DOCKER NETWORKING TIPS

Macvlan Usage

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Associated Youtube video:
https://youtu.be/3vI2DVb8qWk

About me

- Senior Engineering Manager at Cisco Systems Data Center group
- Author of “Mastering CoreOS” https://www.packtpub.com/networking-and-servers/mastering-coreos/)

- Docker Captain(https://www.docker.com/community/docker-captains)

- Blog: https://sreeninet.wordpress.com/
- Projects: https://github.com/smakam
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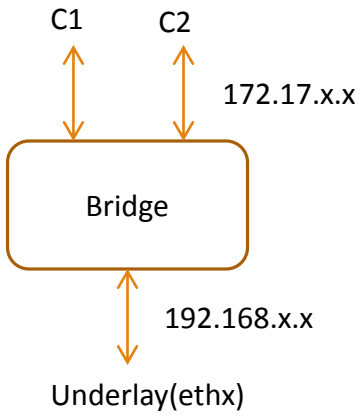
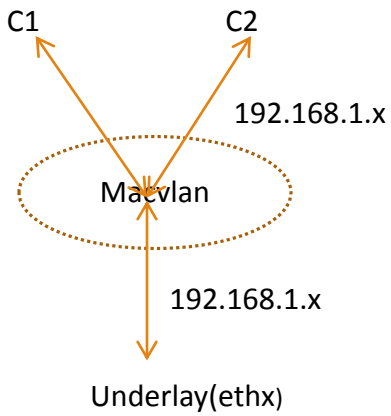
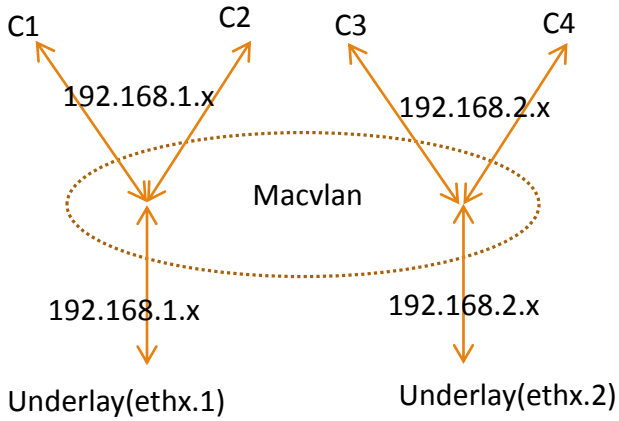
- Twitter: @srmakam

Bridge vs Macvlan







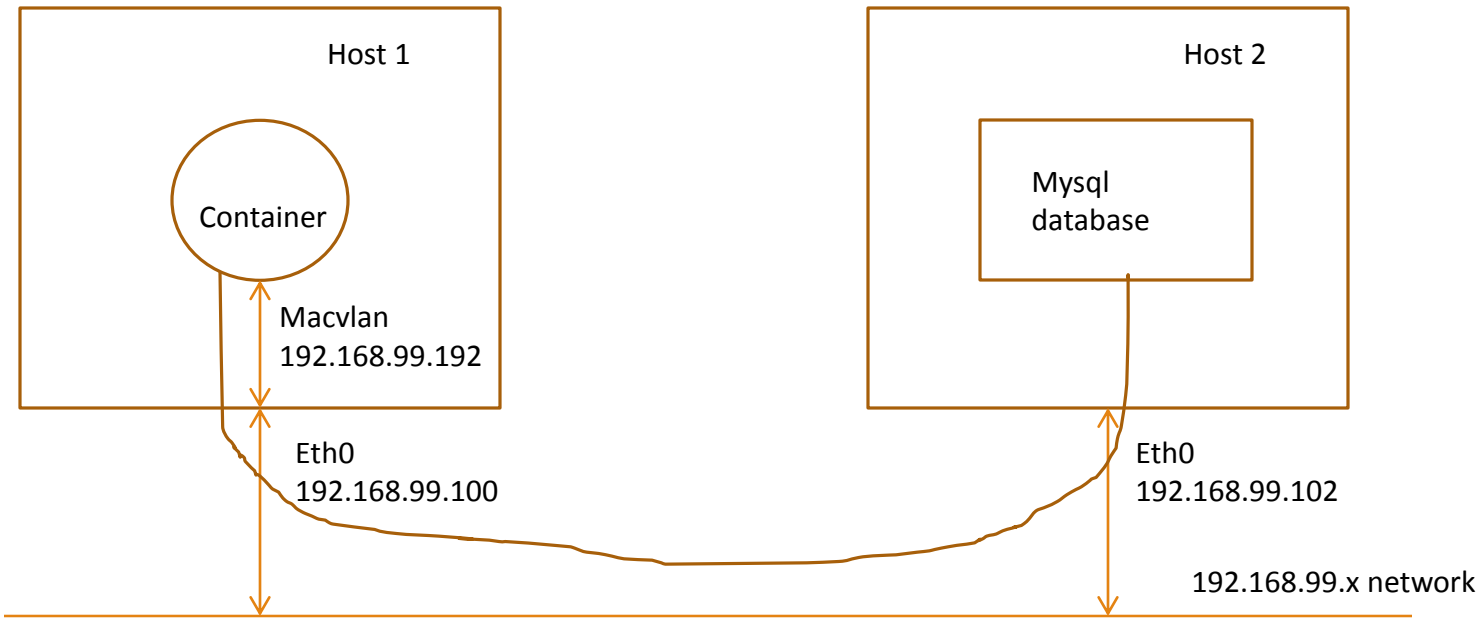
- Single physical interface can have multiple mac and ip addresses using macvlan driver.
- Macvlan bridge is simplified bridge implementation with no mac learning, NAT and STP.

