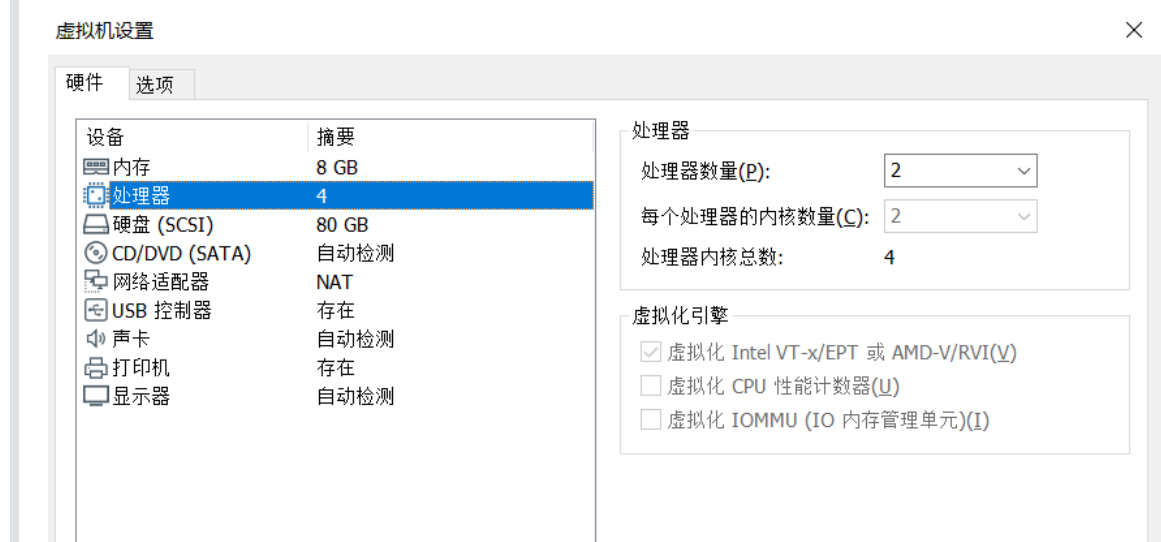


# 虚拟机准备

宿主机操作系统环境：ubuntu20.04

如果宿主机是虚拟机，则需要开启虚拟化选项，才可以进行虚拟机“套娃”。

下图为Vmware的虚拟化选项开启方式。



## 安装virtualbox

- 修改apt源

```
# 修改宿主机的apt源
$ sudo cat > /etc/apt/sources.list << EOF
deb http://mirrors.aliyun.com/ubuntu/ focal main restricted universe multiverse
deb-src http://mirrors.aliyun.com/ubuntu/ focal main restricted universe
multiverse

deb http://mirrors.aliyun.com/ubuntu/ focal-security main restricted universe
multiverse
deb-src http://mirrors.aliyun.com/ubuntu/ focal-security main restricted universe
multiverse

deb http://mirrors.aliyun.com/ubuntu/ focal-updates main restricted universe
multiverse
deb-src http://mirrors.aliyun.com/ubuntu/ focal-updates main restricted universe
multiverse

deb http://mirrors.aliyun.com/ubuntu/ focal-proposed main restricted universe
multiverse
deb-src http://mirrors.aliyun.com/ubuntu/ focal-proposed main restricted universe
multiverse

deb http://mirrors.aliyun.com/ubuntu/ focal-backports main restricted universe
multiverse
deb-src http://mirrors.aliyun.com/ubuntu/ focal-backports main restricted
universe multiverse
```

```
$ apt update
```

- 在宿主机安装virtualbox

```
# 通过apt命令在宿主机中安装virtualbox
$ sudo apt update
$ sudo apt install virtualbox -y
```

- 在宿主机安装vagrant

```
$ cd ~
# 使用apt安装的vagrant版本太旧，不兼容，因此我们需要下载vagrant离线安装包
# 下载或者拷贝vagrant安装包，下载命令如下
$ wget https://releases.hashicorp.com/vagrant/2.2.10/vagrant_2.2.10_x86_64.deb
# 安装vagrant
$ sudo apt install ./vagrant_2.2.10_x86_64.deb
```

## 导入镜像

- 导入ubuntu/focal64镜像

```
# 下载或者拷贝ubuntu/focal64镜像，下载命令如下
$ wget https://mirrors.tuna.tsinghua.edu.cn/ubuntu-cloud-images/focal/current/focal-server-cloudimg-amd64-vagrant.box
# 向virtualbox中添加镜像
$ vagrant box add ubuntu/focal64 focal-server-cloudimg-amd64-vagrant.box
# 查看是否导入成功
$ vagrant box list
ubuntu/focal64 (virtualbox, 0)
```

## 安装k3s

### 准备安装文件

- 克隆仓库

```
$ cd ~
$ git clone https://github.com/cs-course/k3s-tutorial.git
```

- 将 [packages](#) 中的文件拷贝到 k3s-tutorial/packages/ 下，需要的文件如下图所示

此电脑 > 下载 > vagrant > packages					搜索"packa
	名称	修改日期	类型	大小	
✦	busybox~1.32.0.tar	2020/11/3 18:09	360zip	1,425 KB	
✦	containerd.io_1.2.13-2_amd64.deb	2020/11/3 18:11	360zip	20,919 KB	
✦	docker-ce_19.03.11~3-0~ubuntu-foc...	2020/11/3 18:32	360zip	22,020 KB	
✦	docker-ce-cli_19.03.11~3-0~ubuntu-...	2020/11/3 18:32	360zip	40,245 KB	
	k3s	2020/11/3 18:34	文件	52,176 KB	
	k3s-airgap-images-amd64.tar	2020/11/3 18:28	360zip	360,944 KB	
	nginx~1.19.2-alpine.tar	2020/11/3 18:10	360zip	23,035 KB	

# 创建虚拟机

```
$ cd k3s-tutorial
$ vagrant up
# 等待虚拟机安装完毕...
# ...
# ...
$ vagrant status
Current machine states:

node0                running (virtualbox)
node1                running (virtualbox)
node2                running (virtualbox)
```

## 执行k3s安装

- 执行node0的安装

```
# node0
$ cd ~/k3s-tutorial
$ vagrant ssh node0
# 进入到node0
vagrant@node0:~$ bash /vagrant/scripts/k3s-server.sh
vagrant@node0:~$ nohup: redirecting stderr to stdout

vagrant@node0:~$ sudo k3s kubectl get po -A
NAMESPACE          NAME                                READY   STATUS    RESTARTS   AGE
kube-system        metrics-server-7b4f8b595-r5ps5    1/1     Running   0          3h19m
kube-system        coredns-66c464876b-nqk54         1/1     Running   0          3h19m
kube-system        local-path-provisioner-7ff9579c6-trrxx 1/1     Running   0          3h19m
kube-system        helm-install-traefik-dvhnx        0/1     Completed 0          3h19m
kube-system        svc1b-traefik-wkk89               2/2     Running   0          3h19m
kube-system        svc1b-traefik-sgfcc               2/2     Running   0          3h19m
kube-system        svc1b-traefik-97n4b               2/2     Running   0          3h19m
kube-system        traefik-5dd496474-4m7nv          1/1     Running   0          3h19m
```

- 执行node1的安装

```
# node1
$ vagrant ssh node1
# 进入到node1
vagrant@node1:~$ bash /vagrant/scripts/k3s-agent.sh
Warning: Permanently added 'node0,192.168.33.20' (ECDSA) to the list of known hosts.
vagrant@node1:~$ nohup: redirecting stderr to stdout

vagrant@node1:~$
```

- 执行node2的安装

```
# node2操作同node1
$ vagrant ssh node2
# 进入到node2
vagrant@node1:~$ bash /vagrant/scripts/k3s-agent.sh
Warning: Permanently added 'node0,192.168.33.20' (ECDSA) to the list of known hosts.
vagrant@node1:~$ nohup: redirecting stderr to stdout

vagrant@node1:~$
```

- 查看集群是否部署成功

```
vagrant@node0:~$ sudo k3s kubectl get node
```

NAME	STATUS	ROLES	AGE	VERSION
node0	Ready	master	3h25m	v1.19.2+k3s1
node2	Ready	<none>	3h24m	v1.19.2+k3s1
node1	Ready	<none>	3h24m	v1.19.2+k3s1