

第

6

节

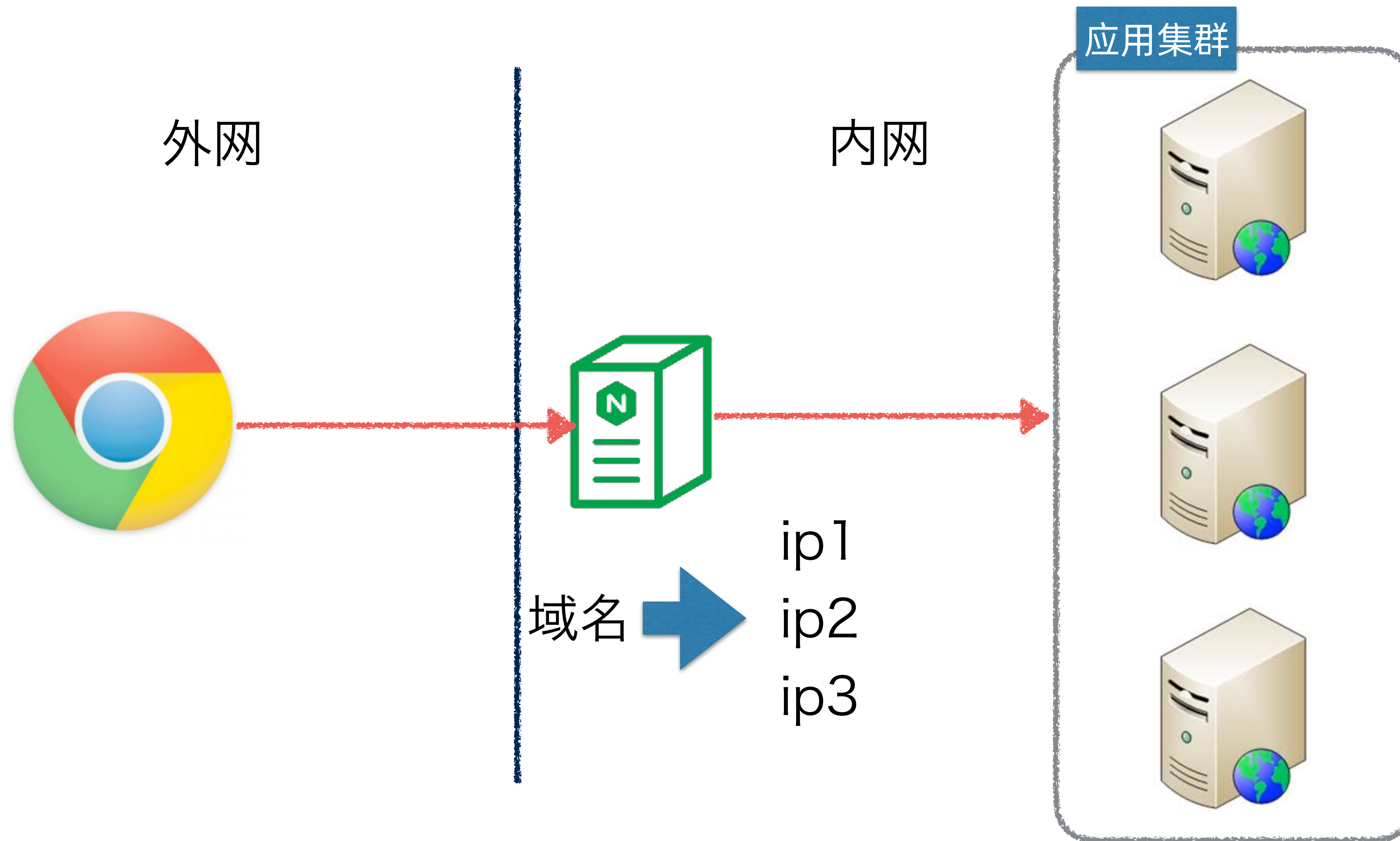
应用集群抽象 ~ ReplicaSet

本课内容

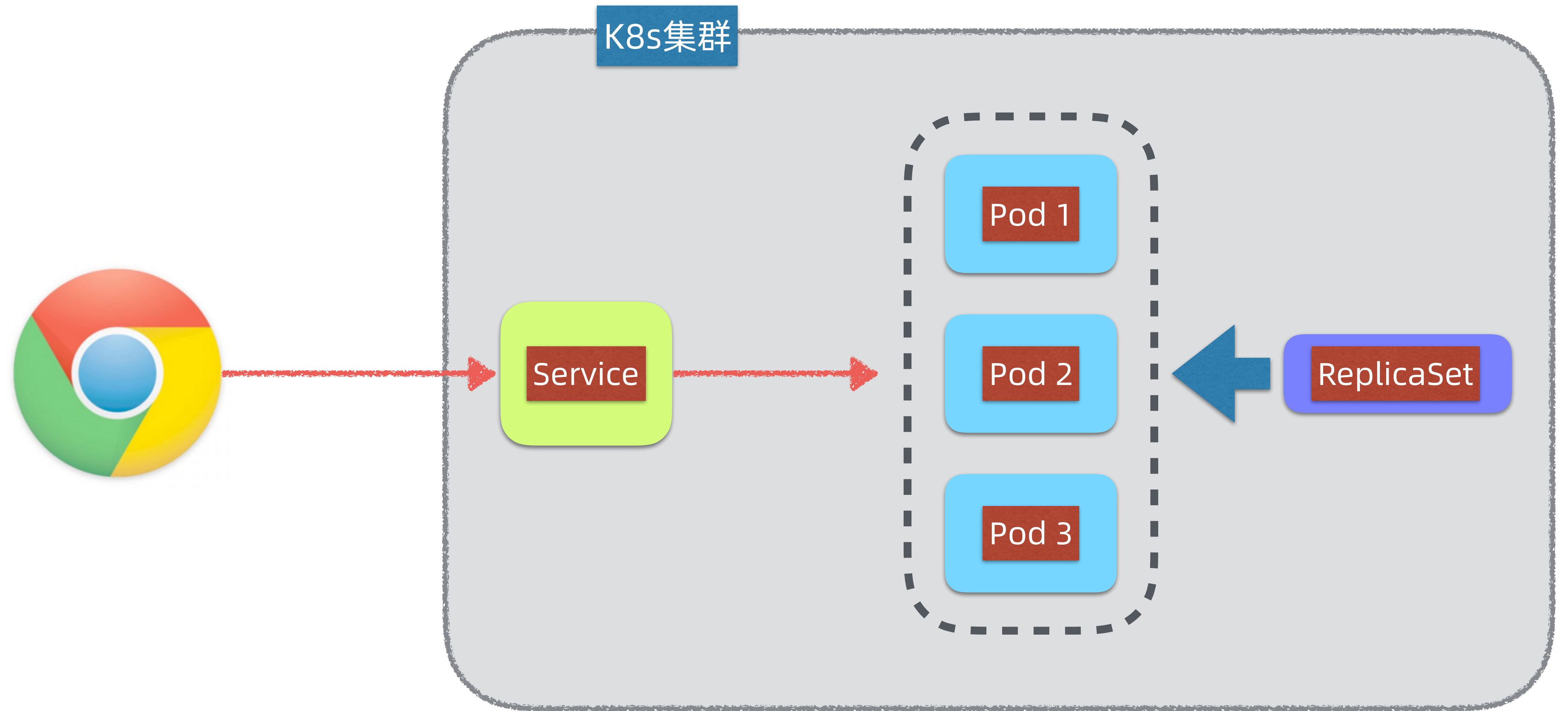
- K8s ReplicaSet副本集原理
- 演示通过ReplicaSet实现PetClinic应用集群



应用集群



副本集ReplicaSet



ReplicaSet发布规范样例

ReplicaSet v1 apps

kubectl example

curl example

ReplicaSet Config to run 3 nginx instances.

```
apiVersion: extensions/v1beta1
kind: ReplicaSet
metadata:
  # Unique key of the ReplicaSet instance
  name: replicaset-example
spec:
  # 3 Pods should exist at all times.
  replicas: 3
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
        # Run the nginx image
        - name: nginx
          image: nginx:1.10
```

<https://kubernetes.io/docs/reference/generated/kubernetes-api/v1.14/#replicaset-v1-apps>

petclinic-replicaset.yml

```
1  apiVersion: extensions/v1beta1
2  kind: ReplicaSet
3  metadata:
4    name: petclinic
5  spec:
6    replicas: 3
7    template:
8      metadata:
9        labels:
10         app: petclinic
11      spec:
12        containers:
13         - name: petclinic
14           image: spring2go/spring-petclinic:1.0.0.RELEASE
```


petclinic-service.yml

```
1  apiVersion: v1
2  kind: Service
3  metadata:
4    name: petclinic
5  spec:
6    ports:
7      - name: http
8        port: 8080
9        targetPort: 8080
10       nodePort: 31080
11    selector:
12      app: petclinic
13    type: NodePort
```

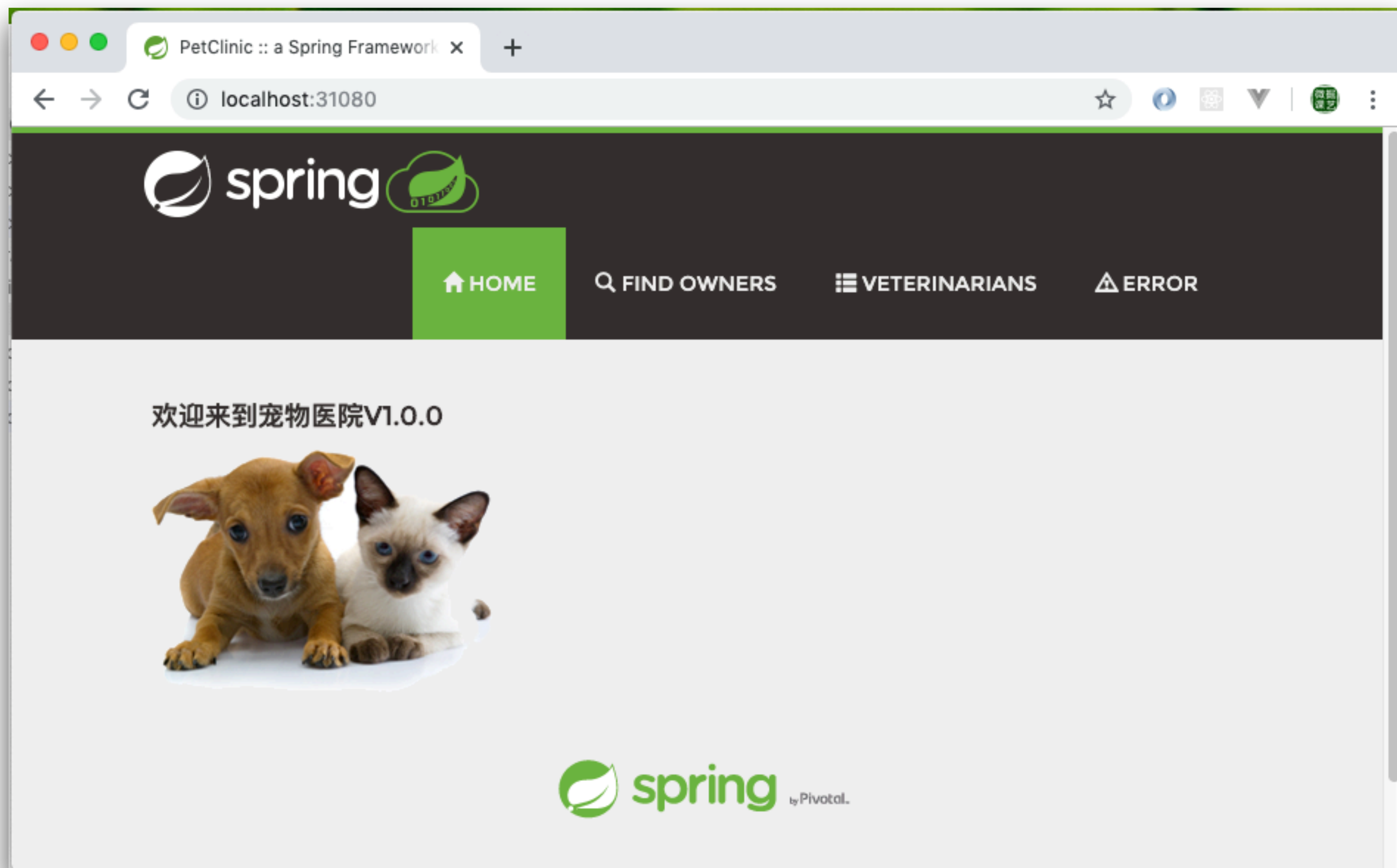
发布PetClinic ReplicaSet + Service

```
1. william@jskill: ~/csdn/k8s-msa-in-action/ch05/06 (zsh)
→ 06 git:(master) x clear
→ 06 git:(master) x kubectl get all
NAME                                TYPE                CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
service/kubernetes                 ClusterIP           10.96.0.1       <none>           443/TCP          14h
→ 06 git:(master) x kubectl apply -f .
replicaset.extensions/petclinic created
service/petclinic created
→ 06 git:(master) x kubectl get all
NAME                                READY    STATUS    RESTARTS   AGE
pod/petclinic-cbfpt                 1/1     Running   0           4s
pod/petclinic-r5hdz                 1/1     Running   0           4s
pod/petclinic-tbqp2                 1/1     Running   0           4s

NAME                                TYPE                CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
service/kubernetes                 ClusterIP           10.96.0.1       <none>           443/TCP          14h
service/petclinic                  NodePort            10.103.217.164  <none>           8080:31080/TCP   4s

NAME                                DESIRED    CURRENT    READY    AGE
replicaset.apps/petclinic           3          3          3        4s
→ 06 git:(master) x
```


PetClinic正常运行



手动删除一个Pod

```
1. william@jskill: ~/csdn/k8s-msa-in-action/ch05/06 (zsh)
→ 06 git:(master) x kubectl get all
NAME                                READY    STATUS    RESTARTS   AGE
pod/petclinic-cbfpt                 1/1     Running   0           2m
pod/petclinic-r5hdz                 1/1     Running   0           2m
pod/petclinic-tbqp2                 1/1     Running   0           2m

NAME                                TYPE          CLUSTER-IP    EXTERNAL-IP  PORT(S)          AGE
service/kubernetes                  ClusterIP     10.96.0.1     <none>       443/TCP          14h
service/petclinic                   NodePort      10.103.217.164 <none>       8080:31080/TCP   2m

NAME                                DESIRED    CURRENT    READY    AGE
replicaset.apps/petclinic           3          3          3        2m
→ 06 git:(master) x kubectl delete po petclinic-cbfpt
pod "petclinic-cbfpt" deleted
→ 06 git:(master) x kubectl get all
NAME                                READY    STATUS    RESTARTS   AGE
pod/petclinic-8l6rd                 1/1     Running   0           5s
pod/petclinic-r5hdz                 1/1     Running   0          2m37s
pod/petclinic-tbqp2                 1/1     Running   0          2m37s

NAME                                TYPE          CLUSTER-IP    EXTERNAL-IP  PORT(S)          AGE
service/kubernetes                  ClusterIP     10.96.0.1     <none>       443/TCP          14h
service/petclinic                   NodePort      10.103.217.164 <none>       8080:31080/TCP   2m37s

NAME                                DESIRED    CURRENT    READY    AGE
replicaset.apps/petclinic           3          3          3        2m37s
```