Need for Macvlan network driver

- Need Container IP directly in underlay network managed by enterprise IT
- Explicit control over Container IP assignment
- Connect Containers to legacy applications
- Connect Containers to external network without overlay network overhead
- Have a need to preserve source IP of container

Macvlan Use-case 1

Connecting to Legacy non-containerized application

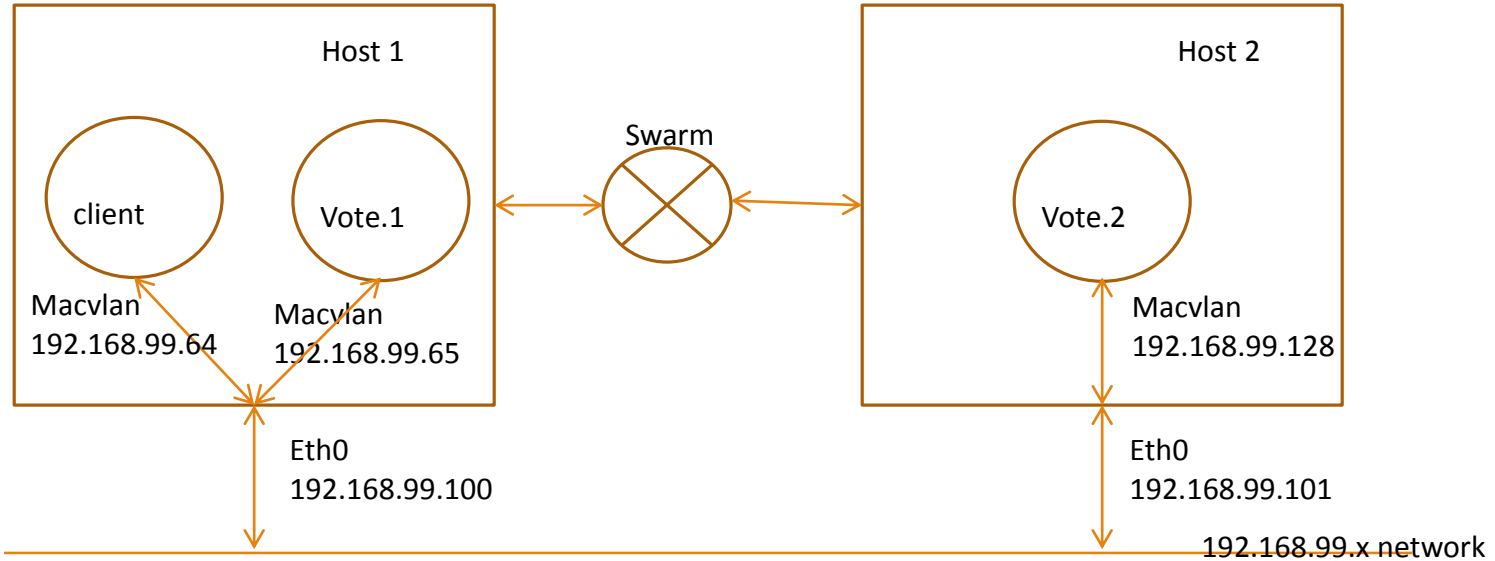


docker network create -d macvlan --subnet=192.168.99.0/24 --ip-range=192.168.99.192/26 --gateway=192.168.99.1 -o macvlan_mode=bridge -o parent=eth1 macvlantest

docker run --net=macvlantest -ti smakam/myubuntu:v6 bash

Macvlan Use-case 2

Multi-service application using Macvlan driver in Swarm cluster



Host 1:
docker network create --config-only --subnet 192.168.99.0/24 --gateway 192.168.99.1 -o parent=eth0 --ip-range 192.168.99.64/26 macvlan1c
Host 2:
docker network create --config-only --subnet 192.168.99.0/24 --gateway 192.168.99.1 -o parent=eth1 --ip-range 192.168.99.128/26 macvlan1c

Host 1:
docker network create -d macvlan --scope swarm --config-from macvlan1c macvlanswarm

docker service create --replicas 1 --name client --network macvlanswarm --detach=false smakam/myubuntu:v4 sleep infinity
docker service create --name vote --network macvlanswarm --mode replicated --replicas 2 --publish mode=ingress,target=80,published=8080 instavote/vote

References

- Blog on Macvlan and Ipvlan basics
- Blog on Docker Macvlan and Ipvlan networking plugin
- Docker Networking – common issues and troubleshooting techniques