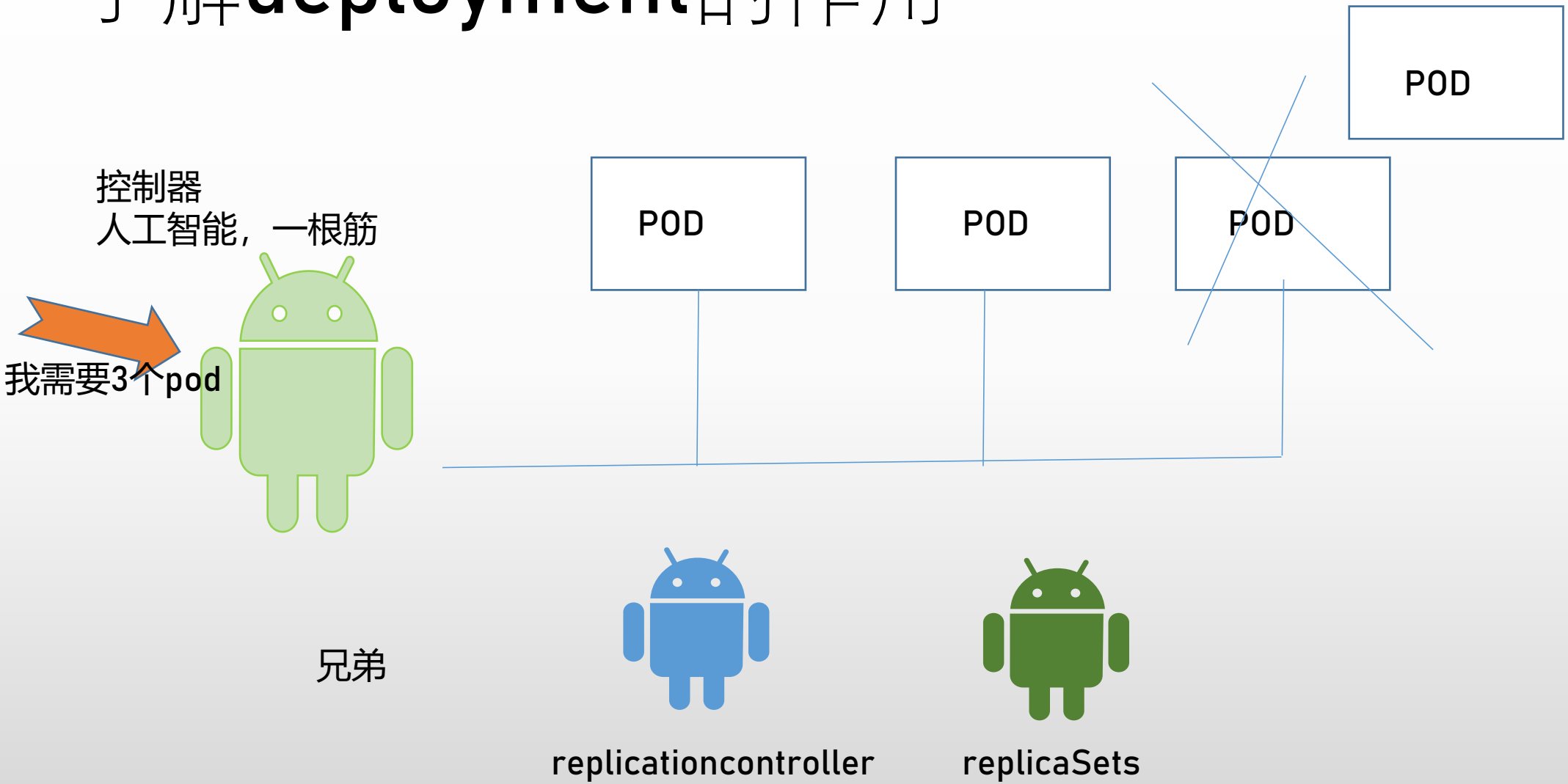
CKA-deployment

讲师： 老段 RHCE/RHCA/COA/CKA

大纲

- 了解deployment的作用
- 创建deployment
- 修改副本数
- 滚动更新
- 水平自动更新

了解deployment的作用



deployment命令行管理

kubectl get deployments

kubectl run nginx --image=nginx --dry-run -o yaml

kubectl run nginx --image=nginx --replicas=5

kubectl run name --image=nginx --port=80

kubectl run name --image=nginx --env="env1=v2" --env="env2=v2"

kubectl run name --image=nginx --labels="app=hazelcast,env=prod"

用yaml文件创建deployment

```
apiVersion: extensions/v1beta1
kind: Deployment
metadata:
  name: nginx
  namespace: default
spec:
  replicas: 2
  selector:
    matchLabels:
      run: nginx
  template:
    metadata:
      labels:
        run: nginx
    spec:
      containers:
      - image: nginx
        imagePullPolicy: Always
        name: nginx
      restartPolicy: Always
```

修改副本数

修改副本数
kubectl scale deployment nginx --replicas=20

或者
kubectl edit deployment nginx

修改yaml文件

kubectl apply -f xxxx.yaml

kubernetes应用-deployment-健壮性测试

- 把node2关机，等一段时间就会发现，pod都会在node1上运行

```
[root@master ~]# kubectl get pods -o wide
NAME                     READY     STATUS              RESTARTS   AGE       IP            NODE
nginx-65899c769f-clpzw   1/1       Unknown             0          6m        10.244.2.9    node2
nginx-65899c769f-pbr6q   0/1       ContainerCreating   0          7s        <none>        node1
nginx-65899c769f-xgb2l   1/1       Running             0          6m        10.244.1.6    node1
[root@master ~]#
```

```
[root@master ~]# kubectl get pods -o wide
NAME                     READY     STATUS    RESTARTS   AGE       IP            NODE
nginx-65899c769f-clpzw   1/1       Unknown   0          7m        10.244.2.9    node2
nginx-65899c769f-pbr6q   1/1       Running   0          37s       10.244.1.7    node1
nginx-65899c769f-xgb2l   1/1       Running   0          7m        10.244.1.6    node1
[root@master ~]#
```

- 当node2重新启动，pod并不会返回到node2上运行

kubernetes-滚动升级

修改**deployment**副本数为**5**个

```
[root@master xx]# kubectl get deployment -o wide
NAME      DESIRED   CURRENT   UP-TO-DATE   AVAILABLE   AGE       CONTAINERS   IMAGES    SELECTOR
nginx     5         5         5            5           1d        nginx        nginx     run=nginx
[root@master xx]#
```

kubectl set image deployment/nginx nginx=nginx:1.9 < --record>
kubectl set image deployment/nginx nginx=nginx:1.9 busybox=buxybox:v1
kubectl rollout undo deployment nginx
查看历史记录
kubectl rollout history deployment/nginx
切换到某指定版本
kubectl rollout undo deployment/nginx --to-revision=2

滚动升级

maxSurge
  在升级过程中一次升级几个

maxUnavailable
  在升级过程中，只能有1个不可用

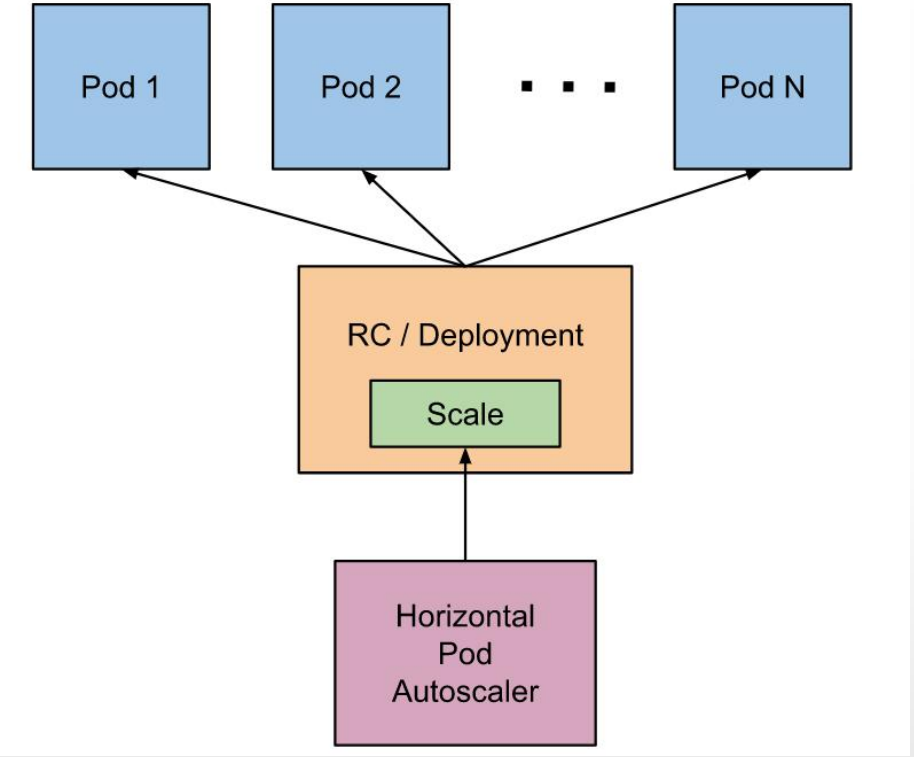
kubectl edit deployment nginx

```
strategy:
  rollingUpdate:
    maxSurge: 3
    maxUnavailable: 1
  type: RollingUpdate
```

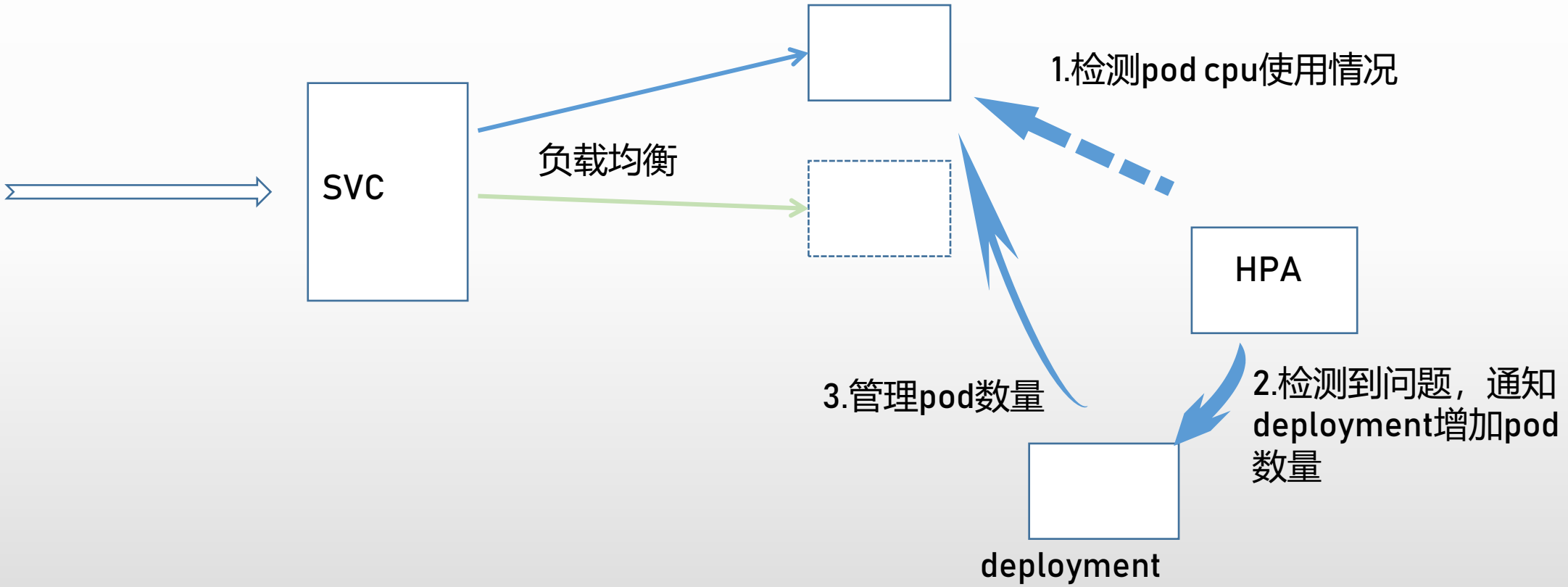
HPA

HPA（horizontal pod autoscalers）水平自动伸缩

通过检测pod CPU的负载，解决deployment里某pod负载太重，动态伸缩pod的数量来负载均衡



应用场景


SVC
负载均衡
1.检测pod cpu使用情况
HPA
2.检测到问题，通知deployment增加pod数量
3.管理pod数量
deployment

kubectl autoscale deployment nginx --min=2 --max=10

kubectl autoscale deployment nginx --max=5 --cpu-percent=80

如果把副本数设置为大于10个运行个数也是10个

设置副本数是小于2个，运行为2个

如果某pod的负载太重，则会调整pod数目，

kubectl get hpa

kubectl delete hpa nginx

解决当前cpu的使用量为unknown

kubectl edit dc nginx

```
containers:
- image: nginx:1.7.9
 imagePullPolicy: Always
 name: nginx
 resources:
  requests:
   cpu: 400m
 ....
```

/etc/kubernetes/manifests

```
- command:
 - kube-controller-manager
 - --address=127.0.0.1
 - --horizontal-pod-autoscaler-use-rest-clients=false
 - --horizontal-pod-autoscaler-sync-period=10s
```

```
[root@vms51 ~]# kubectl get hpa
NAME      REFERENCE          TARGETS    MINPODS   MAXPODS   REPLICAS   AGE
nginx     Deployment/nginx   495%/80%   1         5         4          9m
[root@vms51 ~]#
```

测试HPA

创建一个deployment，副本数为1

修改deployment，增加resource-requests

设置HPA

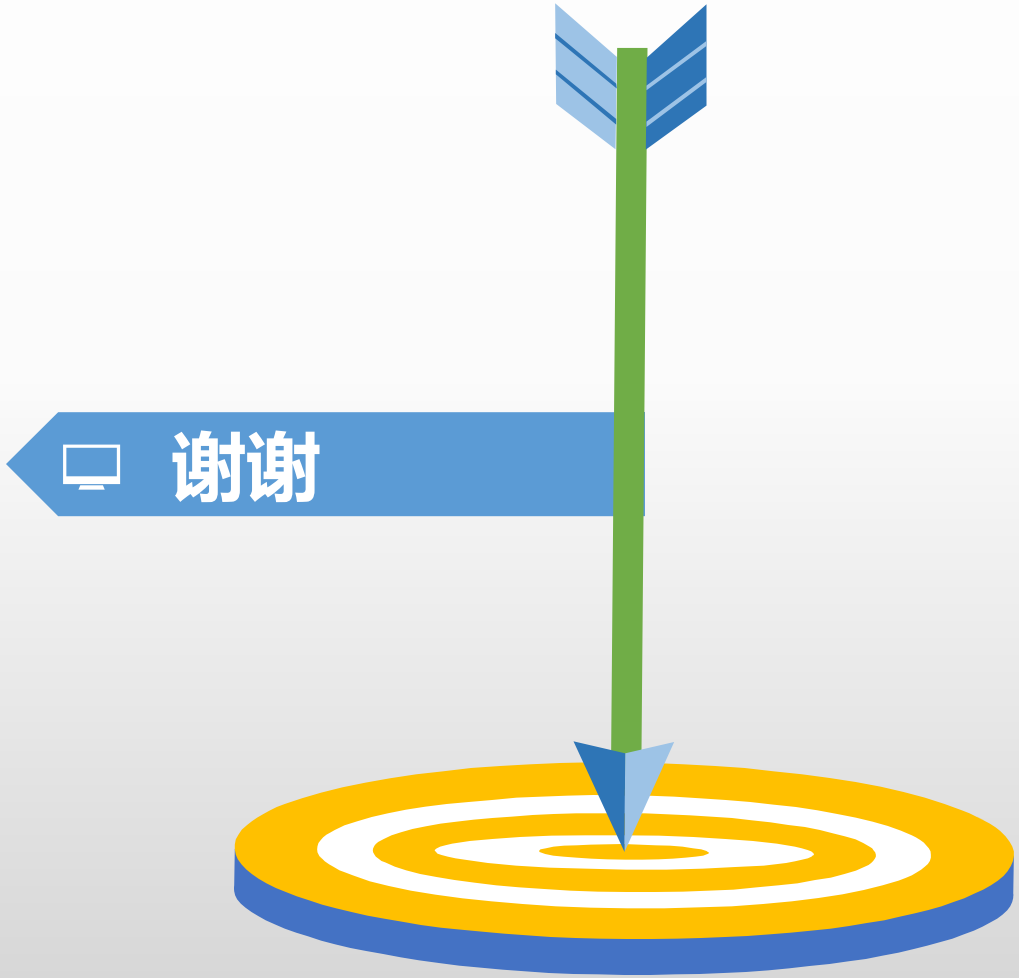
kubectl autoscale deployment nginx --max=5 --cpu-percent=50

进入到某pod里，执行多个cat /dev/zero > /dev/null &

观察pod的数目变化，及hpa的cpu使用量

在物理机里killall -9 cat

观察pod的数目


谢谢