安装flannel

所有的node节点都需要安装网络插件才能让所有的Pod加入到同一个局域网中，建议直接使用yum安装flanneld。

```
[root@vlnx251101 kubernetes]# yum install -y flannel
```

需要在 serivce 配置文件中增加TLS配置 ， service 配置文件/usr/lib/systemd/system/flanneld.service

```
[root@vlnx251101 kubernetes]# vim /usr/lib/systemd/system/flanneld.service

[Unit]
Description=Flanneld overlay address etcd agent
After=network.target
After=network-online.target
Wants=network-online.target
After=etcd.service
Before=docker.service

[Service]
Type=notify
EnvironmentFile=/etc/sysconfig/flanneld
EnvironmentFile=-/etc/sysconfig/docker-network
ExecStart=/usr/bin/flanneld-start -etcd-endpoints=${FLANNEL_ETCD_ENDPOINTS} -etcd-prefix=${FLANNEL_ETCD_PREFIX} $FLANNEL_OPTIONS
ExecStartPost=/usr/libexec/flannel/mk-docker-opts.sh -k DOCKER_NETWORK_OPTIONS -d /run/flannel/docker
Restart=on-failure

[Install]
WantedBy=multi-user.target
RequiredBy=docker.service
```

/etc/sysconfig/flanneld配置文件

```
[root@vlnx251101 kubernetes]# vim /etc/sysconfig/flanneld
# Flanneld configuration options

# etcd url location.  Point this to the server where etcd runs
FLANNEL_ETCD_ENDPOINTS="https://192.168.251.101:2379,https://192.168.251.102:2379,https:/

# etcd config key.  This is the configuration key that flannel queries
# For address range assignment
FLANNEL_ETCD_PREFIX="/kube-centos/network"
# Any additional options that you want to pass
#FLANNEL_OPTIONS=""
FLANNEL_OPTIONS="-etcd-cafile=/etc/kubernetes/ssl/ca.pem -etcd-certfile=/etc/kubernetes/ssl/kubernetes.pem -etcd-
```

```
keyfile=/etc/kubernetes/ssl/kubernetes-key.pem"
```

如果是多网卡（例如vagrant环境），则需要在FLANNEL_OPTIONS中增加指定的外网出口的网卡，例如-iface=eth2

配置flannel (on 101)

在etcd中创建网络配置

执行下面的命令为docker分配IP地址段。

```
[root@vlnx251101 ~]# etcdctl \
--
endpoints=https://192.168.251.101:2379,https://192.168.251.102:2379,https://192.168.251.1
--ca-file=/etc/kubernetes/ssl/ca.pem \
--cert-file=/etc/kubernetes/ssl/kubernetes.pem \
--key-file=/etc/kubernetes/ssl/kubernetes-key.pem \
mkdir /kube-centos/network

[root@vlnx251101 ~]# etcdctl \
--
endpoints=https://192.168.251.101:2379,https://192.168.251.102:2379,https://192.168.251.1
--ca-file=/etc/kubernetes/ssl/ca.pem \
--cert-file=/etc/kubernetes/ssl/kubernetes.pem \
--key-file=/etc/kubernetes/ssl/kubernetes-key.pem  \
mk /kube-centos/network/config '{ "Network": "172.30.0.0/16", "SubnetLen": 24,
"Backend": { "Type": "vxlan" } }'
```

启动kubelet，

```
[root@vlnx251101 kubernetes]# systemctl daemon-reload ; systemctl enable
flanneld.service ; systemctl start flanneld.service ; systemctl status flanneld.service
```

现在查询etcd中的内容可以看到：

```
[root@vlnx251101 kubernetes]# etcdctl \
--
endpoints=https://192.168.251.101:2379,https://192.168.251.102:2379,https://192.168.251.1
--ca-file=/etc/kubernetes/ssl/ca.pem \
--cert-file=/etc/kubernetes/ssl/kubernetes.pem \
--key-file=/etc/kubernetes/ssl/kubernetes-key.pem \
ls /kube-centos/network/subnets
```

/kube-centos/network/subnets/172.30.26.0-24

/kube-centos/network/subnets/172.30.33.0-24

/kube-centos/network/subnets/172.30.96.0-24

```
[root@vlnx251101 kubernetes]# etcdctl --
endpoints=https://192.168.251.101:2379,https://192.168.251.102:2379,https://192.168.251.1
--ca-file=/etc/kubernetes/ssl/ca.pem \
--cert-file=/etc/kubernetes/ssl/kubernetes.pem \
--key-file=/etc/kubernetes/ssl/kubernetes-key.pem \
get /kube-centos/network/config
```

{ "Network": "172.30.0.0/16", "SubnetLen": 24, "Backend": { "Type": "vxlan" } }

```
[root@vlnx251101 kubernetes]# etcdctl  --
endpoints=https://192.168.251.101:2379,https://192.168.251.102:2379,https://192.168.251.1
--ca-file=/etc/kubernetes/ssl/ca.pem \
--cert-file=/etc/kubernetes/ssl/kubernetes.pem \
--key-file=/etc/kubernetes/ssl/kubernetes-key.pem \
get /kube-centos/network/subnets/172.30.26.0-24
```

{"PublicIP":"192.168.251.103","BackendType":"vxlan","BackendData":
{"VtepMAC":"4a:a5:ba:ff:a8:c5"}}

```
[root@vlnx251101 kubernetes]# etcdctl  --
endpoints=https://192.168.251.101:2379,https://192.168.251.102:2379,https://192.168.251.1
--ca-file=/etc/kubernetes/ssl/ca.pem \
--cert-file=/etc/kubernetes/ssl/kubernetes.pem \
--key-file=/etc/kubernetes/ssl/kubernetes-key.pem \
get /kube-centos/network/subnets/172.30.33.0-24
```

{"PublicIP":"192.168.251.101","BackendType":"vxlan","BackendData":
{"VtepMAC":"36:8e:af:19:1d:1b"}}

```
[root@vlnx251101 kubernetes]# etcdctl  --
endpoints=https://192.168.251.101:2379,https://192.168.251.102:2379,https://192.168.251.1
--ca-file=/etc/kubernetes/ssl/ca.pem \
--cert-file=/etc/kubernetes/ssl/kubernetes.pem \
--key-file=/etc/kubernetes/ssl/kubernetes-key.pem \
get /kube-centos/network/subnets/172.30.96.0-24
```

{"PublicIP":"192.168.251.102","BackendType":"vxlan","BackendData":
{"VtepMAC":"32:4c:c2:6b:61:32”}}

如果可以查看到以上内容证明flannel已经安装完成，下一步是在node节点上安装和配置docker、kubelet、kube-proxy等

配置docker

```
[root@vlnx251101 kubernetes]# vim /usr/lib/systemd/system/docker.service
EnvironmentFile=-/run/flannel/docker
EnvironmentFile=-/run/docker_opts.env
EnvironmentFile=-/run/flannel/subnet.env
```

防止主机重启后 `docker` 自动重启时加载不到该上述环境变量。

重启了docker

```
systemctl restart docker
```