Intern Project: Container Networking Testing and Benchmarking

Description	This project aims to include container-networking testing and benchmarking using OPNFV VSPERF.
Status	**PROJECT IN PROGRESS**
Difficulty	**MEDIUM**

Note: you may only apply to this internship position if the "Status" field shown above is "Open". To apply, please follow the Instructions for Students.

Description:

In this project, we will focus on container networking with Kubernetes. There are various plugin options that are available to achieve cluster networking, as described here.

Considering various options for container networking, it is important to understand and benchmark the performance of these networking solutions. Today, there exists few works that studies the container networking performance. However, majority of them do no use high-performance traffic generators and analysis tools, or does not run on high-performance servers that are used in NFV.

VSPERF, which provides detailed configuration and control, is ideal project to include testing and benchmarking container networking solution within a single server.

This work will be COMPLIMENTARY to CNCF Testbed activities.

Additional Information:

VSPERF: Iruya and Beyond

Desirable Skills:

- *Kubernetes and related toolchains (kubectl, kubeadm, kubespray, etc)*
- *Networking.*
- *Python*

Expected Outcome:

- *Automated Container networking "Setup and configuration"*
- *Container Networking Benchmarking Methodologies*
- *Comparative analysis - Results from Exhaustive testing of various solutions.*

Difficulty:

MEDIUM

Desired project timeline/completion date:

1. Automated Container networking (CN) setup on a single server with multiple interfaces support. Use of Kubeadm/Kubespray. For multiple interfaces either use DANM or MULTUS - 1 Month
2. Addition of CN testing logic in VSPERF (VSPERF Team will support in this activity) - 1 Month.
3. Design of Test methodologies, Test Metrics, and Traffic Patterns - VSPERF Team will support in this activity. This activity will be performed in parallel to the above 2.
4. Comparative testing, Reporting, Results Generation and Handoff - 1 Month.

Mentor(s) & contact info:

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Intern: