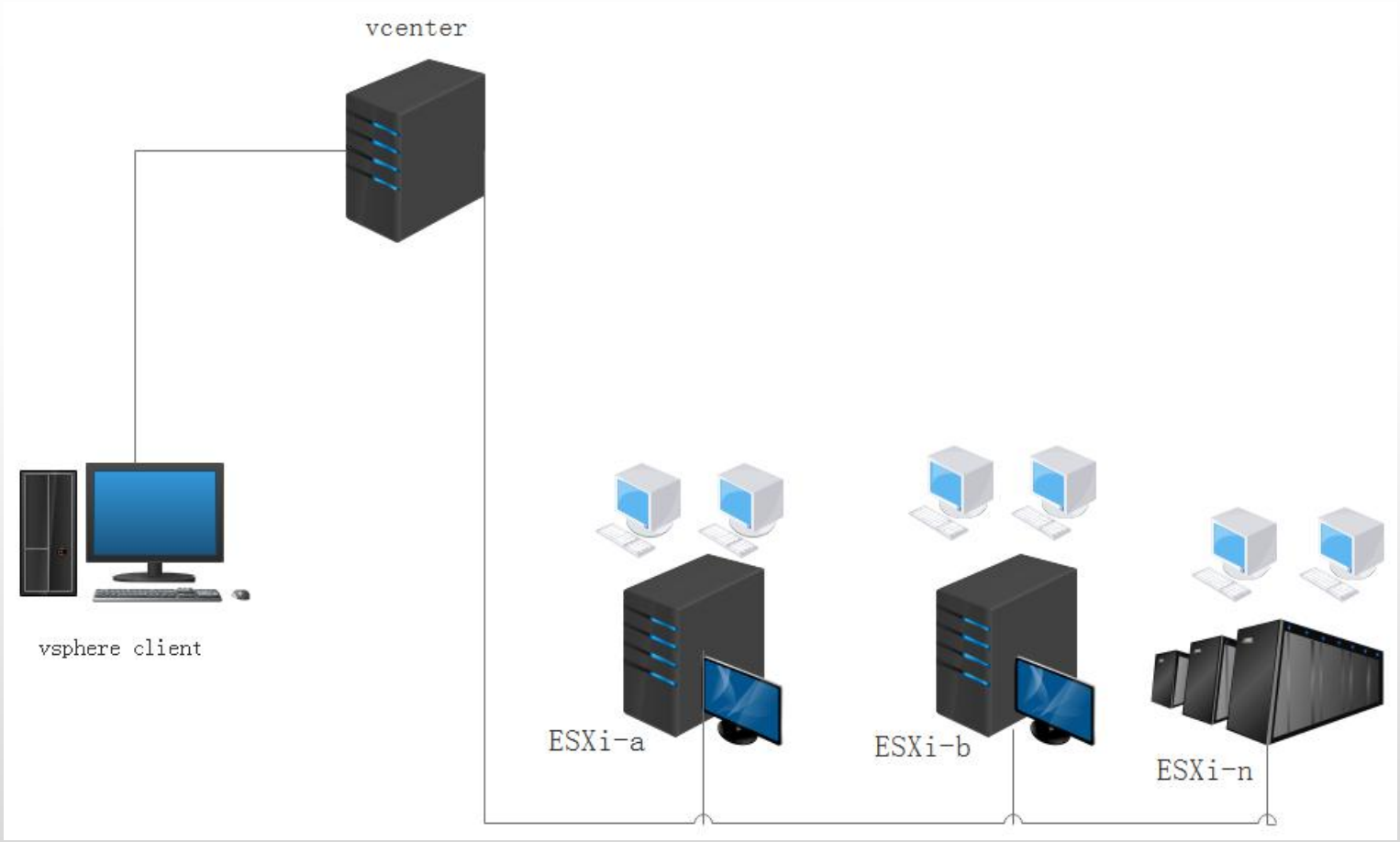
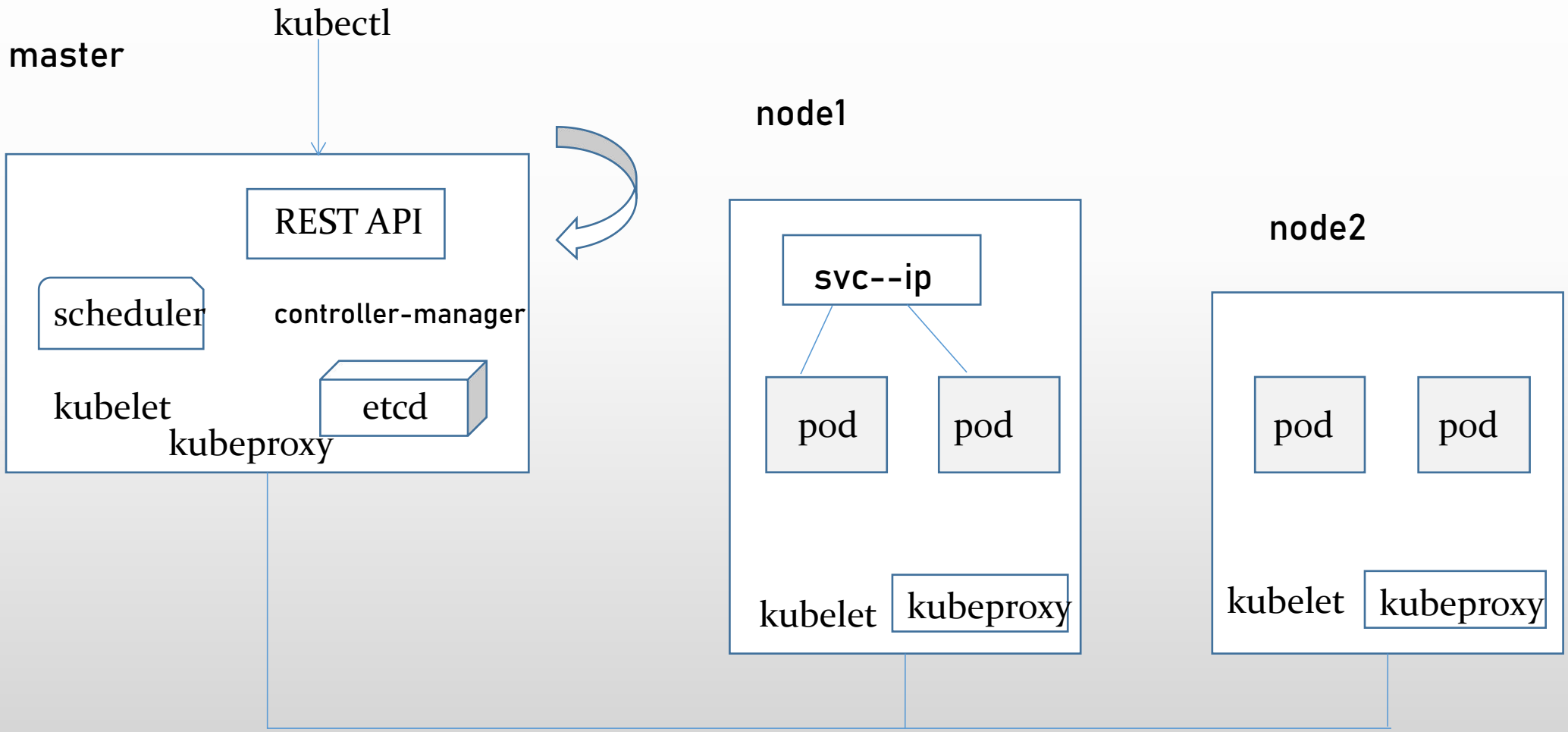
CKA-kubernetes安装

讲师： 老段 RHCE/RHCA/COA/CKA

先了解虚拟化环境框架



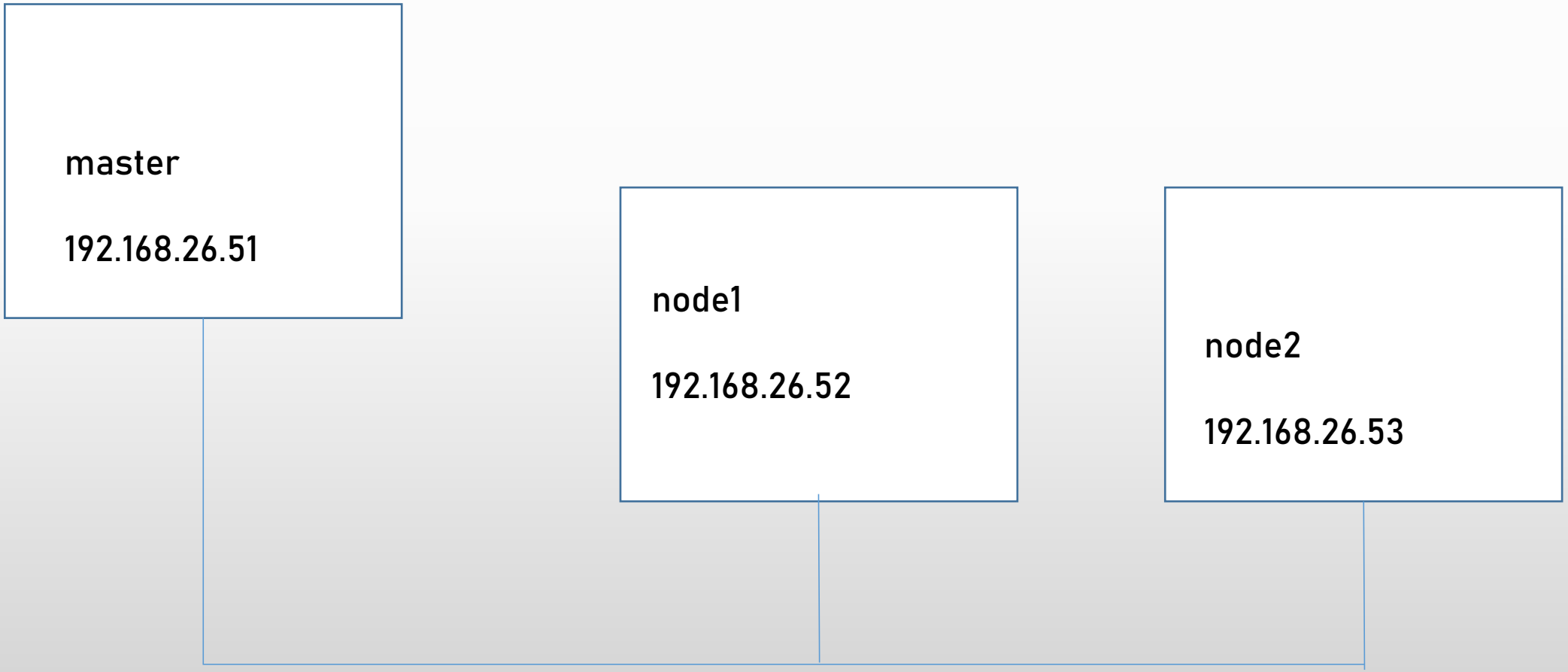
kubernetes框架介绍



概念介绍

- kubectl:客户端命令行工具，将接受的命令格式化后发送给kube-apiserver，作为整个系统的操作入口。
- kube-apiserver:作为整个系统的控制入口，以REST API服务提供接口。
- kube-controller-manager:用来执行整个系统中的后台任务，包括节点状态状况、Pod个数、Pods和Service的关联等。
- kube-scheduler: 负责节点资源管理，接受来自kube-apiserver创建Pods任务，并分配到某个节点。
- etcd:负责节点间的服务发现和配置共享。
- kube-proxy: 运行在每个计算节点上，负责Pod网络代理。定时从etcd获取到service信息来做相应的策略。
- kubelet:运行在每个计算节点上，作为agent，接受分配该节点的Pods任务及管理容器，周期性获取容器状态，反馈给kube-apiserver。

安装kubernetes环境-实验拓扑图



kubeadmin的安装方式

--在master和node上执行

配置系统

关闭防火墙，selinux，配置/etc/hosts，关闭swap,配置yum

安装docker

yum install docker -y，启动docker并设置开机自动启动，导入镜像

设置相关属性

```
cat <<EOF >  /etc/sysctl.d/k8s.conf
net.bridge.bridge-nf-call-ip6tables = 1
net.bridge.bridge-nf-call-iptables = 1
EOF
```

安装kubernetes相关软件包

yum install -y kubelet-1.11.1 kubeadm-1.11.1 kubectl-1.11.1

注意，需要指定版本，否则安装是最新版的

启动服务

```
systemctl restart kubelet ; systemctl enable kubelet
```

kubeadmin的安装方式

--在maser上执行
kubeadm init --kubernetes-version=v1.11.1 --pod-network-cidr=10.244.0.0/16

安装flannel网络
kubectl apply -f https://raw.githubusercontent.com/coreos/flannel/v0.10.0/Documentation/kube-flannel.yml

配置KUBECONFIG变量
#echo "export KUBECONFIG=/etc/kubernetes/admin.conf" >> /etc/profile
source /etc/profile

kubeadmin的安装方式

把node加入到集群
kubeadm join IP:6443 --token TOKEN 这个命令上面有提示
如果后期忘记了，可以通过kubeadm token create --print-join-command 查看
重新部署环境 kubeadm reset

设置可以用tab补齐键 vim /etc/profile
source <(kubectl completion bash)
source /etc/profile

```
kubectl cluster-info

kubectl version

kubectl api-version
```

设置Heapster

docker pull registry.cn-hangzhou.aliyuncs.com/google_containers/heapster-amd64:v1.5.4

运行heapster.yaml

运行heapster-mod.yaml

kubectl top node

kubectl top pod

手动安装--master

yum install kubernetes etcd -y

vim /etc/etcd/etcd.conf
ETCD_LISTEN_CLIENT_URLS="http://0.0.0.0:2379"
ETCD_ADVERTISE_CLIENT_URLS="http://0.0.0.0:2379"

systemctl restart etcd ; systemctl enable etcd

etcdctl -C http://192.168.26.31:2379 set /atomic.io/network/config
'{"Network":"172.17.0.0/16"}'

etcdctl ls /atomic.io/network/config

etcdctl get /atomic.io/network/config

手动安装--master

/etc/kubernetes/config
KUBE_MASTER="--master=http://192.168.26.31:8080"

/etc/kubernetes/apiserver
KUBE_API_ADDRESS="--insecure-bind-address=0.0.0.0"
KUBE_API_PORT="--port=8080"
KUBELET_PORT="--kubelet-port=10250"

/etc/kubernetes/controller-manager
KUBELET_ADDRESSES="--machines=192.168.26.31,192.168.26.32"

手动安装--master

```
KUBELET_ADDRESS="--address=0.0.0.0"
KUBELET_PORT="--port=10250"
KUBELET_HOSTNAME="--hostname-override=192.168.26.31"
KUBELET_API_SERVER="--api-servers=http://192.168.26.31:8080"
```

```
systemctl restart kube-apiserver.service  kube-controller-
manager.service kube-scheduler.service kubelet.service
```

手动安装--node

yum install kubernetes-node flannel -y

/etc/kubernetes/config
KUBE_MASTER="--master=http://192.168.26.31:8080"

/etc/kubernetes/kubelet
KUBELET_ADDRESS="--address=0.0.0.0"
KUBELET_PORT="--port=10250"
KUBELET_HOSTNAME="--hostname-override=192.168.26.32"
KUBELET_API_SERVER="--api-servers=http://192.168.26.31:8080"

/etc/sysconfig/flanneld
FLANNEL_ETCD_ENDPOINTS="http://192.168.26.31:2379"

systemctl start kubelet kube-proxy flanneld

etcd配置

export ETCDCTL_API=3

etcdctl help snapshot save

etcdctl --cacert=domain1.crt --cert=node1.pem --key=node1.key --endpoints=127.0.0.1:2379 snapshot save snap1.db

etcdctl --endpoints=127.0.0.1:2379 snapshot save snap1.db

在另外的窗口
etcdctl rmdir /atomic.io/network/config

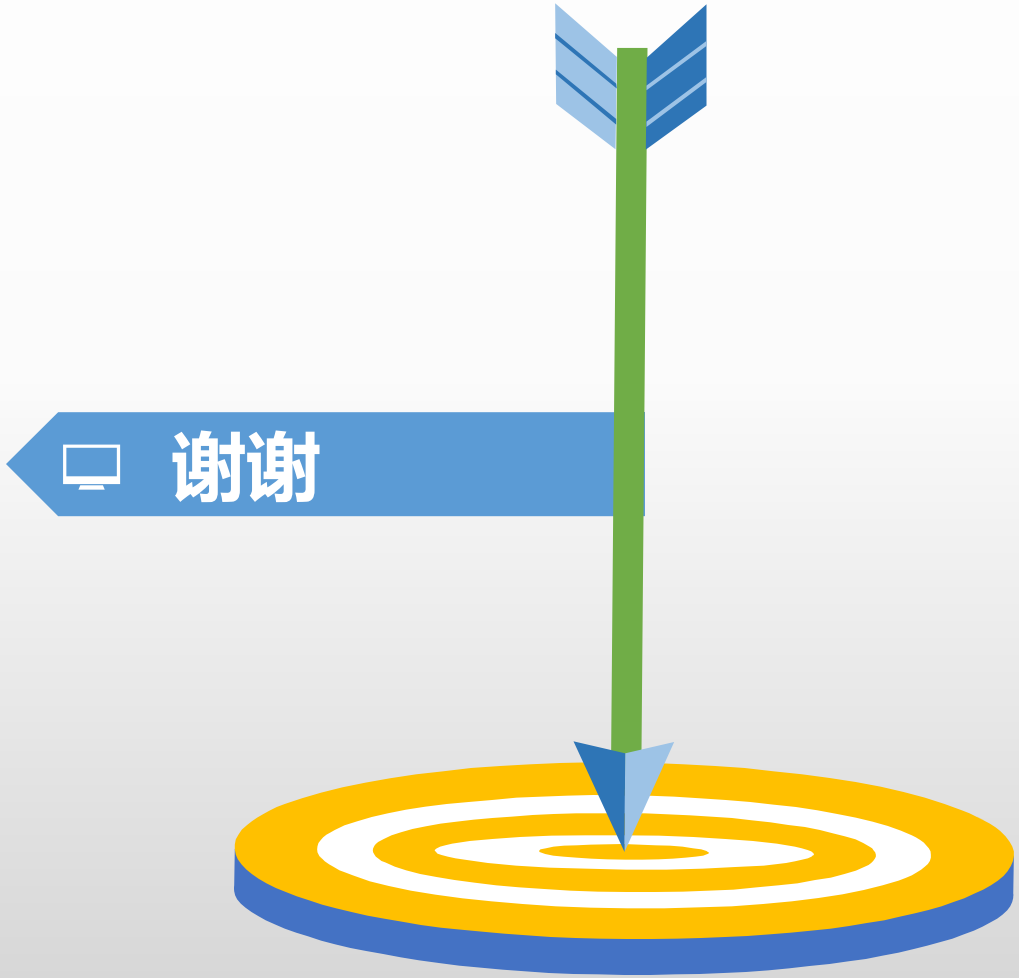
多集群切换

```
apiVersion: v1
clusters:
- cluster:
    11111111111
    server: https://192.168.26.10:6443
  name: kubernetes1
- cluster:
    22222222222
    server: https://192.168.26.21:6443
  name: kubernetes2
contexts:
- context:
    cluster: kubernetes1
    user: kubernetes-admin1
  name: kubernetes1
- context:
    cluster: kubernetes2
    user: kubernetes-admin2
  name: kubernetes2
current-context: kubernetes1
kind: Config
preferences: {}
users:
- name: kubernetes-admin1
  user:
    1111
- name: kubernetes-admin2
  user:
    222
```

kubectl config get-contexts

kubectl config use-context kubernetes1

了解namespace


谢谢