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Kubernetes CNI - Calico VxLAN Mode

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Version：v1.2
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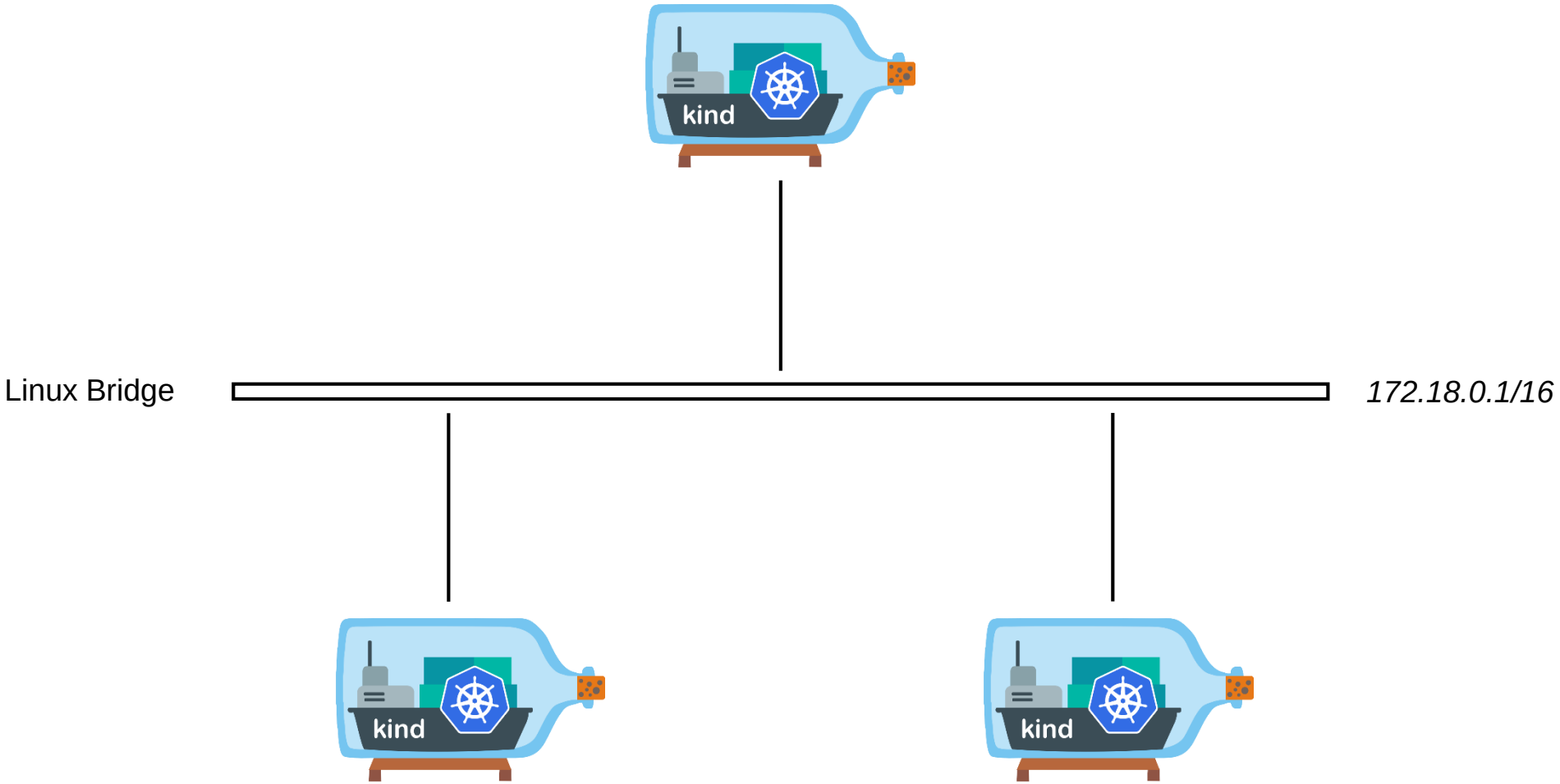
Calico VxLAN Mode - Prepare Environment



