

第

7

节

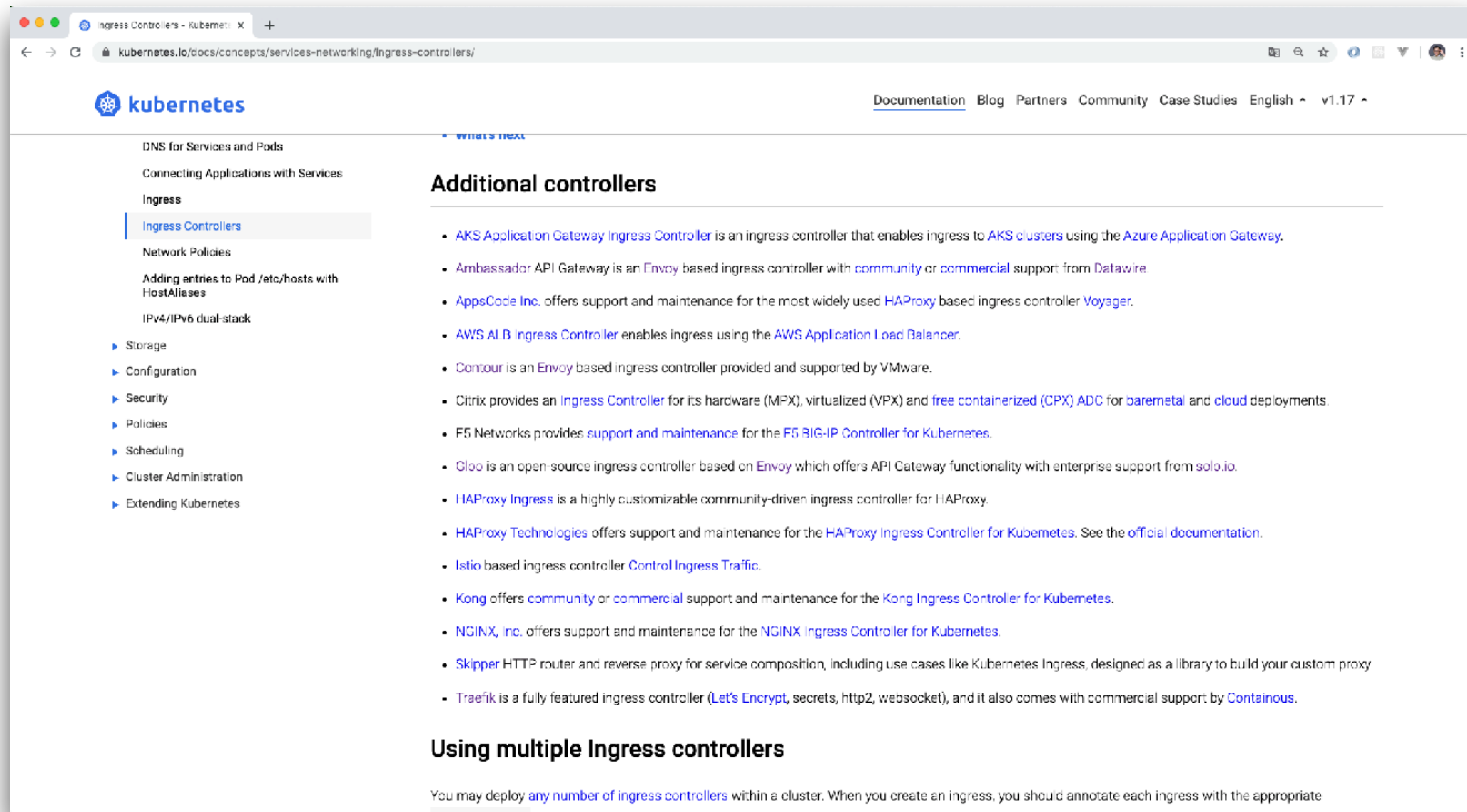
使用K8s Ingress暴露PetClinic微服务

# 本课内容

- 本地安装K8s Nginx IngressController
- 演示通过Ingress暴露PetClinic微服务

