

COE: Project Proposals

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Name

The new project proposed aims at developing a framework for integrating Container Orchestration Engine (like Kubernetes) and OpenDaylight.

Repo Name

coe

Description

Container networking is gaining momentum in Telco and IT Cloud environment. The networking infrastructure for Container Orchestration Engine (like Kubernetes) is still basic and OpenDaylight can provide significant networking support to them. The aim of this project is to integrate COE and OpenDaylight in a seamless manner that allows COEs to use the existing OpenDaylight project/infrastructure.

The initial scope would be to integrate with Kubernetes.

Kubernetes is a well-known container orchestration engine framework and is gaining more adoption as container deployments are in the rise. The container deployment models are complex due to the fact that workloads are being deployed in a mix of VM, nested containers and bare-metal. Network is a key part of these deployments and one can imagine the complexity.

In order to ease, ODL can be used for network provisioning, orchestration and other network admin related activities. Also Openstack and Kubernetes integration enables ODL to address the above problems in a much simpler way. This project would cover integration of Kubernetes with ODL and would include models to manage Kubernetes network model, integration with framework like Kuryr and relevance to NFVi layer (upstreaming to OPNFV).

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Scope

The project will be offset-2 and aims at providing support for following type of workload deployments

- Deployment type 1 - Container only (Baremetal based)
- Deployment type 2 - VM and Container (mixed workload)

Consolidated list of works items

- Deployment type 1
 - Development of Kubernetes CNI Plugin for Opendaylight
 - Development of CNI Northbound for bare metal deployment

- Deployment type 2
 - Kuryr integration
 - Development of Neutron Northbound extensions
 - Usecase testing of VM and container networking
 - Multitenancy networking support for Containers

- CSIT
- Integration with OpenDaylight components like NetVirt/VPNService
- Upstreaming of this project to OPNFV

DPDK related work items

- Support DPDK virtio pmd in container
- Support container-based service function chaining
- Provide DPDK virtio pmd based container images for service function chaining and virtio pmd verification

Also, we plan to integrate with other COE like Mesos (uses CNI model for container networking)

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A detailed diagram for the proposed architecture is given below :

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Resources Committed (developers committed to working)

Prem Sankar G (Ericsson)
Faseela K (Ericsson)
Volker Luessem (Ericsson)
Rihab Banday (Ericsson)
Andre Fredette (RedHat)
Frederick Kautz (RedHat)
Sam Hague (RedHat)
Gideon Kaempfer (HPE)
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Initial Committers

Who would be the initial committers to the project? Please include each committer's First and Last Name, OpenDaylight Gerrit-ID, and Email Address

Prem Sankar G - prem.sankar.g@ericsson.com Gerrit-ID gpremsankar
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Vendor Neutral

No initial code for this project.

Meets Board Policy (including IPR)