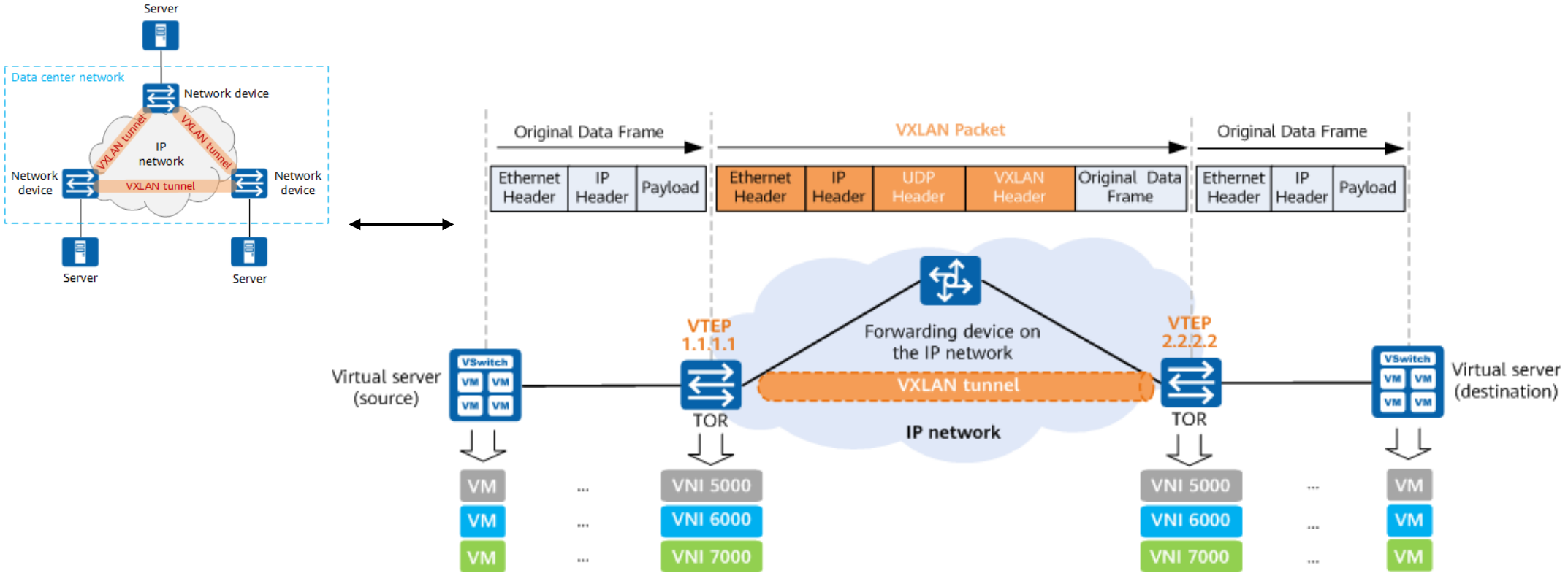
Calico VxLAN Mode - Prepare Environment

```
# 1.prep noCNI env
cat <<EOF | kind create cluster --name=calico-vxlan --image=kindest/node:v1.23.4 --config=-
kind: Cluster
apiVersion: kind.x-k8s.io/v1alpha4
networking:
        disableDefaultCNI: true
nodes:
        - role: control-plane
        - role: worker
        - role: worker
containerdConfigPatches:
- |-
  [plugins."io.containerd.grpc.v1.cri".registry.mirrors."192.168.2.100:5000"]
    endpoint = ["http://192.168.2.100:5000"]
EOF

# 2.remove taints
controller_node=`kubectl get nodes --no-headers  -o custom-columns=NAME:.metadata.name| grep control-plane`
kubectl taint nodes $controller_node node-role.kubernetes.io/master:NoSchedule-
kubectl get nodes -o wide

# 3. install CNI
kubectl apply -f calico.yaml

# 4. install necessary tools
for i in $(docker ps  -a --format "table {{.Names}}" | grep calico-vxlan)
do
    echo $i
    docker cp /usr/bin/calicoctl $i:/usr/bin/calicoctl
    docker cp /usr/bin/ping $i:/usr/bin/ping
    docker exec -it $i bash -c "sed -i -e 's/jp.archive.ubuntu.com\|archive.ubuntu.com\|security.ubuntu.com/old-releases.ubuntu.com/g'
/etc/apt/sources.list"
    docker exec -it $i bash -c "apt-get -y update >/dev/null && apt-get -y install net-tools tcpdump lrzsz >/dev/null 2>&1"
done
```

