BMWG - Containerized Infrastructure Benchmarking

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Hackathon Plan

- The main goal is to figure out container networking performance impacts by various resource options.

  - Related Draft:

    Considerations for Benchmarking Network Performance in Containerized Infrastructures
    https://tools.ietf.org/html/draft-dcn-bmwg-containerized-infra

  - Verifying words in draft:

    "The instantiation of C-VNFs is somewhat non-deterministic and apparently NUMA-Node agnostic, which is one way of saying that performance will likely vary.."

Hackathon Plan

- Verifying CPU allocation correction using current container orchestration engine
  - Kubernetes CPU Scheduler (v1.6.1)
  - Compare with CPU pinning technology
    - CMK(CPU Manager for K8S)
- Allocating same number of CPUs to POD
  - measuring throughput

Hackathon Plan

- System – Remote Site(SSU)
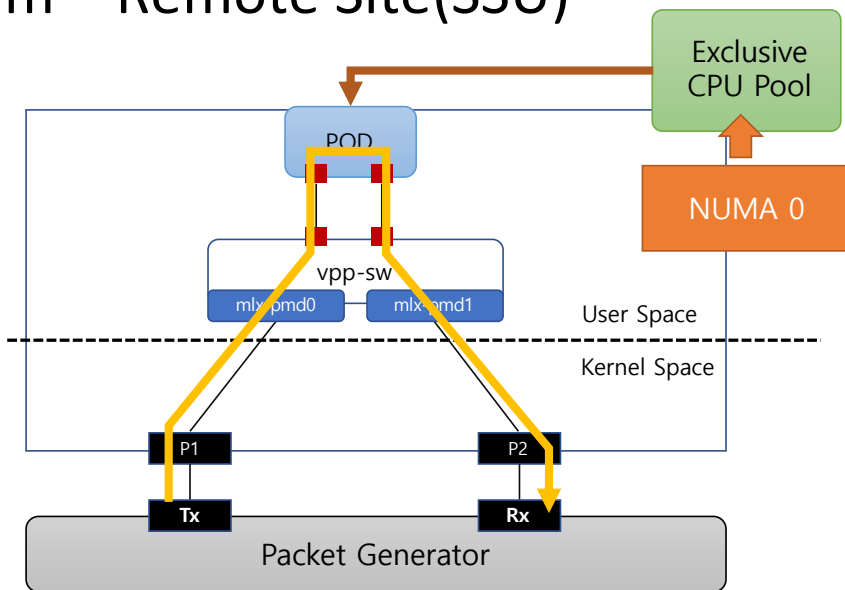
[POD]
Suricata
Simple rule to pass incoming traffic to output port

[CPU Pinning]
CMK
Assign dedicated CPU Core in specific NUMA Zone
Kubernetes native

[Container Networking]
DPDK / Contiv-VPP

[Traffic Generator] – Trex
On Bare-metal
Send IMIX traffic (255 clients—255 servers)

What got done

- Unfortunately, we cannot get expected result yet..
  - So many issues..
    - Install/config – HW/OS/NIC dependencies
    - Base packet throughput/drop were bad
      - Tx: 1/5/10 Gbps -> Rx: ~ 1 Mbps
      - UDP/Ethernet Checksum Error
      - VPP Switch configuration(?)
- Trying to solve problem ASAP – during this week
  - And sharing results to the BMWG

What we learned

- Differences between vSwitch and VNF benchmarking
  - We thing that just forwarding from switch to POD
    - But it's not..!
  - Difficult to find the problem point
- But in other hand, we learned more than simple/quick success
  - Understanding for technologies and configurations
    - K8S, VPP, TRex, …
- TRex Power consumption
  - Our server was down when running TRex with 100% CPU usage

Wrap Up

Team members:

- KJ Sun, Youngki Park, Hojoon Won, Younghan Kim (SSU)
- Wangbong Lee (ETRI)
- Derrick Lim (Rakuten)
- Somers-Harris David (Rakuten)
- Hogeun Lim (SSU) – Remote

First timers @ IETF/Hackathon:

We will find a way, we always have

Cooper - Interstellar movie