OPENSTACK

+

CALICO

KUBERNETES

Karthik Prabhakar
19 October 2017
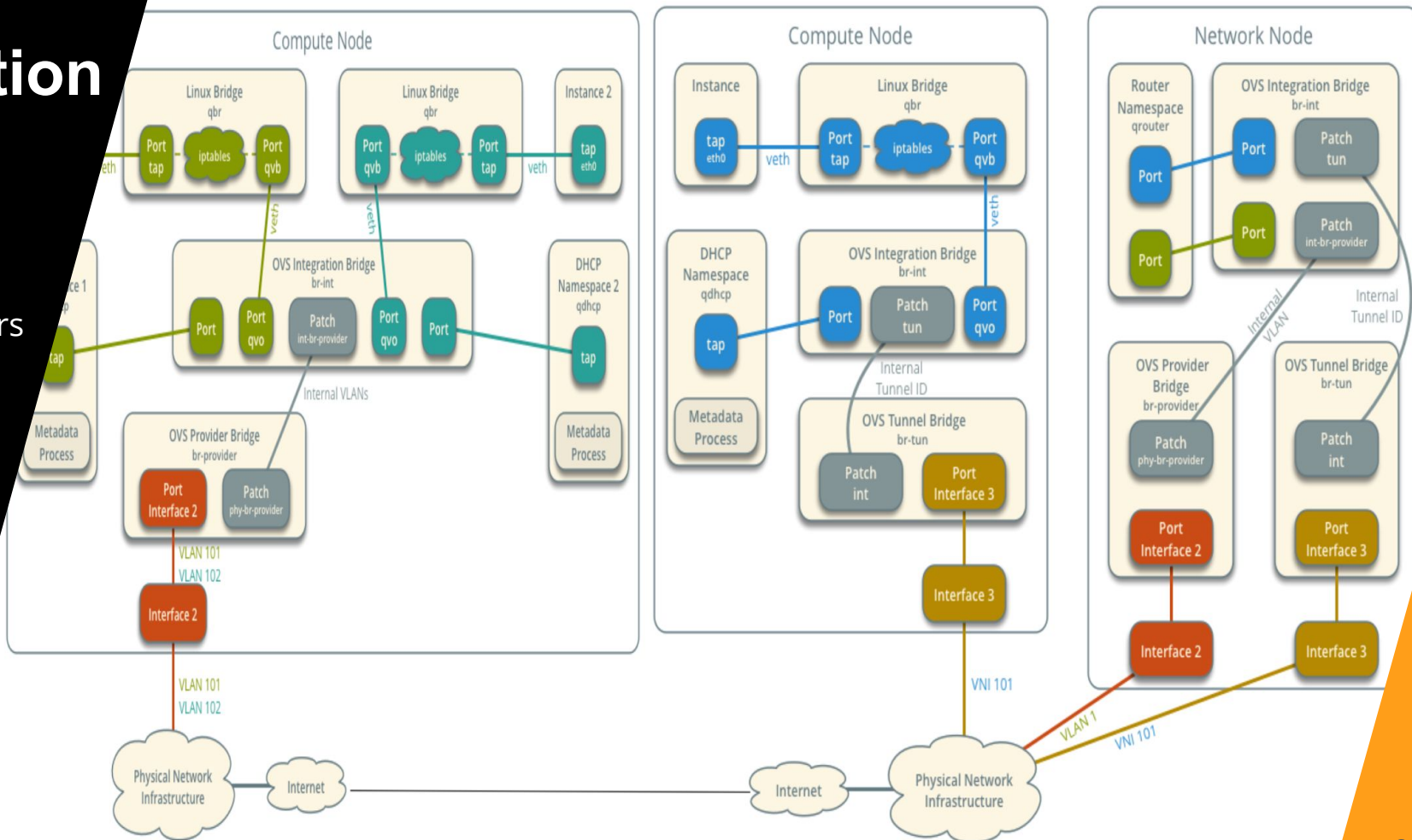
TIGERA

Evolution

Early VM's

Image: ccPixs.com

Evolution

VM Orchestrators

Source: docs.openstack.org

"More Overlays Please" said no SRE ever

Evolution

Container Orchestrators

Services

Network Policy

Ingress

CNI

Kube DNS
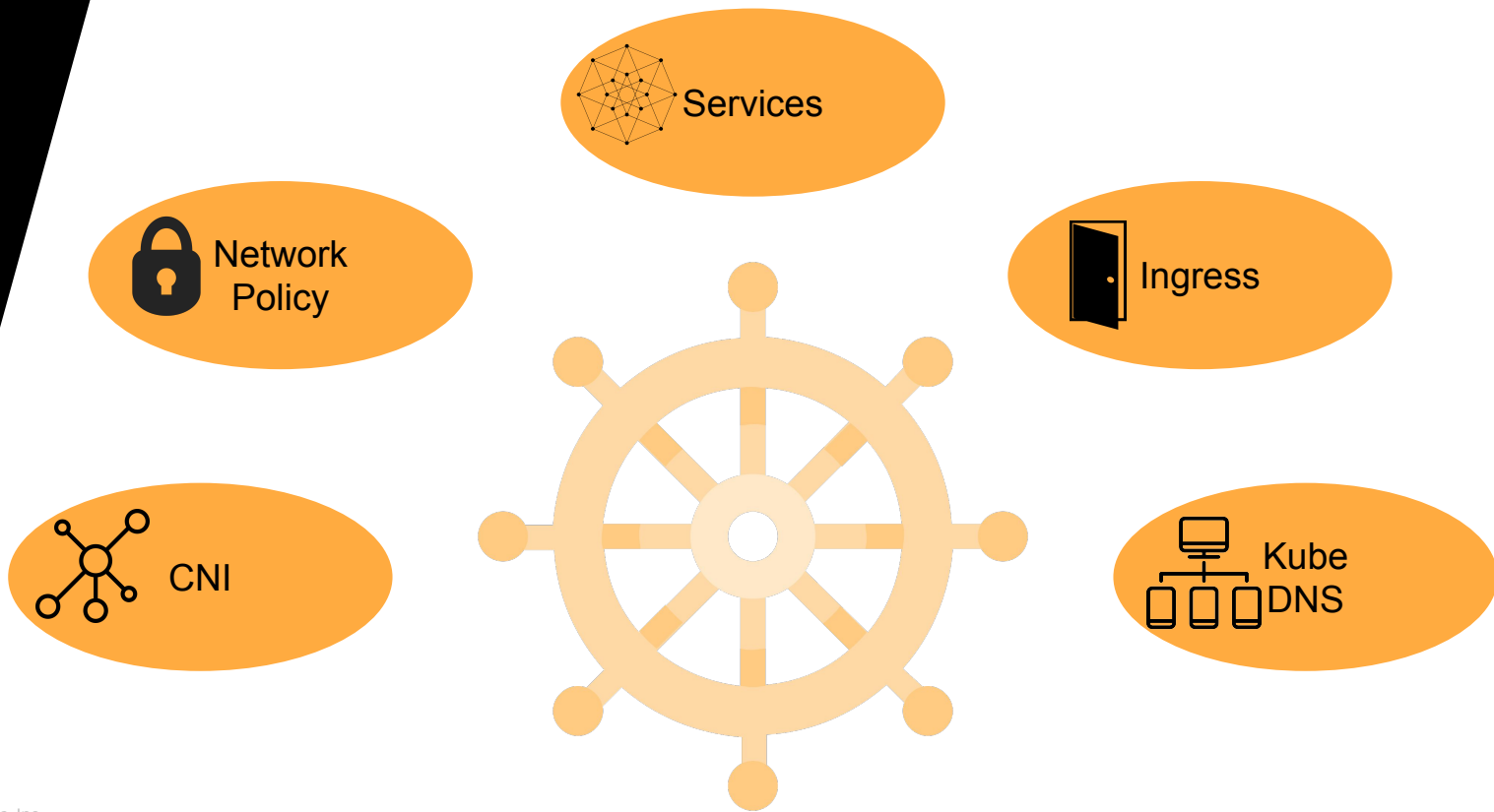
Evolution

Service Mesh

Container
Orchestrators
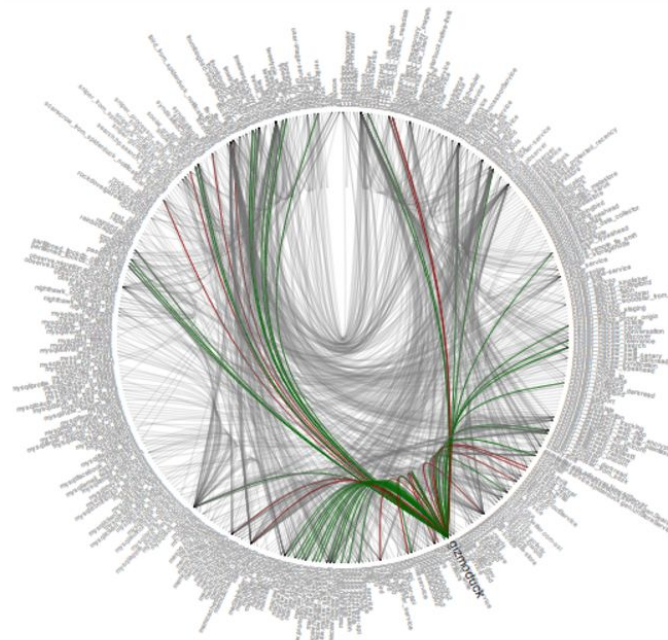
Services

Network
Policy

Service Mesh

Ingress

CNI
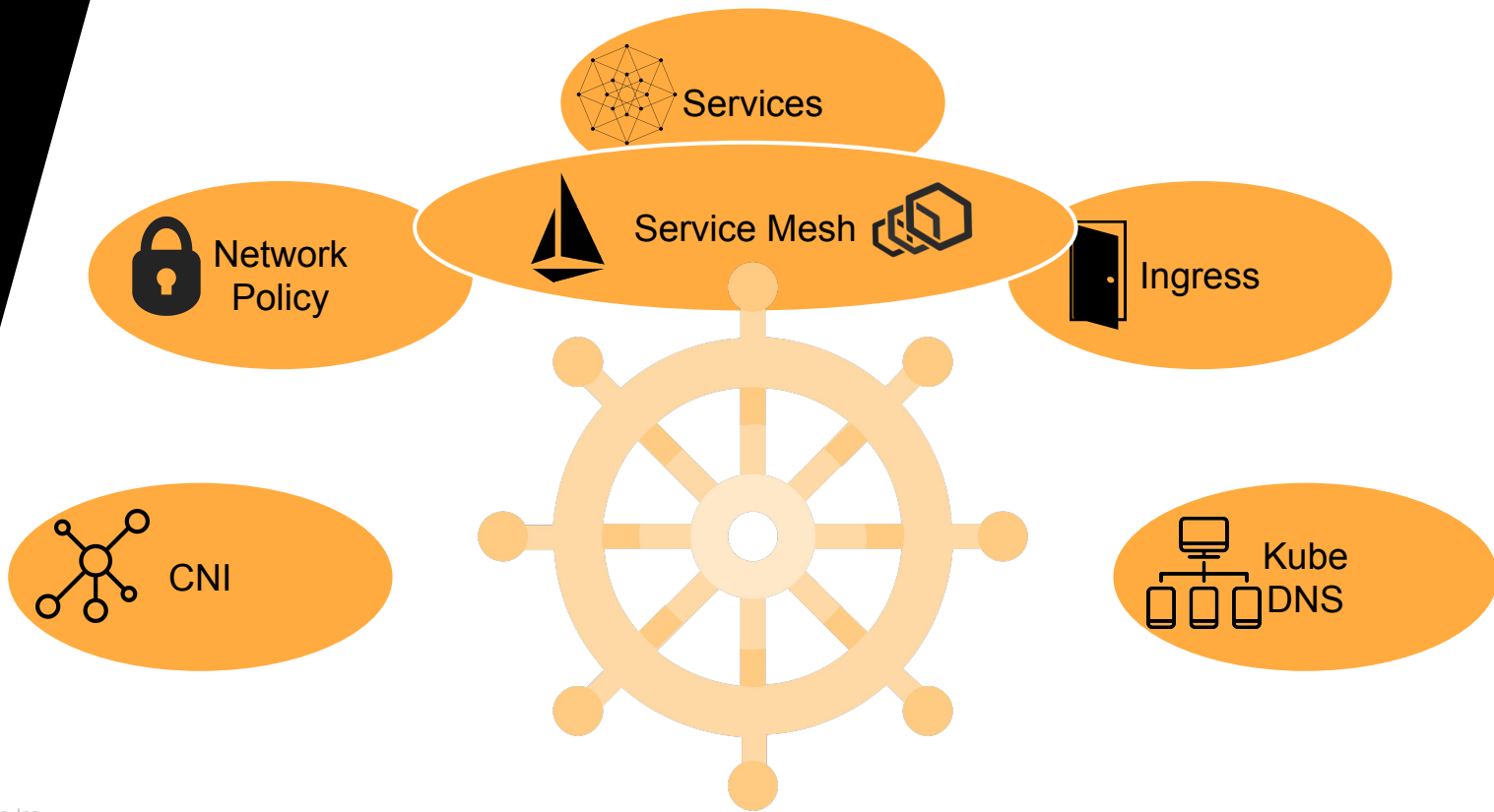
Kube
DNS

Evolution

Serverless
/ FaaS

Microservices Today

NETFLIX
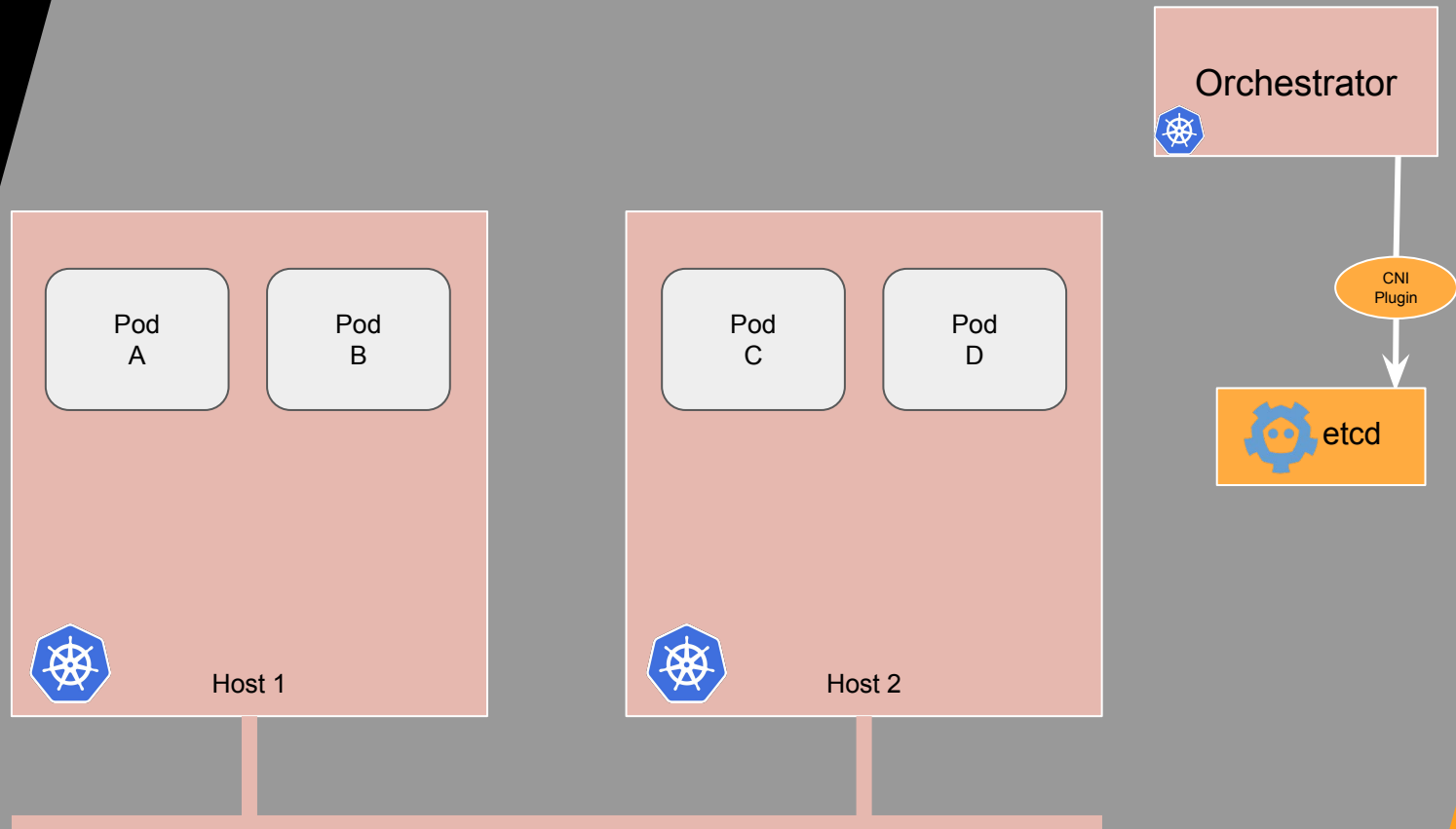

twitter

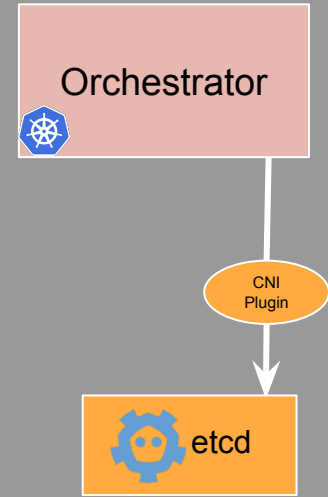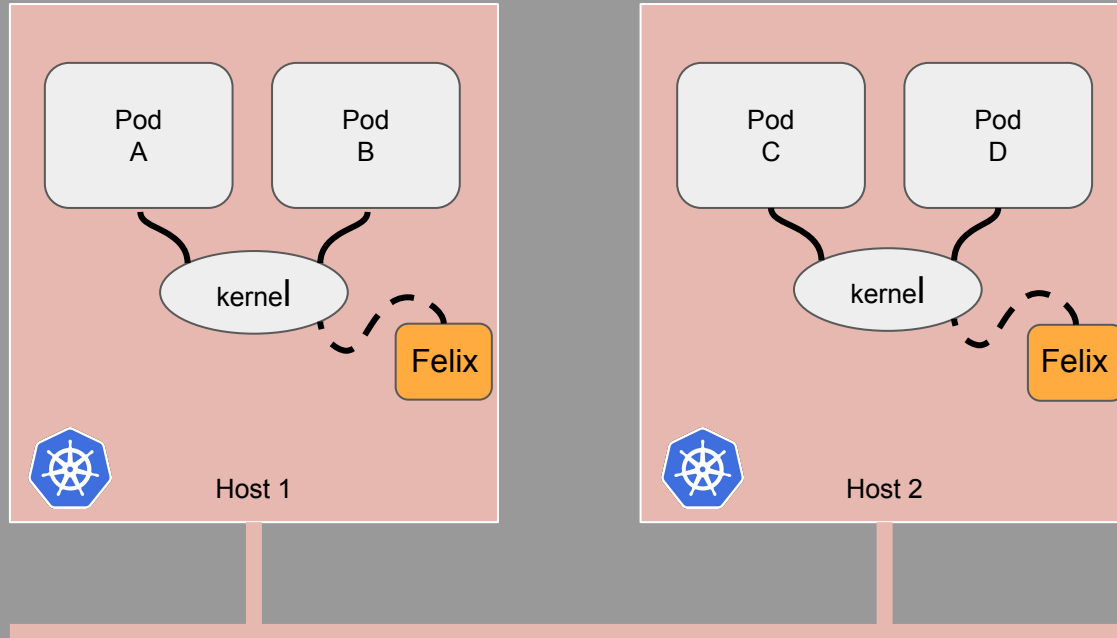# Pod Networks in K8s

Host 1

Host 2

Pod Networks in K8s

Host 1

Host 2

etcd
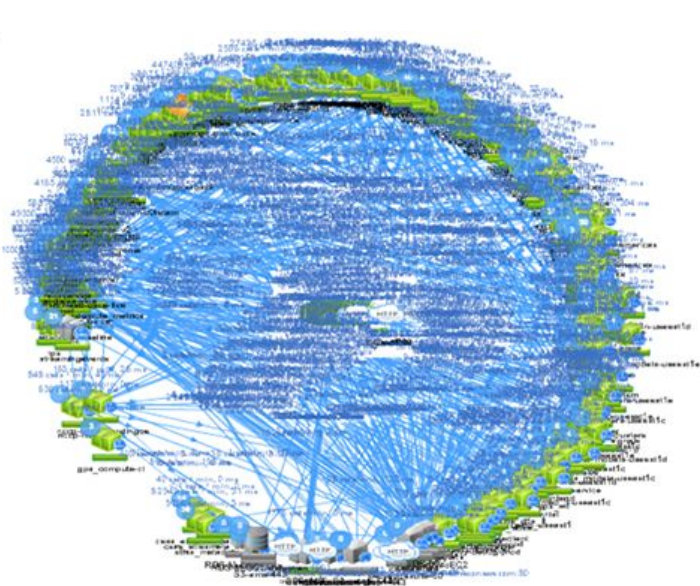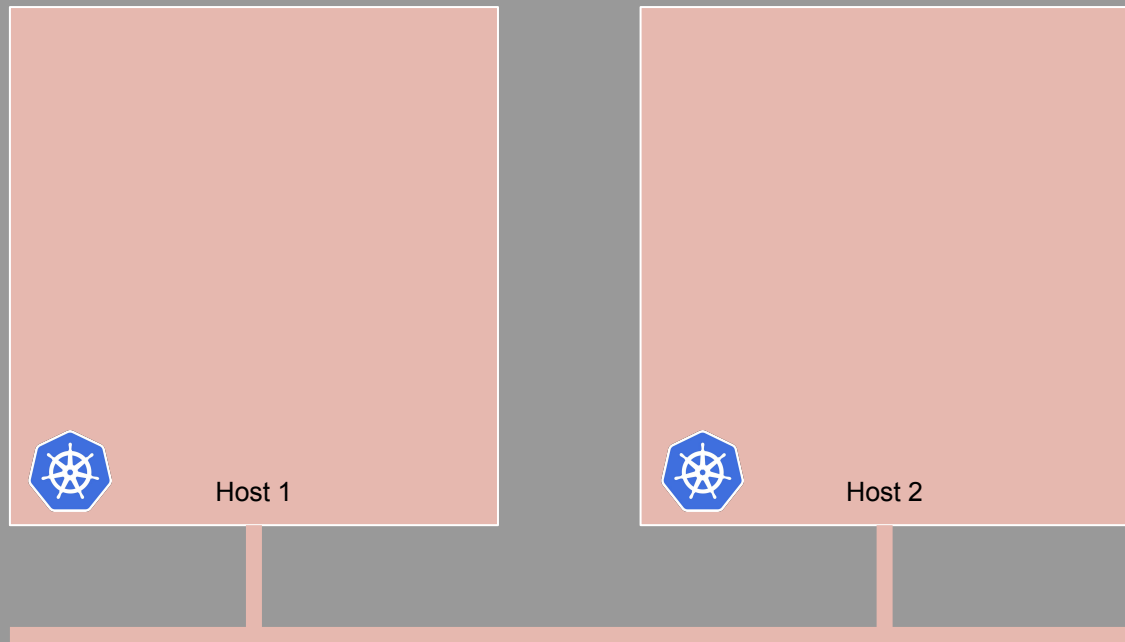
Pod Networks in K8s

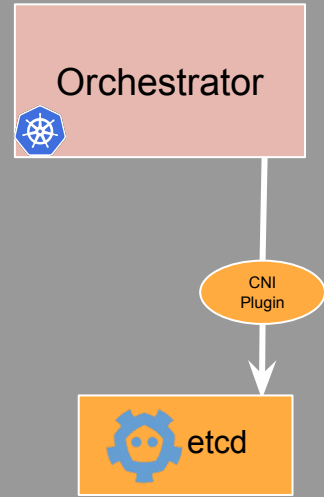# Pod Networks

Orchestrator

CNI Plugin

etcd

Pod A

Pod B

Pod C

Pod D

Host 1

Host 2
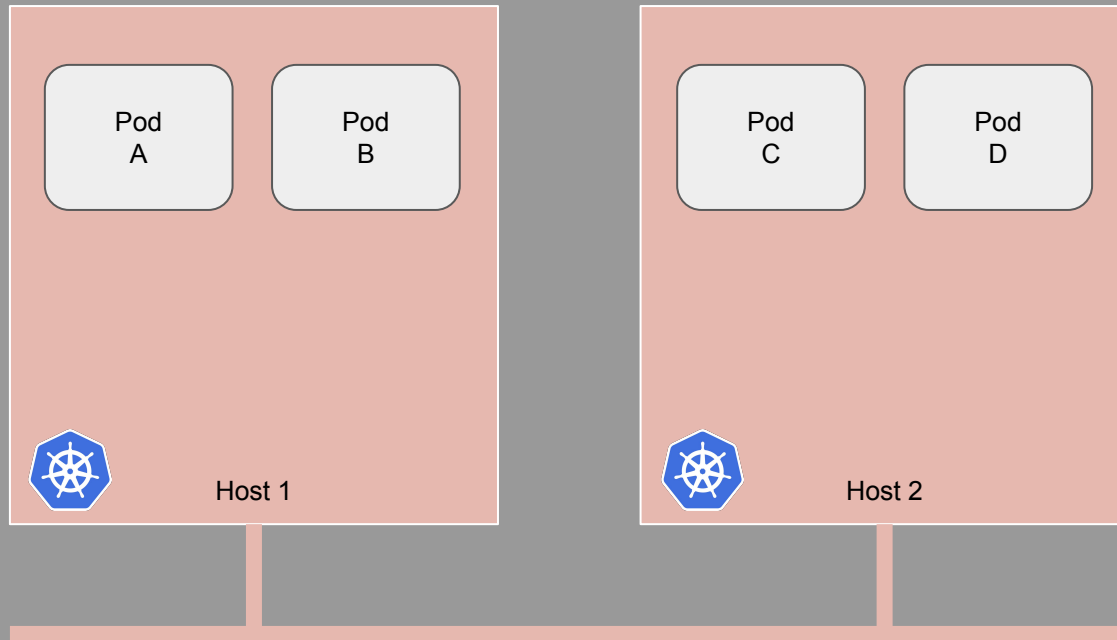
Pod Networks with Calico

Pod Networks with Calico
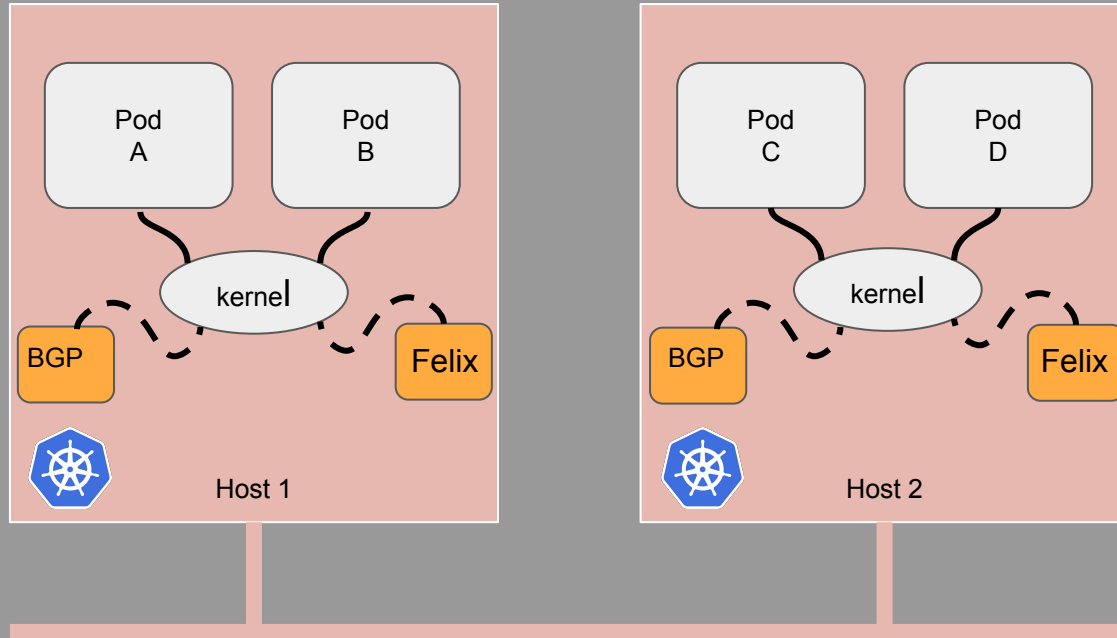
Network Policy with Calico
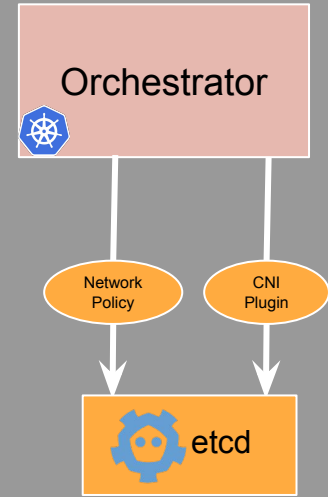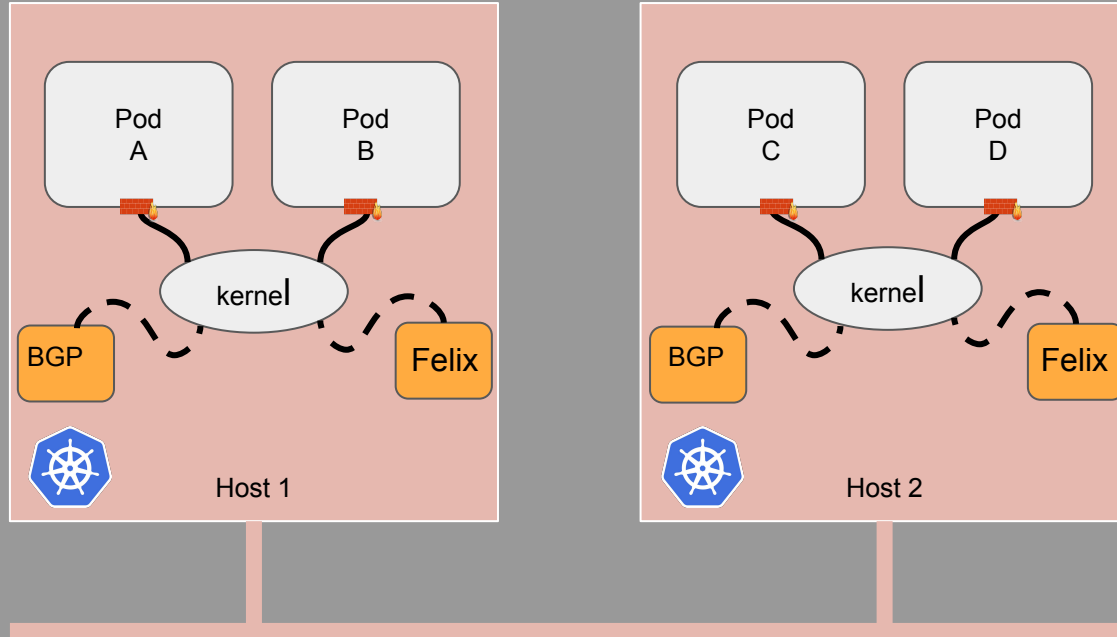
Calico (and Kubernetes) Network Policy

```
apiVersion: v1
kind: policy
metadata:
  name: allow-tcp-6379
spec:
  selector: role == 'database' && compliance == 'PCI'
    ingress:
      - action: allow
        protocol: tcp
        source:
          selector: role == 'frontend' && compliance == 'PCI'
        destination:
          ports:
          - 6379
    egress:
    - action: allow
```

VM Networks with Calico

© 2017 Tigera, Inc.

VM Networks with Calico

© 2017 Tigera, Inc.
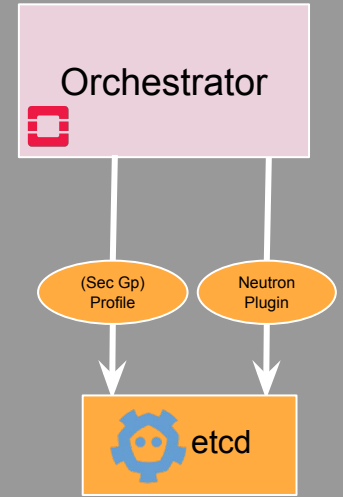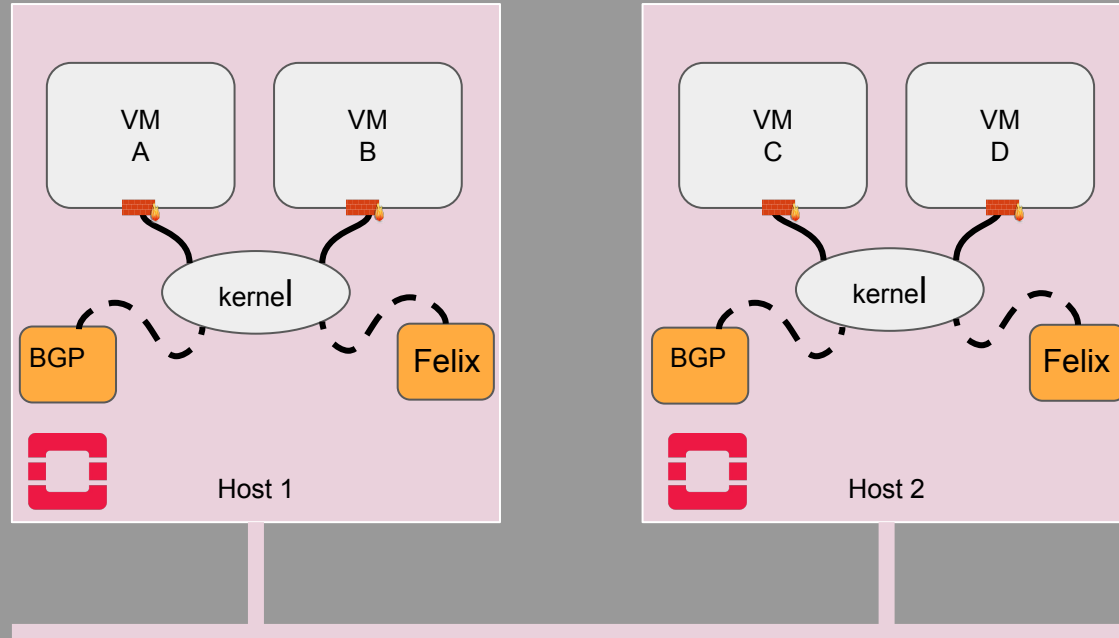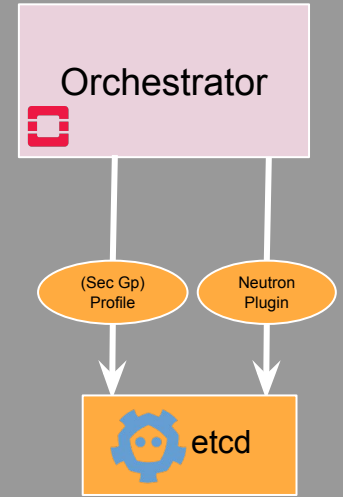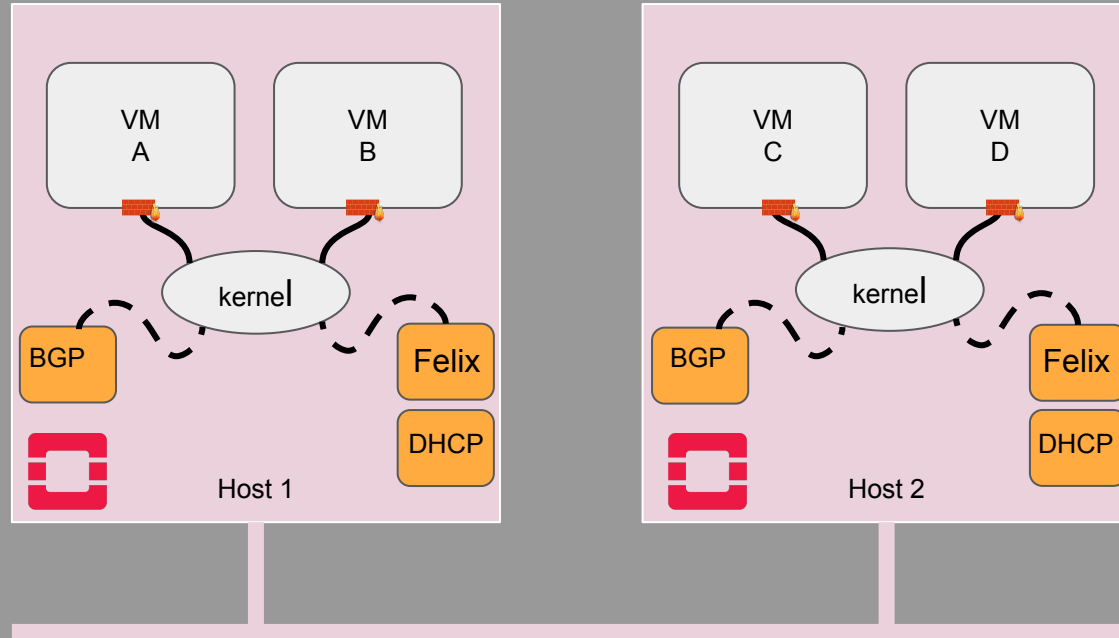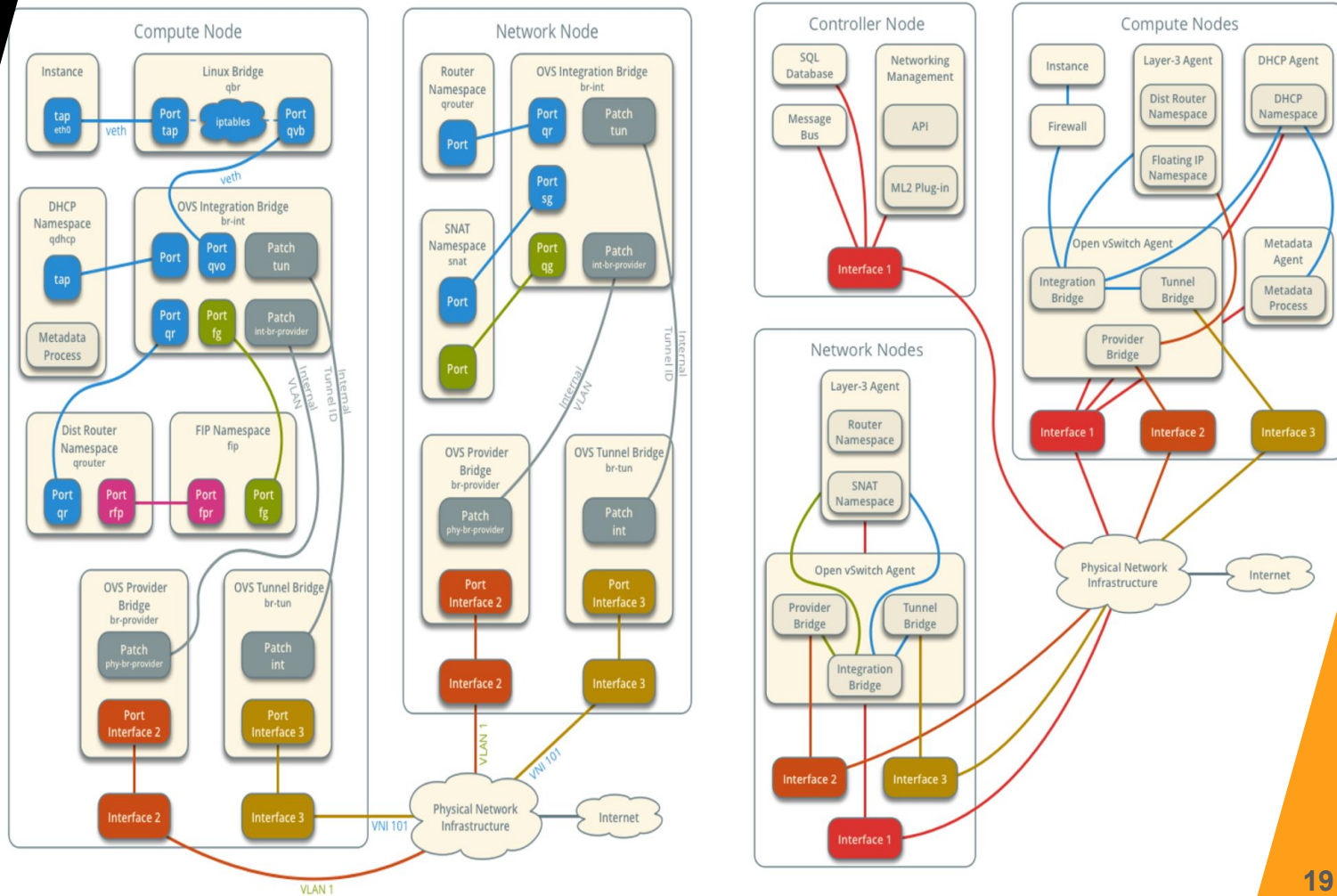
Neutron with OVS

Neutron with Calico

Connect Kubernetes

Pod A
Pod B
kernel
BGP
Felix
Host 1

Pod C
Pod D
kernel
BGP
Felix
Host 2

Orchestrator

Network Policy
CNI Plugin

etcd
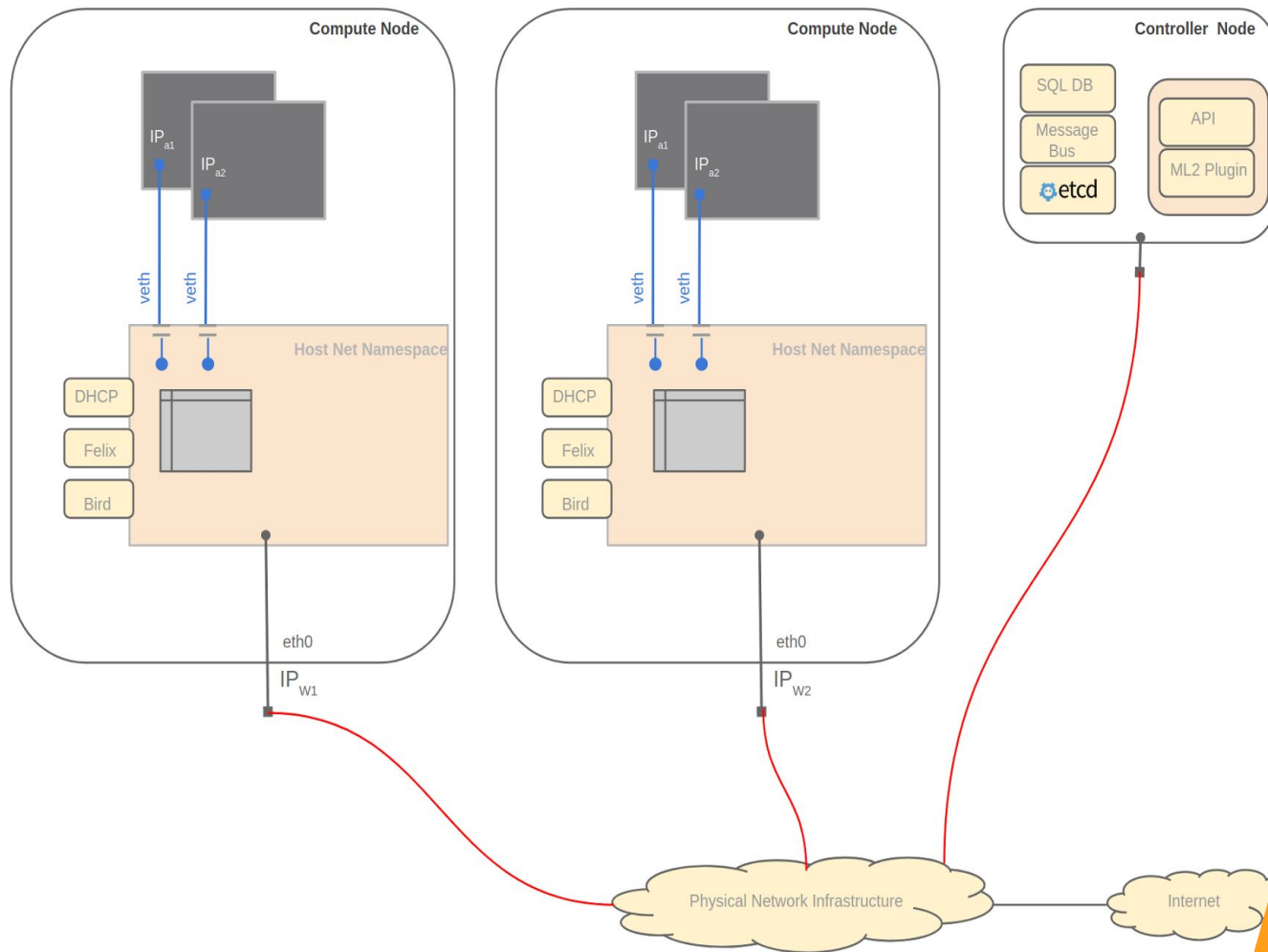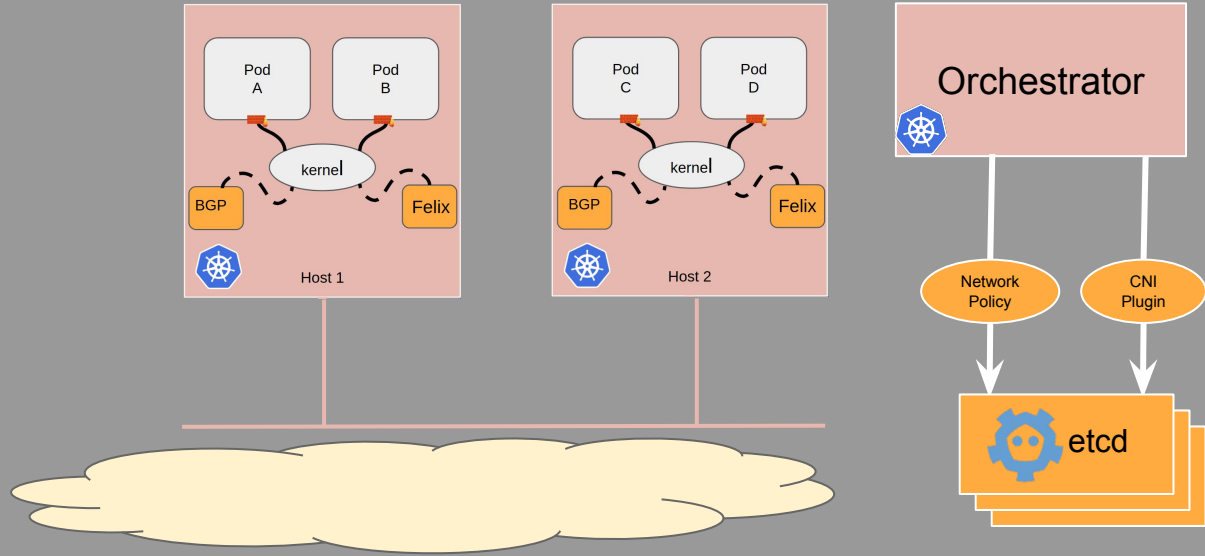
Connect Kubernetes with OpenStack
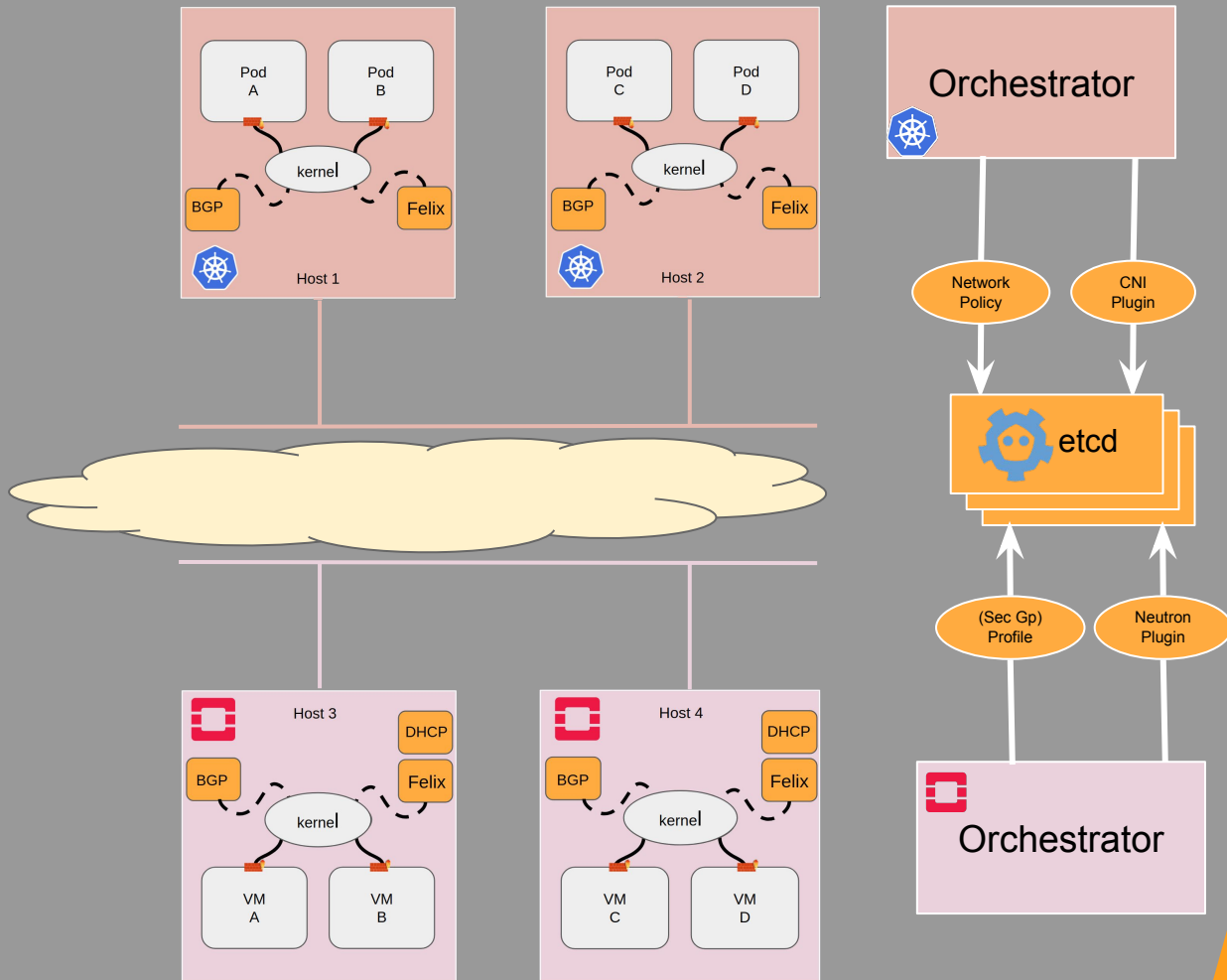
Connect Kubernetes with OpenStack and BM/VM/Cloud Instances
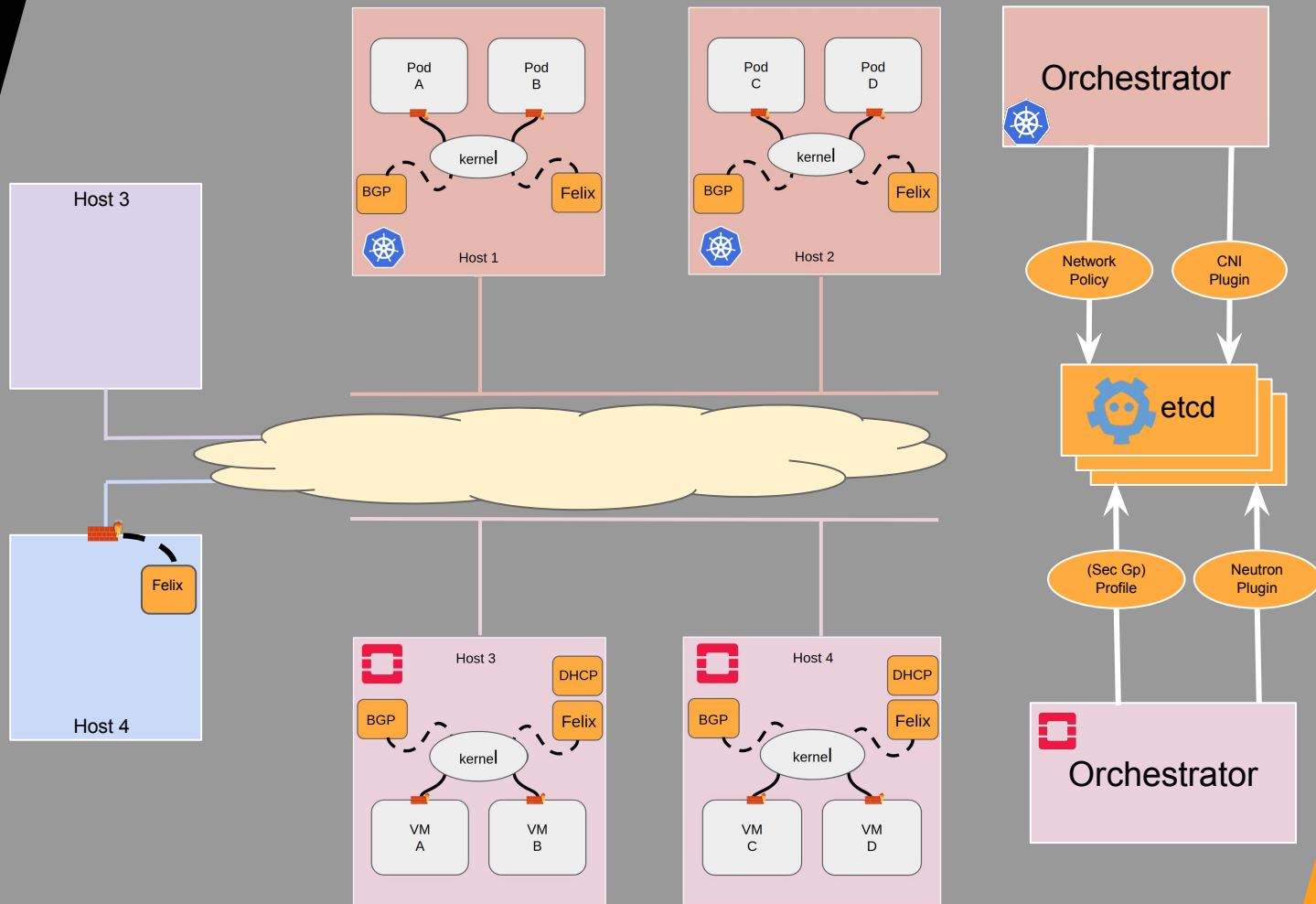
Software-Defined Networking Used With Kubernetes
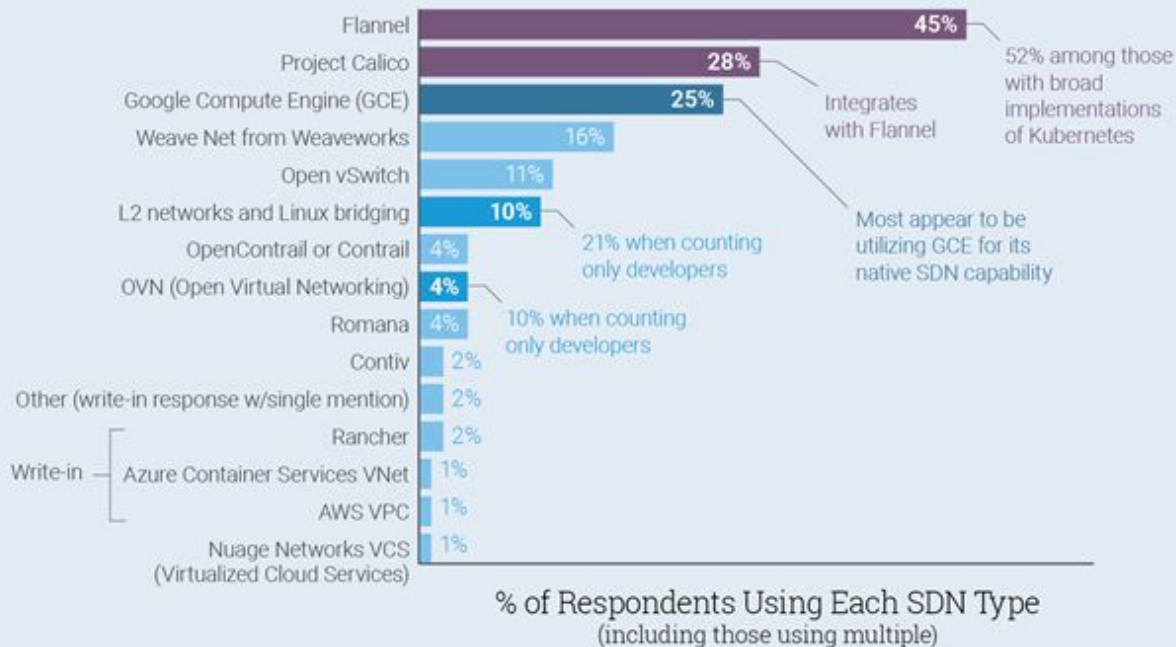
Source: The New Stack 2017 Kubernetes User Experience Survey.
Q. What is being used for software-defined networking (SDN) in your Kubernetes implementations? Select all that apply. n=197.