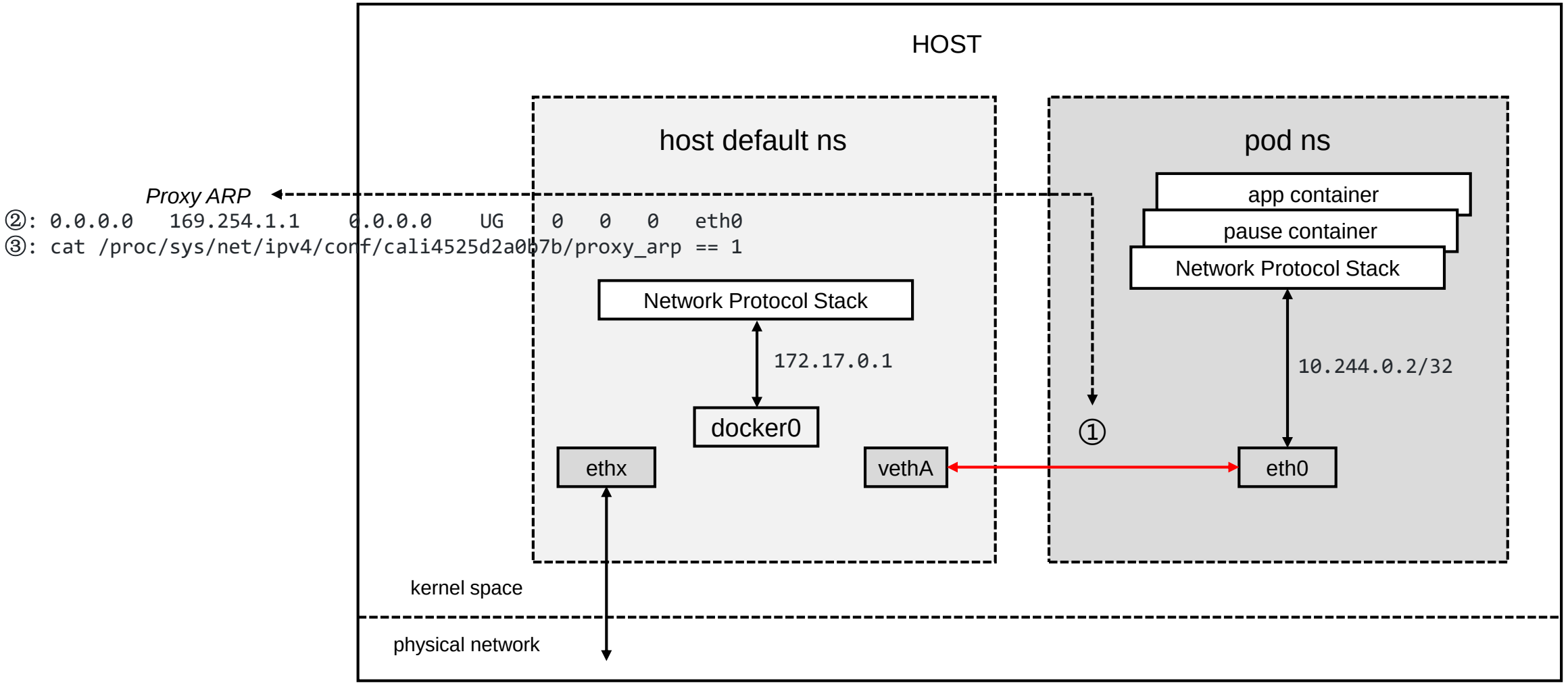
Calico VxLAN Mode - VxLAN Basics

Virtual eXtensible Local Area Network (VXLAN) is one of the Network Virtualization over Layer 3 (NVO3) technologies defined by the Internet Engineering Task Force (IETF) and is an extension to Virtual Local Area Network (VLAN). VXLAN encapsulates a Layer 2 Ethernet frame into a UDP packet and transmits the packet over a Layer 3 network.