手动删除所有Pod

```
1. william@jskill: ~/csdn/k8s-msa-in-action/ch05/06 (zsh)
pod/petclinic-r5hdz 1/1 Running 0 5m6s
pod/petclinic-tbqp2 1/1 Running 0 5m6s

NAME                TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
service/kubernetes  ClusterIP     10.96.0.1     <none>         443/TCP          14h
service/petclinic   NodePort      10.103.217.164 <none>         8080:31080/TCP   5m6s

NAME                DESIRED  CURRENT  READY  AGE
replicaset.apps/petclinic  3        3        3      5m6s
→ 06 git:(master) ✕ kubectl delete po --all
pod "petclinic-8l6rd" deleted
pod "petclinic-r5hdz" deleted
pod "petclinic-tbqp2" deleted
→ 06 git:(master) ✕ kubectl get all
NAME                READY  STATUS    RESTARTS  AGE
pod/petclinic-9w9b7  1/1    Running   0         7s
pod/petclinic-bmfhg  1/1    Running   0         7s
pod/petclinic-j8gtp  1/1    Running   0         7s

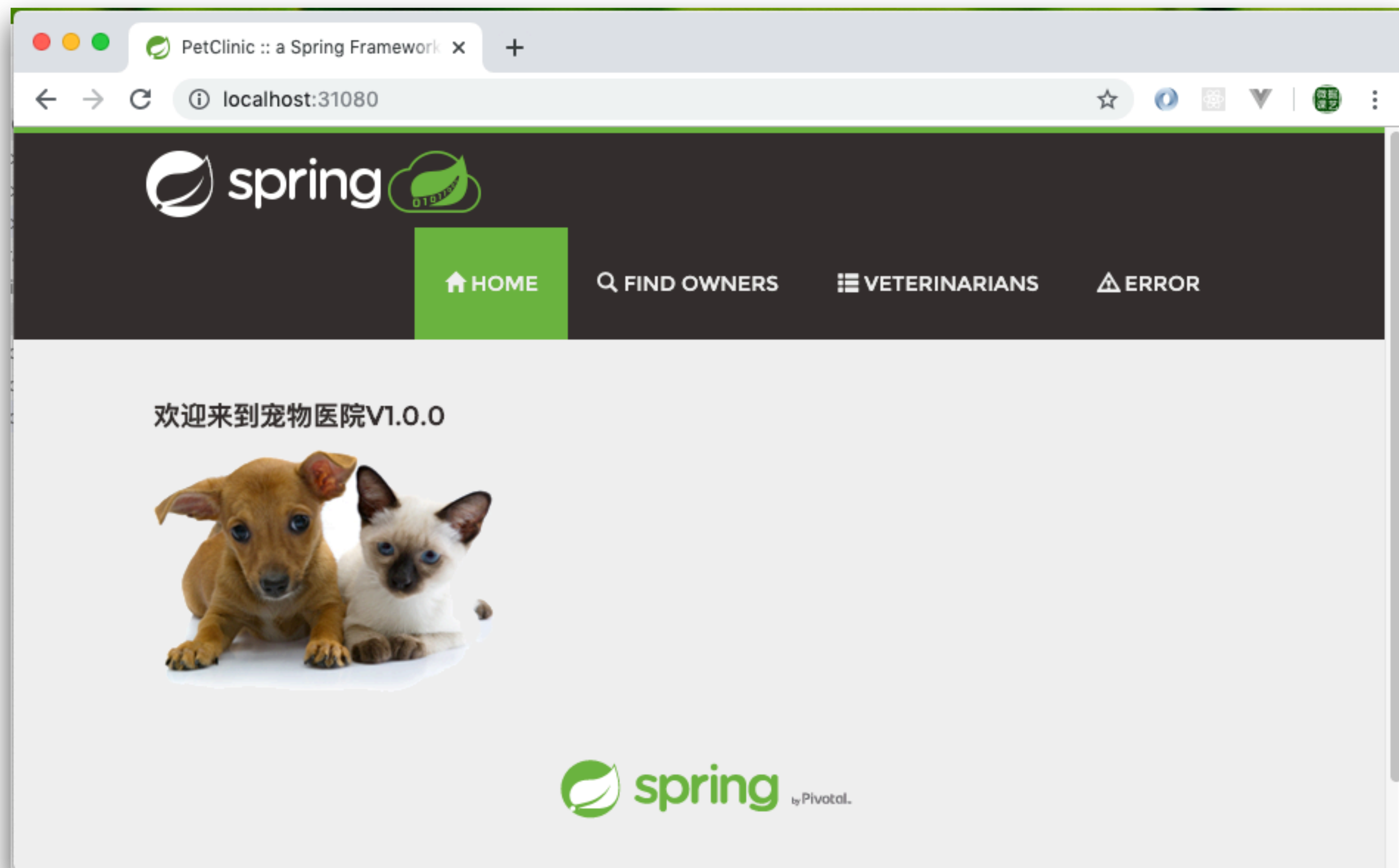
NAME                TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
service/kubernetes  ClusterIP     10.96.0.1     <none>         443/TCP          14h
service/petclinic   NodePort      10.103.217.164 <none>         8080:31080/TCP   5m55s

NAME                DESIRED  CURRENT  READY  AGE
replicaset.apps/petclinic  3        3        3      5m55s
→ 06 git:(master) ✕
```