RFC 8140

2.2. The Unicorn Rampant

Many things in the IETF rely on majick. Without pixie dust or other
artful contributions from the world of faerie, it is unlikely that
the Internet would work at all.

Software Defined Networking (SDN) is a concept whereby complex and
devious networks may be subjugated to the will of a sorcerer (or an
opensourcerer as they are sometimes know). Fundamental to the body
of an SDN is the Path Computation Element (PCE) [RFC7399]. Essential
to the proper function of the PCE is the Unicorn that roams the dark
wood of the Traffic Engineering Database, rearing up and spearing
unwitting paths on the horn of its intellect.

Unicorns, it is claimed, can only be captured by the pure of heart
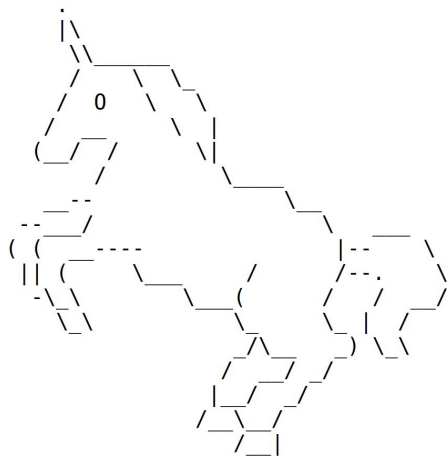who have never operated a real network.

```
                       .
                      |\
                       \\
                        \\      __    _
                      /  0    \   \  \
                     /          \   \  |
                   (__/__/        \|
                      /              \
                  __--                \
               --/__/                  \
             (  ( (  /----              |--    \
             || (  (       \__    /      /  /--.
             -\ \                (       /   /    \
                \_\                       \  |
                          /\        _      )  \_\
                        /   /       /
                       |   __/    /
                      /   /   /  /
                      \__/__|
```

Figure 2: A Unicorn in Rampant State

25

© 2017 Tigera, Inc.

Links

https://projectcalico.org
https://tigera.io/contact

https://tigera.io/training

@worldhopper

TIGERA