R6 Test Document of IEC Type 5: Composable Integrated Edge Cloud (IEC) Server Blueprint Family

Introduction

Since DPU is PCIe-compatible device, we can further combine DPU and PCIe Networking together. In R6, we introduce a hardware layer or physical link /fabric layer between the DPU and the CPUs as below. With this layer, we extend the DPU cluster size and also use the DPU management features as well.

Networking Topology

In CoB design, we have multiple networks. At least one PCIe networking for multiple CPUs. Also we can introduce more connections as well as traditional RJ45 as the management ports as well. Hence all CoB Hardware are cloud native compatible at the beginning.
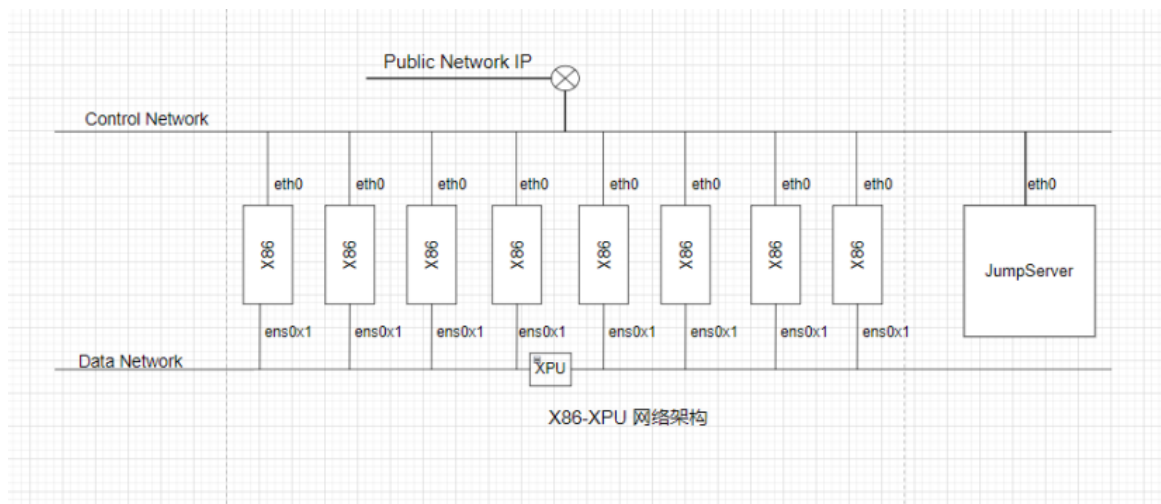
Networking in CoB system for Cloud Native Applications

Docker installation log

```
[1902926.143882] veth6f13209: renamed from eth0
[1902926.241432] docker0: port 2(veth90d2d35) entered disabled state
[1902926.277682] device veth90d2d35 left promiscuous mode
[1902926.282875] docker0: port 2(veth90d2d35) entered disabled state
[1904264.591426] docker0: port 2(vethfd791da) entered blocking state
[1904264.597576] docker0: port 2(vethfd791da) entered disabled state
[1904264.603870] device vethfd791da entered promiscuous mode
[1904264.609659] IPv6: ADDRCONF(NETDEV_UP): vethfd791da: link is not ready
[1904265.178860] eth0: renamed from vetha285947
[1904265.213756] IPv6: ADDRCONF(NETDEV_CHANGE): vethfd791da: link becomes ready
[1904265.221006] docker0: port 2(vethfd791da) entered blocking state
[1904265.227116] docker0: port 2(vethfd791da) entered forwarding state
[1904265.701099] docker0: port 2(vethfd791da) entered disabled state
[1904265.707334] vetha285947: renamed from eth0
[1904265.809211] docker0: port 2(vethfd791da) entered disabled state
[1904265.845497] device vethfd791da left promiscuous mode
[1904265.850690] docker0: port 2(vethfd791da) entered disabled state
[1905093.586259] docker0: port 2(veth5bab49b) entered blocking state
[1905093.592389] docker0: port 2(veth5bab49b) entered disabled state
[1905093.598694] device veth5bab49b entered promiscuous mode
[1905093.604509] IPv6: ADDRCONF(NETDEV_UP): veth5bab49b: link is not ready
[1905094.178399] eth0: renamed from veth0e959c3
[1905094.209270] IPv6: ADDRCONF(NETDEV_CHANGE): veth5bab49b: link becomes ready
[1905094.216504] docker0: port 2(veth5bab49b) entered blocking state
[1905094.222614] docker0: port 2(veth5bab49b) entered forwarding state
[1905094.708029] docker0: port 2(veth5bab49b) entered disabled state
[1905094.714275] veth0e959c3: renamed from eth0
[1905094.823988] docker0: port 2(veth5bab49b) entered disabled state
[1905094.860252] device veth5bab49b left promiscuous mode
[1905094.865430] docker0: port 2(veth5bab49b) entered disabled state
[1907665.272865] docker0: port 2(vethbbaa260) entered blocking state
[1907665.279008] docker0: port 2(vethbbaa260) entered disabled state
[1907665.285333] device vethbbaa260 entered promiscuous mode
[1907665.291168] IPv6: ADDRCONF(NETDEV_UP): vethbbaa260: link is not ready
```

