

Common NFVI Telco Taskforce Antwerp Face-To-Face Sessions

Fu Qiao, China Mobile
Mark Shostak, AT&T
Mike Fix, AT&T

Infrastructure Labs

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 THE **LINUX** FOUNDATION



Discussion Outline

Requirements

- Intended Strategy
- Requirements
- Recommend multiple labs, multiple racks/lab

Intake & Onboarding

- Community Labs
- Lab Assignment, Access, Support

Lab Procurement (Present, Future)

Discussion Topic (CNTT-RI Lab Recommendation)

Appendix

- Infrastructure Requirements



Requirements



Problem Statement

Infrastructure needed to support physical manifestation of RA's (aka RI), with considerations:

- **Robust** and **Diverse**
- Compliant and **Compatible within OVP Ecosystem**
- Community Driven

Strategy

- **Sufficient** Compute and Controller **Nodes** - Parallel Testing (failover, multiple profile)
- Multiple Racks – Contingency and Failover
- Remote Access & Baremetal Provisioning - **Manifest Validations**
- **Second Environment** – parallel release/RI/etc testing

High Level Hardware Requirement

- 3 x Controller Nodes
- 10 x Compute Nodes (4 general + 2 per B/N/C)
- 1 x Jump Host
- 1 x Spine Switch and 2 x Leaf Switch in 1 x 48u Rack

Requirements.. continued



Promote Using OPNFV Templates

- POD Description File (PDF) – *add diff POD sizes/flavors*
- Scenario Description File (SDF) – *add new feature index for flavor size & POD quantity*

PDF (yaml)

Metadata (Lab Owner, Location)
H/W per node (Cpu, Disks, NICs)
Common Network Info (IP range, Subnets)



SDF (yaml)

Metadata (Name, Purpose, Owner)
Components (SDN-C, NFV features)
Deployment Tools (installers)
Hardware Prerequisites (SRIOV, DPDK)

Benefits

- Aligns to existing [OPNFV Standards](#)
- Easily maintained and edited [Templates](#) and YAML
- OPNFV installers can Consume
- CI/CD Pipelines built to consume PDFs/SDFs
- Provides details for Test Developers for Test Framework Design

Intake/Onboarding

[Support Process Link](#)

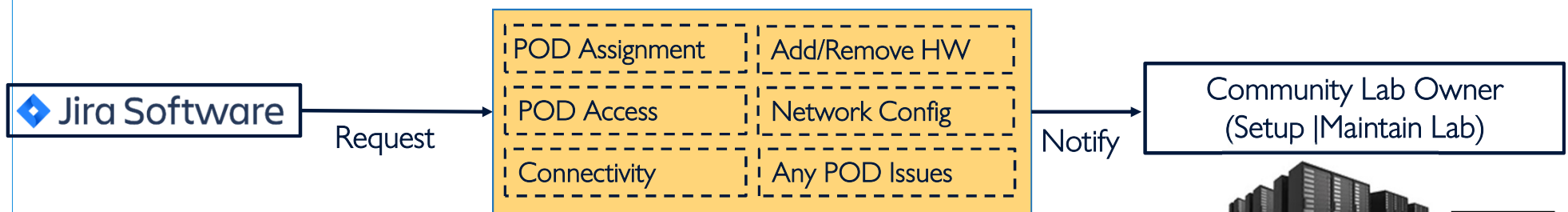
IRC channel #opnfv-pharos

OPNFV Community Labs

- OPNFV dedicated hardware
- 6-server PODs
- Pharos Compliant (h/w, ntwk, remote mgmt)
- All donated
- One CI lab hosted by LF
- Managed by individual companies

OPNFV Process for Lab Resource Assignment, Access and Support

1. Identify h/w requirement (# servers, special h/w)
2. Select a lab from [Community Labs](#) matching requirements, # PODs, availability
3. Contact lab owner(s) and confirm lab availability
4. Initiate and track lab support requests using [Jira](#) – access, connectivity, config



PMO & FMO Lab Procurement



Present Mode of Operations (PMO)

How Many OPNFV Community Labs Exist Today? Where Are They? Who Owns/Manages the Labs?

- [Community Labs](#) lists 18 active labs, locations, owners (companies) and contacts
- Owners manage labs

How Many Labs Can Be Used, or Secured, by One Particular Team, and For How Long?

- No limit
- Contingent on availability
- Inactive users: access revoked
- Inactive projects: resources reassigned



Future Mode of Operations (FMO)

How Does a Test Project Expand a Lab to Meet Project Needs, or Increase Lab Quantities?

- Identify h/w requirements, analyze gaps
- Contact lab owners to **survey & discuss** desired lab(s) changes
- Same JIRA [Documented Process](#) to request lab resource increase (**Pending Lab Team Alignment**)



What if an N+1, or Multiple versions of RI (Assume Different OPNFV Releases) are needed?

- Non-issue
- Identify the project needs – e.g. h/w quantities, PODs, configurations
- Work with lab owners to discuss special configurations
- Submit JIRA ticket requesting lab changes, or for new lab

CNTT-RI Recommendation

Goal

Select a secure, stable, and configurable lab, enabling automated reference implementation (RI) validations

Vision & Recommendation

- ✓ Establish 2 pre-existing lab locations in **Spirent** and **Intel** as a PoC
 - ✓ Supports multiple RI validations in parallel
 - ✓ Readily available supplier test apparatus & expertise
 - ✓ Leverage geo diversity



Qualifications – Must be Satisfied for Lab Selection

- **Available** with Outage Contingency (4-nine uptime)
- **Current & Stable** (current patch sets)
- Demonstrated **Integration with the OVP Ecosystem**
- **Secure** (physical, and logical)
- Support Readily Available (business days, follow the sun)
- Capable of handling performance loads
- **Configurable with minimal downtime**
- Sufficient capacity to expand nodes/racks
- **Effortless onboarding process** for Users and Developers (VNFs)
- Ability to simulate rack failover

Backup Slides

Infra: Requirements

https://github.com/cntt-n/CNTT/blob/master/doc/ref_impl/chapter02.md

Strategy

- 4th compute - supports parallel host profile/failover testing (e.g. executing SRIOV and OVS-DPDK in concurrently)
- Logical/physical 2x racks to mimic rack-level failover (vm-reset)
- Recommend 2nd env available - supports parallel testing, possibly of different distributions/RIs

Configuration

•Controller Nodes:

- 3 x
 - 2x dual-port 10Gbps NIC.
 - 2.2GHz 14C/28T.
 - 256GB RAM.
 - 10TB HDD.
 - 3.2TB SSD.

•Compute Node

- 4x
 - 2x dual-port 25Gbps NIC.
 - 2.2GHz 24C/48T.
 - 512GB RAM.
 - 2TB HDD

•Jump/Baremetal manager

- 1x
 - 2x dual-port 10Gbps NIC.
 - 2.2GHz 14C/28T.
 - 256GB RAM.
 - 10TB HDD

•Networking

- 1x Spine Switch
 - Total: 32x100G
- 2x Leaf Switch
 - 48 x 25/10G
 - 6 x 100G

•Miscellaneous

- 1x 48u Rack
- Cables and Transcievers

Infra: Leverage PDF and SDF Templates

Defined

- Point of Devliery (PoD) Descriptor File (PDF) and Scenario Descriptor File (SDF)
- Installers consume the PDF to execute any tasks on a POD (for hardware and config info)
- CICD Pipelines consume PDFs to assign, and execute on, integration/deployment tasks
- Test frameworks need to know the deployment options to trigger the appropriate test cases.

PDF Contents PDF Template: https://gerrit.opnfv.org/gerrit/gitweb?p=pharos.git;a=blob_plain;f=config/pod1.yaml;hb=HEAD

- › pod.yaml
- › Metadata
 - Labowner
 - Location
- › Hardware information per node
 - Cpu
 - Disks
 - OS (jumphost)
 - Remote management
 - Network Interfaces
- › Network.yaml
- › (Common for all PODs in a lab)
- › Metadata
 - Labowner
 - Location
- › Common Network Info
 - IP-address ranges
 - Subnets
 - Vlan configurations/tags

According to the new node plan for CNTT-RI, PDF should evolve to fit into different size of Pod. New feature index should also be added according to RM&RA

Infra: Leverage PDF and SDF Templates

Defined

- Scenario (test) define content and drive usage through a Scenario Descriptor File (SDF)
- Installers receive a list of components
- CI knows valid combinations of scenarios, options, installers
- CI pipelines receive tasks, and Release Managers understand dependencies

SDF Contents SDF Template (in review): <https://gerrit.opnfv.org/gerrit/#/c/30677/6/scenarios/templates/sdf-template.yaml>

- › Metadata
 - › Name
 - › History
 - › Purpose
 - › Owner
- › Components
 - › e.g. SDN controllers
 - › Versions
 - › Optional features, e.g. NFV features
- › Deployment Options
 - › Hardwaretypes
 - › Virtual deploy
 - › HA, NOHA
- › Deployment Tools
 - › Supporting install
 - › Valid options per
- › Hardware Prerequisites
 - › e.g. SRIOV, DPDK

New feature index should be added to SDF according to RM&RA. E.g., identify different flavor and the number of node, identify specific configuration

Infra: Intake & Onboarding

OPNFV Community Labs

- [Pharos Specification](#) provides information on minimum hardware and network requirement for an OPNFV lab.
- Current [Community Labs](#) are collections of OPNFV dedicated hardware, generally partitioned into Pharos-compliant PODs. Each POD is a cluster of 6+ servers.
- Except CI Lab hosted by LF, all [Community Labs](#) are donated and thus managed by individual companies.

Community Lab Access and Support

- OPNFV uses [Jira](#) ("[Infra Group](#)" project / key "[INFRA](#)") to initiate and track lab support requests, including requests for POD access, connectivity, add/remove hardware, network configuration and POD issues, etc.
- OPNFV uses IRC channel #opnfv-pharos for communication with Pharos community and lab support.
- Just follow the [Documented Process](#) to request POD access and support of a community lab.

How Can a Test Project Secure a Lab

- Identify hardware requirement of your test project, e.g. how many servers, any special hardware, etc.
- Based on information in [Community Labs](#) and related details of each lab, identify which lab(s) meet your requirement, how many PODs you need, their availability status, etc.
- Contact owner(s) of your desired lab(s) to confirm information accuracy and resource availability
- Follow the [Documented Process](#) to request POD resources, VPN access and support.

CNTT | Roadmap

- Reference Model
- Reference Architecture
- Reference Implementation