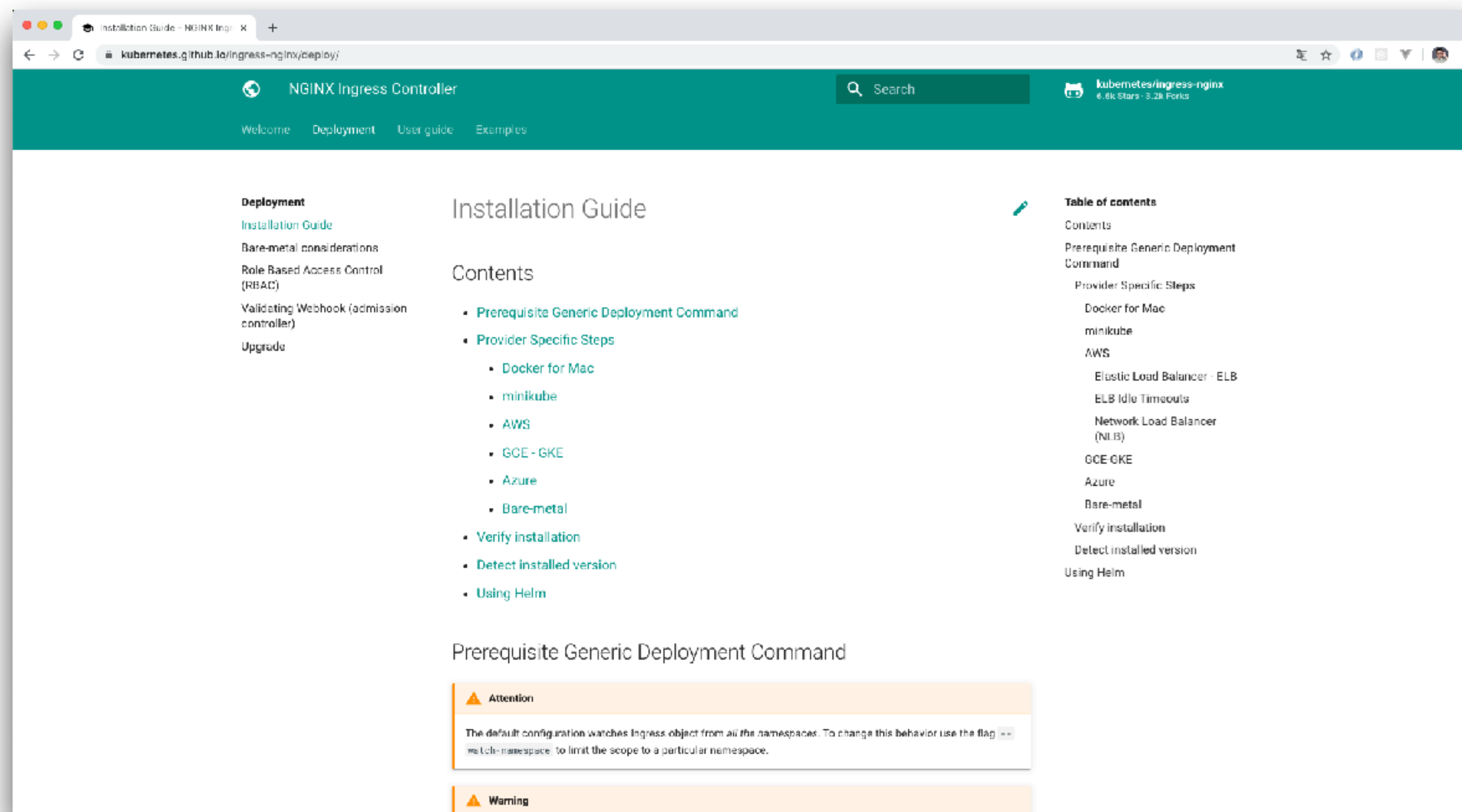


# Ingress Controller



<https://kubernetes.io/docs/concepts/services-networking/ingress-controllers/>