Docker config

ExecStart=/usr/bin/dockerd -H unix:///var/run/docker.sock -H tcp://0.0.0.0:2375

docker-compose

```
cat >/etc/docker/daemon.json << EOF
{
    "data-root":"/home/docker",
    "debug":true,
    "default-address-pools":[
    {
        "base":"192.1.0.0/16",
        "size":24
    }]
}
EOF
```

docker-swarm init

docker swarm init --advertise-addr 10.3.1.16 # set Manager

```
[root@localhost ~]# docker swarm init --advertise-addr=192.168.65.129
Swarm initialized: current node (3tkery351fmsroatxu6nb3nvs) is now a manager.

To add a worker to this swarm, run the following command:

    docker swarm join --token SWMTKN-1-2fl56eq1fov04ftmzsaayrybz92mrc2c90ja5sc8ni4ur5ze54-8lta9gj7pot0s9fhhxsbca

To add a manager to this swarm, run 'docker swarm join-token manager' and follow the instructions.
```

docker swarm join-token manager   #join 10.3.1.16
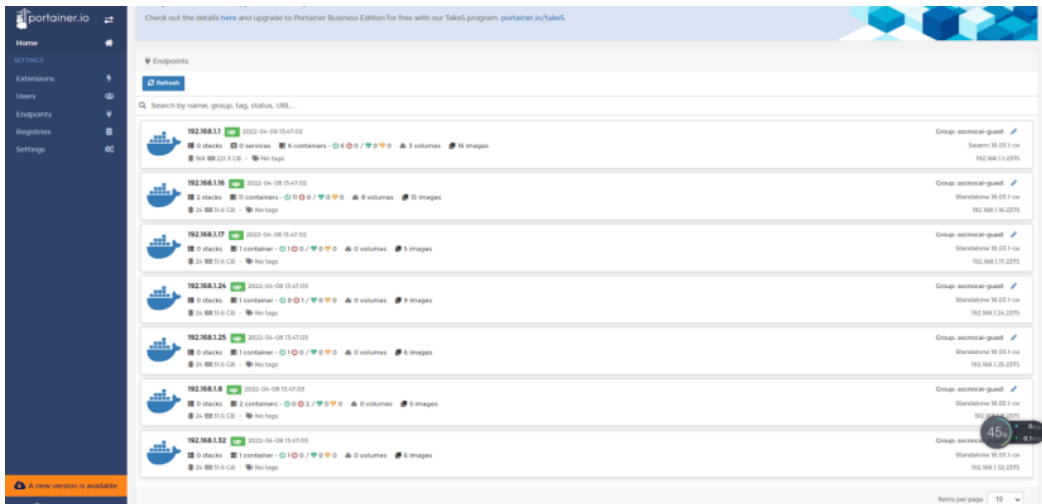
show

```
[root@master docker]# docker node ls
ID                          HOSTNAME   STATUS    AVAILABILITY   MANAGER STATUS   ENGINE VERSION
4olgybws3v99o0dgux9wmy7q0 *  master     Ready     Active         Leader           19.03.5
sq72fnr3fs7c9sq2q460lcti0    slave      Ready     Active                          19.03.5
```


Docker cluster status log
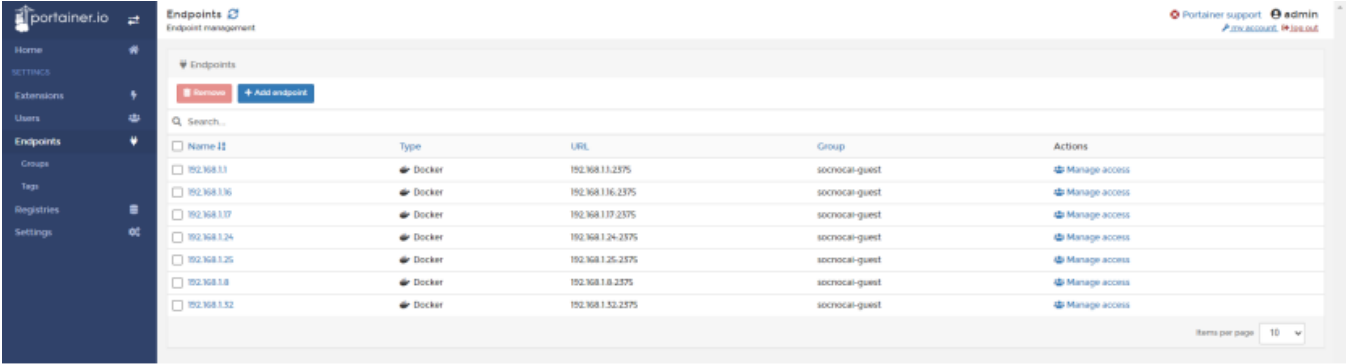
Web portal screenshot

The test is to evaluate the performance of SmartNIC offloading.

Test API description

Thus we currently don't have any Test APIs provided.

Test Dashboards

n/a

Additional Testing

n/a

Bottlenecks/Errata

n/a