查看ReplicaSet 资源详情

```
1. william@jskill: ~/csdn/k8s-msa-in-action/ch05/06 (zsh)
→ 06 git:(master) x kubectl describe rs petclinic
Name:          petclinic
Namespace:     default
Selector:      app=petclinic
Labels:        app=petclinic
Annotations:   kubectl.kubernetes.io/last-applied-configuration:
                {"apiVersion":"extensions/v1beta1","kind":"ReplicaSet","metadata":{"annotati
                ons":{"name":"petclinic","namespace":"default"},"spec":{"rep...
Replicas:      3 current / 3 desired
Pods Status:   3 Running / 0 Waiting / 0 Succeeded / 0 Failed
Pod Template:
  Labels:  app=petclinic
  Containers:
    petclinic:
      Image:   spring2go/spring-petclinic:1.0.0.RELEASE
      Port:    <none>
      Host Port: <none>
      Environment: <none>
      Mounts:    <none>
      Volumes:   <none>
Events:
  Type      Reason            Age   From                  Message
  ----      -
  Normal    SuccessfulCreate   6m35s replicaset-controller Created pod: petclinic-cbfpt
  Normal    SuccessfulCreate   6m35s replicaset-controller Created pod: petclinic-tbqp2
  Normal    SuccessfulCreate   6m35s replicaset-controller Created pod: petclinic-r5hdz
  Normal    SuccessfulCreate   4m3s  replicaset-controller Created pod: petclinic-8l6rd
  Normal    SuccessfulCreate   47s   replicaset-controller Created pod: petclinic-j8gtp
  Normal    SuccessfulCreate   47s   replicaset-controller Created pod: petclinic-9w9b7
  Normal    SuccessfulCreate   47s   replicaset-controller Created pod: petclinic-bmfhg
→ 06 git:(master) x
```

PetClinic正常运行



删除ReplicaSet

```
1. william@jskill: ~/csdn/k8s-msa-in-action/ch05/06 (zsh)
→ 06 git:(master) x kubectl get all
NAME                                READY    STATUS    RESTARTS   AGE
pod/petclinic-2xqhb                1/1     Running   0           2m8s
pod/petclinic-jbtqb                1/1     Running   0           2m8s
pod/petclinic-wrnqq                1/1     Running   0           2m8s

NAME                                TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
service/kubernetes                 ClusterIP     10.96.0.1     <none>         443/TCP          14h
service/petclinic                  NodePort      10.103.217.164 <none>         8080:31080/TCP   11m

NAME                                DESIRED   CURRENT   READY   AGE
replicaset.apps/petclinic           3         3         3       11m
→ 06 git:(master) x kubectl delete rs petclinic
replicaset.extensions "petclinic" deleted
→ 06 git:(master) x kubectl get all
NAME                                READY    STATUS    RESTARTS   AGE
pod/petclinic-2xqhb                0/1     Terminating 0         2m24s
pod/petclinic-jbtqb                0/1     Terminating 0         2m24s
pod/petclinic-wrnqq                0/1     Terminating 0         2m24s

NAME                                TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
service/kubernetes                 ClusterIP     10.96.0.1     <none>         443/TCP          14h
service/petclinic                  NodePort      10.103.217.164 <none>         8080:31080/TCP   11m
→ 06 git:(master) x kubectl get all
NAME                                TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
service/kubernetes                 ClusterIP     10.96.0.1     <none>         443/TCP          14h
service/petclinic                  NodePort      10.103.217.164 <none>         8080:31080/TCP   11m
→ 06 git:(master) x kubectl delete svc petclinic
service "petclinic" deleted
→ 06 git:(master) x
```

本课小结



- K8s中的ReplicaSet副本集可以实现应用集群
- 发布规范
 - kind: ReplicaSet
 - apiVersion: extensions/v1beta1
- ReplicaSet具有自愈(self-healing)能力