As shown in Figure 1-1, VXLAN is essentially a tunneling technology. It establishes a logical tunnel on the IP network between the source and destination network devices to encapsulate user-side packets and forward them through the tunnel. Servers are connected to different ports of network devices in the data center VXLAN network, which can be considered as a virtual Layer 2 switch.

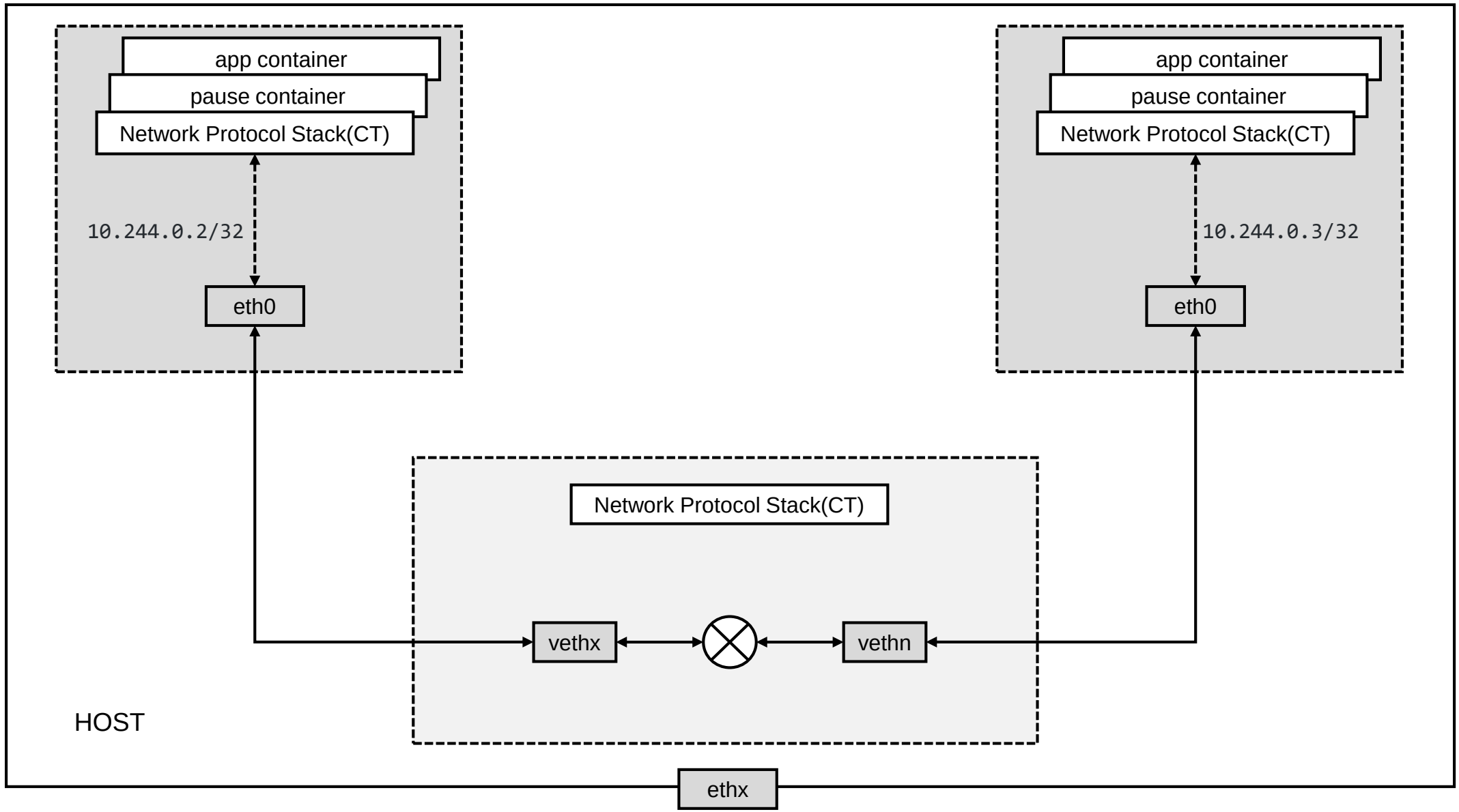


Calico VxLAN Mode - DataPath