# 安装Nginx Ingress Controller



<https://kubernetes.github.io/ingress-nginx/deploy/>

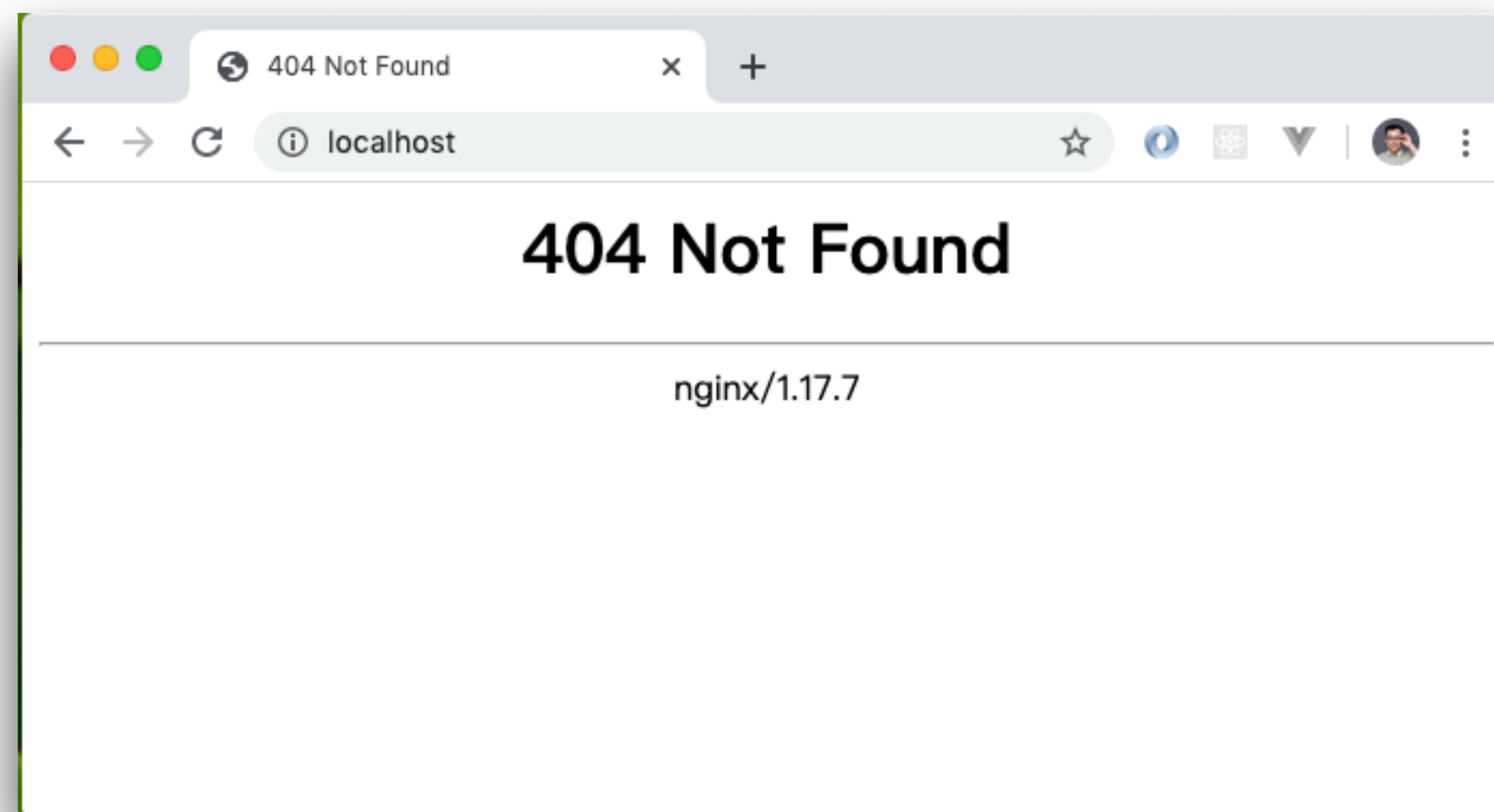
<https://github.com/kubernetes/ingress-nginx/>

