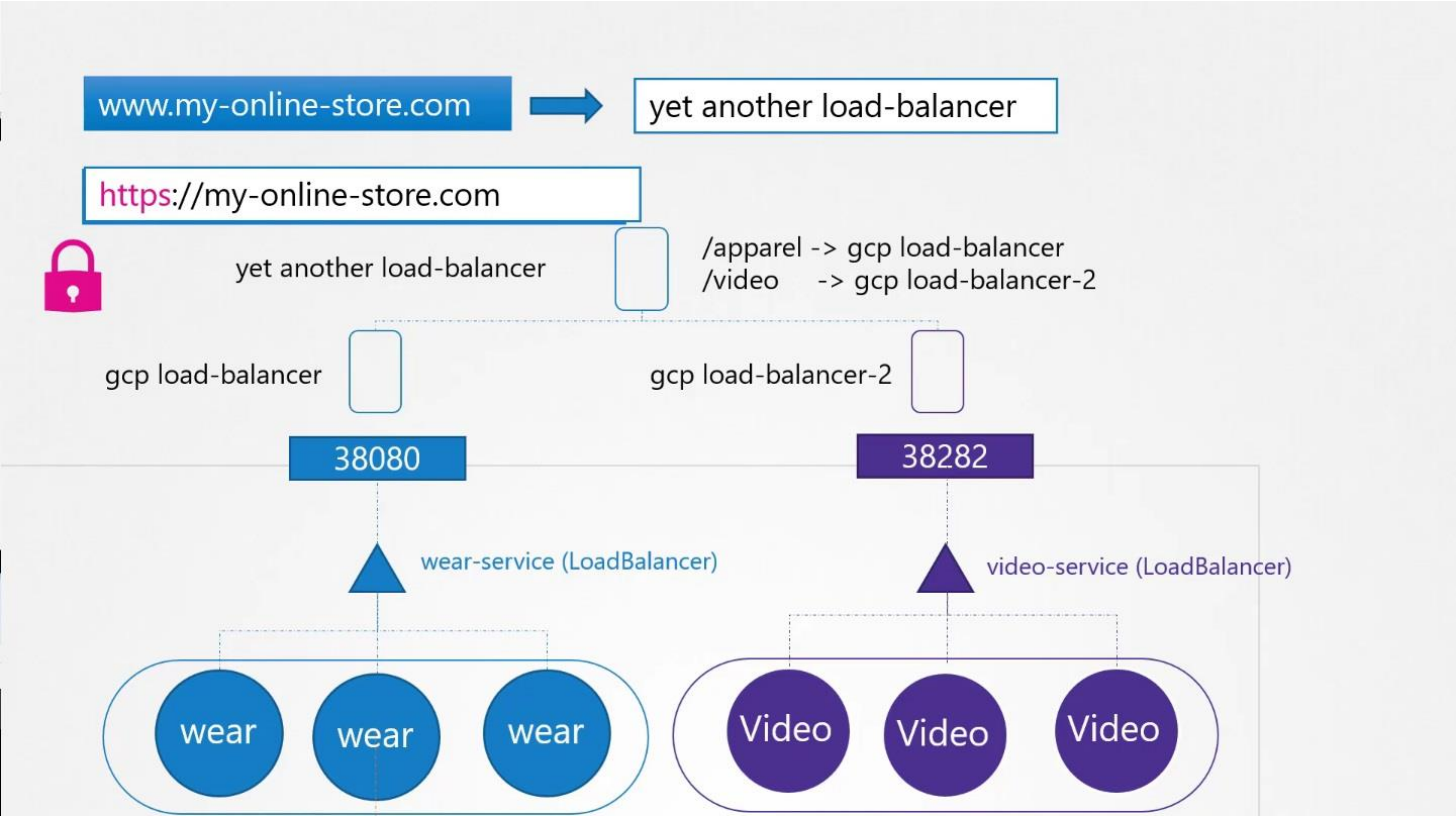
gcp load-balancer-2

38080

38282

wear-service (LoadBalancer)

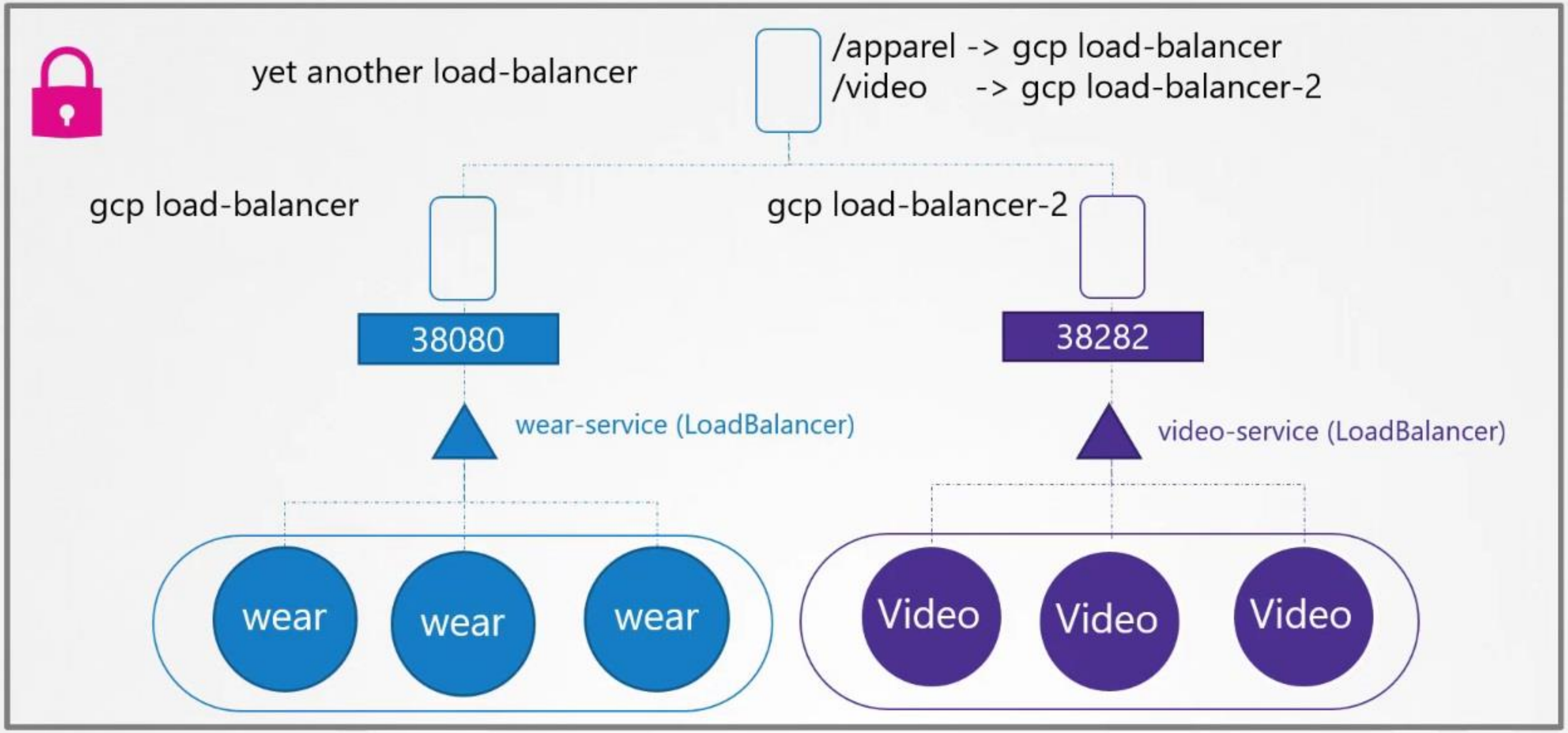
video-service (LoadBalancer)



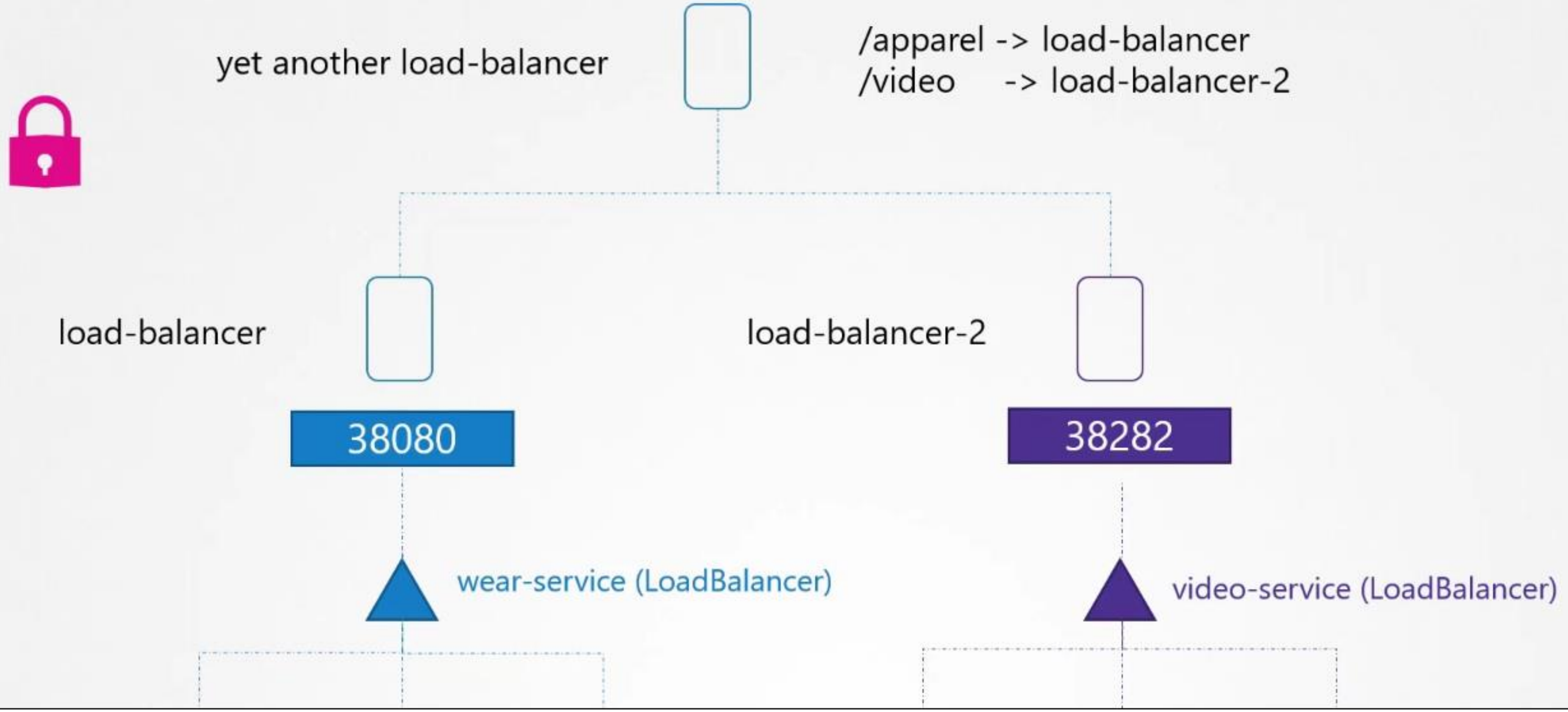
www.my-online-store.com
yet another load-balancer
https://my-online-store.com
yet another load-balancer
/apparel -> gcp load-balancer
/video -> gcp load-balancer-2
gcp load-balancer
gcp load-balancer-2
38080
38282
wear-service (LoadBalancer)
video-service (LoadBalancer)
wear
wear
wear
Video
Video
Video

www.my-online-store.com → yet another load-balancer

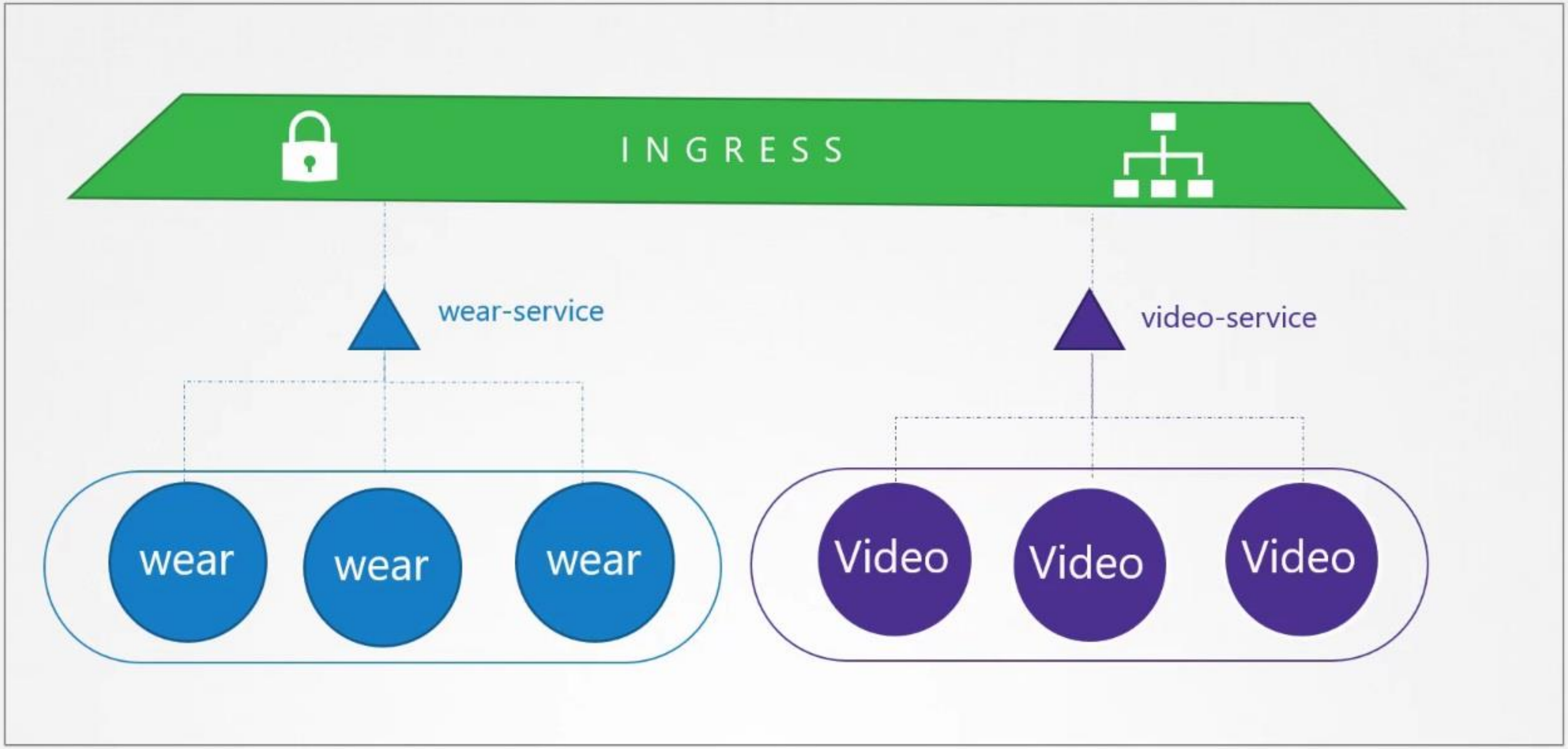
https://my-online-store.com


yet another load-balancer
/apparel -> gcp load-balancer
/video -> gcp load-balancer-2
gcp load-balancer
gcp load-balancer-2
38080
38282
wear-service (LoadBalancer)
video-service (LoadBalancer)
wear
wear
wear
Video
Video
Video

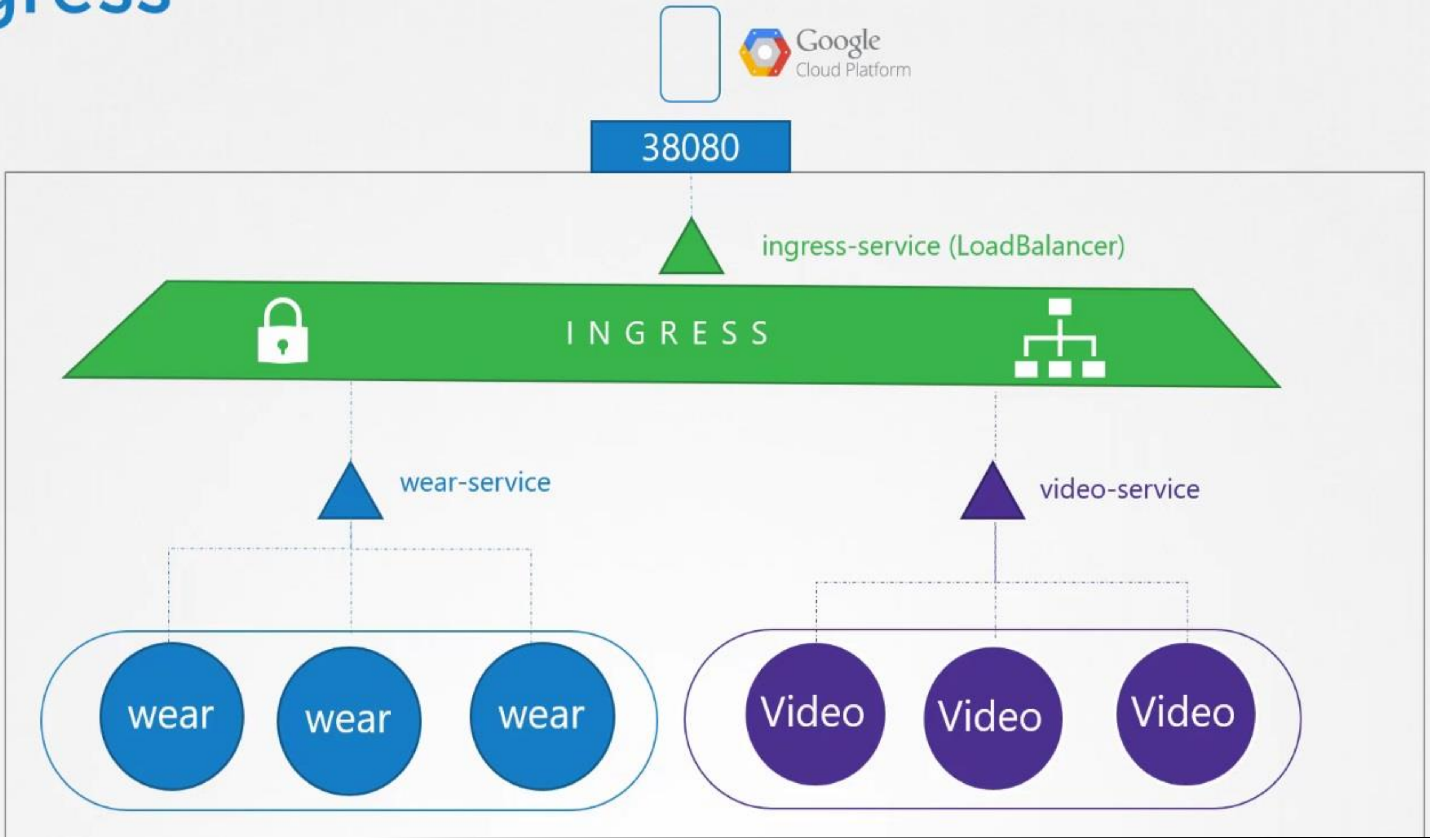
Ingress

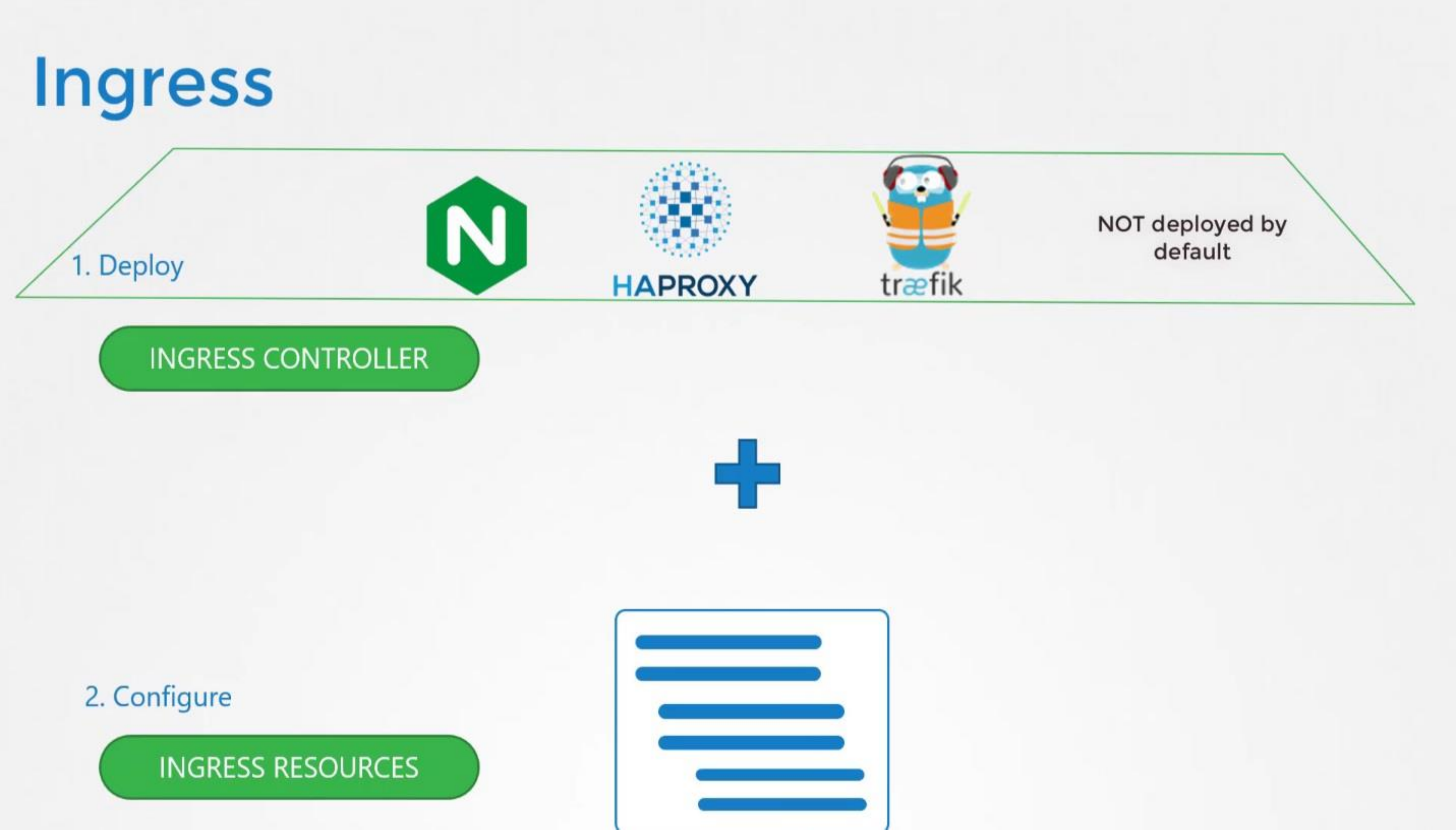

yet another load-balancer
/apparel -> load-balancer
/video -> load-balancer-2
load-balancer
load-balancer-2
38080
38282
wear-service (LoadBalancer)
video-service (LoadBalancer)

Ingress


INGRESS
wear-service
video-service
wear
wear
wear
Video
Video
Video

Ingress


Google
Cloud Platform
38080
ingress-service (LoadBalancer)
INGRESS
wear-service
video-service
wear
wear
wear
Video
Video
Video



Ingress

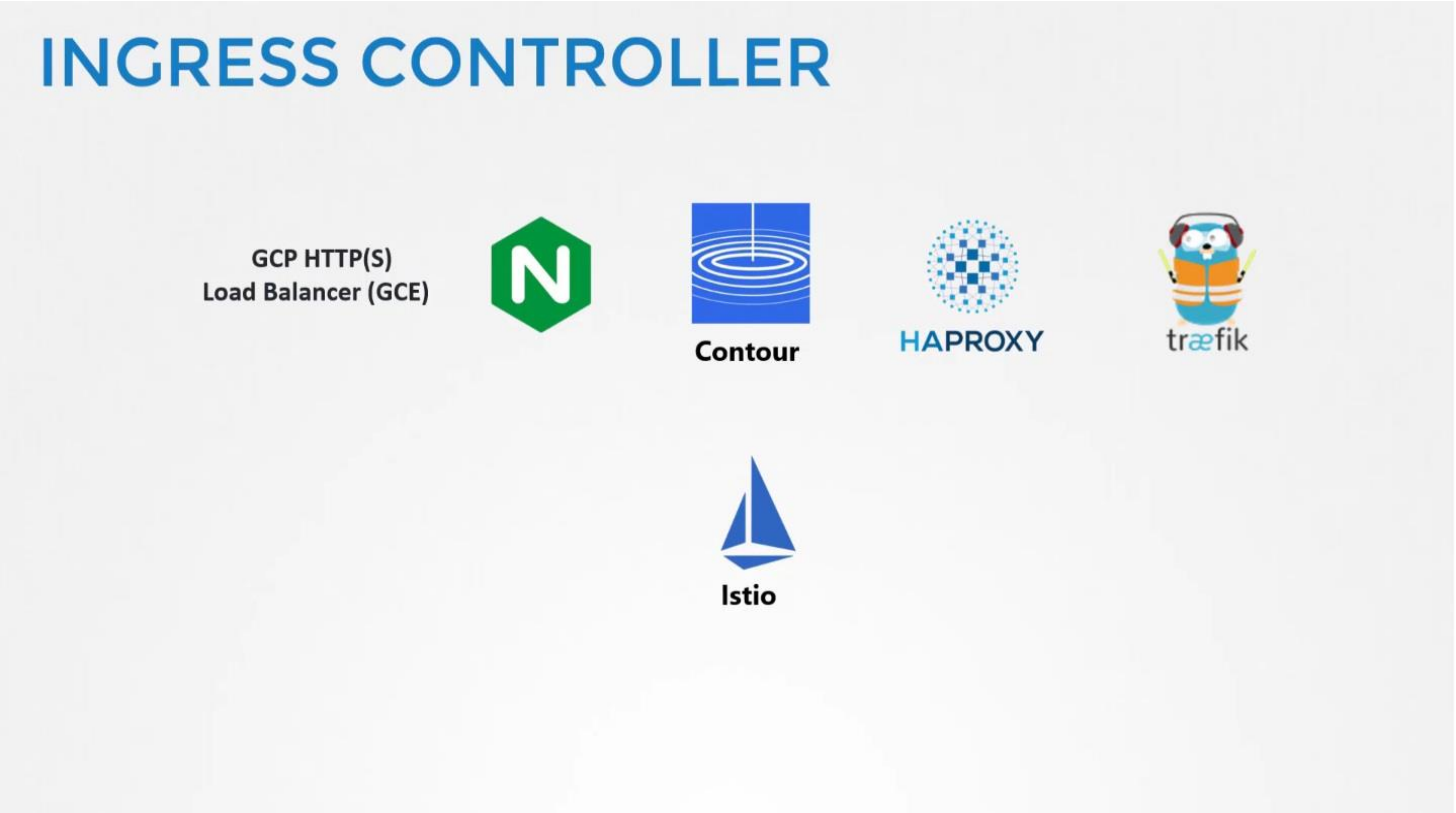
1. Deploy

NOT deployed by default

INGRESS CONTROLLER

2. Configure

INGRESS RESOURCES



INGRESS CONTROLLER

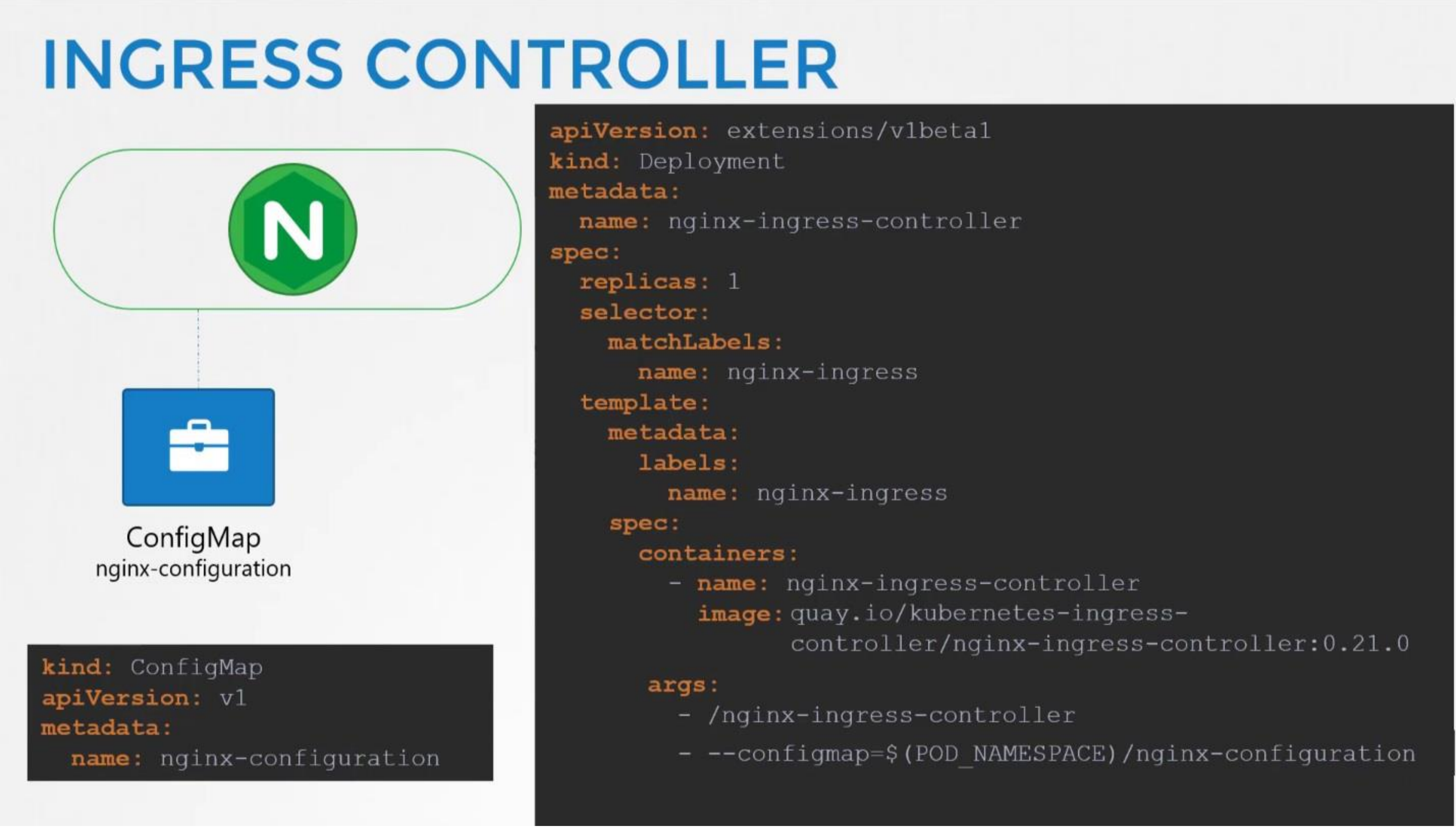
GCP HTTP(S)
Load Balancer (GCE)

Contour

HAPROXY

træfik

Istio

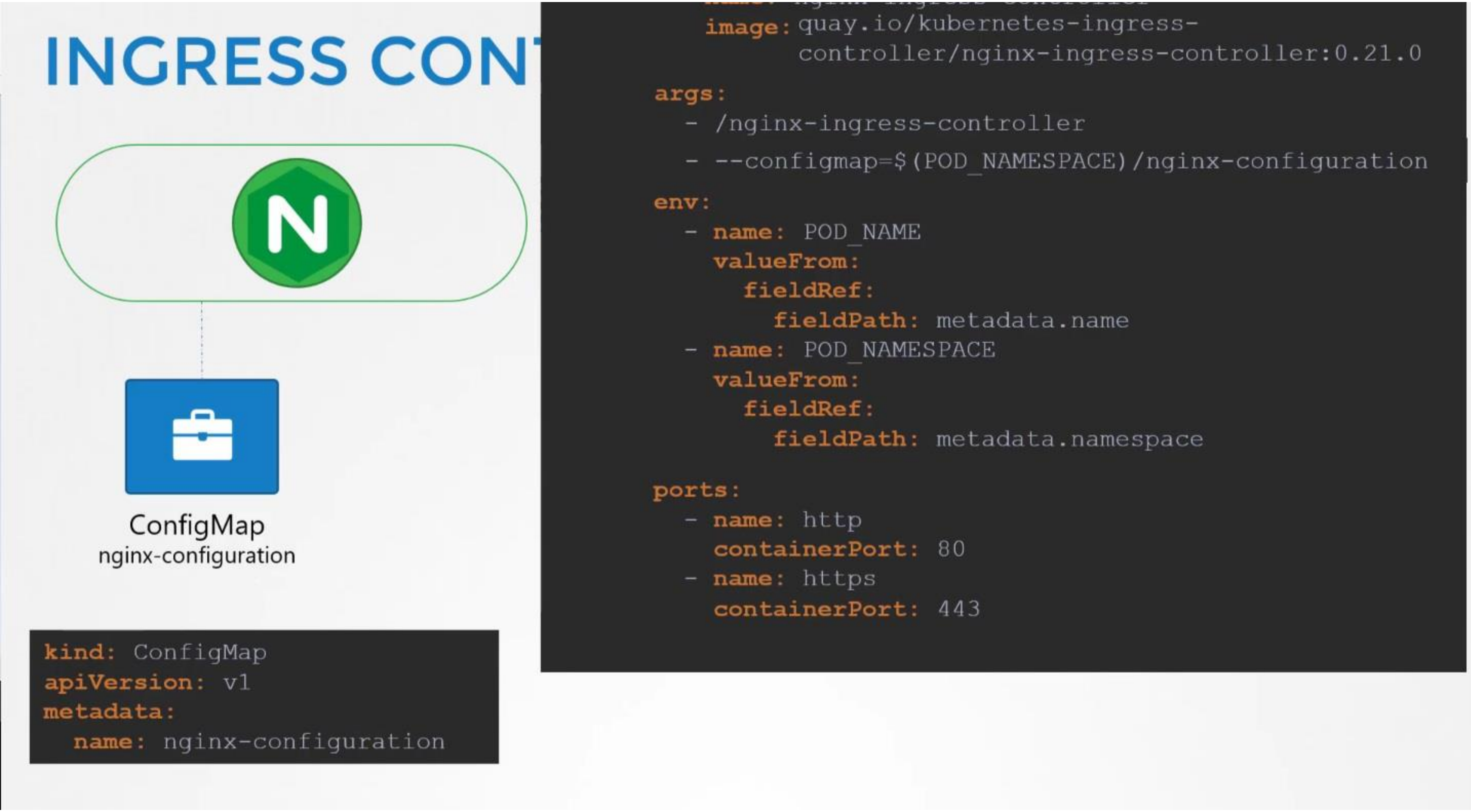


INGRESS CONTROLLER

ConfigMap
nginx-configuration

```
kind: ConfigMap
apiVersion: v1
metadata:
  name: nginx-configuration
```

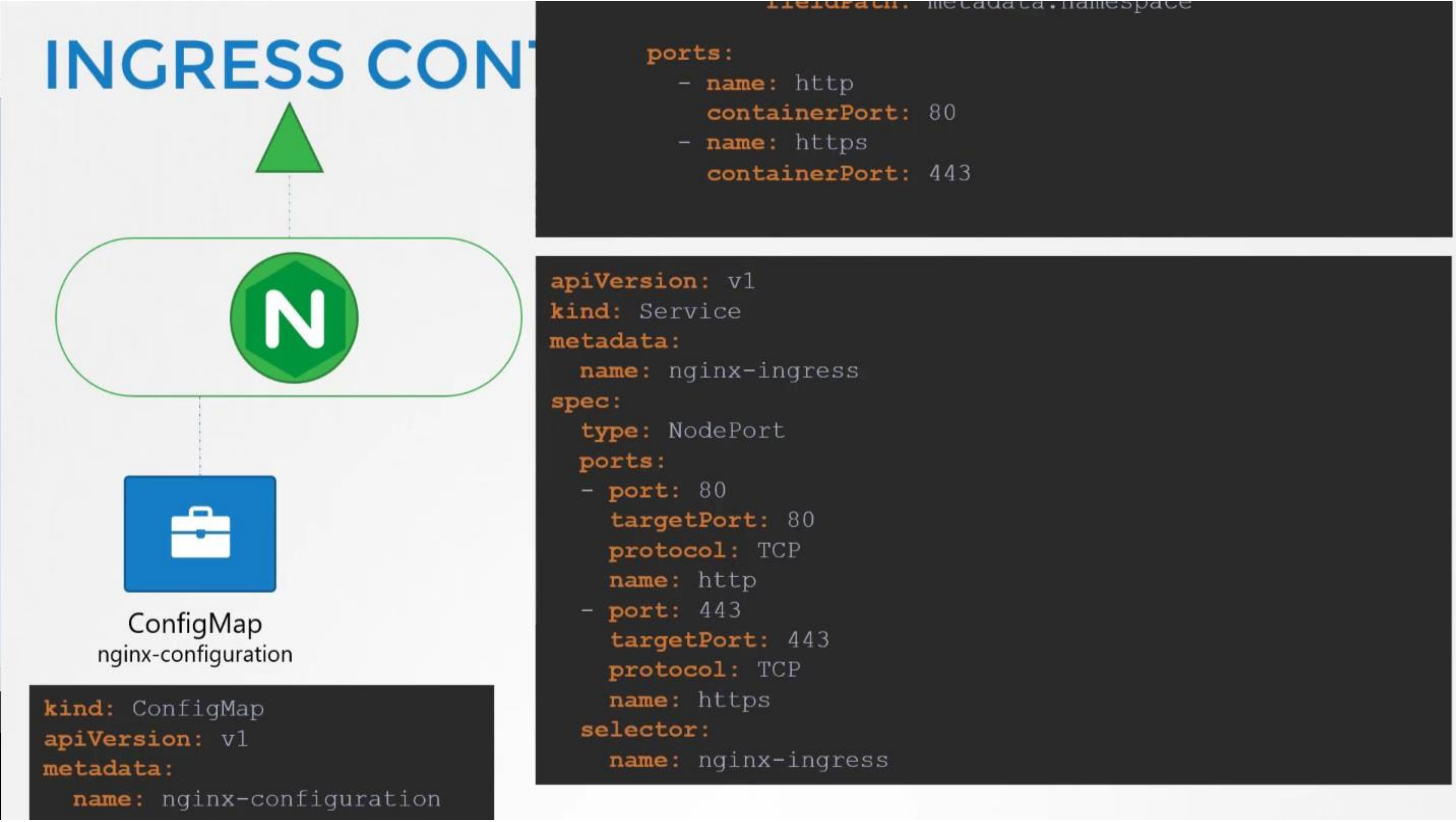
```
apiVersion: extensions/v1beta1
kind: Deployment
metadata:
  name: nginx-ingress-controller
spec:
  replicas: 1
  selector:
    matchLabels:
      name: nginx-ingress
  template:
    metadata:
      labels:
        name: nginx-ingress
    spec:
      containers:
        - name: nginx-ingress-controller
          image: quay.io/kubernetes-ingress-
                 controller/nginx-ingress-controller:0.21.0

       args:
         - /nginx-ingress-controller
         - --configmap=$(POD_NAMESPACE)/nginx-configuration
```



INGRESS CON

```
kind: ConfigMap
apiVersion: v1
metadata:
  name: nginx-configuration
```

```
      name: nginx-ingress-controller
      image: quay.io/kubernetes-ingress-
             controller/nginx-ingress-controller:0.21.0
    args:
      - /nginx-ingress-controller
      - --configmap=$(POD_NAMESPACE)/nginx-configuration
    env:
      - name: POD_NAME
        valueFrom:
          fieldRef:
            fieldPath: metadata.name
      - name: POD_NAMESPACE
        valueFrom:
          fieldRef:
            fieldPath: metadata.namespace

    ports:
      - name: http
        containerPort: 80
      - name: https
        containerPort: 443
```

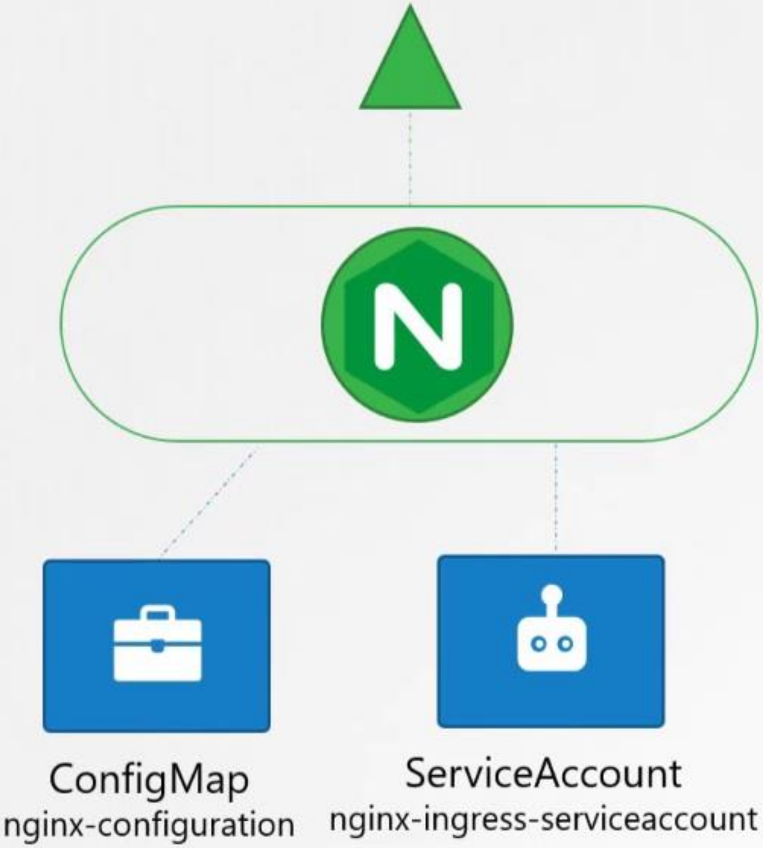


```
          fieldPath: metadata.namespace
    ports:
      - name: http
        containerPort: 80
      - name: https
        containerPort: 443
```

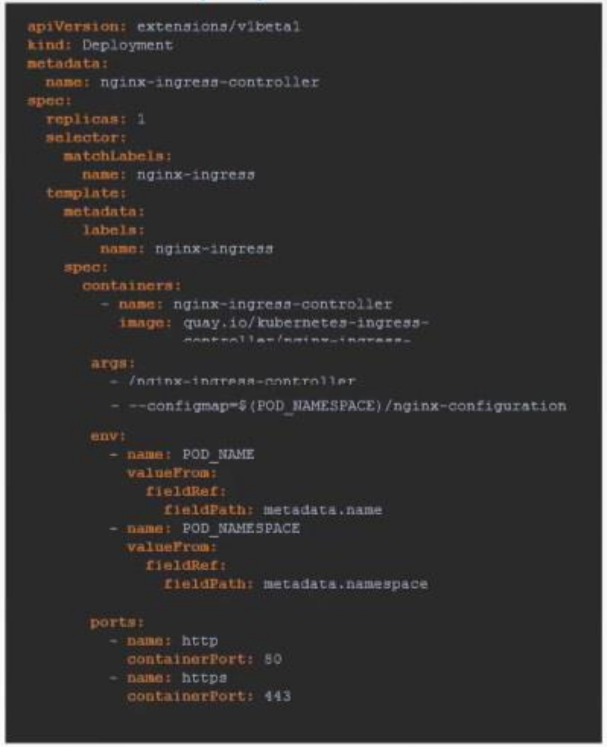
```
kind: ConfigMap
apiVersion: v1
metadata:
  name: nginx-configuration
```

```
apiVersion: v1
kind: Service
metadata:
  name: nginx-ingress
spec:
  type: NodePort
  ports:
  - port: 80
    targetPort: 80
    protocol: TCP
    name: http
  - port: 443
    targetPort: 443
    protocol: TCP
    name: https
  selector:
    name: nginx-ingress
```

INGRESS CONTROLLER

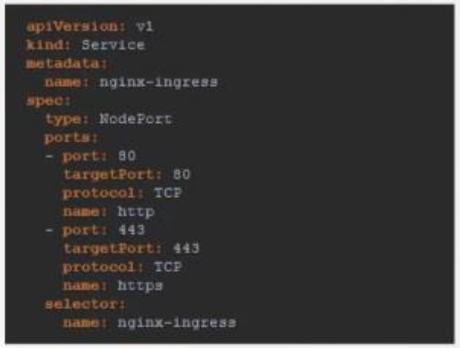


Deployment



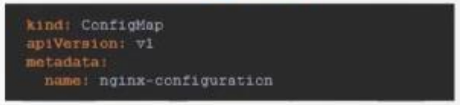
```yaml
apiVersion: extensions/v1beta1
kind: Deployment
metadata:
  name: nginx-ingress-controller
spec:
  replicas: 1
  selector:
    matchLabels:
      name: nginx-ingress
  template:
    metadata:
      labels:
        name: nginx-ingress
    spec:
      containers:
        - name: nginx-ingress-controller
          image: quay.io/kubernetes-ingress-
                 controller/nginx-ingress-

       args:
         - /nginx-ingress-controller

         - --configmap=$(POD_NAMESPACE)/nginx-configuration

       env:
         - name: POD_NAME
           valueFrom:
             fieldRef:
               fieldPath: metadata.name
         - name: POD_NAMESPACE
           valueFrom:
             fieldRef:
               fieldPath: metadata.namespace

       ports:
         - name: http
           containerPort: 80
         - name: https
           containerPort: 443
```

Service



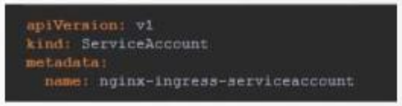
```yaml
apiVersion: v1
kind: Service
metadata:
  name: nginx-ingress
spec:
  type: NodePort
  ports:
  - port: 80
    targetPort: 80
    protocol: TCP
    name: http
  - port: 443
    targetPort: 443
    protocol: TCP
    name: https
  selector:
    name: nginx-ingress
```

ConfigMap



```yaml
kind: ConfigMap
apiVersion: v1
metadata:
  name: nginx-configuration
```

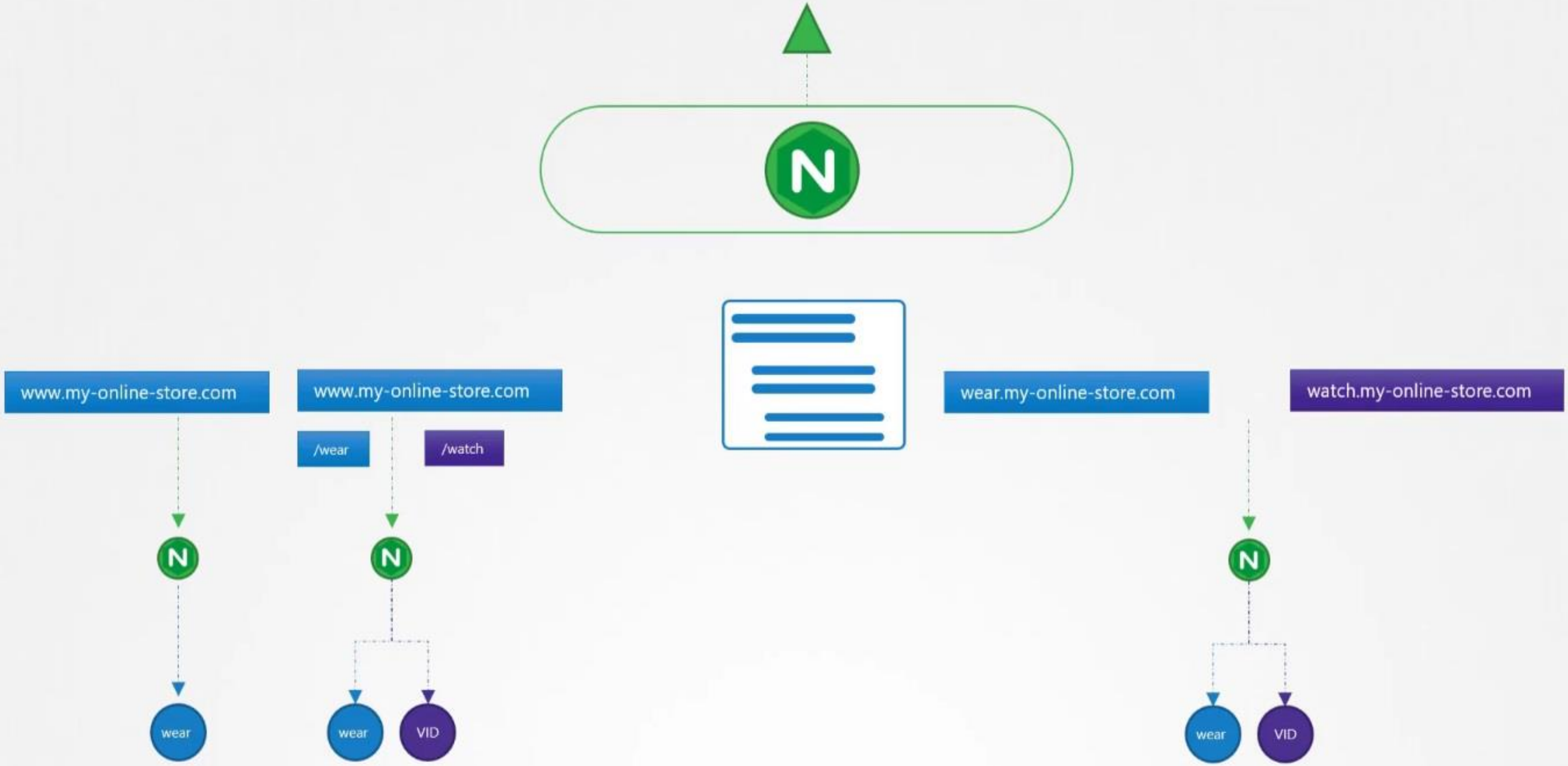
Auth

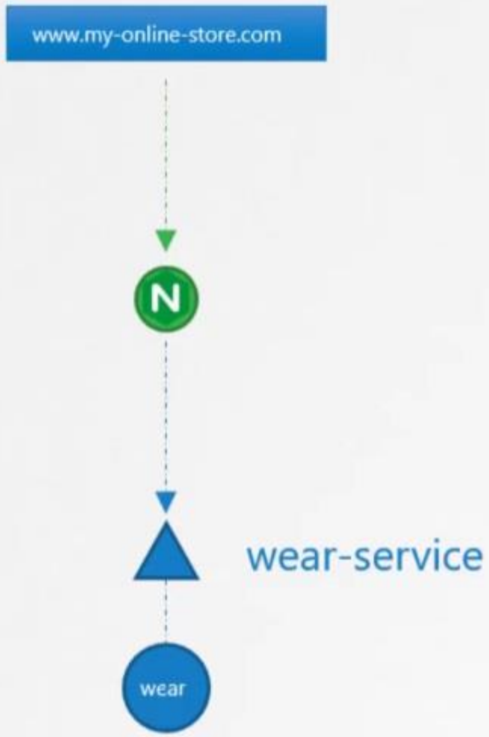


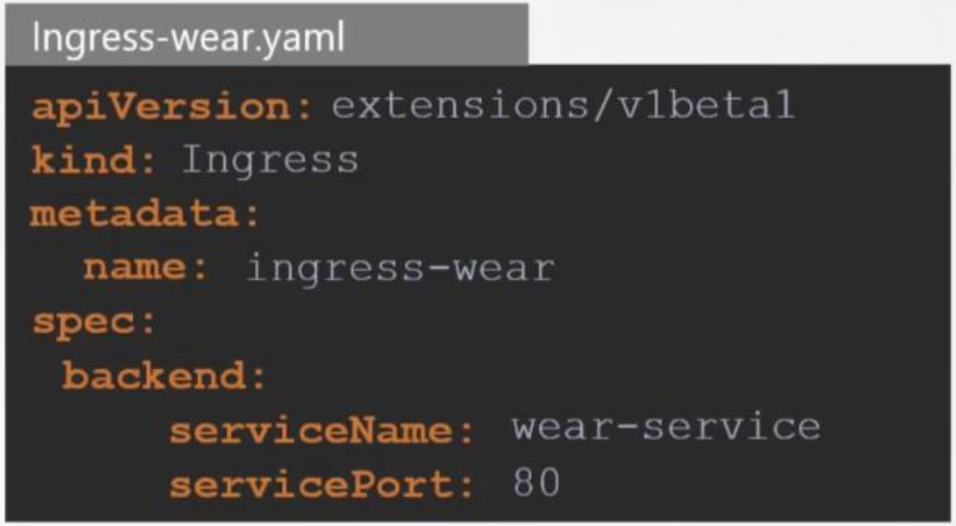
```yaml
apiVersion: v1
kind: ServiceAccount
metadata:
  name: nginx-ingress-serviceaccount
```

Roles ClusterRoles RoleBindings

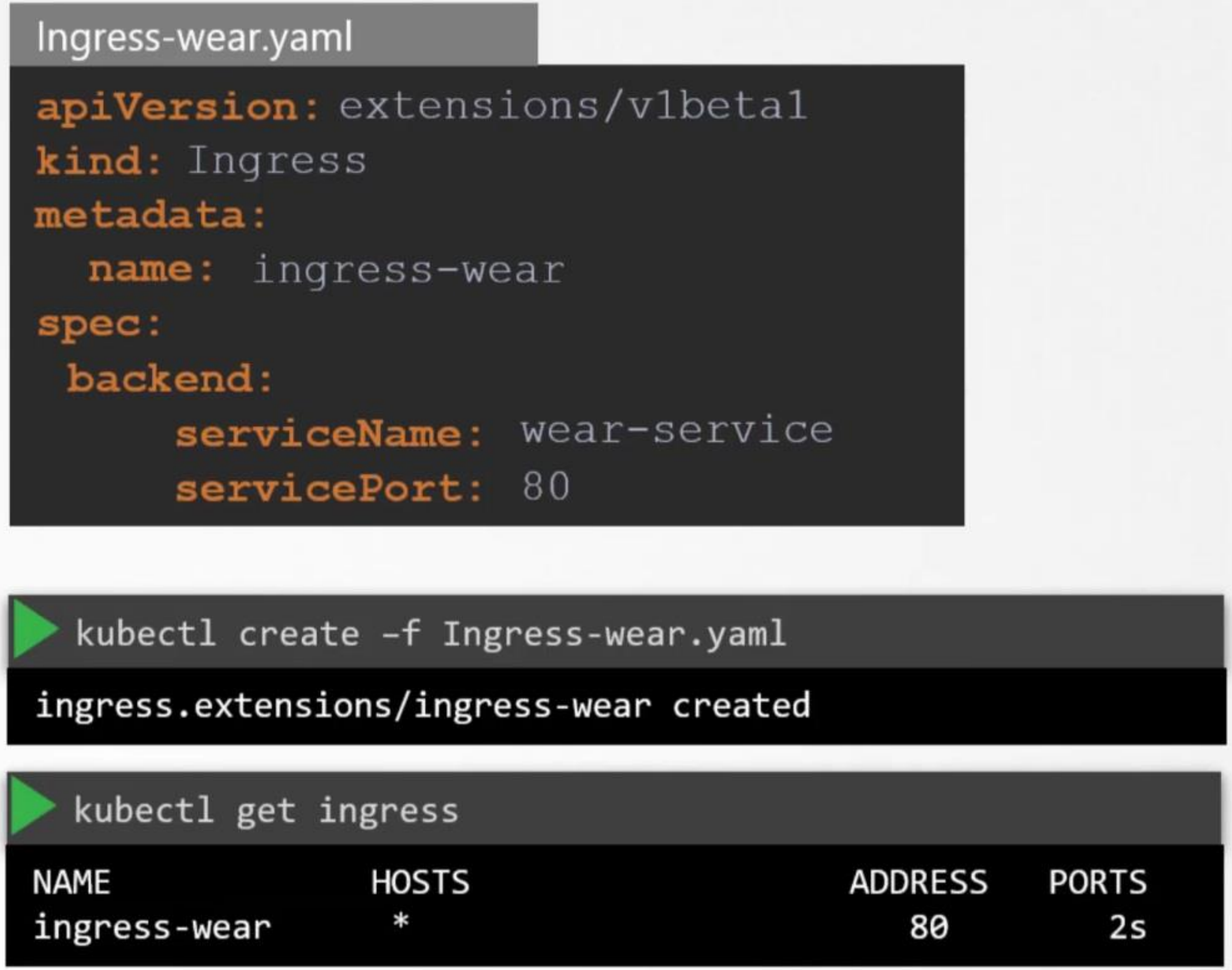
INGRESS RESOURCE






Ingress-wear.yaml

```yaml
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
   name:  ingress-wear
spec:
  backend:
        serviceName:  wear-service
        servicePort:  80
```

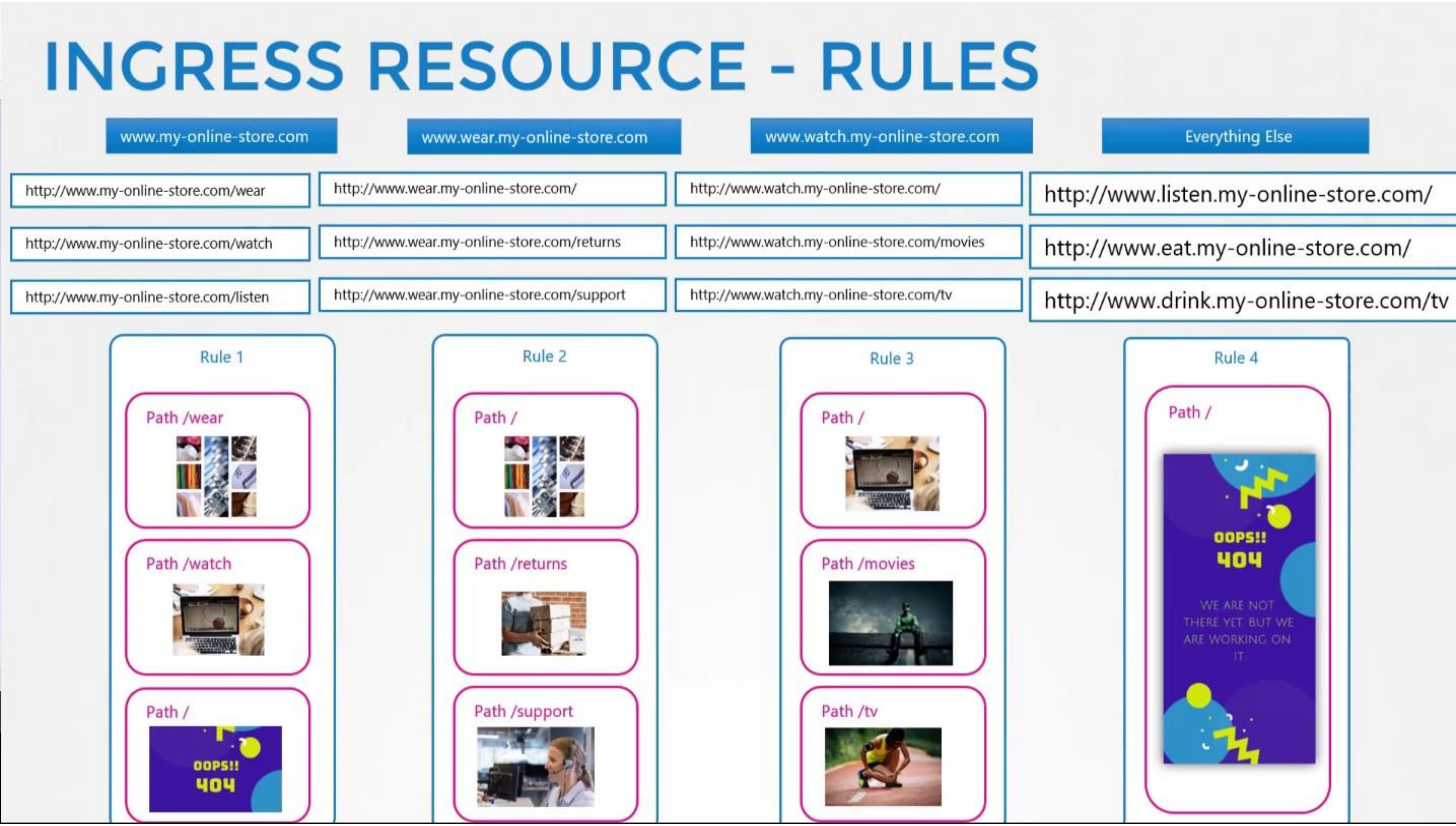


Ingress-wear.yaml

```yaml
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-wear
spec:
 backend:
      serviceName: wear-service
      servicePort: 80
```

```
▶ kubectl create -f Ingress-wear.yaml
ingress.extensions/ingress-wear created
```

```
▶ kubectl get ingress
NAME            HOSTS                ADDRESS    PORTS
ingress-wear     *                      80         2s
```



INGRESS RESOURCE - RULES

www.my-online-store.com	www.wear.my-online-store.com	www.watch.my-online-store.com	Everything Else
http://www.my-online-store.com/wear	http://www.wear.my-online-store.com/	http://www.watch.my-online-store.com/	http://www.listen.my-online-store.com/
http://www.my-online-store.com/watch	http://www.wear.my-online-store.com/returns	http://www.watch.my-online-store.com/movies	http://www.eat.my-online-store.com/
http://www.my-online-store.com/listen	http://www.wear.my-online-store.com/support	http://www.watch.my-online-store.com/tv	http://www.drink.my-online-store.com/tv

Rule 1

- Path /wear
- Path /watch
- Path /

Rule 2

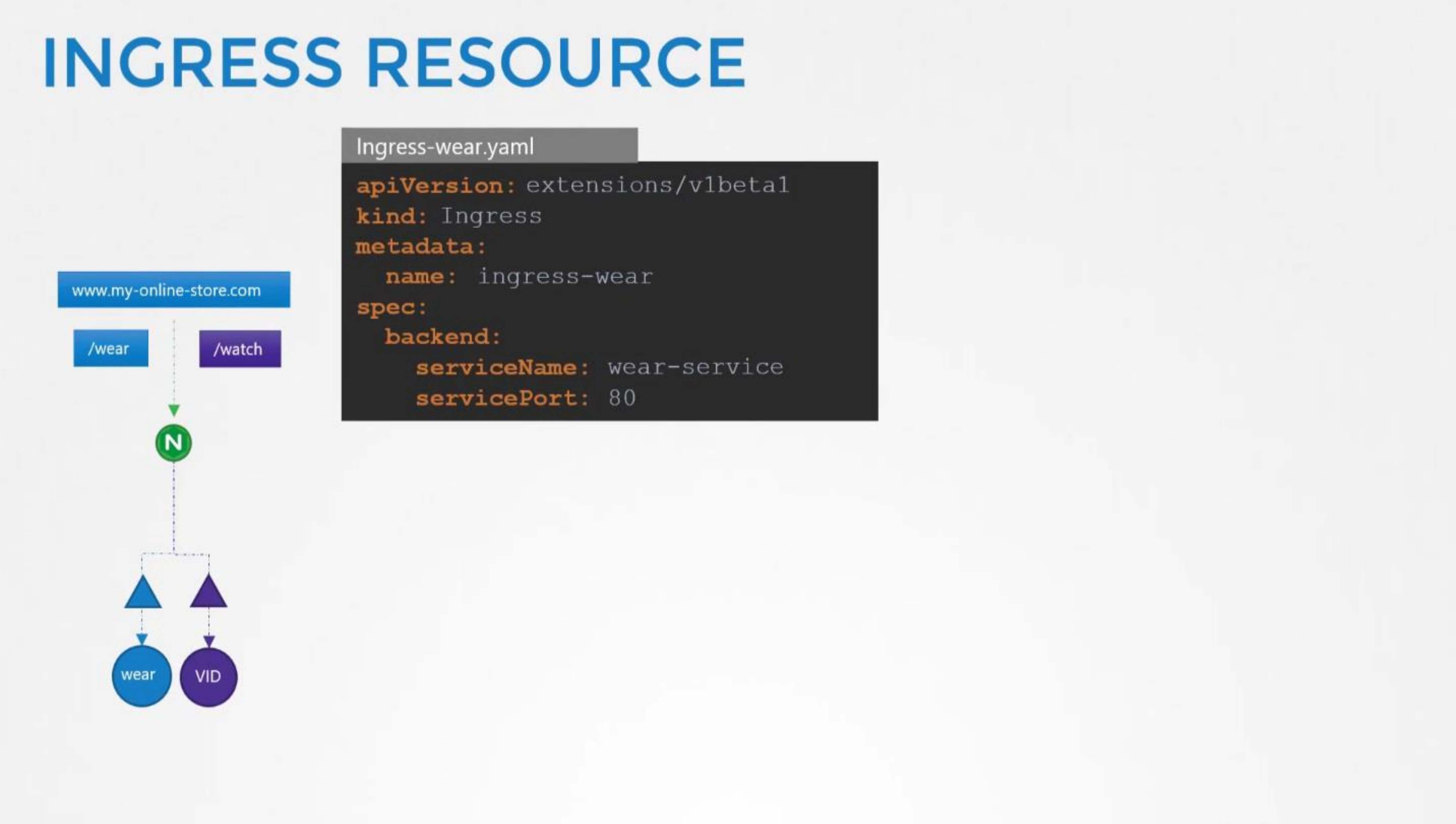
- Path /
- Path /returns
- Path /support

Rule 3

- Path /
- Path /movies
- Path /tv

Rule 4

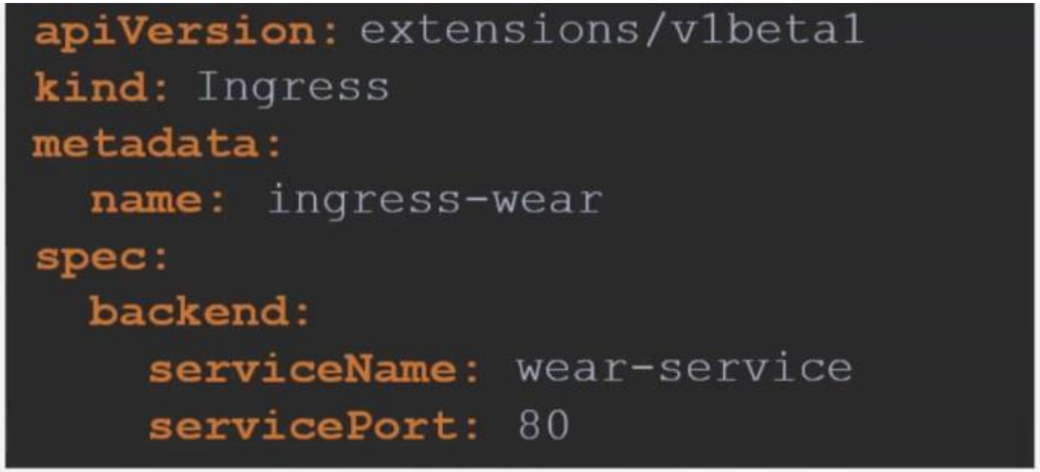
- Path /



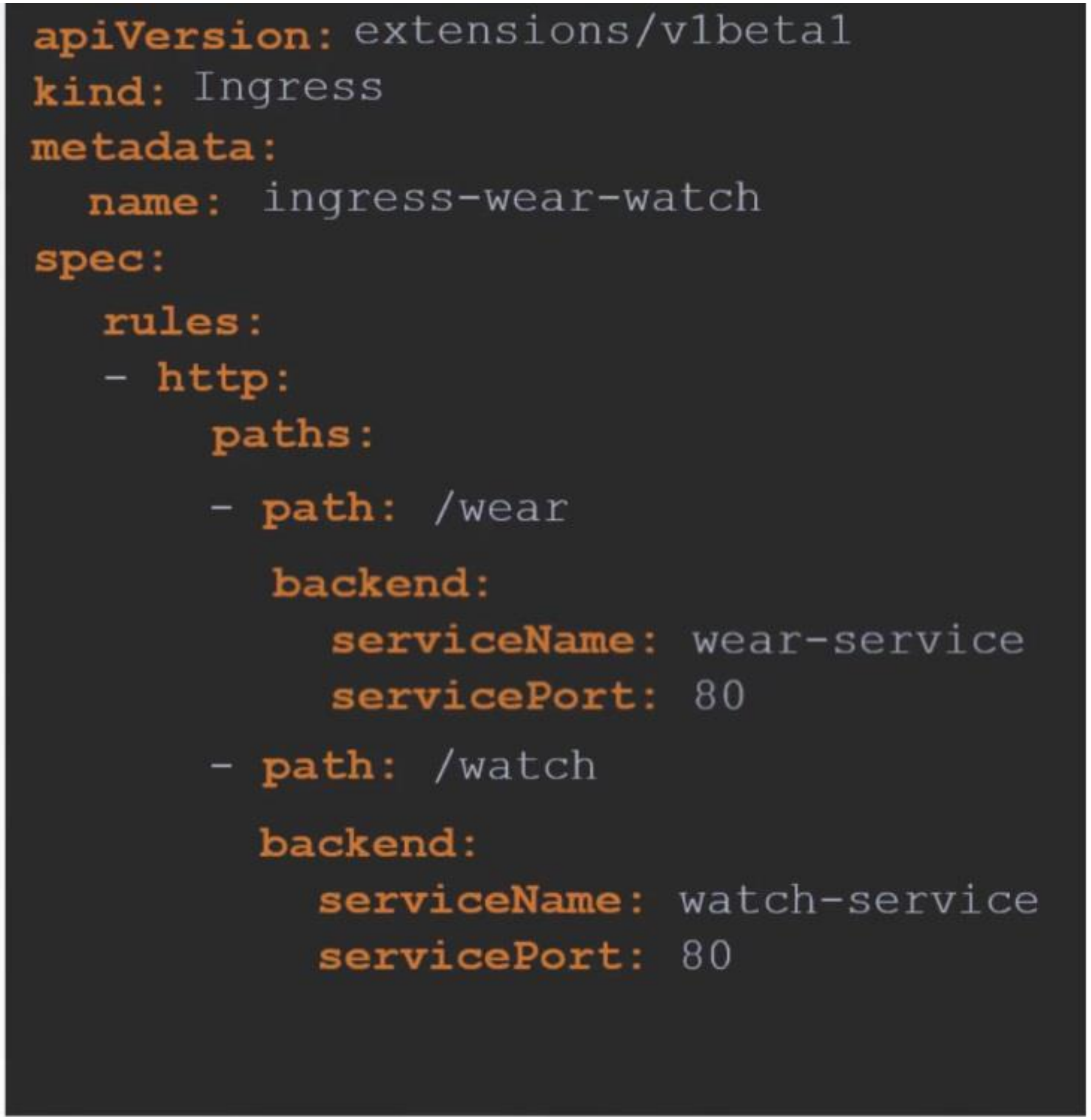
INGRESS RESOURCE

Ingress-wear.yaml

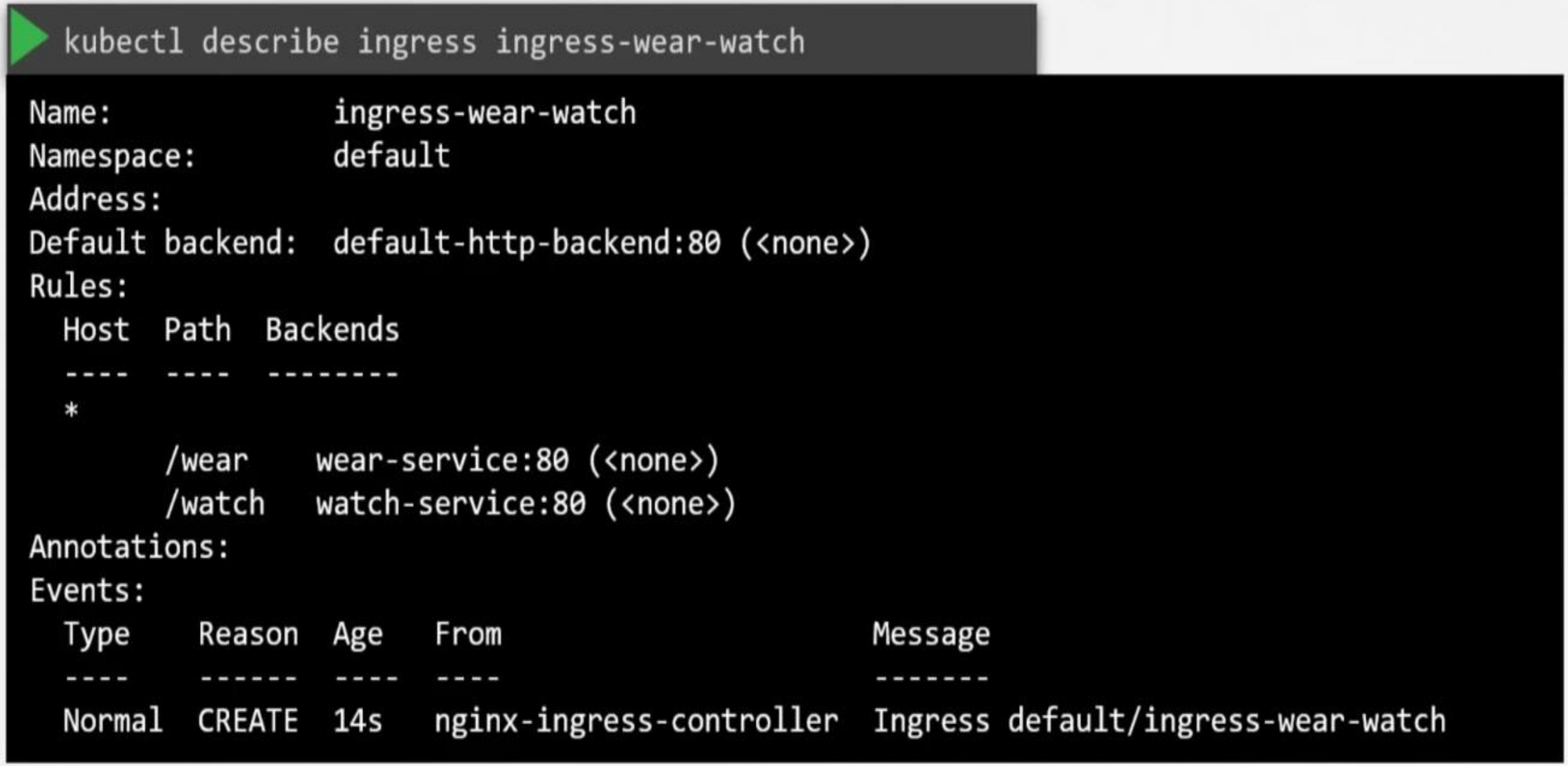
```
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-wear
spec:
  backend:
    serviceName: wear-service
    servicePort: 80
```



```
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-wear
spec:
  backend:
    serviceName: wear-service
    servicePort: 80
```



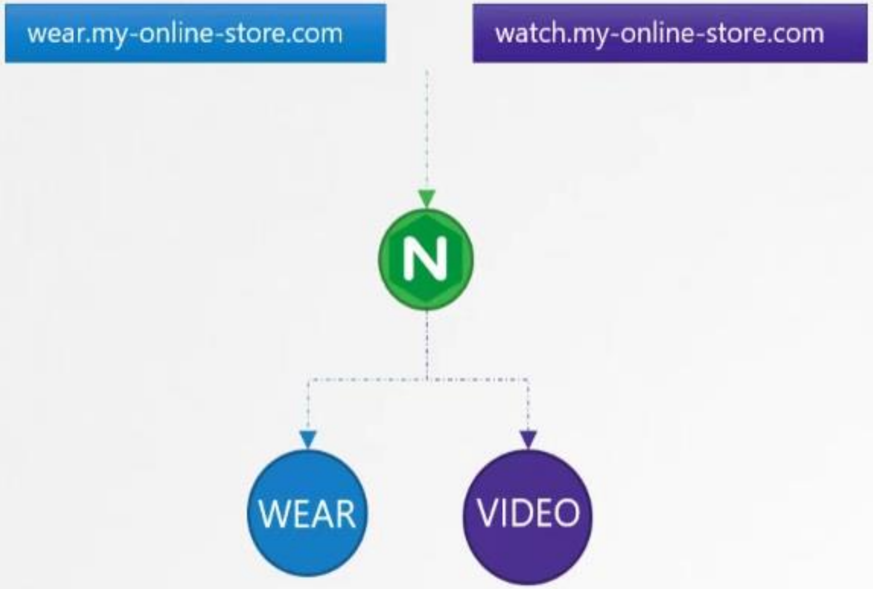
```
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-wear-watch
spec:
   rules:
   - http:
       paths:
       - path: /wear
         backend:
           serviceName: wear-service
           servicePort: 80
       - path: /watch
        backend:
          serviceName: watch-service
          servicePort: 80
```

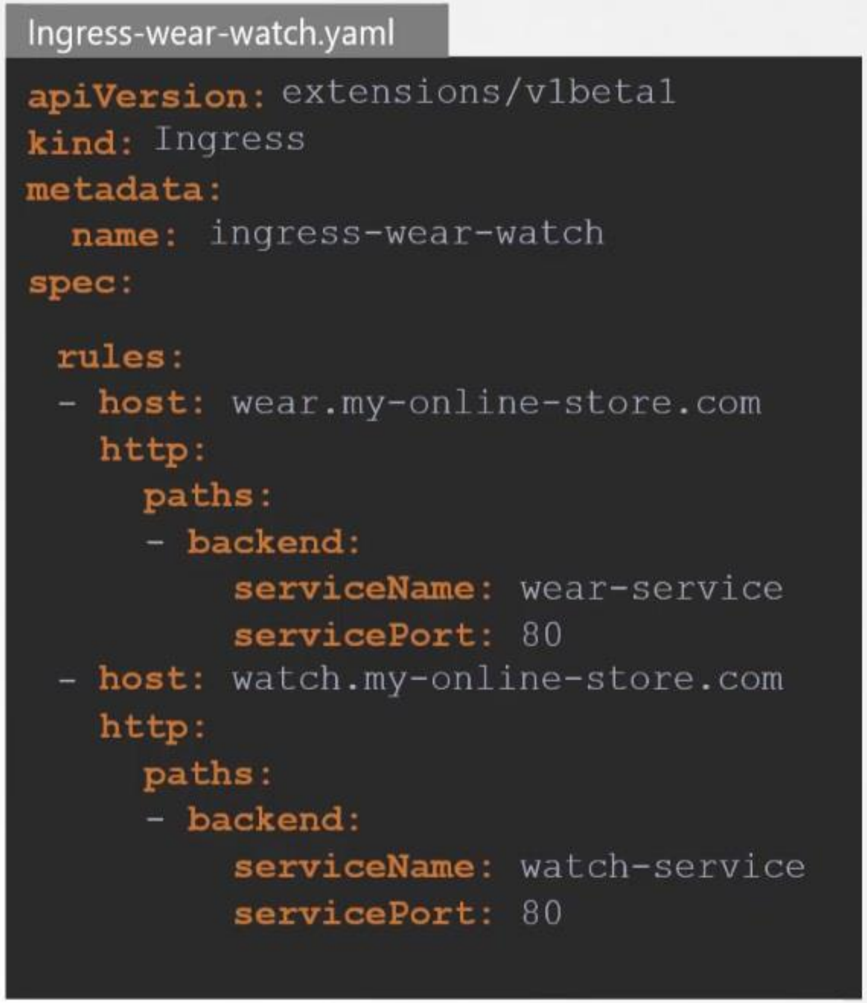


```
kubectl describe ingress ingress-wear-watch
```

```
Name:              ingress-wear-watch
Namespace:         default
Address:
Default backend:   default-http-backend:80 (<none>)
Rules:
  Host  Path  Backends
  ----  ----  --------
  *
        /wear    wear-service:80 (<none>)
        /watch   watch-service:80 (<none>)
Annotations:
Events:
  Type    Reason  Age   From                      Message
  ----    ------  ----  ----                      -------
  Normal  CREATE  14s   nginx-ingress-controller  Ingress default/ingress-wear-watch
```

INGRESS RESOURCE

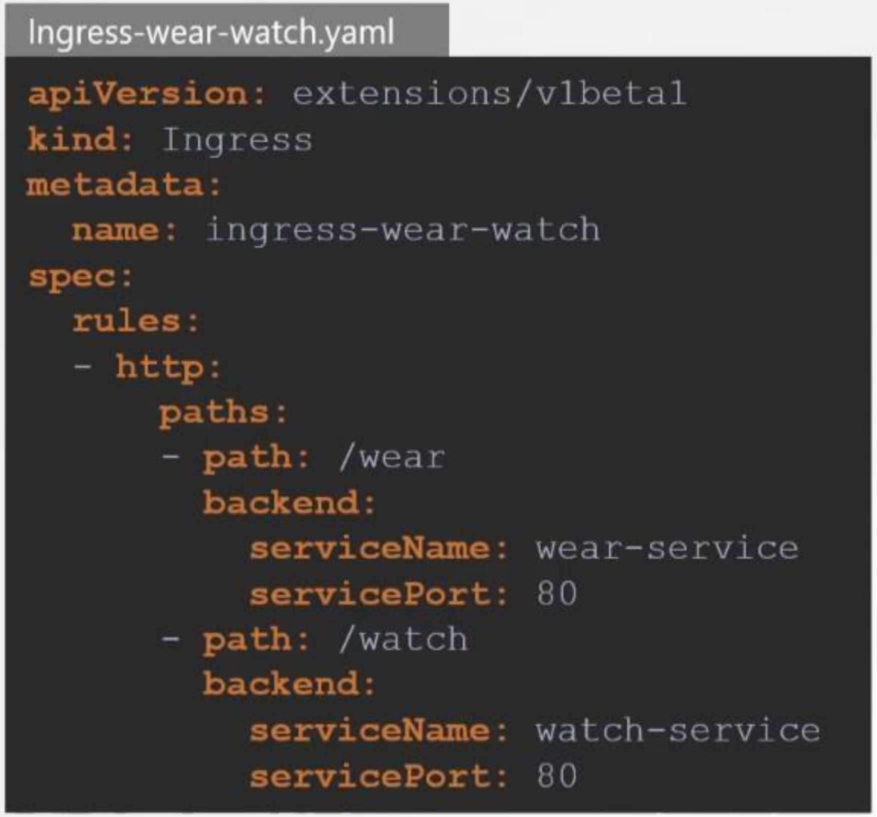




Ingress-wear-watch.yaml

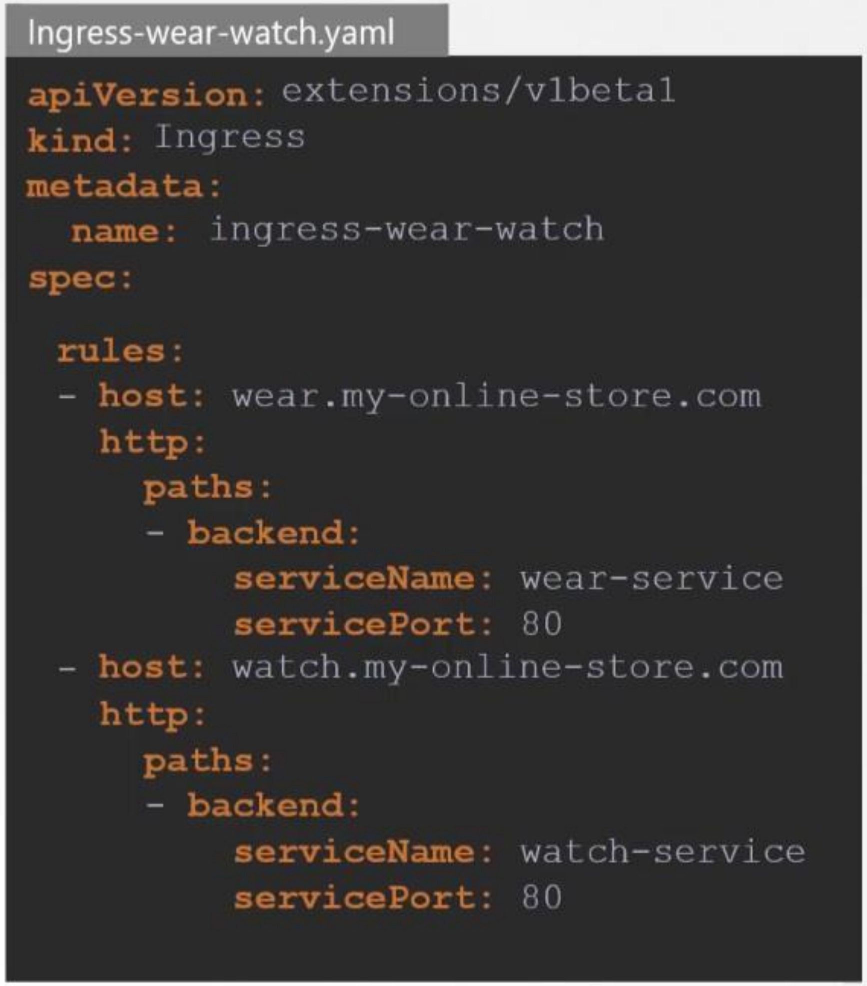
```yaml
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-wear-watch
spec:

 rules:
 - host: wear.my-online-store.com
   http:
     paths:
     - backend:
         serviceName: wear-service
         servicePort: 80
 - host: watch.my-online-store.com
   http:
     paths:
     - backend:
         serviceName: watch-service
         servicePort: 80
```

INGRESS RESOURCE



Ingress-wear-watch.yaml

```yaml
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-wear-watch
spec:
  rules:
  - http:
      paths:
      - path: /wear
        backend:
          serviceName: wear-service
          servicePort: 80
      - path: /watch
        backend:
          serviceName: watch-service
          servicePort: 80
```



Ingress-wear-watch.yaml

```yaml
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-wear-watch
spec:

  rules:
  - host: wear.my-online-store.com
    http:
      paths:
      - backend:
          serviceName: wear-service
          servicePort: 80
  - host: watch.my-online-store.com
    http:
      paths:
      - backend:
          serviceName: watch-service
          servicePort: 80
```

Partie Pratique

Merci pour votre attention

Questions

Ghazela Technology
Academy