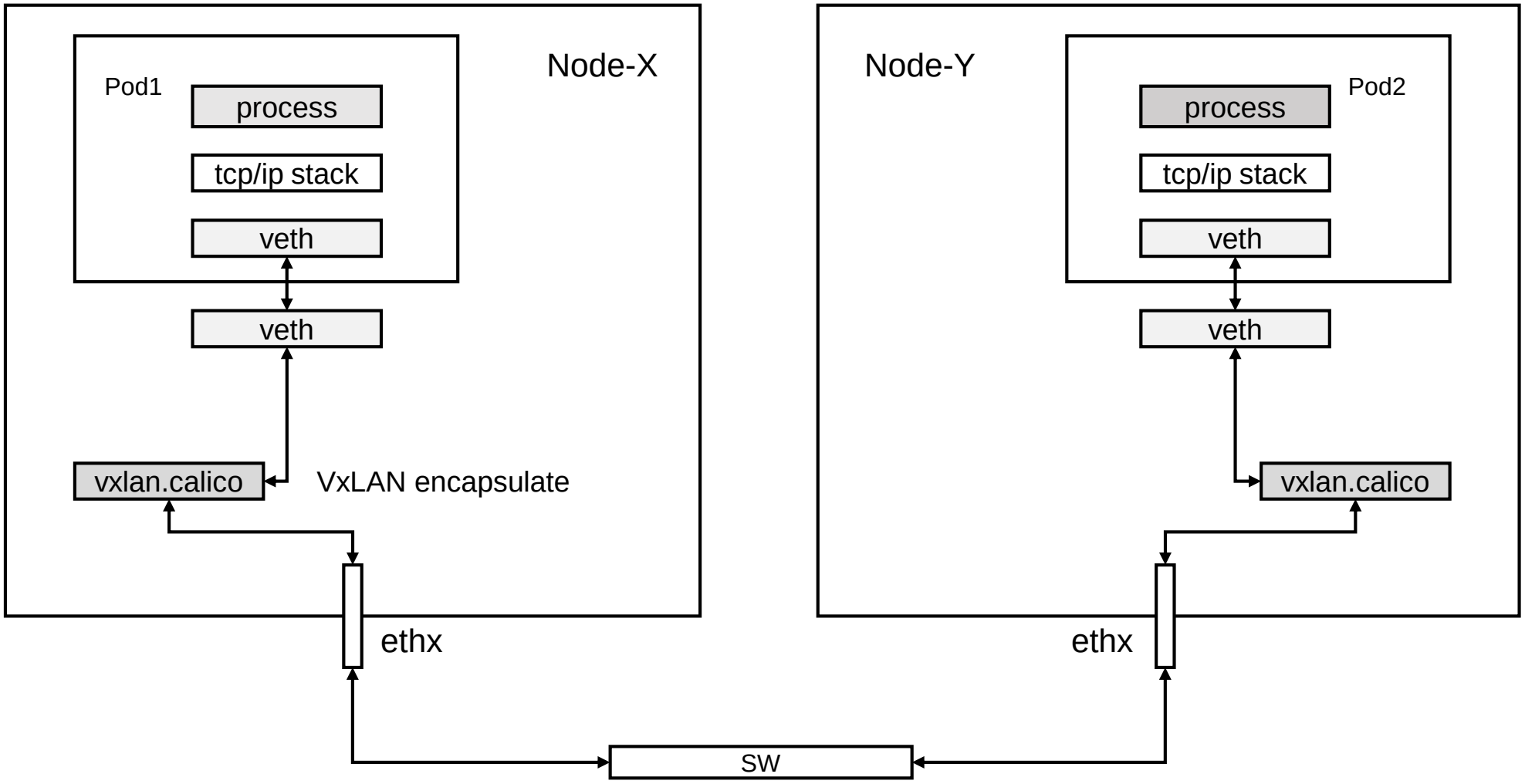


Docker spawns a container in the containers own network namespace (use the CLONE_NEWNET flag defined in sched.h when calling the clone system call to create a new network namespace) and later on runs a veth pair (a cable with two ends) between the container namespace and the host network stack.

Calico VxLAN Mode - DataPath



Calico VxLAN Mode - DataPath



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