# 本地发布Nginx IngressController

```
1. william@jskill: ~/temp/ingress-nginx/deploy/static/provider (zsh)
→ static git:(master) pwd
/Users/william/temp/ingress-nginx/deploy/static
→ static git:(master) ls
configmap.yaml namespace.yaml rbac.yaml
mandatory.yaml provider with-rbac.yaml
→ static git:(master) kubectl apply -f mandatory.yaml
namespace/ingress-nginx created
configmap/nginx-configuration created
configmap/tcp-services created
configmap/udp-services created
serviceaccount/nginx-ingress-serviceaccount created
clusterrole.rbac.authorization.k8s.io/nginx-ingress-clusterrole created
role.rbac.authorization.k8s.io/nginx-ingress-role created
rolebinding.rbac.authorization.k8s.io/nginx-ingress-role-nisa-binding created
clusterrolebinding.rbac.authorization.k8s.io/nginx-ingress-clusterrole-nisa-binding created
deployment.apps/nginx-ingress-controller created
limitrange/ingress-nginx created
→ static git:(master) cd provider
→ provider git:(master) ls
aws baremetal cloud-generic.yaml
→ provider git:(master) kubectl apply -f cloud-generic.yaml
service/ingress-nginx created
→ provider git:(master)
```



# 校验部署



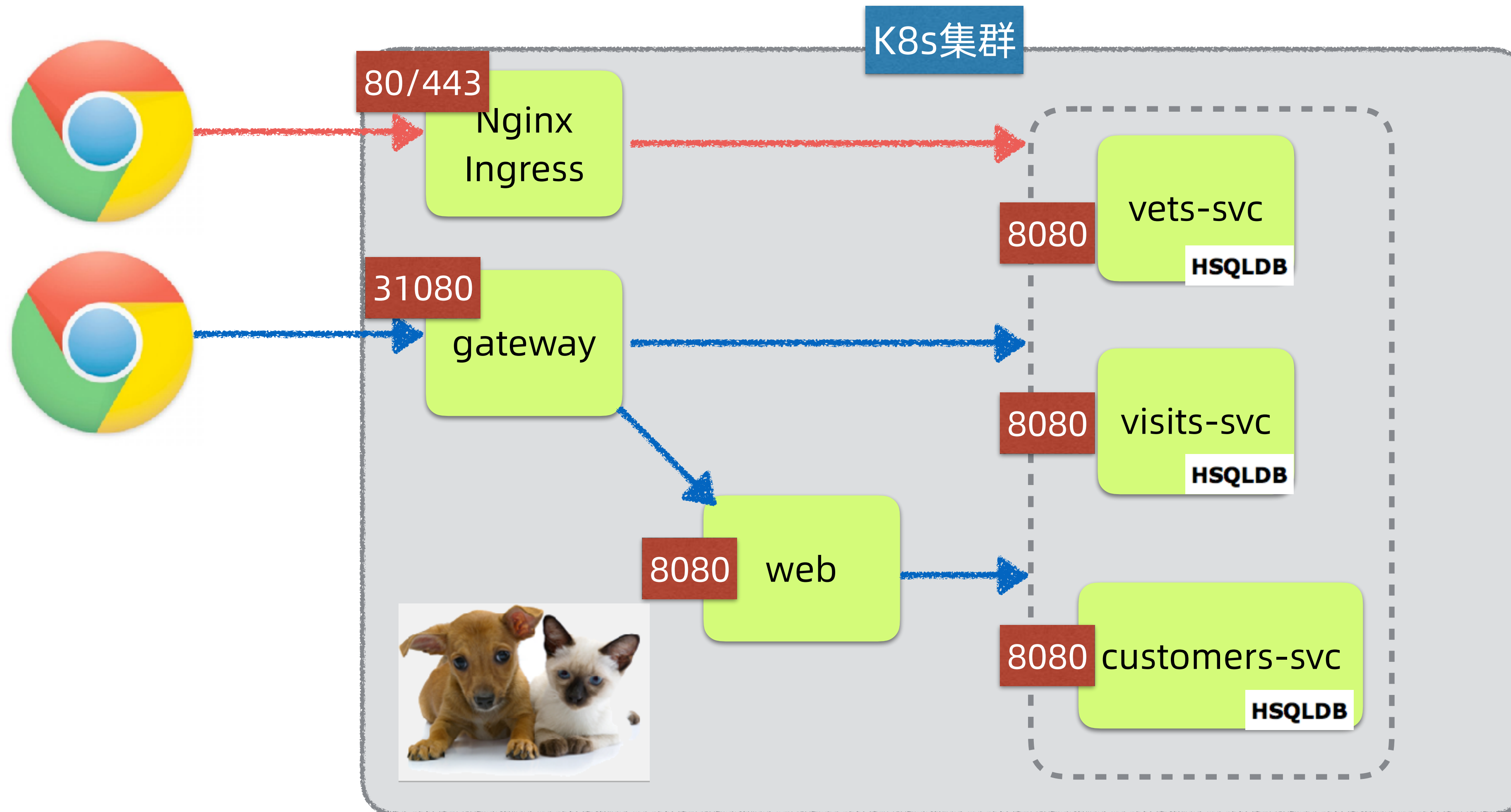
```
1. william@jskill: ~/temp/ingress-nginx/deploy/static/provider (zsh)
→ provider git:(master) kubectl get ns
NAME                STATUS   AGE
default             Active  128d
docker              Active  128d
ingress-nginx       Active  66s
kube-node-lease     Active  128d
kube-public         Active  128d
kube-system         Active  128d
kubernetes-dashboard Active  23d
→ provider git:(master) kubectl get all -n ingress-nginx
NAME                                READY   STATUS    RESTARTS   AGE
pod/nginx-ingress-controller-68dfb8cff6-jsvf6  1/1     Running   0          77s

NAME                TYPE           CLUSTER-IP   EXTERNAL-IP   PORT(S)                                     AGE
service/ingress-nginx  LoadBalancer  10.96.107.213 localhost     80:30303/TCP,443:31506/TCP                57s

NAME                                READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/nginx-ingress-controller  1/1     1            1          77s

NAME                                DESIRED   CURRENT   READY   AGE
replicaset.apps/nginx-ingress-controller-68dfb8cff6  1         1         1       77s
→ provider git:(master) 
```

# 演示设计

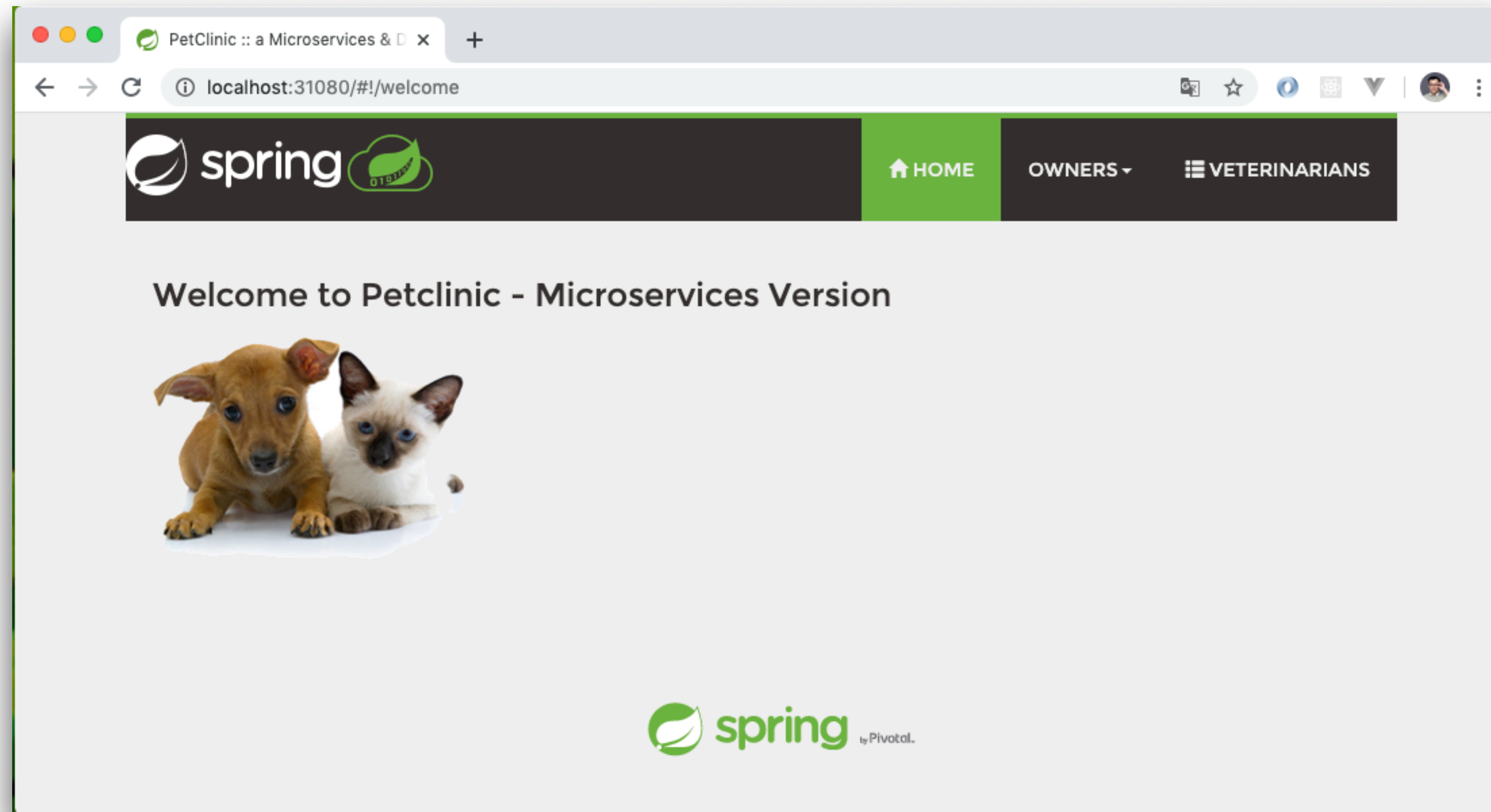


# 发布PetClinic微服务

```
1. william@jskill: ~/mydev/github/spring2go/spring-petclinic-msa/k8s/local (zsh)
/Users/william/mydev/github/spring2go/spring-petclinic-msa/k8s/local
→ local git:(master) x ls
customers-svc.yml gateway-svc.yml ingress vets-svc.yml visits-svc.yml web-app.yml
→ local git:(master) x kubectl apply -f .
deployment.apps/customers created
service/customers created
deployment.apps/gateway created
service/gateway created
deployment.apps/vets created
service/vets created
deployment.apps/visits created
service/visits created
deployment.apps/web created
service/web created
→ local git:(master) x kubectl get po
NAME                                READY   STATUS    RESTARTS   AGE
customers-568f485f8d-9c2pv          1/1     Running   0           9s
gateway-558d7f976c-s7ldz            1/1     Running   0           9s
vets-8bf75546c-dsxpg                1/1     Running   0           9s
visits-66d7799799-md6jd             0/1     Running   0           9s
web-6d46d5c849-wxcj5                1/1     Running   0           9s
→ local git:(master) x
```



# 通过NodePort校验PetClinic微服务

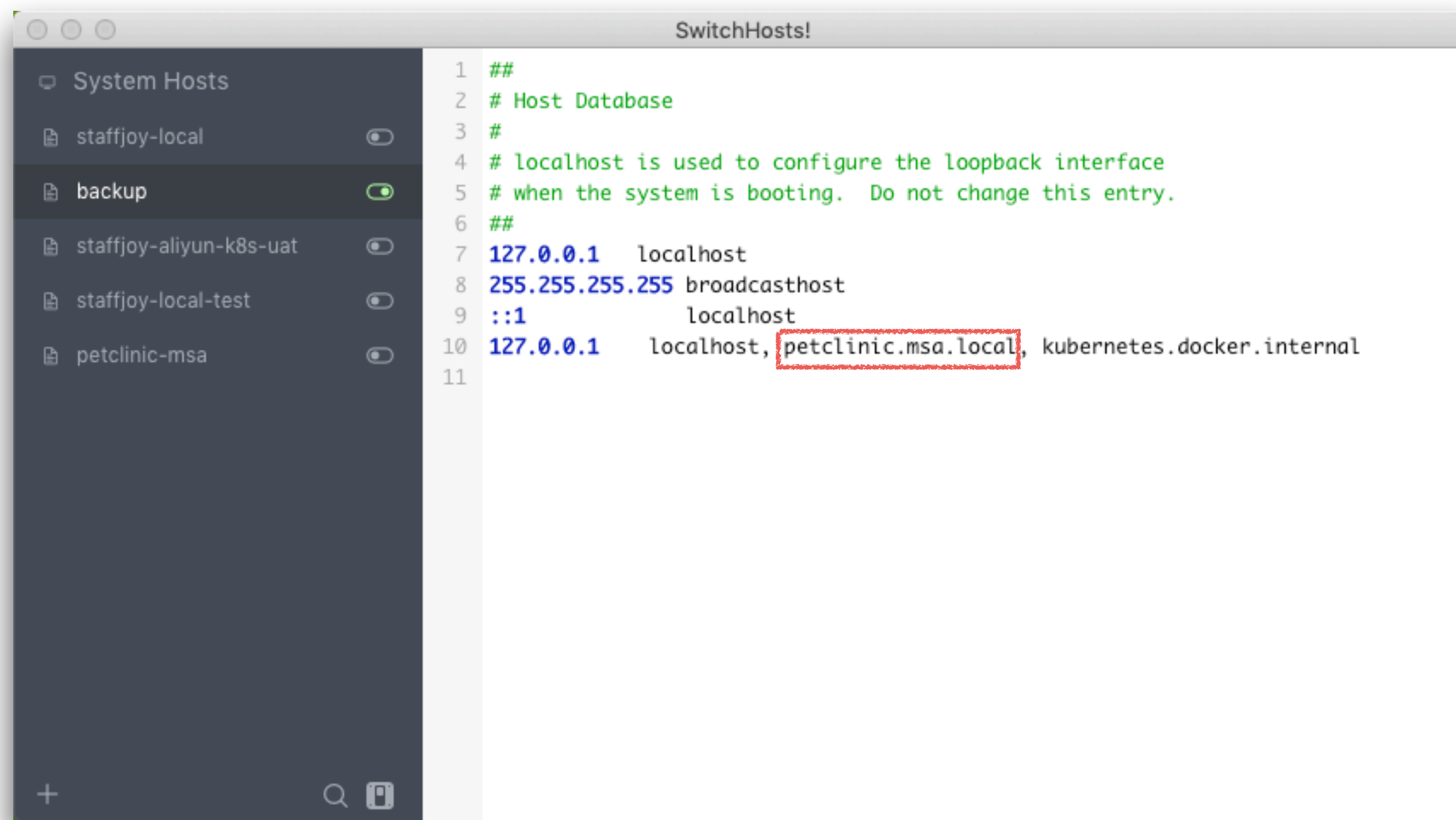


# Ingress发布文件

```
application.yml x
Document 1/1 > spring: > cloud: > gateway: > routes: > Item 5/5 > predicates: > Item 1/1
1  server:
2    port: 8080
3
4  spring:
5    cloud:
6      gateway:
7        routes:
8          - id: api-bff
9            uri: ${WEB_APP_ENDPOINT:http://localhost:8081}
10           predicates:
11             - Path=/api/bff/**
12          - id: vets-service
13            uri: ${VETS_SERVICE_ENDPOINT:http://localhost:8082}
14           predicates:
15             - Path=/api/vet/**
16           filters:
17             - StripPrefix=2
18          - id: visits-service
19            uri: ${VISITS_SERVICE_ENDPOINT:http://localhost:8083}
20           predicates:
21             - Path=/api/visit/**
22           filters:
23             - StripPrefix=2
24          - id: customers-service
25            uri: ${CUSTOMERS_SERVICE_ENDPOINT:http://localhost:8084}
26           predicates:
27             - Path=/api/customer/**
28           filters:
29             - StripPrefix=2
30          - id: web-app
31            uri: ${WEB_APP_ENDPOINT:http://localhost:8081}
32           predicates:
33             - Path=/**
34
```

```
1  apiVersion: networking.k8s.io/v1beta1
2  kind: Ingress
3  metadata:
4    annotations:
5      nginx.ingress.kubernetes.io/rewrite-target: /$2
6    name: petclinic-msa-ingress
7    namespace: default
8  spec:
9    rules:
10     - host: petclinic.msa.local
11       http:
12         paths:
13           - path: /api/vet(/|$)(.*)
14             backend:
15               serviceName: vets
16               servicePort: 8080
17           - path: /api/customer(/|$)(.*)
18             backend:
19               serviceName: customers
20               servicePort: 8080
```

# 配置SwitchHosts域名



<https://github.com/oldj/SwitchHosts>

# 发布Ingress暴露PetClinic微服务

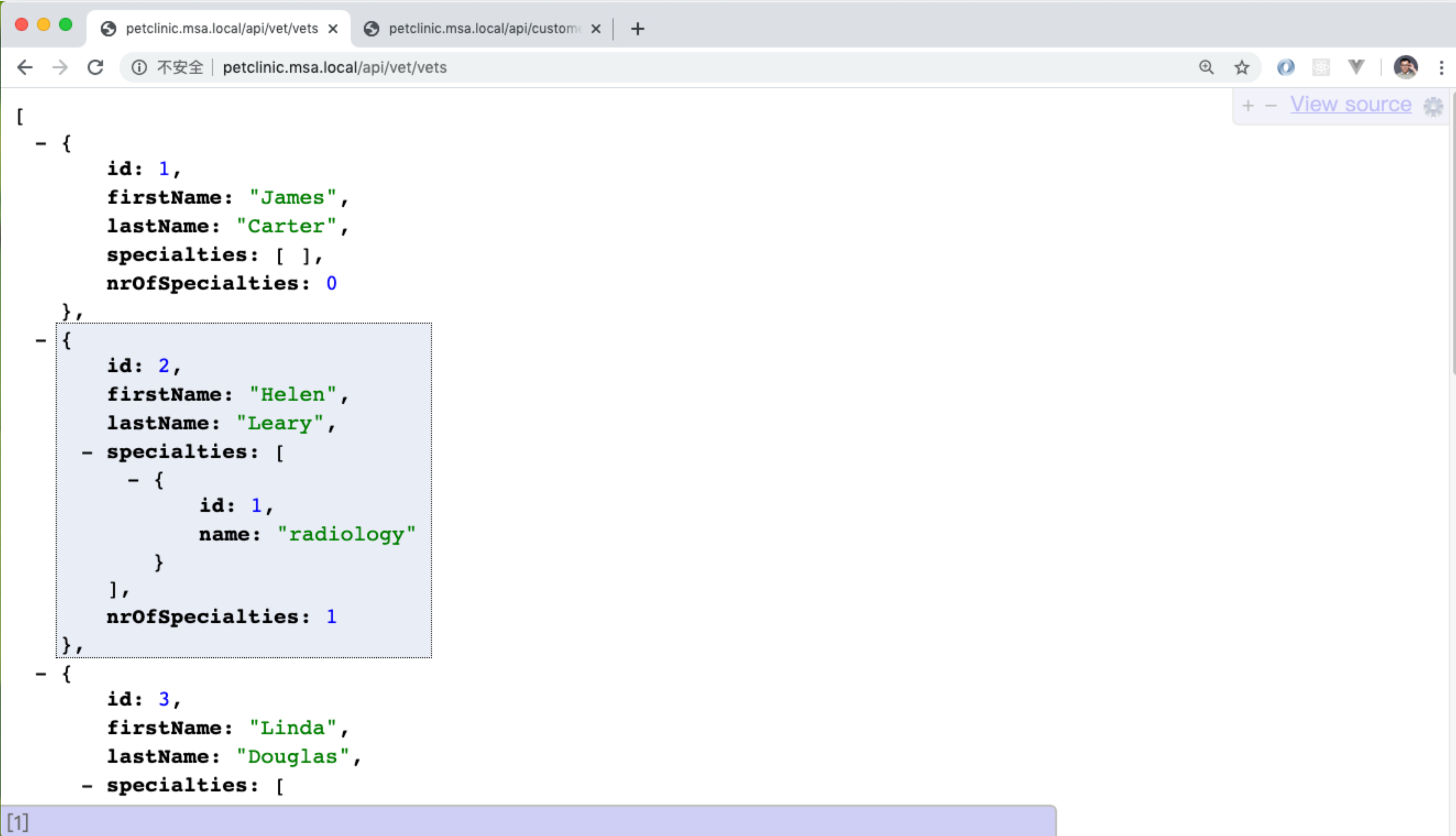
```
1. william@jskill: ~/mydev/github/spring2go/spring-petclinic-msa/k8s/local/ingress (zsh)
→ local git:(master) x ls
customers-svc.yml ingress visits-svc.yml
gateway-svc.yml vets-svc.yml web-app.yml
→ local git:(master) x cd ingress
→ ingress git:(master) x pwd
/Users/william/mydev/github/spring2go/spring-petclinic-msa/k8s/local/ingress
→ ingress git:(master) x ls
ingress.yml
→ ingress git:(master) x kubectl apply -f .
ingress.networking.k8s.io/petclinic-msa-ingress created
→ ingress git:(master) x kubectl get ing
NAME                                HOSTS                ADDRESS      PORTS    AGE
petclinic-msa-ingress              petclinic.msa.local 80           8s
→ ingress git:(master) x
```



# 查看Ingress详情

```
1. william@jskill: ~/mydev/github/spring2go/spring-petclinic-msa/k8s/local/ingress (zsh)
→ ingress git:(master) x kubectl describe ing
Name:                petclinic-msa-ingress
Namespace:           default
Address:             localhost
Default backend:     default-http-backend:80 (<none>)
Rules:
  Host                Path      Backends
  ----                -
  petclinic.msa.local /api/vet(/|$)(.*)    vets:8080 (10.1.7.147:8080)
                     /api/customer(/|$)(.*) customers:8080 (10.1.7.146:8080)
Annotations:
  kubectl.kubernetes.io/last-applied-configuration: {"apiVersion":"networking.k8s.io/v1beta1","kind":"Ingress","metadata":{"annotations":{"nginx.ingress.kubernetes.io/rewrite-target":"/$2"},"name":"petclinic-msa-ingress","namespace":"default"},"spec":{"rules":[{"host":"petclinic.msa.local","http":{"paths":[{"backend":{"serviceName":"vets","servicePort":8080},"path":"/api/vet(/|$)(.*)"}, {"backend":{"serviceName":"customers","servicePort":8080},"path":"/api/customer(/|$)(.*)"}]}}]}}
  nginx.ingress.kubernetes.io/rewrite-target:  /$2
Events:
  Type    Reason    Age   From                      Message
  ----    -
  Normal  CREATE    15m   nginx-ingress-controller  Ingress default/petclinic-msa-ingress
  Normal  UPDATE    15m   nginx-ingress-controller  Ingress default/petclinic-msa-ingress
→ ingress git:(master) x
```

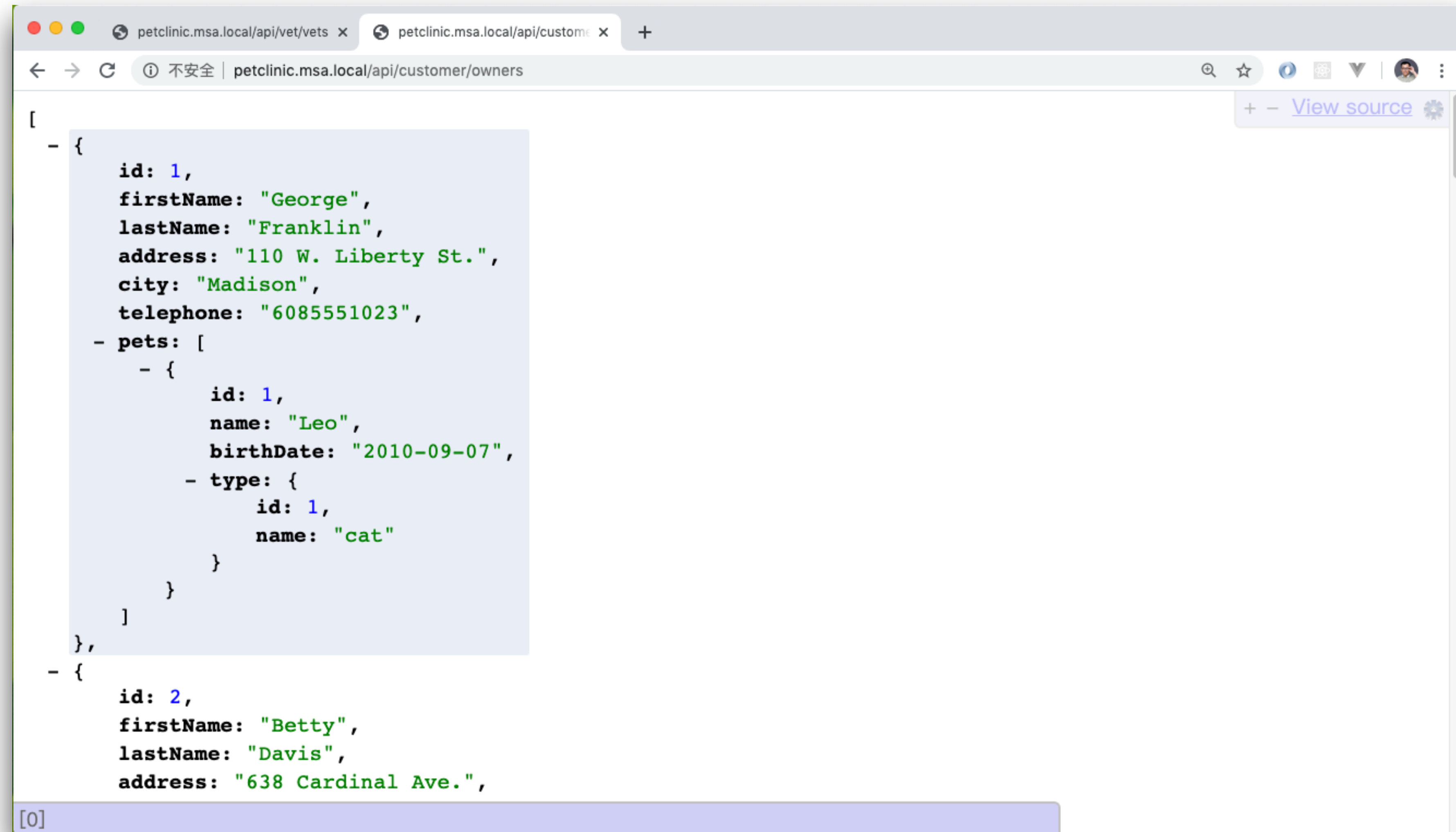
# 校验通过Ingress访问vet微服务



```
[
  - {
    id: 1,
    firstName: "James",
    lastName: "Carter",
    specialties: [ ],
    nrOfSpecialties: 0
  },
  - {
    id: 2,
    firstName: "Helen",
    lastName: "Leary",
    - specialties: [
      - {
        id: 1,
        name: "radiology"
      }
    ],
    nrOfSpecialties: 1
  },
  - {
    id: 3,
    firstName: "Linda",
    lastName: "Douglas",
    - specialties: [
```

[1]

# 校验通过Ingress访问customer微服务



```
[
  - {
    id: 1,
    firstName: "George",
    lastName: "Franklin",
    address: "110 W. Liberty St.",
    city: "Madison",
    telephone: "6085551023",
    - pets: [
      - {
        id: 1,
        name: "Leo",
        birthDate: "2010-09-07",
        - type: {
          id: 1,
          name: "cat"
        }
      }
    ]
  },
  - {
    id: 2,
    firstName: "Betty",
    lastName: "Davis",
    address: "638 Cardinal Ave.",
  }
]
```

[0]

# 环境清理

```
1. william@jskill: ~/mydev/github/spring2go/spring-petclinic-msa/k8s/local (zsh)
→ ingress git:(master) ✕ ls
ingress.yml
→ ingress git:(master) ✕ kubectl delete -f .
ingress.networking.k8s.io "petclinic-msa-ingress" deleted
→ ingress git:(master) ✕ cd ..
→ local git:(master) ✕ pwd
/Users/william/mydev/github/spring2go/spring-petclinic-msa/k8s/local
→ local git:(master) ✕ ls
customers-svc.yml ingress visits-svc.yml
gateway-svc.yml vets-svc.yml web-app.yml
→ local git:(master) ✕ kubectl delete -f .
deployment.apps "customers" deleted
service "customers" deleted
deployment.apps "gateway" deleted
service "gateway" deleted
deployment.apps "vets" deleted
service "vets" deleted
deployment.apps "visits" deleted
service "visits" deleted
deployment.apps "web" deleted
service "web" deleted
→ local git:(master) ✕ kubectl get ing
No resources found.
→ local git:(master) ✕ kubectl get po
No resources found.
→ local git:(master) ✕
```



# 本课小结



- 演示本地安装Nginx IngressController
  - 可以作为本地演示用LB
  - 公有云部署需配合专门的前置LB，详参考文档
- 暴露微服务的两种方式
  - 微服务网关
  - K8s Ingress
- 本地暴露服务的两种方式
  - NodePort(30000~32767)
  - Ingress(80/443)