BMWG - Containerized Infrastructure Benchmarking

IETF 106
Nov. 16-17, 2019
Singapore

KJ SUN (Soongsil Univ.)
gomjae@dcn.ssu.ac.kr
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

• 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 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 couldn’t 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 thought 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: