PHAROS

Release Latest

May 09, 2019

Contents

CHAPTER 1

OPNFV Community Lab Infrastructure

1.1 Pharos Project Information

1.1.1 Introduction

The Pharos Project deals with developing an OPNFV lab infrastructure that is geographically and technically diverse. This will greatly assist in developing a highly robust and stable OPNFV platform. Community labs are hosted by individual companies and there is also an OPNFV lab hosted by the Linux Foundation that has controlled access for key development and production activities. The **Pharos Specification** defines a "compliant" deployment and test environment. Pharos is responsible for defining lab capabilities, developing management/usage policies and process; and a support plan for reliable access to project and release resources. Community labs are provided as a service by companies and are not controlled by Pharos however our goal is to provide easy visibility of all lab capabilities and their usage at all-times.

A requirement of Pharos labs is to provide **bare-metal** for development, deployment and testing. This is resource intensive from a hardware and support perspective while providing remote access can also be very challenging due to corporate IT policies. Achieving a consistent *look and feel* of a federated lab infrastructure continues to be an objective. Virtual environments are also useful and provided by some labs. Jira is currently used for tracking lab operational issues as well as for Pharos project activities.

Future lab capabilities are currently focused on:

1) Automatic resource provisioning
2) Dashboards (for capability and usage)
3) *Virtual Labs* for developer on-boarding

1.1.2 Project Communication

- Pharos page
- Pharos project Wiki
- Pharos Planning

- Pharos Jira
- Weekly INFRA WG meeting
- Weekly coordination meeting for Test related projects
- IRC: freenode.net #opnfv-pharos
- Mailing List: use opnfv-tech-discuss@lists.opnfv.org and tag your emails with [Pharos] in the subject for filtering

1.1.3 Project Release Artifacts

- Project Repository
- Continuous Integration
- Documentation

1.1.4 Pharos Lab Process

- Process for requesting lab access and support https://wiki.opnfv.org/display/INF/Infra+Lab+Support
- Pharos Lab Governance and Policies https://wiki.opnfv.org/display/pharos/Pharos+Policies
- Status of Community labs https://wiki.opnfv.org/display/pharos/Community+Labs

1.1.5 Current Labs

An interactive map of OPNFV lab locations, lab owners and other lab information is maintained on the Pharos Wiki

#	Hosted by	Home page	Location
1	Linux Foundation	https://wiki.opnfv.org/display/pharos/Lflab+Hosting	Portland, Oregon
2	China Mobile	https://wiki.opnfv.org/display/pharos/Lab2+Chinamobile+Hosting	Beijing, China
3	Enea	https://wiki.opnfv.org/display/pharos/Enea-pharos-lab	Kista, Sweden
4	Ericsson	https://wiki.opnfv.org/display/pharos/Ericsson+Hosting+and+Request+Process	Montreal, Canada
5	Huawei	https://wiki.opnfv.org/display/pharos/Huawei+Hosting	Langfang, China Shanghai, China Munich, Germany
6	Intel	https://wiki.opnfv.org/display/pharos/Intel+Hosting	Hillsboro, Oregon
7	Nokia	https://wiki.opnfv.org/display/pharos/Nokia+Hosting	Espoo, Finland
8	Okinawa Open Lab	https://wiki.opnfv.org/display/pharos/OOL+TestLab	Okinawa, Japan
9	Orange	https://wiki.opnfv.org/display/pharos/Opnfv-orange	Lannion, France Paris, France
10	ZTE	https://wiki.opnfv.org/display/pharos/ZTE+SH+Testlab	Shanghai, China

1.1.6 Pharos project Key Facts

Key Project Facts are maintained in the Pharos INFO file in the project repo

- Can be viewed on the project wiki INFO
- Project key facts in repo INFO

1.2 Pharos Specification

The Pharos Specification provides information on Pharos hardware and network requirements

1.2.1 Pharos Compliance

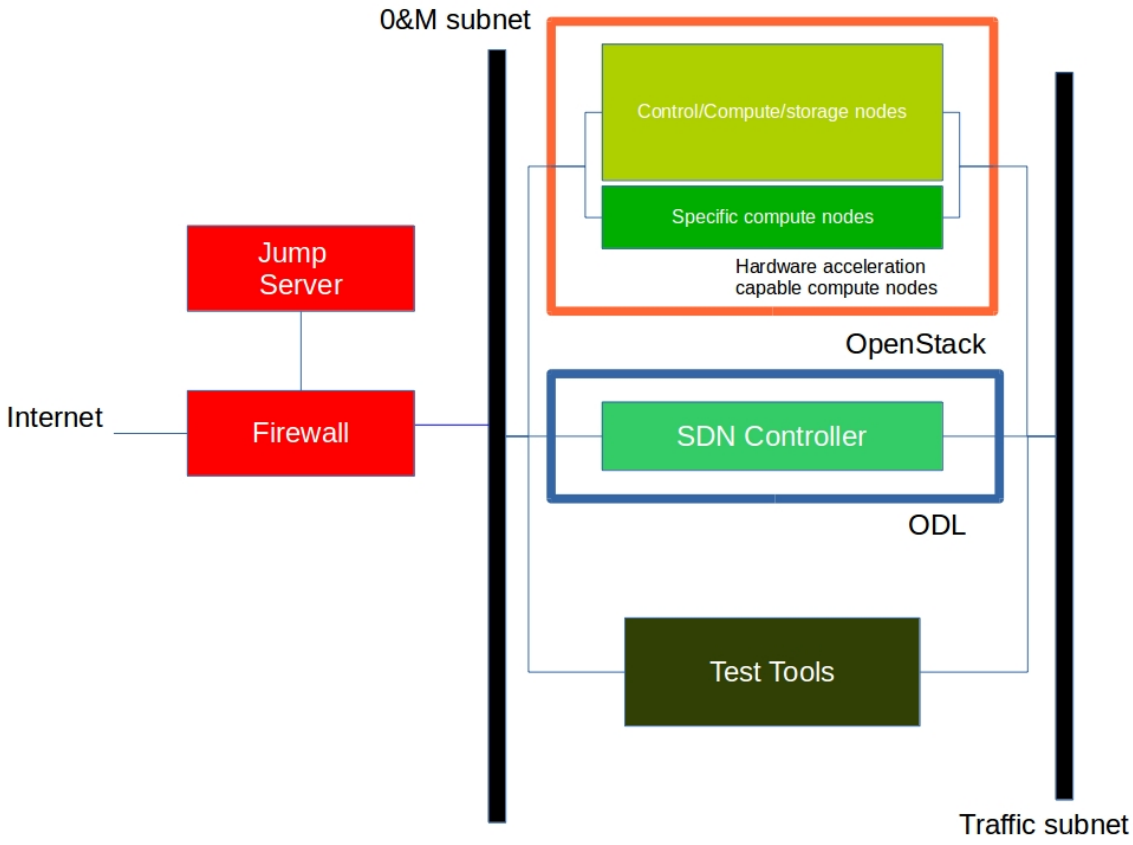
The **Pharos Specification** defines a hardware environment for deployment and testing of the OPNFV platform release.

Pharos lab infrastructure has the following objectives:

- Provides secure, scalable, standard and HA environments for feature development
- Supports the full Euphrates deployment lifecycle (this requires a **bare-metal** environment)
- Supports functional and performance testing of the Euphrates release
- Provides mechanisms and procedures for secure remote access to Pharos compliant environments for OPNFV community

Deploying Euphrates in a Virtualized environment is possible and will be useful, however it does not provide a fully featured deployment and realistic test environment for the Euphrates release of OPNFV.

The high level architecture is outlined in the following diagram:



1.2.2 Hardware

A pharos compliant OPNFV test-bed provides:

- One CentOS/Ubuntu jump server on which the virtualized Openstack/OPNFV installer runs. For an ARM POD, the jump server should also be an ARM server
- 3 controller nodes
- 2 compute nodes
- A configured network topology allowing for LOM, Admin, Public, Private, and Storage Networks
- Remote access as defined by the Jenkins slave configuration guide http://artifacts.opnfv.org/octopus/brahmaputra/docs/octopus_docs/opnfv-jenkins-slave-connection.html#jenkins-slaves

In the Euphrates release you may select a variety of deployment toolchains to deploy from the jump server.

Servers

CPU:

- Intel Xeon E5-2600v2 Series or newer
- AArch64 (64bit ARM architecture) compatible (ARMv8 or newer)

Firmware:

- BIOS/EFI compatible for x86-family blades
- EFI compatible for AArch64 blades

Local Storage:

Below describes the minimum for the Pharos spec, which is designed to provide enough capacity for a reasonably functional environment. Additional and/or faster disks are nice to have and mayproduce a better result.

- Disks: 2 x 1TB HDD + 1 x 100GB SSD (or greater capacity)
- The first HDD should be used for OS & additional software/tool installation
- The second HDD is configured for CEPH OSD
- The SSD should be used as the CEPH journal
- Performance testing requires a mix of compute nodes with CEPH (Swift+Cinder) and without CEPH storage
- Virtual ISO boot capabilities or a separate PXE boot server (DHCP/tftp or Cobbler)

Memory:

- 32G RAM Minimum

Power Supply

- Single power supply acceptable (redundant power not required/nice to have)

1.2.3 Networking

Network Hardware

- 24 or 48 Port TOR Switch
- NICs - Combination of 1GE and 10GE based on network topology options (per server can be on-board or use PCI-e)
- Connectivity for each data/control network is through a separate NIC. This simplifies Switch Management however requires more NICs on the server and also more switch ports
- BMC (Baseboard Management Controller) for lights-out mangement network using IPMI (Intelligent Platform Management Interface)

Network Options

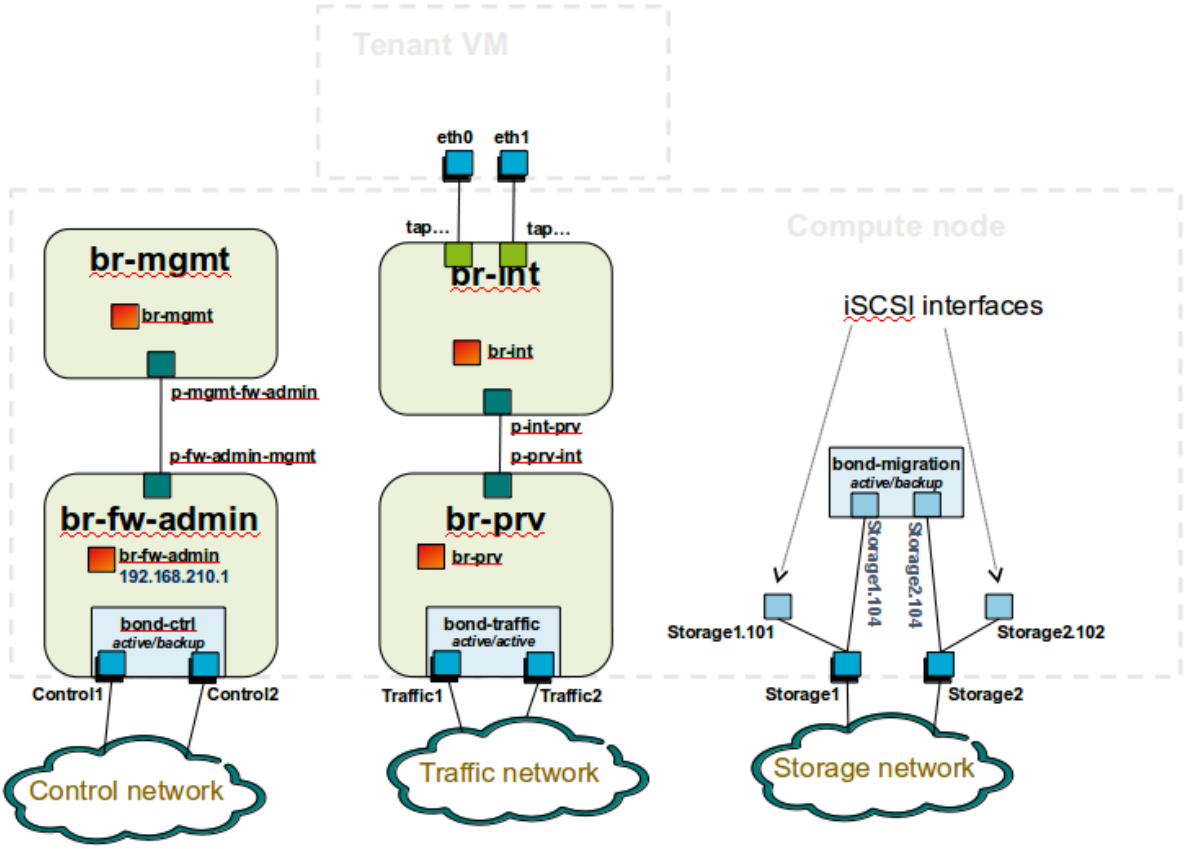
- Option I: 4x1G Control, 2x10G Data, 48 Port Switch
  - 1 x 1G for lights-out Management
  - 1 x 1G for Admin/PXE boot
  - 1 x 1G for control-plane connectivity
  - 1 x 1G for storage
  - 2 x 10G for data network (redundancy, NIC bonding, High bandwidth testing)
- Option II: 1x1G Control, 2x 10G Data, 24 Port Switch
  - Connectivity to networks is through VLANs on the Control NIC
  - Data NIC used for VNF traffic and storage traffic segmented through VLANs
- Option III: 2x1G Control, 2x10G Data, 2x10G Storage, 24 Port Switch
  - Data NIC used for VNF traffic

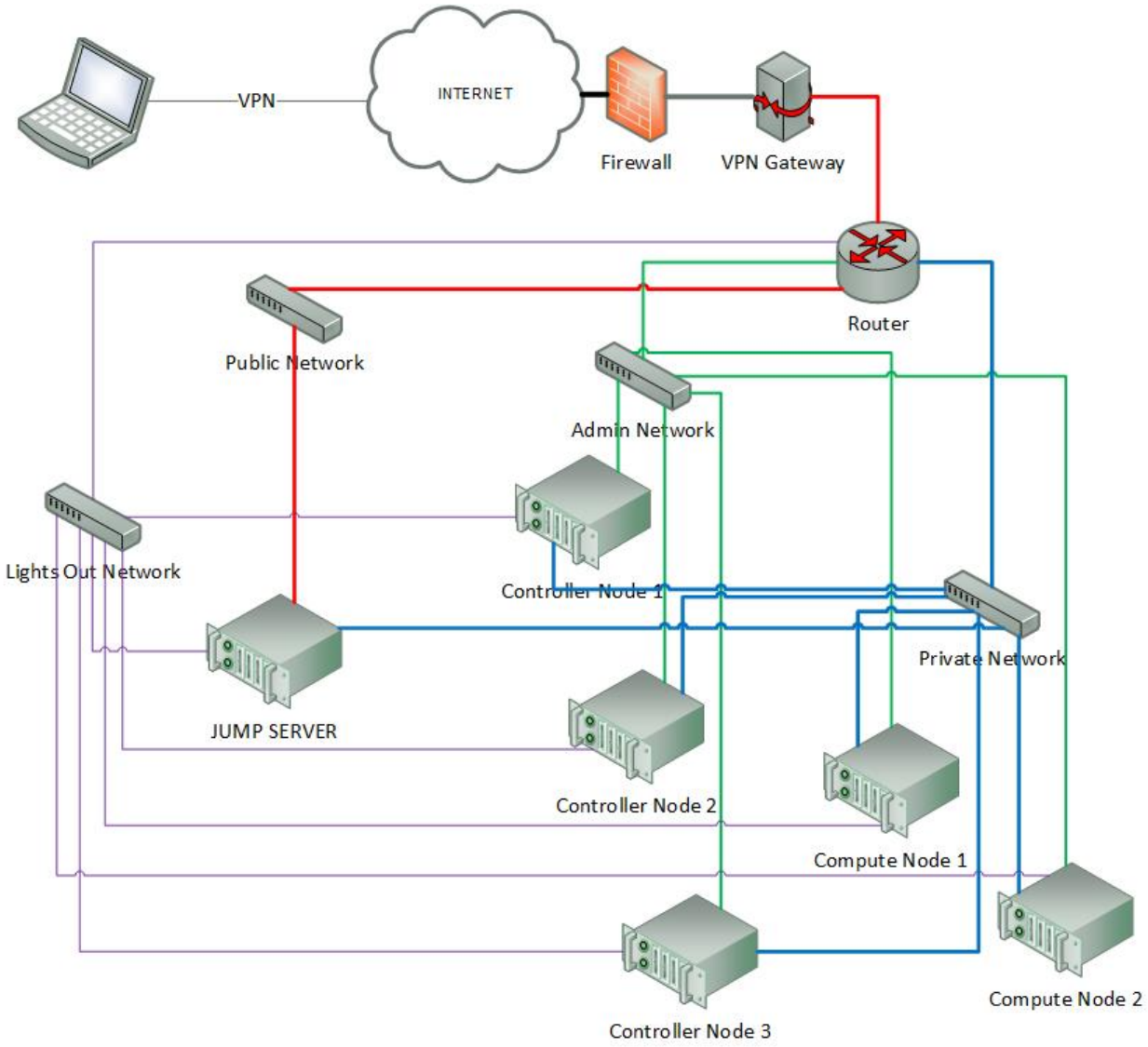
- Storage NIC used for control plane and Storage segmented through VLANs (separate host traffic from VNF)
- 1 x 1G for lights-out mangement
- 1 x 1G for Admin/PXE boot
- 2 x 10G for control-plane connectivity/storage
- 2 x 10G for data network

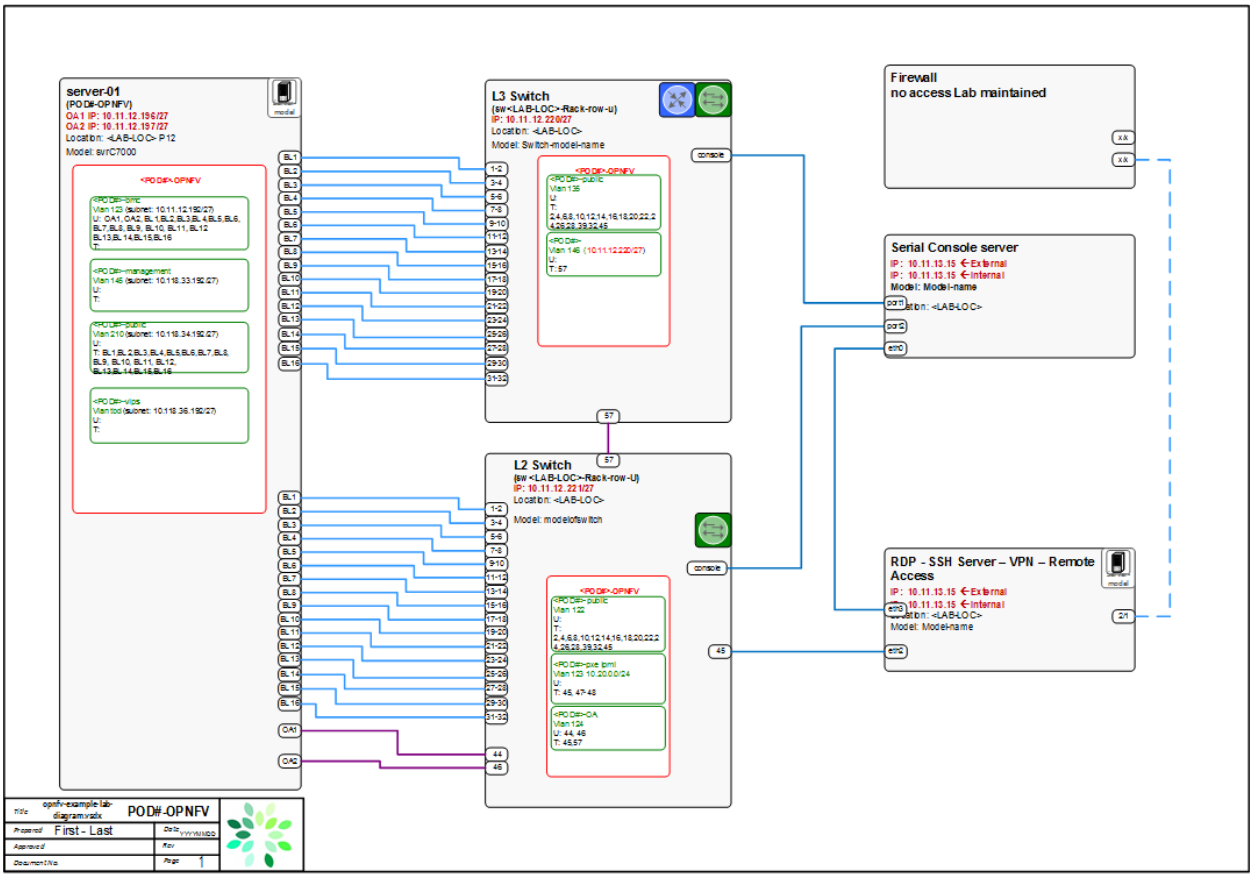
Documented configuration to include:

- Subnet, VLANs (may be constrained by existing lab setups or rules)
- IPs
- Types of NW - lights-out, public, private, admin, storage
- May be special NW requirements for performance related projects
- Default gateways

Sample Network Drawings




VPN
INTERNET
Firewall
VPN Gateway
Router
Public Network
Admin Network
Lights Out Network
Controller Node 1
Private Network
JUMP SERVER
Controller Node 2
Compute Node 1
Compute Node 2
Controller Node 3



Download the visio zip file here: opnfv-example-lab-diagram.vsdx.zip

1.2.4 Remote Management

Remote access is required for . . .

- Developers to access deploy/test environments (credentials to be issued per POD / user)
- Connection of each environment to Jenkins master hosted by Linux Foundation for automated deployment and test

OpenVPN is generally used for remote however community hosted labs may vary due to company security rules. For POD access rules / restrictions refer to individual lab documentation as each company may have different access rules and acceptable usage policies.

Basic requirements:

- SSH sessions to be established (initially on the jump server)
- Packages to be installed on a system (tools or applications) by pullig from an external repo.

Firewall rules accomodate:

- SSH sessions
- Jenkins sessions

Lights-out management network requirements:

- Out-of-band management for power on/off/reset and bare-metal provisioning

- Access to server is through a lights-out-management tool and/or a serial console
- Refer to applicable light-out mangement information from server manufacturer, such as ...
  - Intel lights-out RMM
  - HP lights-out ILO
  - CISCO lights-out UCS

Linux Foundation Lab is a UCS-M hardware environment with controlled access *as needed*

- Access rules and procedure are maintained on the Wiki
- A list of people with access is maintained on the Wiki
- Send access requests to infra-steering@lists.opnfv.org with the following information ...
  - Name:
  - Company:
  - Approved Project:
  - Project role:
  - Why is access needed:
  - How long is access needed (either a specified time period or define "done"):
  - What specific POD/machines will be accessed:
  - What support is needed from LF admins and LF community support team:
- Once access is approved please follow instructions for setting up VPN access ... https://wiki.opnfv.org/get_started/lflab_hosting
- The people who require VPN access must have a valid PGP key bearing a valid signature from LF
- When issuing OpenVPN credentials, LF will be sending TLS certificates and 2-factor authentication tokens, encrypted to each recipient's PGP key

1.3 Pharos Templates and Configuration Files

Lab and POD templates are provided to help lab owners document capabilities, configurations and network topologies. Compute, network and storage specifications with network topology details are required to help developers use lab resources efficiently while minimizing support needs. This also greatly assists with troubleshoting. It is the responsibility of the lab owner to keep individual lab documents updated and determine appropriate level of detail that is exposed publicly through the Wiki or maintained in a secure Pharos repo securedlab with controlled access. To avoid deplicated content, it is suggested to directly include the rst docs in the wiki.

Before Danube release, securedlab is only opened for Infra WG committers and installer projects's contributors. Since Euphrates release, it is opened for all the contributors of Pharos project, if you are the owner of a community lab, please ask helpdesk to become a Pharos contributor in order to submit your PDF to the securedlab repo.

The goal of the Pharos Project is automation of resource provisioning. This requires machine readable inventory and network configuration files that follow common format.

1.3.1 Lab Specification Template

1.3.1.1 Introduction

Add an summary of what your lab hosts, its focus areas and purpose

1.3.1.2 Lab Resources

POD Name	Project(s)	Project Lead(s)	Email(s)	POD Role	Status	Notes
POD1	Project Name	John Doe	john@abc.com	CI: stable	Active	

- **POD Name:** Use consistent naming / numbering to avoid confusion. Hyperlinked to POD description.
- **POD Role:** CI stable, CI latest, Dev/test, Stand-alone, Virtual, . . .
- **Status:** Assigned, Configuring, Active, Troubleshooting, Available, . . .

1.3.1.3 Acceptable Usage Policy

Define lab user policies and expectations

1.3.1.4 Remote Access Infrastructure

Describe lab remote access setup (typically VPN, also link speed, any known restrictions, etc.)

1.3.1.5 Remote Access Procedure

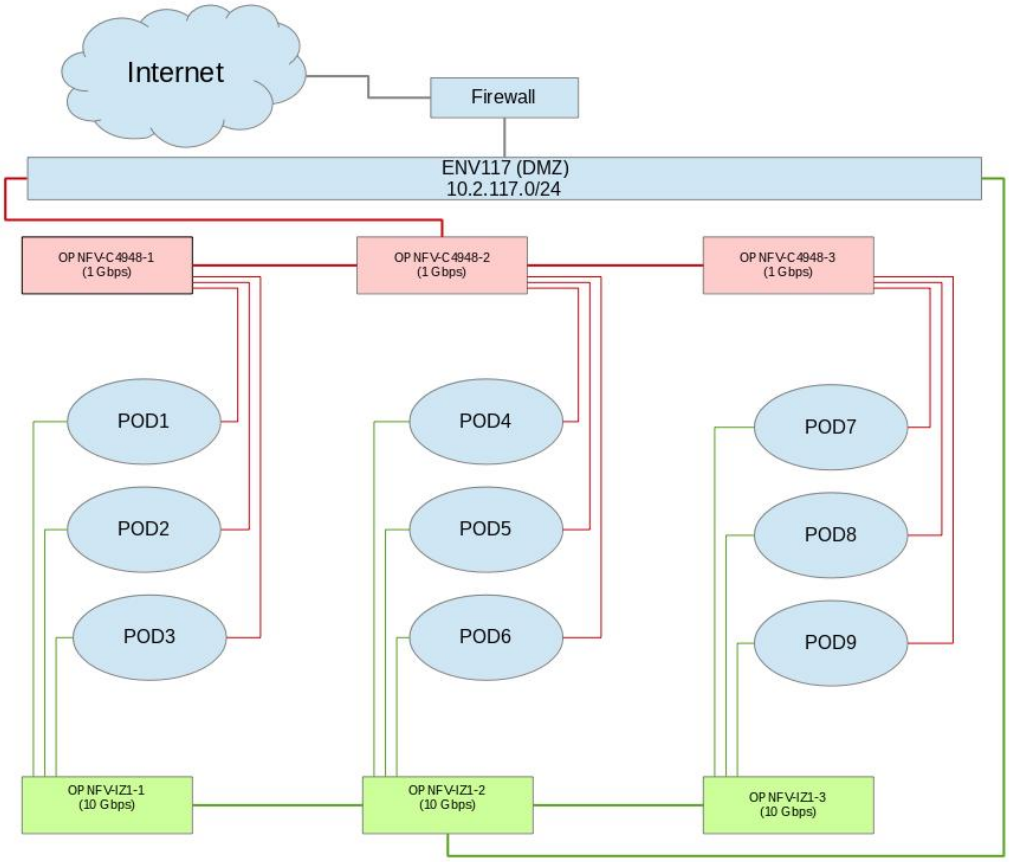
Define lab process for requesting access to the lab (e.g. VPN guide, how to modify BIOS settings, etc.)

1.3.1.6 Lab Documentation

List lab specific documents here

1.3.1.7 Lab Topology

Provide a diagram showing the network topology of lab including lights-out network. Any security sensitive details should not be exposed publically. The following diagram is an example only.



1.3.2 POD Specification Template

1.3.2.1 Introduction

Add an summary of the POD usage (Project, CI stable, CI latest, dev/test, stand-alone servers, etc.)

1.3.2.2 Additional Requirements

Describe any addional POD requirements beyond a standard Pharos compliant POD e.g. test equipment, shared usage, . . .

1.3.2.3 Server Specifications

Jump Host

Hostname	Vendor	Model	Serial Number	CPUs	Memory	Local Storage	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
jump	Dell	R730	ABCDEF	E5-2699x2	64GB	240GB SSD 1 TB SATA	10.10.10.10 00:1E:67:D4:36:E6 root/root	IF0: 10.2.117.36 00:1E:67:4F:B7:B1 VLAN 984 Public IF1: 10.2.1.1 00:1E:67:4F:B7:B2 VLAN 201 Admin	IF2: 10.2.12.1 00:1E:67:4F:B7:B4 VLAN 202 Private IF3: 10.2.13.1 00:1E:67:4F:B7:B5 VLAN 203 Storage	

Compute Nodes

Hostname	Vendor	Model	Serial Number	CPUs	Memory	Local Storage	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
node1										
node2										
node3										
node4										
node5										

1.3.2.4 VPN Users

Name	Email	Project	Role	Notes
joe user	ju@gmail.com	Pharos	contributer	CI support

1.3.2.5 Firewall Rules

Port(s)	Service	Notes
22, 43, 80	Jenkins CI	

1.3.2.6 POD Topology

Provide a diagram showing the network topology of the POD. Any security sensitive details should not be exposed publically and can be stored in the secure Pharos repo. The following diagram is an example only.

1.3.3 Pod Description File

The PDF(Pod Descrition File) provides template for POD's hardware information for all the installers in yaml. The target is to use the same PDF file to deploy a POD by any installer with any scenario it supports. It is the base of the dynamic CI , LaaS(Lab as a Service) and SDF(Scenario Description File).

Currently Jinja template is used to transfer the PDF to the specific installer's template. PDF, Jinja template and the transfering tools are all stored in securedlab. You can find the latest PDF template in https://gerrit.opnfv.org/gerrit/#/c/38283/8/labs/lf/pod4.yaml.

1.4 Pharos Configuration

OPNFV development, test and production activities rely on Pharos resources and support from the Pharos community. Lab owners and Pharos project committers/contributors will evolve the vision for Pharos as well as expand lab capabilities that are needed to help OPNFV be highly successful.

Pharos configuration documents provide information on how to setup hardware and networks in a Pharos compliant lab. Jira is used to track Pharos activities including lab operations. Lab resources can be used for and declared as either *Development (bare-metal or virtual)* or *Production/CI (bare-metal or virtual)*. If a resource is used for and declared as *Development* resource, it can not be used for and declared as *Production/CI* resource at the same time and vice versa.

Changing the resource declation must be brought in to Infra WG. Production/CI PODs are required to be connected to OPNFV Jenkins and available on a 24/7 basis other than scheduled maintenance and troubleshooting. Jenkins slave status can be seen on *Jenkins dashboard https://build.opnfv.org/ci/computer/*.

1.4.1 Lab Setup Guide

Provides an overview for setting up a Pharos lab. A full set of *PHAROS* documents are maintained in the *pharos* repo.

When setting up an OPNFV community lab ...

- Provide the Pharos community with details of the intended setup, including ...
  - Overview of resources are being offered to the community, intended purpose and known limitations
  - Lab owner name with contacts
  - Timelines for availablity for development, test, release production, ...
- Update the Pharos Wiki with lab details
  - Lab map, organization, contacts, status, location, resources, role, etc.
  - Community labs
  - *Updating Pharos Documents*
- Update the Pharos project information file "Current Labs"
  - pharos_information
- Submit a patch using Pharos template for lab(*ZTE SH Lab Specification*) and POD(*ZTE SH POD3 Specification*) specific information in gerrit
  - Access procedures
  - Usage guidelines for developers
  - Update infomtation as PODs are re-assigned or usage/availability changes
- Create new Wiki pages and include the lab and POD content in the pharos git
- Connect PODs to Jenkins/CI
- Note: if the POD will be used for dynamical deployment with community installers, some security sensitive lab information should be stored in the secure Pharos repo securedlab

1.4.2 Updating Pharos Documents

Details about each Community Lab is found in 3 places:

- Summary of lab including location, contacts, status, etc. on the Pharos Project Wiki page
- Lab specific details are provided with dedicated Wiki pages, see this Example Lab
- Pharos repo docs ...

1.4.2.1 Update Pharos repo

Clone the Pharos Git repository

- git clone https://gerrit.opnfv.org/gerrit/pharos
- Make the changes to Pharos project information file (docs/release/information/pharos.rst)

- Submit changes for review
- After code gets merged http://artifacts.opnfv.org/pharos/docs/release/information/pharos.html will contain your change

1.4.2.2 Update Pharos Wiki

Edit Wiki page

- https://wiki.opnfv.org/pharos
- Look for {{scrape>http://artifacts.opnfv.org/pharos/docs/release/information/pharos.html}}
- Click "Preview" and see if your change is shown; if shown add a short "Edit summary" and click "Save" (Wiki does not auto update content)

You will see a section of code as shown below. Add your page to the bullet list with wiki link, nice name, and location summary

Update the map info on the Pharos Project Page https://wiki.opnfv.org/display/pharos/Community+Labs

- You will see a section of code as shown below. Add your lab infomation to the list with a comma separated list as follows:
  - Location
  - Contact
  - POD/vPOD
  - Role

1.4.3 Jump Server Configuration

Jump server install procedures are maintained by each installer project. Addional Jump server configuraton BKMs will be maintained here. Let's take CentOS7 for example. The below install information was used for Fuel(up to Danube, and it is replaced by MCP since Euphrates).

Procedure

1. Obtain CentOS 7 Minimal ISO and install

   ```
   wget http://mirrors.kernel.org/centos/7/isos/x86_64/
   CentOS-7-x86_64-Minimal-1503-01.iso
   ```

2. Set parameters appropriate for your environment during installation
3. Disable NetworkManager

   ```
   systemctl disable NetworkManager
   ```

4. Configure your /etc/sysconfig/network-scripts/ifcfg-* files for your network
5. Restart networking

   ```
   service network restart
   ```

6. Edit /etc/resolv.conf and add a nameserver, for example 8.8.8.8

   ```
   echo nameserver 8.8.8.8 >> /etc/resolv.conf
   ```

7. Install libvirt & kvm

```
yum -y update   yum -y install kvm qemu-kvm libvirt   systemctl enable
libvirtd
```

8. Reboot:

   ```
   shutdown -r now
   ```

9. Configure SSHD

   If you wish to avoid annoying delay when use ssh to log in, disable DNS lookups:

   When **UseDNS** is existed in the config file, update it:

   ```
   sed -i -e 's/^#*UseDNS\ \+yes/UseDNS no/' /etc/ssh/sshd_config
   ```

   or append the setting when not existed:

   ```
   echo UseDNS no >> /etc/ssh/ssd_config
   ```

   Disable Password Authenticaion for security:

   ```
   sed -i -e 's/^#PasswordAuthentication\ \+yes/PasswordAuthentication
   no/' /etc/ssh/sshd_config
   ```

   If you want to disable IPv6 connections, comment IPv6 ListenAddress and change AddressFamily to inet:

   ```
   sed -i -e 's/^ListenAddress\ \+::/#ListenAddress ::/'  /etc/ssh/
   sshd_config    sed -i -e 's/^AddressFamily\ \+any/AddressFamily inet/'
   /etc/ssh/sshd_config
   ```

10. Restart sshd

    ```
    systemctl restart sshd
    ```

11. Install virt-install

    ```
    yum -y install virt-install
    ```

12. Visit artifacts.opnfv.org and D/L the OPNFV Fuel ISO

13. Create a bridge using the interface on the PXE network, for example: br0

    ```
    brctl addbr br0
    ```

14. Make a directory owned by qemu:

    ```
    mkdir /home/qemu; mkdir -p /home/qemu/VMs/fuel-6.0/disk
    ```

    ```
    chown -R qemu:qemu /home/qemu
    ```

15. Copy the ISO to /home/qemu

    ```
    cd /home/qemu
    ```

    ```
    virt-install -n opnfv-2015-05-22_18-34-07-fuel -r 4096 --vcpus=4
    --cpuset=0-3 -c opnfv-2015-05-22_18-34-07.iso --os-type=linux
    --os-variant=rhel6 --boot hd,cdrom --disk path=/home/qemu/VMs/
    mirantis-fuel-6.0/disk/fuel-vhd0.qcow2,bus=virtio,size=50,
    format=qcow2 -w bridge=br0,model=virtio --graphics vnc,listen=0.0.0.0
    ```

16. Temporarily flush the firewall rules to make things easier:

    ```
    iptables -F
    ```

17. Connect to the console of the installing VM with your favorite VNC client.

18. Change the IP settings to match the pod, use an IP in the PXE/Admin network for the Fuel Master

1.5 PHAROS Community Labs

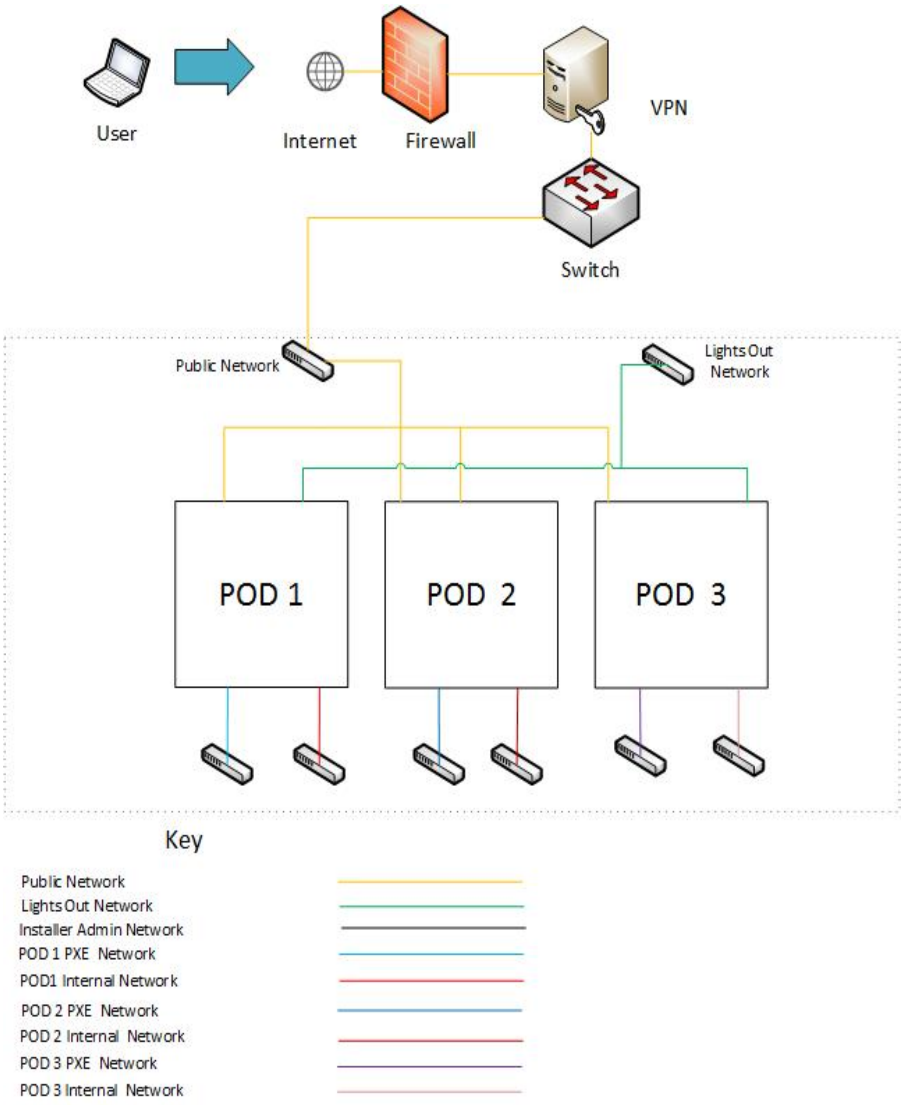
1.5.1 Dell OPNFV Testlab

1.5.1.1 Overview

Dell is hosting an OPNFV testlab at its Santa Clara facility. The testlab would host baremetal servers for the use of OPNFV community as part of the OPNFV Pharos Project

The Dell Testlab consists of 2 PODs

- POD1 for Fuel
- POD2 for Foreman



Each of the 2 PODs consists of 6 servers that consist of

- 1 Jump Server
- 3 Servers for Control Nodes

- 2 Servers for Compute Nodes

1.5.1.2 Hardware details

All the servers within the two PODs reside within a single Dell PowerEdge 620 chassis and have the following specifications:

1.5.1.2.1 POD1-Fuel

Hostname	Model	Memory	Storage	Processor	Socket
Fuel Jump Server	Dell PowerEdge M620	64 GB	1200GB HDD	Intel Xeon E5-2640	2
Node2	Dell PowerEdge M620	64 GB	600GB HDD	Intel Xeon E5-2640	2
Node3	Dell PowerEdge M620	64 GB	600GB HDD	Intel Xeon E5-2640	2
Node4	Dell PowerEdge M620	64 GB	600GB HDD	Intel Xeon E5-2640	2
Node5	Dell PowerEdge M620	64 GB	600GB HDD	Intel Xeon E5-2640	2
Node6	Dell PowerEdge M620	64 GB	600GB HDD	Intel Xeon E5-2640	2

1.5.1.2.2 POD2-Foreman

Hostname	Model	Memory	Storage	Processor	Socket
Foreman Jump Server	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2640	2
Node7	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2640	2
Node8	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2640	2
Node9	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2640	2
Node11	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2640	2
Node12	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2640	2

1.5.1.3 Software

The Jump servers in the Testlab are pre-provisioned with the following softwares:

- Fuel-Jump Server:

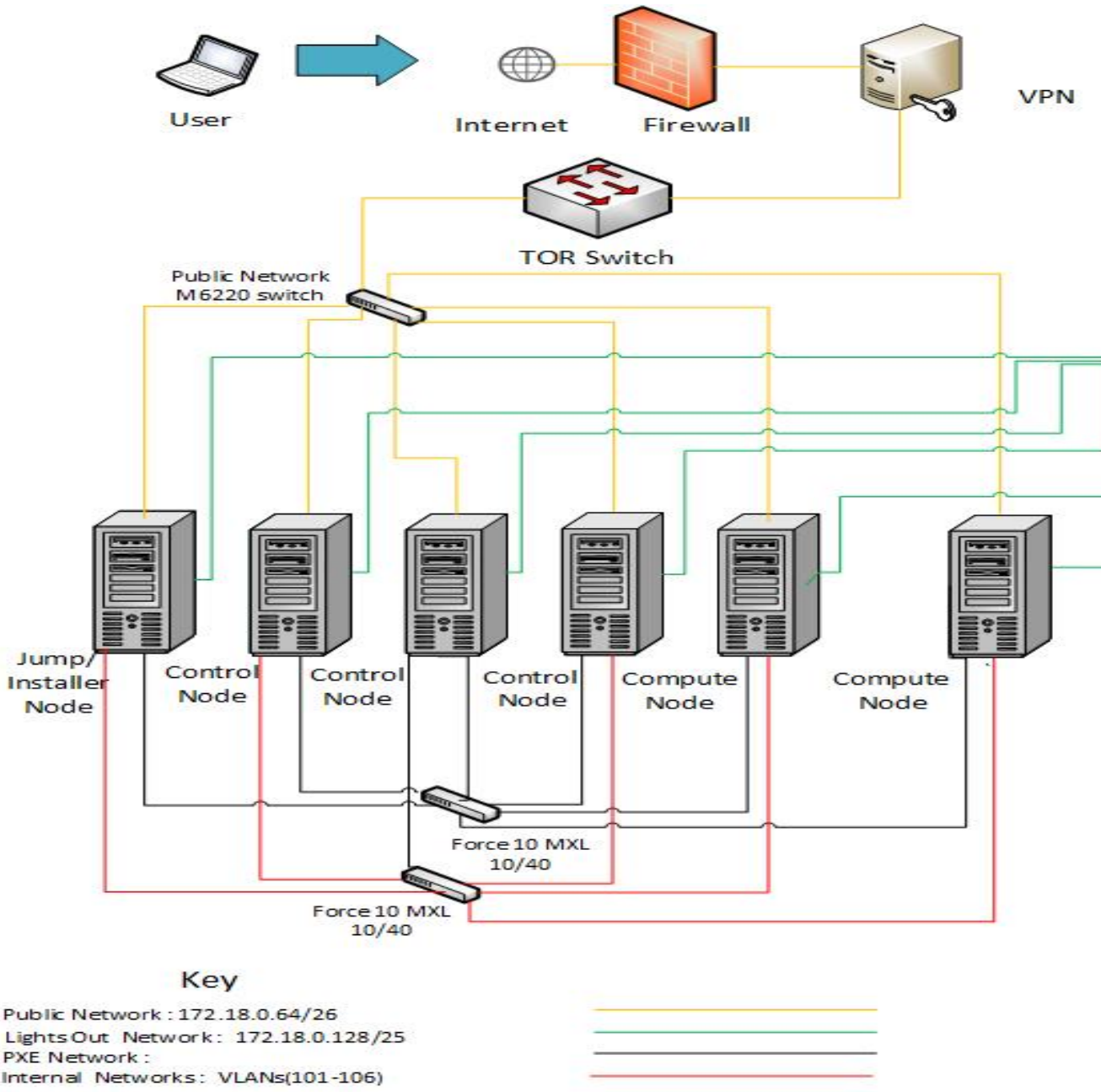
1. OS: Ubuntu 14.04

- Foreman-Jump Server:

1. OS: CentOS7

1.5.1.4 Networks

1.5.1.4.1 POD1-Fuel



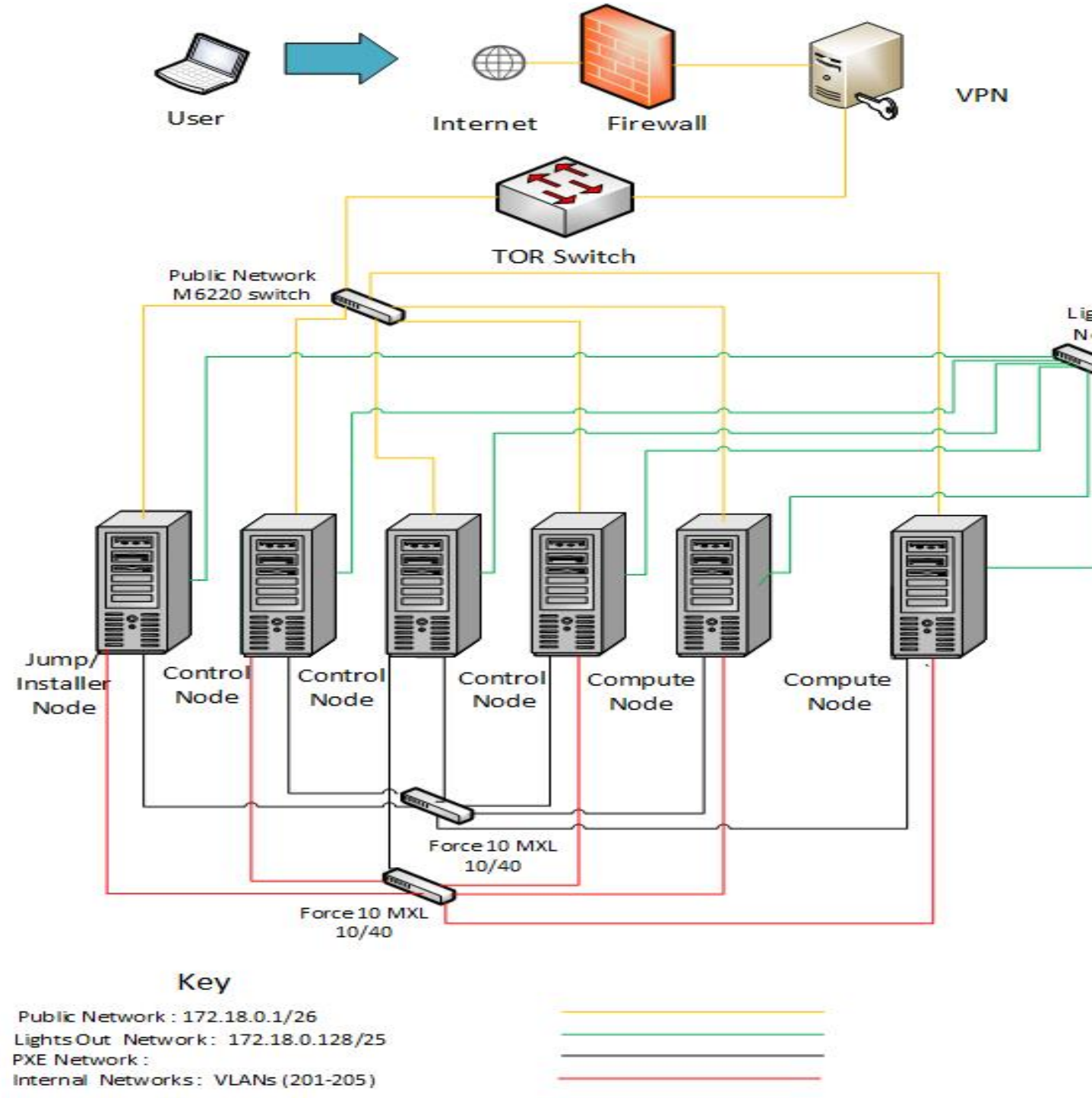
Hostname	NIC Model	Ports	MAC	BW	Roles
Fuel Jump	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:81	10G	Unused
		em2	A4:1F:72:11:B4:84	10G	Unused
	2, Intel 82599	p3p1	A4:1F:72:11:B4:85	10G	Public
		p3p2	A4:1F:72:11:B4:87	10G	Fuel Admin/mgmt/pvt/ storage
	3, Intel 82599	p1p1	A4:1F:72:11:B4:89	10G	Unused

Continued on next page

Table 1 – continued from previous page

		p1p2	A4:1F:72:11:B4:8B	10G	Unused
Node2	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:8E	10G	Unused
		em2	A4:1F:72:11:B4:91	10G	Unused
	2, Intel 82599	p3p1	A4:1F:72:11:B4:92	10G	Public
		p3p2	A4:1F:72:11:B4:94	10G	Fuel Admin/mgmt/pvt/ storage
	3, Intel 82599	p1p1	A4:1F:72:11:B4:96	10G	Unused
		p1p2	A4:1F:72:11:B4:98	10G	Unused
Node3	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:9B	10G	Unused
		em2	A4:1F:72:11:B4:9E	10G	Unused
	2, Intel 82599	p3p1	A4:1F:72:11:B4:9F	10G	Public
		p3p2	A4:1F:72:11:B4:A1	10G	Fuel Admin/mgmt/pvt/ storage
	3, Intel 82599	p1p1	A4:1F:72:11:B4:A3	10G	Unused
		p1p2	A4:1F:72:11:B4:A5	10G	Unused
Node4	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:A8	10G	Unused
		em2	A4:1F:72:11:B4:AB	10G	Unused
	2, Intel 82599	p3p1	A4:1F:72:11:B4:AC	10G	Public
		p3p2	A4:1F:72:11:B4:AE	10G	Fuel Admin/mgmt/pvt/ storage
	3, Intel 82599	p1p1	A4:1F:72:11:B4:B0	10G	Unused
		p1p2	A4:1F:72:11:B4:B1	10G	Unused
Node5	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:B5	10G	Unused
		em2	A4:1F:72:11:B4:B8	10G	Unused
	2, Intel 82599	p3p1	A4:1F:72:11:B4:B9	10G	Public
		p3p2	A4:1F:72:11:B4:BB	10G	Fuel Admin/mgmt/pvt/ storage
	3, Broadcom NetXtreme II BCM57810	p1p1	A4:1F:72:11:B4:BD	10G	Unused
		p1p2	A4:1F:72:11:B4:C0	10G	Unused
Node6	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:C2	10G	Unused
		em2	A4:1F:72:11:B4:C5	10G	Unused
	2, Intel 82599	p3p1	A4:1F:72:11:B4:C6	10G	Public
		p3p2	A4:1F:72:11:B4:C8	10G	Fuel Admin/mgmt/pvt/ storage
	3, Broadcom NetXtreme II BCM57810	p1p1	A4:1F:72:11:B4:CA	10G	Unused
		p1p2	A4:1F:72:11:B4:CD	10G	Unused

1.5.1.4.2 POD2-Foreman



Hostname	NIC Model	Ports	MAC	BW	Roles
Foreman Jump	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B5:1D	10G	Foreman Admin
		em2	A4:1F:72:11:B5:20	10G	Foreman Private/ Storage
	2, Intel 82599	p3p1	A4:1F:72:11:B5:21	10G	Public

Continued on next page

Table 2 – continued from previous page

		p3p2	A4:1F:72:11:B5:23	10G	Unused
	3, TBD	p1p1	A4:1F:72:11:B4:89	10G	Unused
		p1p2	A4:1F:72:11:B4:8B	10G	Unused
Node7	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:CF	10G	Foreman Admin
		em2	A4:1F:72:11:B4:D2	10G	Foreman Private/ Storage
	2, Intel 82599	p3p1	A4:1F:72:11:B4:D3	10G	Public
		p3p2	A4:1F:72:11:B4:D5	10G	Unused
	3, Broadcom NetXtreme II BCM57810	p1p1	A4:1F:72:11:B4:D7	10G	Unused
		p1p2	A4:1F:72:11:B4:DA	10G	Unused
Node8	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:DC	10G	Foreman Admin
		em2	A4:1F:72:11:B4:DF	10G	Foreman Private/ Storage
	2, Intel 82599	p3p1	A4:1F:72:11:B4:E0	10G	Public
		p3p2	A4:1F:72:11:B4:E2	10G	Unused
	3, Broadcom NetXtreme II BCM57810	p1p1	A4:1F:72:11:B4:E4	10G	Unused
		p1p2	A4:1F:72:11:B4:E7	10G	Unused
Node9	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:E9	10G	Foreman Admin
		em2	A4:1F:72:11:B4:EC	10G	Foreman Private/ Storage
	2, Intel 82599	p3p1	A4:1F:72:11:B4:ED	10G	Public
		p3p2	A4:1F:72:11:B4:EF	10G	Unused
	3, Intel 82599	p1p1	A4:1F:72:11:B4:F1	10G	Unused
		p1p2	A4:1F:72:11:B4:F3	10G	Unused
Node11	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B5:03	10G	Foreman Admin
		em2	A4:1F:72:11:B5:06	10G	Foreman Private/ Storage
	2, Intel 82599	p3p1	A4:1F:72:11:B5:07	10G	Public
		p3p2	A4:1F:72:11:B5:09	10G	Unused
	3, Intel 82599	p1p1	A4:1F:72:11:B5:0B	10G	Unused
		p1p2	A4:1F:72:11:B5:0D	10G	Unused
Node12	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B5:10	10G	Foreman Admin
		em2	A4:1F:72:11:B5:13	10G	Foreman Private/ Storage
	2, Intel 82599	p3p1	A4:1F:72:11:B5:14	10G	Public
		p3p2	A4:1F:72:11:B5:16	10G	Unused
	3, TBD	p1p1	A4:1F:72:11:B4:89	10G	Unused
		p1p2	A4:1F:72:11:B4:8B	10G	Unused

1.5.1.4.3 Subnet allocations

Network name	Address	Mask	Gateway	VLAN id
Fuel Admin	10.20.0.0	255.255.0.0	10.20.0.1	Untagged
Fuel Mangement	192.168.0.0	255.255.255.0	192.168.0.1	101
Fuel Storage	192.168.1.0	255.255.255.0	192.168.1.1	102
Fuel Public	172.18.0.64	255.255.255.192	172.18.0.65	Untagged
Foreman Admin	10.4.14.0	255.255.255.0	10.4.14.100	Untagged
Foreman Private	10.4.5.0	255.255.255.0	10.4.5.1	Untagged
Foreman Public	172.18.0.0	255.255.255.192	172.18.0.1	Untagged
Lights Out	172.18.0.128	255.255.255.128	172.18.0.129	Untagged

1.5.1.4.4 Lights out Network

POD1

Hostname	Lights-out address	MAC	Username	Password
Fuel-Jump	172.18.1.131	A4:1F:72:11:B4:80	root	calvin
Node2	172.18.1.132	A4:1F:72:11:B4:8D	root	calvin
Node3	172.18.1.133	A4:1F:72:11:B4:9A	root	calvin
Node4	172.18.1.134	A4:1F:72:11:B4:A7	root	calvin
Node5	172.18.1.135	A4:1F:72:11:B4:B4	root	calvin
Node6	172.18.1.136	A4:1F:72:11:B4:C1	root	calvin

POD2

Hostname	Lights-out address	MAC	Username	Password
Foreman-Jump	172.18.1.143	A4:1F:72:11:B5:1C	root	calvin
Node7	172.18.1.137	A4:1F:72:11:B4:CE	root	calvin
Node8	172.18.1.138	A4:1F:72:11:B4:DB	root	calvin
Node9	172.18.1.139	A4:1F:72:11:B4:E8	root	calvin
Node11	172.18.1.141	A4:1F:72:11:B5:02	root	calvin
Node12	172.18.1.142	A4:1F:72:11:B5:0F	root	calvin

1.5.1.5 Remote access infrastructure

The Dell OPNFV testlab is free to use for the OPNFV community.

A VPN is used to provide access to the Dell Testlab.

To access the Testlab, please contact Waqas_Riaz@DELL.com with the following details:

- Name
- Email
- Designation
- Organization
- Purpose of using the lab

Processing the request can take 2-3 business days.

1.5.1.6 *Accessing the Teslab*

1.5.1.6.1 POD1 JumpServer

IP: 172.18.0.67 User: opnfv Passwd: d3ll1234

1.5.1.6.2 POD2 JumpServer

IP: 172.18.0.11 User: opnfv Passwd: d3ll1234

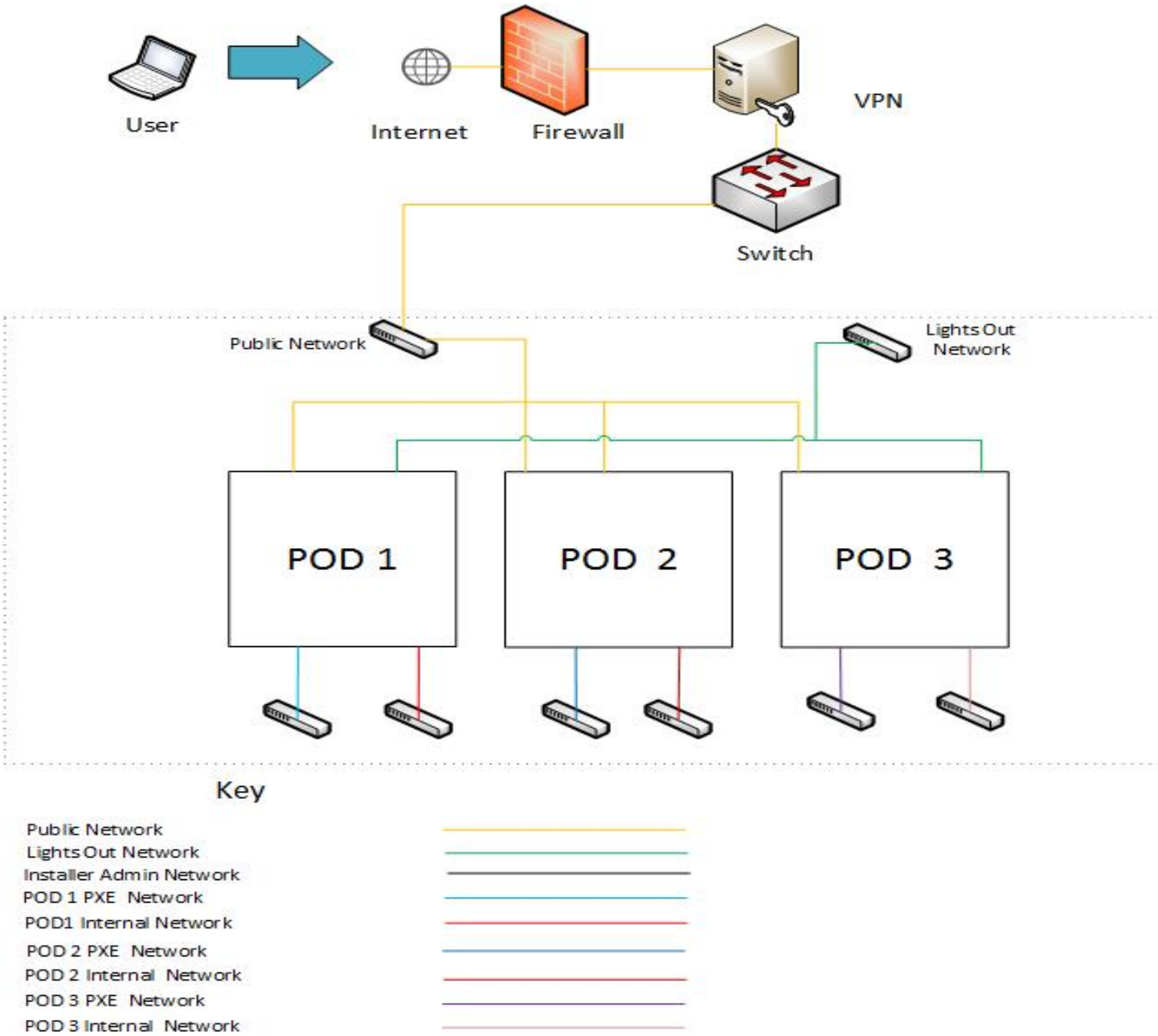
Dell OPNFV Testlab

1.5.1.7 Overview

Dell is hosting an OPNFV testlab at its Santa Clara facility. The testlab would host baremetal servers for the use of OPNFV community as part of the OPNFV Pharos Project

The Dell Testlab consists of 3 PODs for the use of the community

- POD1 (Jenkins slave: dell-us-testing-bm-1)
- POD2 (Jenkins slave: dell-us-deploying-bm2)
- POD3 (Jenkins slave: dell-us-delpoyingbm3)



Each of the 2 PODs consists of 6 servers that consist of

- 1 Jump Server
- 3 Servers for Control Nodes
- 2 Servers for Compute Nodes

1.5.1.8 Hardware details

For POD1 and POD2, the servers reside within a single Dell PowerEdge 620 chassis and have the following specifications:

POD1

Hostname	Model	Memory	Storage	Processor	Socket
Jump Server	Dell PowerEdge M620	64 GB	1200GB HDD	Intel Xeon E5-2640	2
Node2	Dell PowerEdge M620	64 GB	600GB HDD	Intel Xeon E5-2640	2
Node3	Dell PowerEdge M620	64 GB	600GB HDD	Intel Xeon E5-2640	2
Node4	Dell PowerEdge M620	64 GB	600GB HDD	Intel Xeon E5-2640	2
Node5	Dell PowerEdge M620	64 GB	600GB HDD	Intel Xeon E5-2640	2
Node6	Dell PowerEdge M620	64 GB	600GB HDD	Intel Xeon E5-2640	2

POD2

Hostname	Model	Memory	Storage	Processor	Socket
Jump Server	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2630	2
Node7	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2640	2
Node8	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2640	2
Node9	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2640	2
Node11	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2640	2
Node12	Dell PowerEdge M620	64 GB	300GB HDD	Intel Xeon E5-2640	2

POD3 consists of 6 R630 Rack servers with the following specifications:

POD3

Hostname	Model	Memory	Storage	Processor	Socket
Jump Server	Dell PowerEdge R630	128 GB	750GB SSD	Intel Xeon E5-2698	2
Node2	Dell PowerEdge R630	128 GB	750GB SSD	Intel Xeon E5-2698	2
Node3	Dell PowerEdge R630	128 GB	750GB SSD	Intel Xeon E5-2698	2
Node4	Dell PowerEdge R630	128 GB	750GB SSD	Intel Xeon E5-2698	2
Node5	Dell PowerEdge R630	128 GB	750GB SSD	Intel Xeon E5-2698	2
Node6	Dell PowerEdge R630	128 GB	750GB SSD	Intel Xeon E5-2698	2

1.5.1.9 Software

The Jump servers in the Testlab are pre-provisioned with the following softwares:

- POD1-Jump Server:

1. OS: Ubuntu 14.04

- POD2-Jump Server:

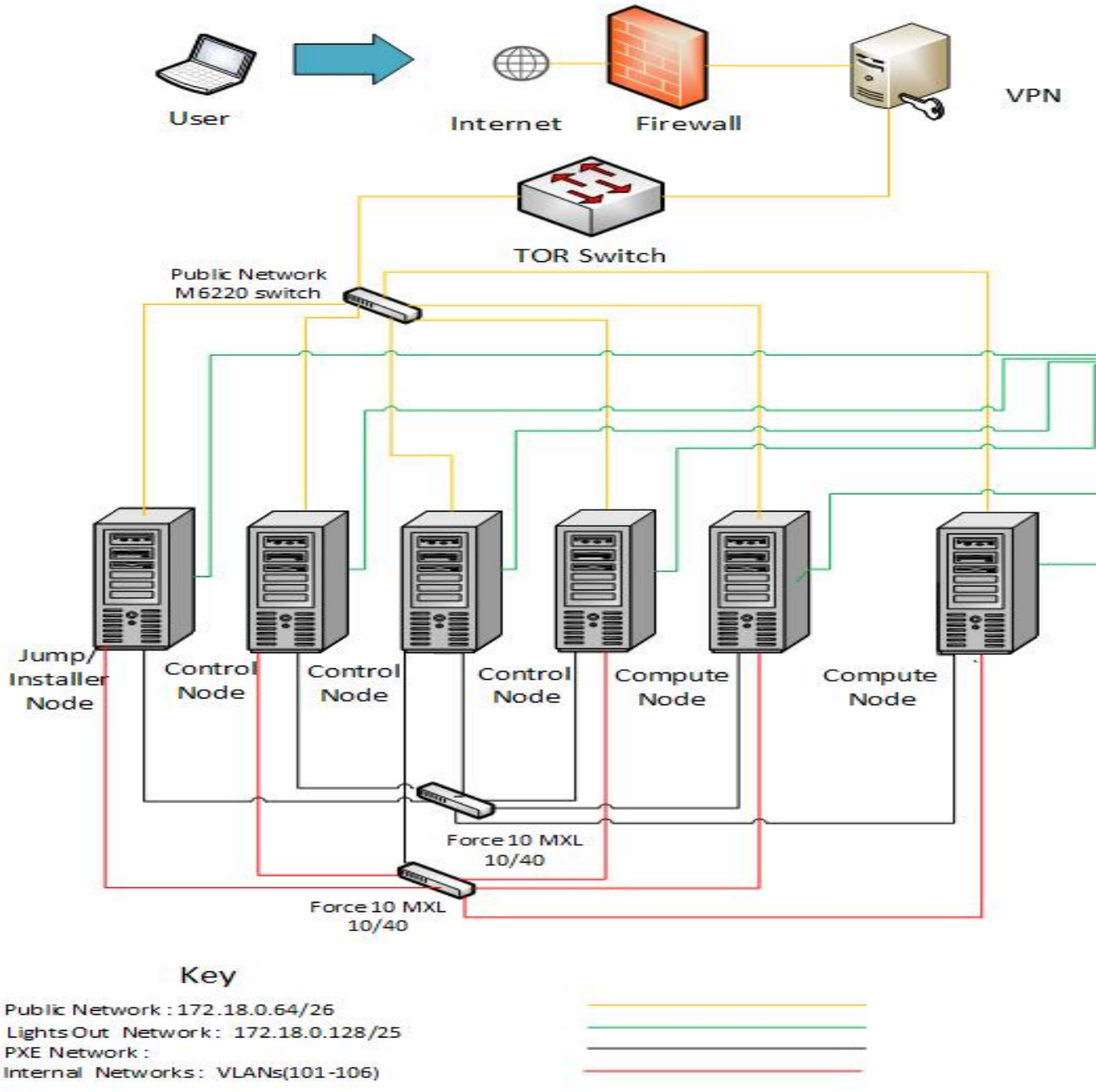
1. OS: CentOS7.1

- POD3-Jump Server:

1. OS: CentOS7.1

1.5.1.10 Networks

POD1



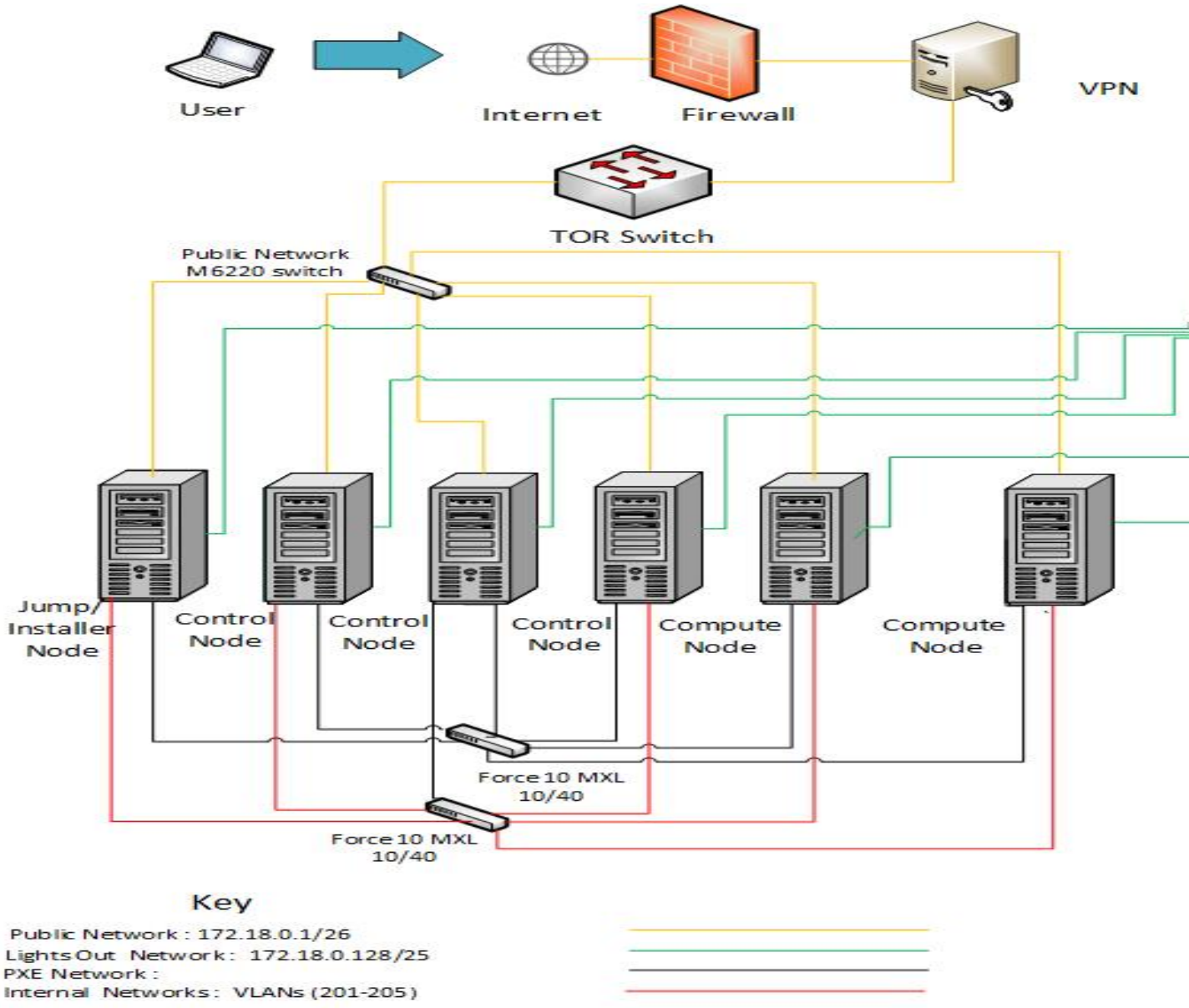
Hostname	NIC Model	Ports	MAC	BW	VLANs/Roles
Jump Server	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:81	10G	PXE

Continued on next page

Table 3 – continued from previous page

		em2	A4:1F:72:11:B4:84	10G	Internal Networks (101-106)
	2, Intel 82599	p3p1	A4:1F:72:11:B4:85	1G	Public
		p3p2	A4:1F:72:11:B4:87	10G	Unused
	3, Intel 82599	p1p1	A4:1F:72:11:B4:89	10G	Unused
		p1p2	A4:1F:72:11:B4:8B	10G	Unused
Node2	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:8E	10G	PXE
		em2	A4:1F:72:11:B4:91	10G	Internal Networks (101-106)
	2, Intel 82599	p3p1	A4:1F:72:11:B4:92	1G	Public
		p3p2	A4:1F:72:11:B4:94	10G	Unused
	3, Intel 82599	p1p1	A4:1F:72:11:B4:96	10G	Unused
		p1p2	A4:1F:72:11:B4:98	10G	Unused
Node3	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:9B	10G	PXE
		em2	A4:1F:72:11:B4:9E	10G	Internal Networks (101-106)
	2, Intel 82599	p3p1	A4:1F:72:11:B4:9F	1G	Public
		p3p2	A4:1F:72:11:B4:A1	10G	Unused
	3, Intel 82599	p1p1	A4:1F:72:11:B4:A3	10G	Unused
		p1p2	A4:1F:72:11:B4:A5	10G	Unused
Node4	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:A8	10G	PXE
		em2	A4:1F:72:11:B4:AB	10G	Internal Networks (101-106)
	2, Intel 82599	p3p1	A4:1F:72:11:B4:AC	1G	Public
		p3p2	A4:1F:72:11:B4:AE	10G	Unused
	3, Intel 82599	p1p1	A4:1F:72:11:B4:B0	10G	Unused
		p1p2	A4:1F:72:11:B4:B1	10G	Unused
Node5	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:B5	10G	PXE
		em2	A4:1F:72:11:B4:B8	10G	Internal Networks (101-106)
	2, Intel 82599	p3p1	A4:1F:72:11:B4:B9	1G	Public
		p3p2	A4:1F:72:11:B4:BB	10G	Unused
	3, Broadcom NetXtreme II BCM57810	p1p1	A4:1F:72:11:B4:BD	10G	Unused
		p1p2	A4:1F:72:11:B4:C0	10G	Unused
Node6	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:C2	10G	PXE
		em2	A4:1F:72:11:B4:C5	10G	Internal Networks (101-106)
	2, Intel 82599	p3p1	A4:1F:72:11:B4:C6	1G	Public
		p3p2	A4:1F:72:11:B4:C8	10G	Unused
	3, Broadcom NetXtreme II BCM57810	p1p1	A4:1F:72:11:B4:CA	10G	Unused
		p1p2	A4:1F:72:11:B4:CD	10G	Unused

POD2



Hostname	NIC Model	Ports	MAC	BW	Roles
Foreman Jump	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B5:1D	10G	PXE
		em2	A4:1F:72:11:B5:20	10G	Internal Networks (201-205)
	2, Intel 82599	p3p1	A4:1F:72:11:B5:21	1G	Public
		p3p2	A4:1F:72:11:B5:23	10G	Unused
	3, TBD	p1p1	A4:1F:72:11:B4:89	10G	Unused
		p1p2	A4:1F:72:11:B4:8B	10G	Unused
Node7	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:CF	10G	PXE
		em2	A4:1F:72:11:B4:D2	10G	Internal Networks (201-205)
	2, Intel 82599	p3p1	A4:1F:72:11:B4:D3	1G	Public
		p3p2	A4:1F:72:11:B4:D5	10G	Unused
	3, Broadcom NetXtreme II BCM57810	p1p1	A4:1F:72:11:B4:D7	10G	Unused
		p1p2	A4:1F:72:11:B4:DA	10G	Unused

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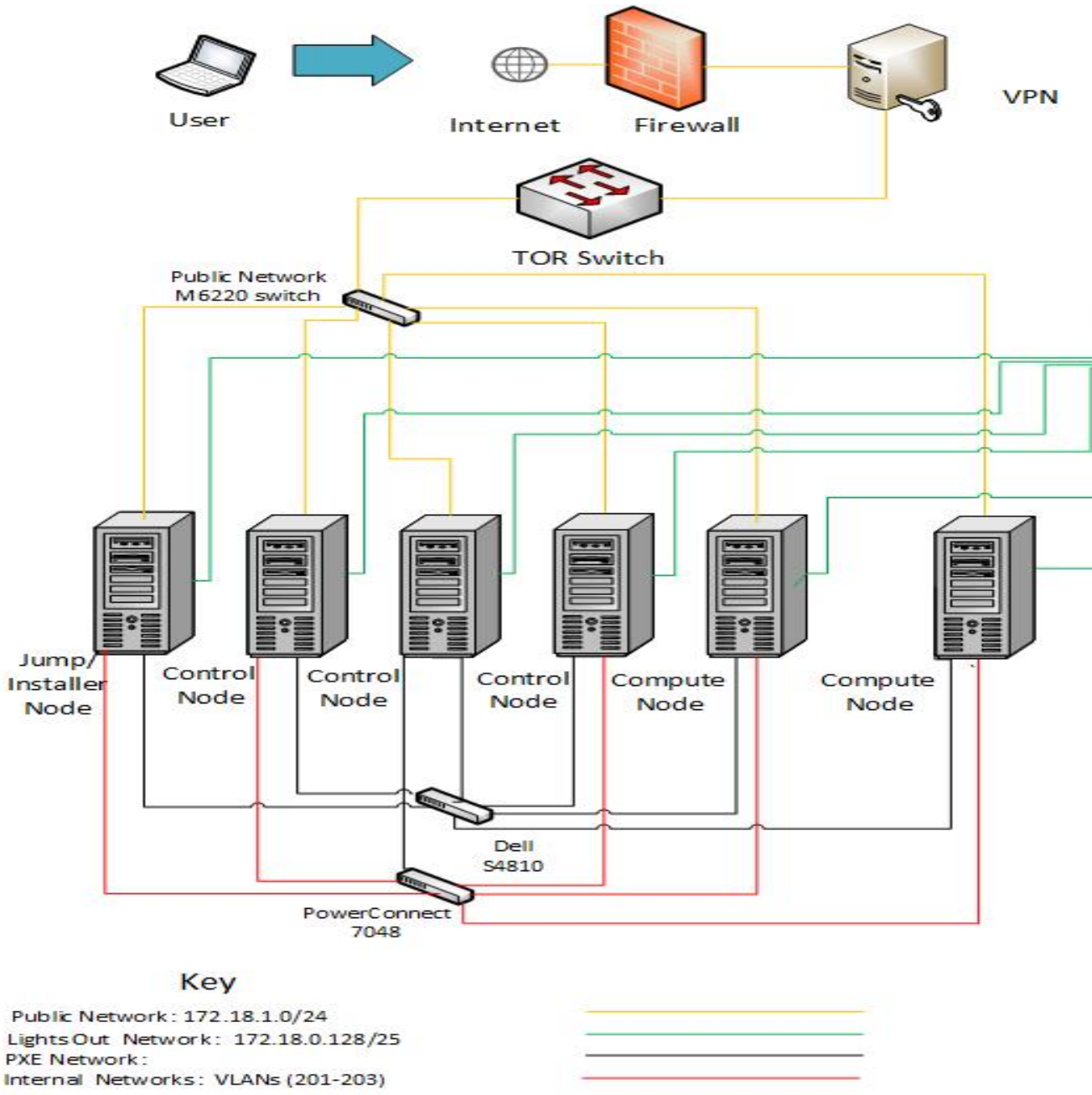
Table 4 – continued from previous page

Node8	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:DC	10G	PXE
		em2	A4:1F:72:11:B4:DF	10G	Internal Networks (201-205)
	2, Intel 82599	p3p1	A4:1F:72:11:B4:E0	1G	Public
		p3p2	A4:1F:72:11:B4:E2	10G	Unused
	3, Broadcom NetXtreme II BCM57810	p1p1	A4:1F:72:11:B4:E4	10G	Unused
		p1p2	A4:1F:72:11:B4:E7	10G	Unused
Node9	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B4:E9	10G	PXE
		em2	A4:1F:72:11:B4:EC	10G	Internal Networks (201-205)
	2, Intel 82599	p3p1	A4:1F:72:11:B4:ED	1G	Public
		p3p2	A4:1F:72:11:B4:EF	10G	Unused
	3, Intel 82599	p1p1	A4:1F:72:11:B4:F1	10G	Unused
		p1p2	A4:1F:72:11:B4:F3	10G	Unused
Node11	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B5:03	10G	PXE
		em2	A4:1F:72:11:B5:06	10G	Internal Networks (201-205)
	2, Intel 82599	p3p1	A4:1F:72:11:B5:07	10G	Public
		p3p2	A4:1F:72:11:B5:09	10G	Unused
	3, Intel 82599	p1p1	A4:1F:72:11:B5:0B	10G	Unused
		p1p2	A4:1F:72:11:B5:0D	10G	Unused
Node12	1, Broadcom NetXtreme II BCM57810	em1	A4:1F:72:11:B5:10	10G	PXE
		em2	A4:1F:72:11:B5:13	10G	Internal Networks (201-205)
	2, Intel 82599	p3p1	A4:1F:72:11:B5:14	1G	Public
		p3p2	A4:1F:72:11:B5:16	10G	Unused
	3, TBD	p1p1	A4:1F:72:11:B4:89	10G	Unused
		p1p2	A4:1F:72:11:B4:8B	10G	Unused

POD3


User
Internet
Firewall
VPN
TOR Switch
Public Network
M6220 switch
Jump/
Installer
Node
Control
Node
Control
Node
Control
Node
Compute
Node
Compute
Node
Dell
S4810
PowerConnect
7048
Key
Public Network: 172.18.1.0/24
Lights Out Network: 172.18.0.128/25
PXE Network:
Internal Networks: VLANs (201-203)

Hostname	NIC Model	Ports	MAC	BW	Roles (VLANs)
Jump Server	1, Intel 2P X520/2P I350 rNDC	em1	EC:F4:BB:D7:14:20	1G	PXE
		em2	EC:F4:BB:D7:14:22	10G	Internal Networks (201,202,203)
		p3p1	EC:F4:BB:D7:14:24	1G	Public
Node1	1, Intel 2P X520/2P I350 rNDC	em1	EC:F4:BB:D6:F2:98	10G	PXE
		em2	EC:F4:BB:D6:F2:9A	10G	Internal Networks (201,202,203)
		p3p1	EC:F4:BB:D6:F2:9C	1G	Public
Node2	1, Intel 2P X520/2P I350 rNDC	em1	EC:F4:BB:D6:F9:10	1G	PXE
		em2	EC:F4:BB:D6:F9:12	10G	Internal Networks (201,202,203)
		p3p1	EC:F4:BB:D6:F9:14	1G	Public
Node3	1, Intel 2P X520/2P I350 rNDC	em1	EC:F4:BB:D7:C9:B8	1G	PXE
		em2	EC:F4:BB:D7:C9:BA	10G	Internal Networks (201,202,203)
		p3p1	EC:F4:BB:D7:C9:BC	1G	Public
Node4	1, Intel 2P X520/2P I350 rNDC	em1	EC:F4:BB:D7:16:E8	10G	PXE
		em2	EC:F4:BB:D7:16:EA	10G	Internal Networks (201,202,203)
		p3p1	EC:F4:BB:D7:16:EA	1G	Public
Node5	1, Intel 2P X520/2P I350 rNDC	em1	EC:F4:BB:D6:FE:98	1G	Unused
		em2	EC:F4:BB:D6:FE:9A	10G	Internal Networks (201,202,203)
		p3p1	EC:F4:BB:D6:FE:9C	1G	Public

Subnet allocations

Network name	Address	Mask	Gateway	VLAN id
POD1 Public	172.18.0.64	255.255.255.192	172.18.0.65	Untagged
POD2 Public	172.18.0.0	255.255.255.192	172.18.0.1	Untagged
POD3 Public	172.18.1.0	255.255.255.0	172.18.1.1	Untagged
Lights Out	172.18.0.128	255.255.255.128	172.18.0.129	Untagged

Lights out Network

POD1

Hostname	Lights-out address	MAC	Username	Password
Jump	172.18.0.131	A4:1F:72:11:B4:80	root	calvin
Node2	172.18.0.132	A4:1F:72:11:B4:8D	root	calvin
Node3	172.18.0.133	A4:1F:72:11:B4:9A	root	calvin
Node4	172.18.0.134	A4:1F:72:11:B4:A7	root	calvin
Node5	172.18.0.135	A4:1F:72:11:B4:B4	root	calvin
Node6	172.18.0.136	A4:1F:72:11:B4:C1	root	calvin

POD2

Hostname	Lights-out address	MAC	Username	Password
Jump	172.18.0.143	A4:1F:72:11:B5:1C	root	calvin
Node7	172.18.0.137	A4:1F:72:11:B4:CE	root	calvin
Node8	172.18.0.138	A4:1F:72:11:B4:DB	root	calvin
Node9	172.18.0.139	A4:1F:72:11:B4:E8	root	calvin
Node11	172.18.0.141	A4:1F:72:11:B5:02	root	calvin
Node12	172.18.0.142	A4:1F:72:11:B5:0F	root	calvin

POD3

Hostname	Lights-out address	MAC	Username	Password
Jump	172.18.0.181	74:E6:E2:FA:BB:D8	root	calvin
Node1	172.18.0.182	74:E6:E2:FA:E9:2E	root	calvin
Node2	172.18.0.183	74:E6:E2:FA:FC:E2	root	calvin
Node3	172.18.0.184	74:E6:E2:FB:05:68	root	calvin
Node4	172.18.0.185	74:E6:E2:FA:A4:02	root	calvin
Node5	172.18.0.186	74:E6:E2:FA:E4:18	root	calvin

1.5.1.11 Remote access infrastructure

The Dell OPNFV testlab is free to use for the OPNFV community.

A VPN is used to provide access to the Dell Testlab.

To access the Testlab, please visit the Dell OPNFV Lab's wiki page (https://wiki.opnfv.org/dell_hosting) for details.

1.5.1.12 *Accessing the Teslab*

- POD1 JumpServer

  IP: 172.18.0.67

  User: opnfv

  Passwd: d3ll1234

- POD2 JumpServer

  IP: 172.18.0.11

  User: opnfv

  Passwd: d3ll1234

- POD3 JumpServer

  IP: 172.18.1.3

  User: opnfv

  Passwd: d3ll1234

1.5.2 ERICSSON OPNFV Lab Configuration Files

1.5.2.1 Ericssion OPNFV Lab Specification

1.5.2.1.1 Introduction

Ericsson OPNFV Lab currently has 2 Bare Metal and 3 Virtual PODs available globally (hosted in the GIC). Each POD has 5 servers, comprised of 3 controller nodes (HA) and 2 computes nodes. NOTE: (this make differ depending on scenario).

These PODs are dedicated for use by Production/CI. These PODs focus on providing verification, build, deploy and testing for scenarios related with **test** projects, **installer** projects and perforamnce enhancement projects, such as KVM, OVS, FDS, etc.

In addition to the full-time CI/CD resources, the Ericsson OPNFV lab provides developer labs (DRs) for project usage, testing and development.

Scenarios services by this lab are:

Scenario defitions can be found here: Colorado Scenario Status

1.5.2.1.2 Lab Resources

- Ericsson Hostting And Request Page

POD Name	Project(s)	PTL(s)	Email(s)	POD Role	Status	Notes
POD1	CI/CD	Daniel Smith	daniel.smith@ericsson.com	CI: latest	Active	BM-CI
POD2	CI/CD	Daniel Smith	daniel.smith@ericsson.com	CI: latest	Active	BM-CI
vPOD1	CI/CD	Fatih Degirmenci	fatih.degirmenci@ericsson.com	CI: latest	Active	Virt-CI
PHAROS-166	FUEL	Constant Wette	constant.wette@ericsson.com	DR: B-rel	Active	Nested
PHAROS-167	OVSNFV	Billy O'Mahoney	billy.omahoney@intel.com	DR: C-rel	Active	Hybrid
PHAROS-174	GLUON	Bin Hu	bh526r@att.com	DR: D-rel	Active	Nested*
PHAROS-180	SAVI	**Rick** Brunner	richard.brunner@ericsson.com	DR: D-rel	Active	Nested*
PHAROS-181	IPV6-MULTI	**Bin** Hu	bh526r@att.com	DR: D-rel	Active	Nested*
PHAROS-191	AUTO-DEP	**Peter** Barabas	Peter.Barabas@ericsson.com	DR: C-rel	Active	Nested*
PHAROS-199	SDN-L3	**Tim** Irnich	Tim.Irnich@ericsson.com	DR: C-rel	Active	Nested*
PHAROS-236	LLT-TOOL	**Jose** Lausuch	Jose.Lausuch@ericsson.com	DR: C-rel	Active	Nested*
PHAROS-253	ODL-II	**Nikolas** Hermanns	Nikolas.Hermanns@ericsson.com	DR: C-rel	Active	Nested*

- ACTIVE CI/CD LAB SPECS
- CI-ERICSSON-POD1 wiki page
- CI-ERICSSON-POD1 wiki page
- ACTIVE LAB SPECS
- PHAROS-166 wiki page
- PHAROS-167 wiki page
- PHAROS-174 wiki page
- PHAROS-180 wiki page
- PHAROS-181 wiki page
- PHAROS-191 wiki page
- PHAROS-199 wiki page
- PHAROS-236 wiki page
- PHAROS-253 wiki page
- Decommissioned Requets

1.5.2.1.3 Acceptable Usage Policy

Resources located in Ericsson OPNFV lab shall only be used for CI, infra setup/configuration and troubleshooting purposes. No development work is allowed in these PODs. Development Work should only be performed on the DR labs assigned to individual projects.

1.5.2.1.4 Remote Access Infrastructure

Ericsson OPNFV lab provides a SSH GW that allows for unlimited port-forwarding, as well as Remote Desktop, VNC and SOCKS proxy capability allowing the end user to feel as though directly connected to the lab.

1.5.2.1.5 Remote Access Procedure

Access to this environment can be granted by sending an e-mail to: **daniel.smith@ericsson.com**.

Subject: ericsson opnfv access.

The following information should be provided in the request:

```
Full name:
E-mail:
Organization:
Why is access needed:
How long is access needed:
Number of Hosts required:
Topology Required (HA, SA):
Feature/Plugins/Options Required (DPDK, ODL, ONOS):
```

Enclosed a copy of your id_rsa.pub (public key) with your request and a login will be created for you

1.5.2.1.6 Lab Documentation

1.5.2.1.7 Lab Topology

release/release-notes/labs/ericsson/./images/ericsson_opnfv_topology.png

Each POD is an individual entity with its own set of independant networks allowing for interconnection between DR labs, intra connectinos within multiple Nested DRs all without touching the CI/CD running in production.

Refer to each Lab specific wiki page for IP and Login and Topology Information.

1.5.3 Huawei's OPNFV Lab

1.5.3.1 Huawei's Lab Specification

1.5.3.1.1 Introduction

Huawei's lab providing 5 PODs for baremetal deployment, 4 standalone servers for virtual deployment. All the resources have been attached to jenkins master, you can view the slaves below in jenkins master. Current POD assignments and individual POD details are listed below.

Lab Resources & Assignments

Resource	Project(s)	POD Role	Status
huawei-pod1	compass4nfv	CI Stable	Active
huawei-pod2	compass4nfv	CI Stable	Active
huawei-pod3	yardstick	Dev/Test	Active
huawei-pod4	compass4nfv	CI Stable	Active
huawei-pod5	compass4nfv	CI Stable	Active
huawei-virtual1	compass4nfv	CI Stable	Active
huawei-virtual2	compass4nfv	CI Stable	Active
huawei-virtual3	compass4nfv	CI Stable	Active
huawei-virtual4	compass4nfv	CI Stable	Active

1.5.3.1.2 Acceptable Usage Policy

All of these resources above are used for OPNFV CI, if there is any requirement by OPNFV contributor or committer for the purpose of OPNFV development, please apply to us for permission.

1.5.3.1.3 Remote Access Infrastructure

Huawei provides VPN(OpenVPN) to connect the lab.

1.5.3.1.4 Remote Access Procedure

This environment is free to use by any OPNFV contributor or committer for the purpose of OPNFV approved activities, you just need to obtain VPN credentials to access.

Access to this environment can be granted by sending a e-mail to:

- chigang@huawei.com
- meimei@huawei.com

Following information should be provided in the request:

- subject: opnfv_huawei_access
- Full name
- e-mail
- Phone

- Organization
- OPNFV Contributor/Committer name :
- OPNFV Project(s) Association:
- LF ID:
- Recommended by:
- PGP public key (preferably registered with a PGP PKI server)
- SSH public key

Granting access normally takes 3-5 business days.

Detailed access descriptions will be provided with your access grant e-mail.

1.5.3.1.5 Lab Documentation

1.5.3.1.6 Lab Topology

Below you'll find a topological view of the hosting set-up,you can get more detailed information from the individual POD.

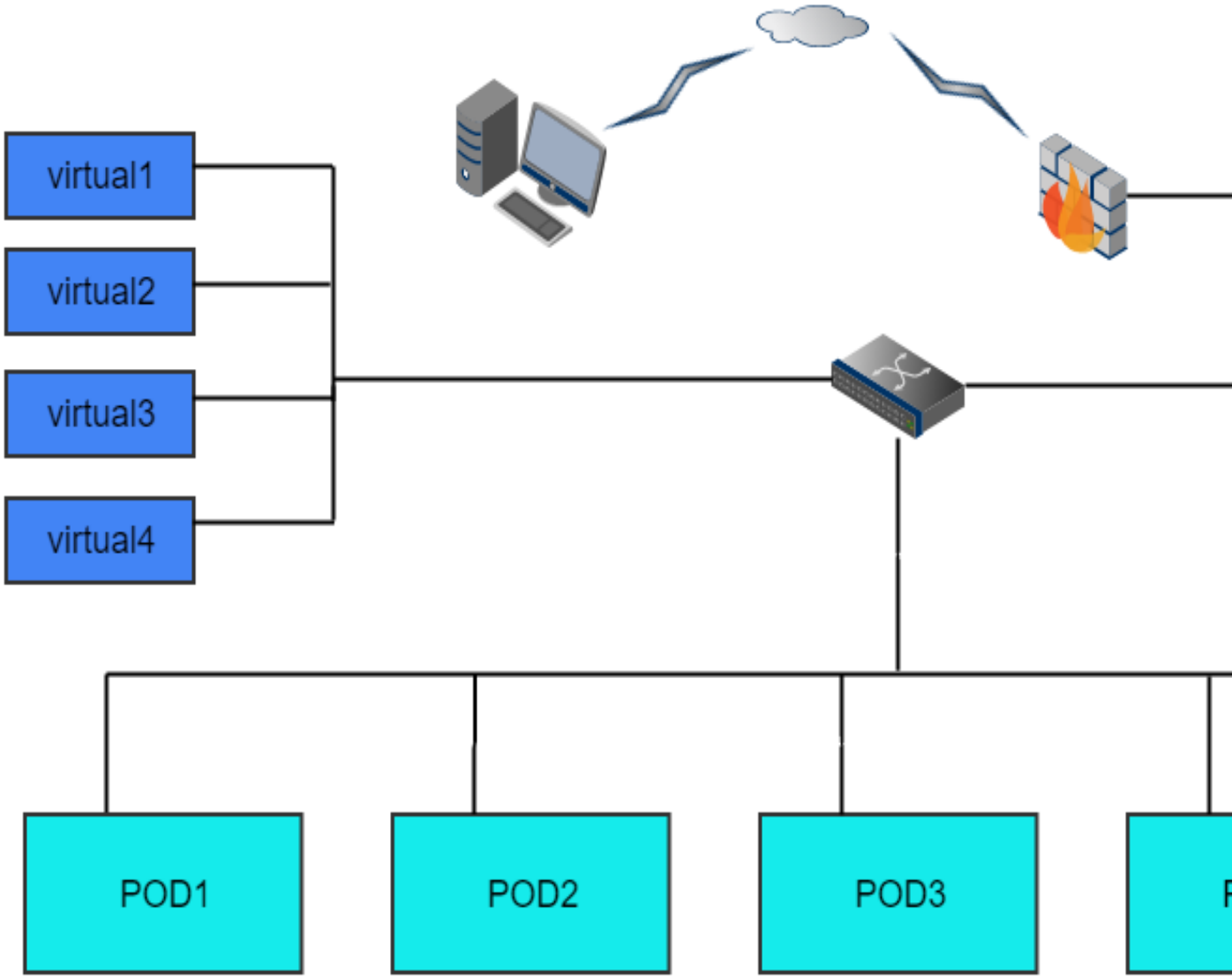


Figure 1: Huawei lab OPNFV hosting environment overview

1.5.3.2 Huawei PODs Specification

NOTE: Illustrated by the example of huawei-pod1&huawei-virtual1.

1.5.3.2.1 huawei-pod1

Introduction

This is a bare metal deployment pod deployed by compass installer

Hardware

- the pod1 consist of 6 Rack servers, the following is detail

Hostname	CPU	Storage	Memory	ipmi Mac &ip
jumpserver	Intel(R) Xeon(R) CPU X5650 @ 2.67GHz	1.8TB	31G	
Host1 controller	Intel(R) Xeon(R) CPU E5-2690 @ 2.90GHz	4.2TB	188G	eth3:Mac F8:4A:BF:55:A2:8E ip 172.16.130.26
Host2 controller	Intel(R) Xeon(R) CPU E5-2670@ 2.60GHz	6TB	188G	eth3:Mac D8:49:0B:DA:5A:B8 ip 172.16.130.27
Host3 controller	Intel(R) Xeon(R) CPU E5-2670@ 2.60GHz	8.4TB	188G	eth3:Mac 78:D7:52:A0:B1:9D ip 172.16.130.29
Host4 compute	Intel(R) Xeon(R) CPU E5-2670@ 2.60GHz	7.2TB	188G	eth3:Mac D8:49:0B:DA:5B:5E ip 172.16.130.30
Host5 compute	Intel(R) Xeon(R) CPU E5-2670@ 2.60GHz	4.8TB	188G	eth3:Mac D8:49:0B:DA:56:86 ip 172.16.130.31

- 1 Huawei S9300 10G switch for storage, management and public traffic - 2x10GE to each server.
- 1 Huawei S5300 1G switch for installing and Lights+out management traffic - 2x1GE to each server.
- 1 VPN concentrator for remote access and management.
- 1 Huawei firewall and router for public network secure access.

huawei-pod1 Topology

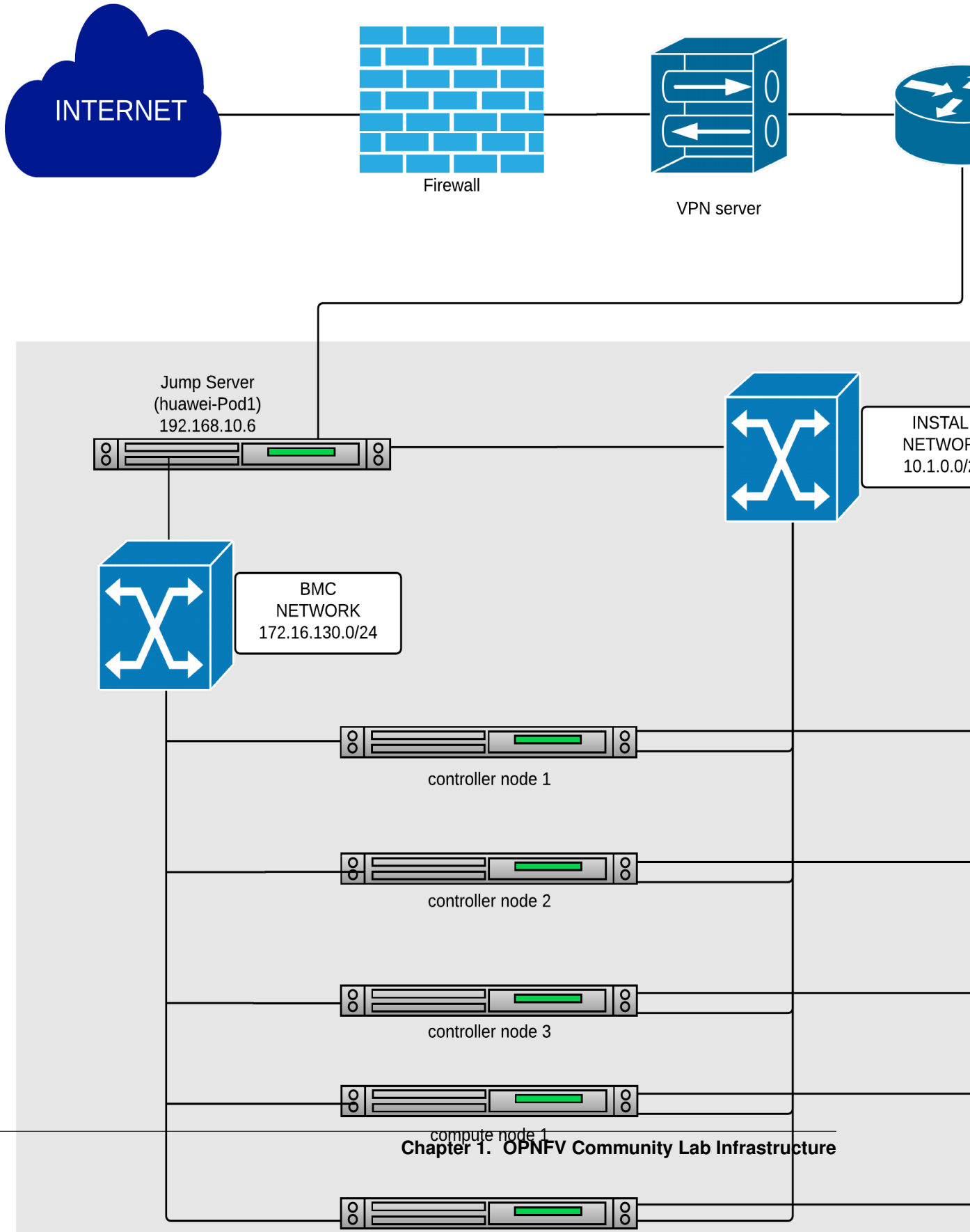


Figure 1: Huawei lab pod1 topology

huawei-pod1 Network

Below you'll find a topological view of the huawei-Pod1 set-up:

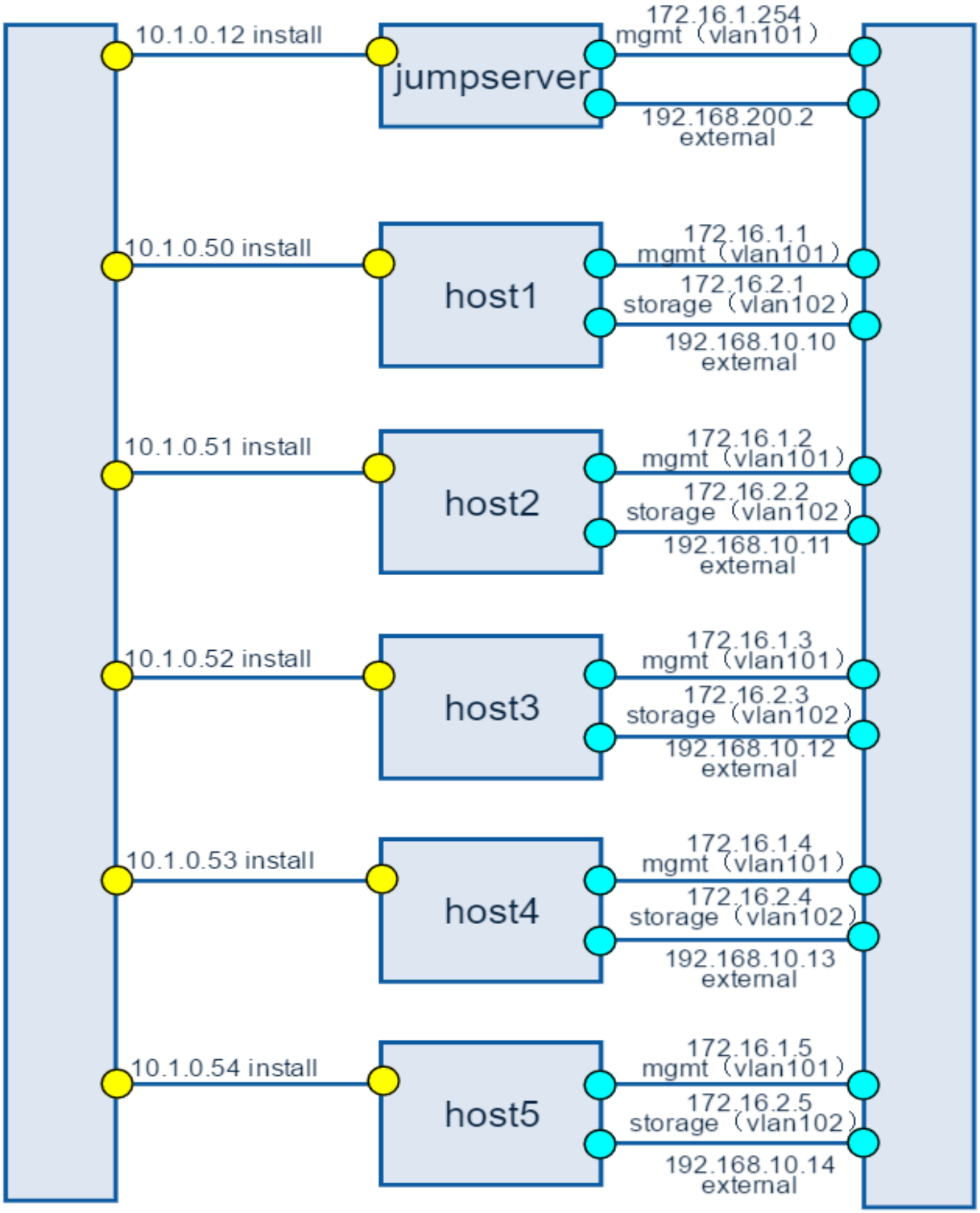

10.1.0.12 install
jumpserver
172.16.1.254
mgmt (vlan101)
192.168.200.2
external
10.1.0.50 install
host1
172.16.1.1
mgmt (vlan101)
172.16.2.1
storage (vlan102)
192.168.10.10
external
10.1.0.51 install
host2
172.16.1.2
mgmt (vlan101)
172.16.2.2
storage (vlan102)
192.168.10.11
external
10.1.0.52 install
host3
172.16.1.3
mgmt (vlan101)
172.16.2.3
storage (vlan102)
192.168.10.12
external
10.1.0.53 install
host4
172.16.1.4
mgmt (vlan101)
172.16.2.4
storage (vlan102)
192.168.10.13
external
10.1.0.54 install
host5
172.16.1.5
mgmt (vlan101)
172.16.2.5
storage (vlan102)
192.168.10.14
external

Figure 2: Full Pod network configuration

1.5.3.2.2 huawei-virtual1

Introduction

This is a virtual deployment POD deployed by compass installer

Hardware

virtual pod consist of one standalone server

name	huawei-virtual1
CPU	Intel(R) Xeon(R) CPU E5-2680 v3 @ 2.50GHz
Memory	251G
Storage	4TB
IP	192.168.107.2

Network

Below you'll find a topological view of the huawei-virtual1 Pod set-up:

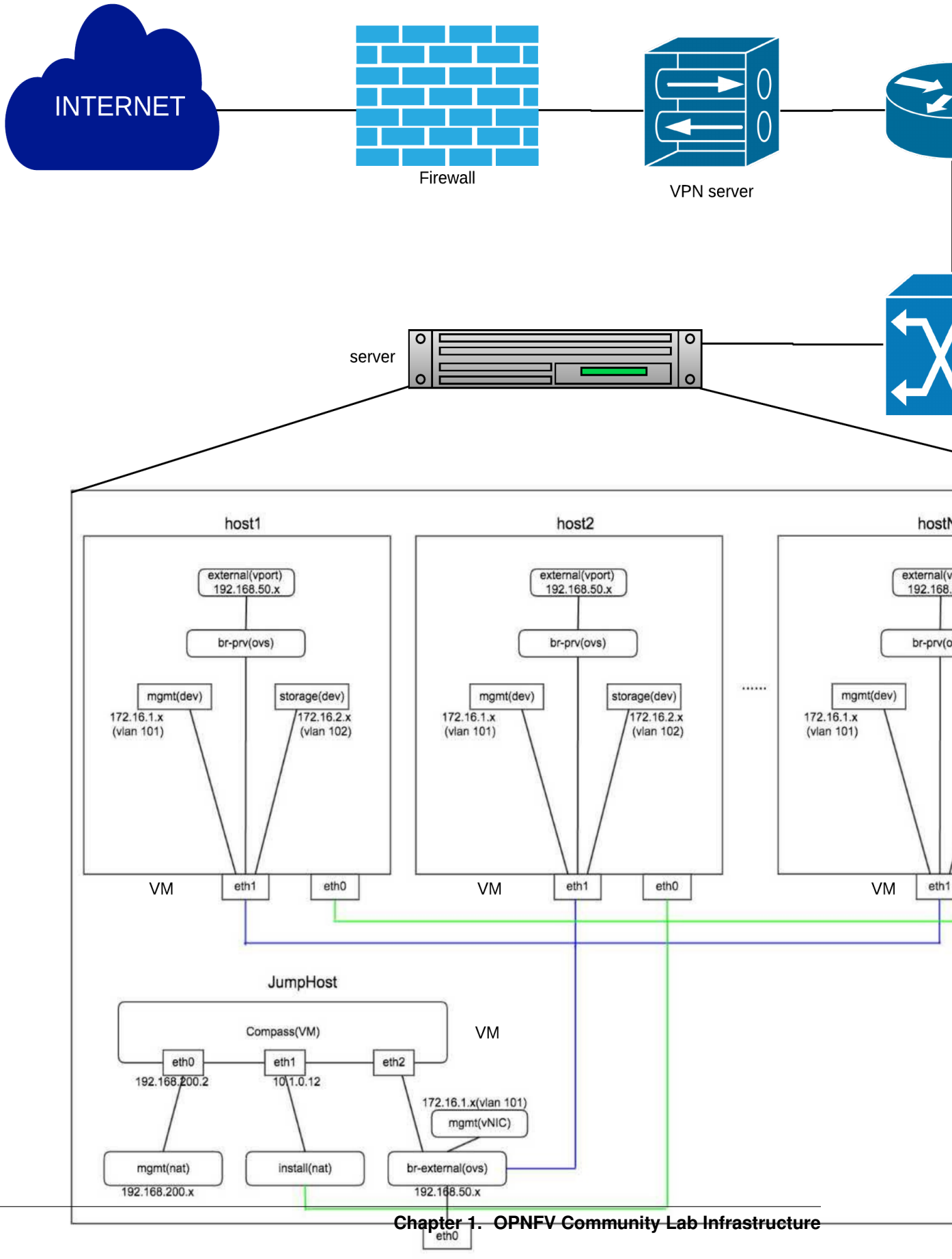

INTERNET
Firewall
VPN server
server
host1
host2
external(vport)
192.168.50.x
br-prv(ovs)
mgmt(dev)
172.16.1.x
(vlan 101)
storage(dev)
172.16.2.x
(vlan 102)
VM
eth1
eth0
.....
JumpHost
Compass(VM)
192.168.200.2
10.1.0.12
172.16.1.x(vlan 101)
mgmt(vNIC)
mgmt(nat)
192.168.200.x
install(nat)
br-external(ovs)
192.168.50.x

Figure 3: virtual deployment pod network configuration

1.5.4 OOL OPNFV Testbed

1.5.4.1 Lab: OOL OPNFV Testbed

1.5.4.1.1 Introduction

Okinawa Open Laboratory (OOL) provides the following facilities for OPNFV testing. The testlab is now located only at Okinawa in Japan.

1.5.4.1.2 Lab Resources

POD Name	Project(s)	Project Lead(s)	Email(s)	POD Role	Status	Notes
ool-pod1				CI stable	Available	
ool-virtual1	Doctor	Ryota Mibu	r-mibu@cq.jp.nec.com	CI review	Assigned	

1.5.4.1.3 Acceptable Usage Policy

These resources provided to OPNFV are free to use by any OPNFV contributor or committer for the purpose of OPNFV approved activities by permission of the operator, but shall be used for CI, infra setup/configuration and troubleshooting purposes.

1.5.4.1.4 Remote Access Infrastructure

OOL provide VPN(OpenVPN) to connect this testlab.

1.5.4.1.5 Remote Access Procedure

Access to this environment can be granted by sending a e-mail to: TBD

subject: opnfv_access_ool

Following information should be provided in the request:

- Full name
- e-mail
- Phone
- Organization
- Resources required
- How long is access needed
- PGP public key

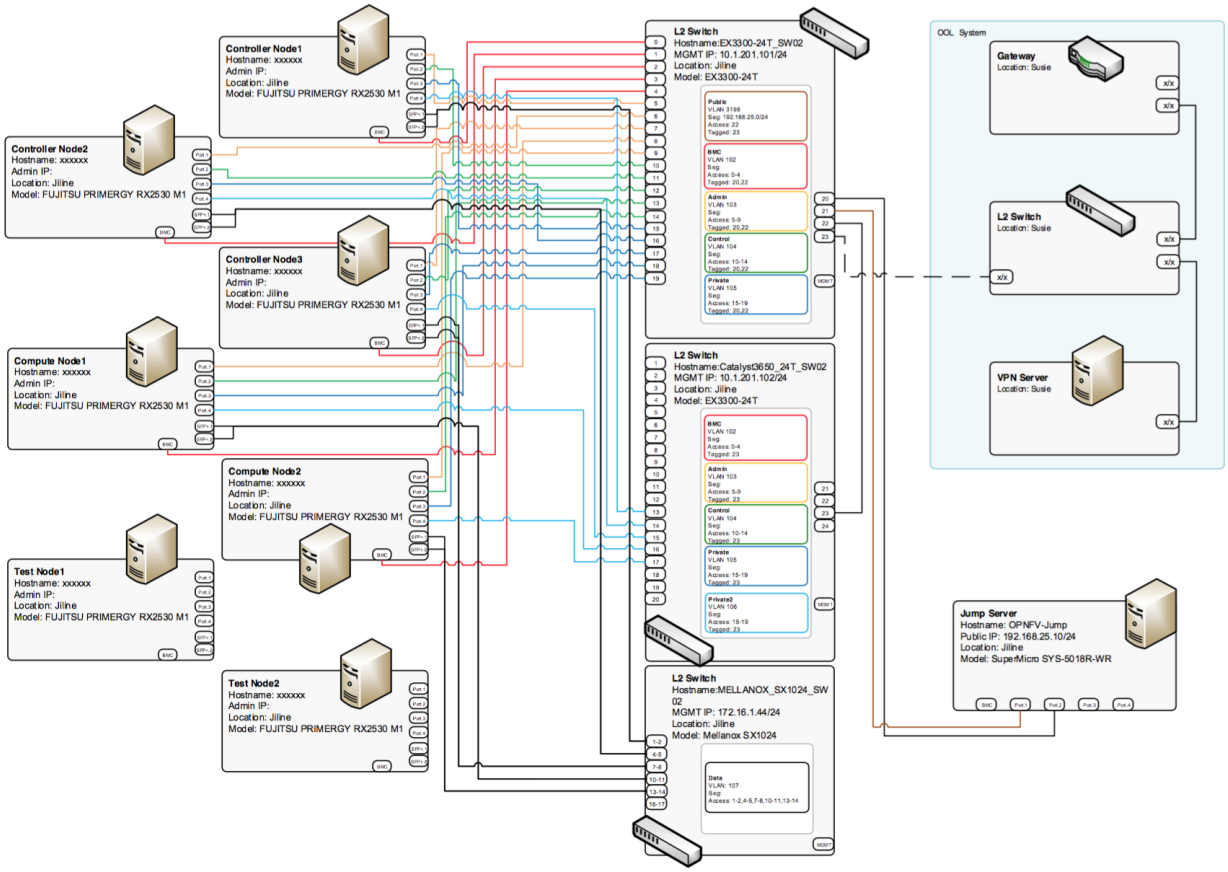
- SSH public key

Granting access normally takes 2-3 business days.

Detailed access descriptions will be provided with your access grant e-mail.

1.5.4.1.6 Lab Documentation

1.5.4.1.7 Lab Topology



1.5.4.2 POD: ool-pod1

1.5.4.2.1 Introduction

This is a physical POD deployed by Fuel installer (Brahmputra).

1.5.4.2.2 Additional Requirements

1.5.4.2.3 Server Specifications

Jump Host

Hostname	Vendor	Model	Serial Number	CPUs	Memory	Storage
OPNFV-jump	SuperMicro	SYS-5018R-WR	•	E5-2630v3 x1	32 GB	SATA 7.2krpm 2TB x1

Hostname	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
OPNFV-jump	•	IF0: 0c:c4:7a:6c:a2:b2 VLAN untagged Public IF1: 0c:c4:7a:6c:a2:b3 VLAN 10{2-5} Admin/Mgmt/Private		NIC Model: Intel I350

Compute Nodes

Hostname	Vendor	Model	Serial Number	CPUs	Memory	Storage
node-9	FUJITSU	RX2530 M1	•	E5-2630v3 x1	32 GB	SATA 7.2krpm 2TB x2 SSD 100GB x1
node-10	FUJITSU	RX2530 M1	•	E5-2630v3 x1	32 GB	SATA 7.2krpm 2TB x2 SSD 100GB x1
node-11	FUJITSU	RX2530 M1	•	E5-2630v3 x1	32 GB	SATA 7.2krpm 2TB x2 SSD 100GB x1
node-12	FUJITSU	RX2530 M1	•	E5-2630v3 x1	32 GB	SATA 7.2krpm 2TB x2 SSD 100GB x1

Hostname	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
node-9	•	IF0: 90:1b:0e:6b:e8:a8 VLAN untagged Admin IF1: 90:1b:0e:6b:e8:a9 VLAN untagged Mgmt IF2: 90:1b:0e:6b:e8:aa VLAN untagged Public IF3: 90:1b:0e:6b:e8:ab VLAN untagged Private	IF4: 90:1b:0e:6d:09:71 VLAN untagged Storage IF5: 90:1b:0e:6d:09:72 VLAN untagged Storage	NIC Models: (1GbE) Emulex Skyhawk (10GbE) Intel 82599E
node-10	•	IF0: 90:1b:0e:6b:e3:00 VLAN untagged Admin IF1: 90:1b:0e:6b:e3:01 VLAN untagged Mgmt IF2: 90:1b:0e:6b:e3:02 VLAN untagged Public IF3: 90:1b:0e:6b:e3:03 VLAN untagged Private	IF4: 90:1b:0e:6d:09:5f VLAN untagged Storage IF5: 90:1b:0e:6d:09:60 VLAN untagged Storage	NIC Models: (1GbE) Emulex Skyhawk (10GbE) Intel 82599E
node-11	•	IF0: 90:1b:0e:6b:e5:b4 VLAN untagged Admin IF1: 90:1b:0e:6b:e5:b5 VLAN untagged Mgmt IF2: 90:1b:0e:6b:e5:b6 VLAN untagged Public IF3: 90:1b:0e:6b:e5:b7 VLAN untagged Private	IF4: 90:1b:0e:6d:09:6f VLAN untagged Storage IF5: 90:1b:0e:6d:09:70 VLAN untagged Storage	NIC Models: (1GbE) Emulex Skyhawk (10GbE) Intel 82599E
node-12	•	IF0: 90:1b:0e:6b:e2:bc VLAN untagged Admin IF1: 90:1b:0e:6b:e2:bd VLAN untagged Mgmt IF2: 90:1b:0e:6b:e2:be VLAN untagged Public IF3: 90:1b:0e:6b:e2:bf VLAN untagged Private	IF4: 90:1b:0e:6d:08:31 VLAN untagged Storage IF5: 90:1b:0e:6d:08:32 VLAN untagged Storage	NIC Models: (1GbE) Emulex Skyhawk (10GbE) Intel 82599E

Switches

Node	Hardware
Switch 1 (for each network except storage)	Juniper EX3300-24T
Switch 2 (for storage)	Mellanox SX1024

Subnet Allocations

Network name	Address	Mask	Gateway	VLAN id
Public	192.168.25.0	255.255.255.0	192.168.25.254	103
Fuel Admin	192.168.103.0	255.255.255.0	192.168.103.1	103
Fuel Mangement	192.168.104.0	255.255.255.0	192.168.104.1	104
Fuel Public	192.168.105.0	255.255.255.0	192.168.105.1	105
Fuel Private	192.168.106.0	255.255.255.0		Untagged
Fuel Storage	192.168.107.0	255.255.255.0		Untagged

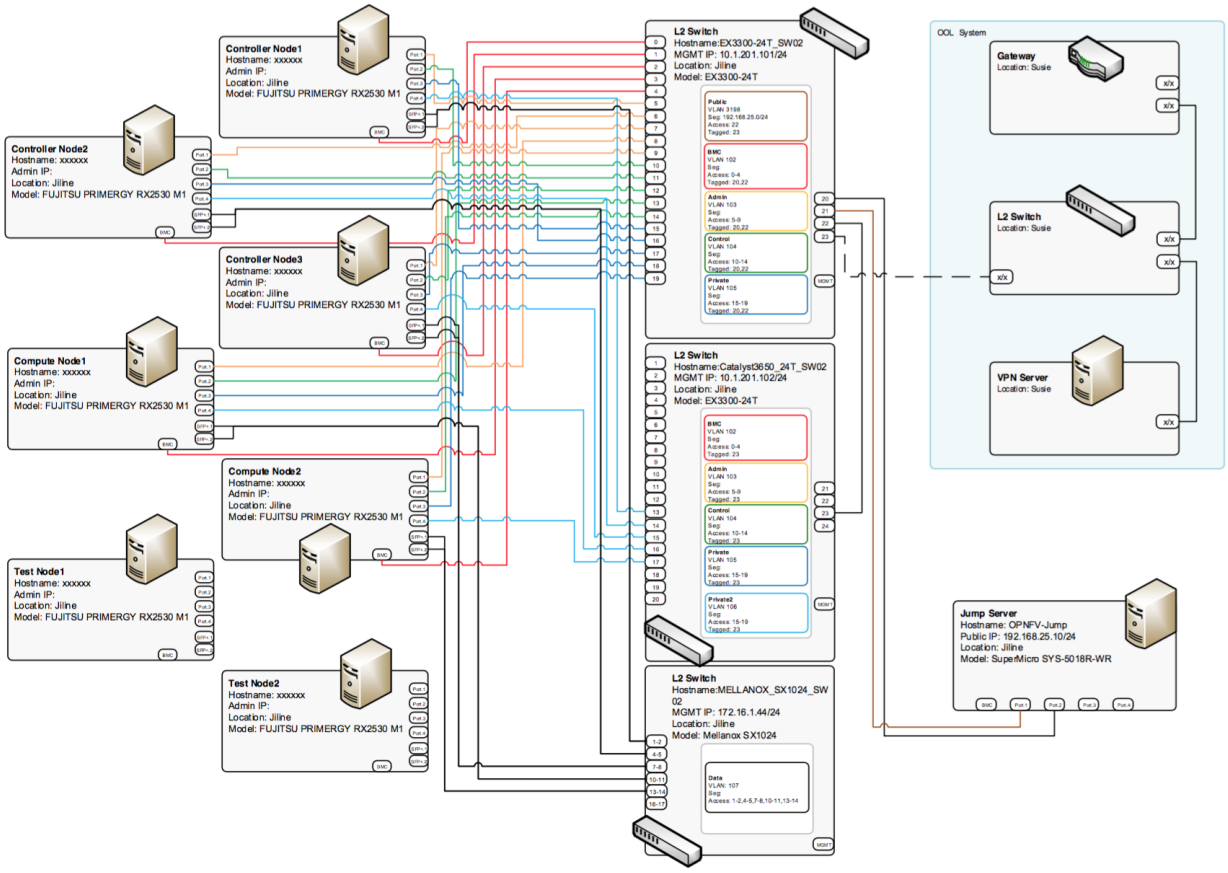
1.5.4.2.4 VPN Users

Name	Email	Project	Role	Notes
Ryota Mibu	r-mibu@cq.jp.nec.com	Doctor	Project Lead	

1.5.4.2.5 Firewall Rules

Port(s)	Service	Notes

1.5.4.2.6 POD Topology



1.5.4.3 POD: ool-virtual1

1.5.4.3.1 Introduction

This is a virtual POD deployed by Apex installer (master/Colorado). This POD is built on one machine placed next to machines of the physical POD (ool-pod1). Controller and compute nodes are VM.

1.5.4.3.2 Additional Requirements

1.5.4.3.3 Server Specifications

Jump Host

See *Server Specifications*.

Compute Nodes

Machine	Hostname	Hardware
Virtual POD	ool-virtual1	FUJITSU PRIMERGY RX2530 M1

FUJITSU PRIMERGY RX2530 M1		
CPU	Xeon E5-2630v3	x1
RAM	32GB	•
HDD	SATA 7.2krpm 2TB	x2
SSD	100GB	x1
1000BASE-T	Emulex Skyhawk	x2
10GBASE-T	Intel 82599E	x2
BMC	•	x1

Hostname	IF#	BW	MAC	IF in OS	Role
ool-virtual1	IF0	1Gb	90:1b:0e:6b:e5:d8	eno1	Admin
ool-virtual1	IF1	1Gb	90:1b:0e:6b:e5:d9	eno2	Mgmt
ool-virtual1	IF2	1Gb	90:1b:0e:6b:e5:da	eno3	Public
ool-virtual1	IF3	1Gb	90:1b:0e:6b:e5:db	eno4	Private
ool-virtual1	IF4	1Gb	90:1b:0e:6d:08:f5	ens2f0	Storage
ool-virtual1	IF5	1Gb	90:1b:0e:6d:08:f6	ens2f1	Storage

Subnet Allocations in the host

Network name	Address	Mask	Gateway	VLAN id
Admin	192.0.2.0	255.255.255.0	192.168.103.1	Untagged
Public	192.168.37.0	255.255.255.0	192.168.105.1	Untagged
Private	11.0.0.0	255.255.255.0		Untagged
Storage	12.0.0.0	255.255.255.0		Untagged

1.5.4.3.4 VPN Users

Name	Email	Project	Role	Notes
Ryota Mibu	r-mibu@cq.jp.nec.com	Doctor	Project Lead	

1.5.4.3.5 Firewall Rules

Port(s)	Service	Notes

1.5.4.3.6 POD Topology

1.5.4.4 OOL Inventory File

```
import pod1_inventory.yaml
```

1.5.5 Orange Paris Pharos Lab and Configuration Files

1.5.5.1 Lab Specification Template

1.5.5.1.1 Introduction

Orange is hosting an OPNFV test lab at Chatillon (near Paris) facility. The test lab would host baremetal servers for the use of OPNFV community as part of the OPNFV Pharos Project.

The Orange Paris lab consist of 1 POD

- POD for Fuel

1.5.5.1.2 Lab Resources

POD Name	Project(s)	Project Lead(s)	Email(s)	POD Role	Status	Notes
opnfv-integ				Dev/test	Active	

- **POD Name:** Use consistent naming / numbering to avoid confusion. Hyperlinked to POD description.
- **POD Role:** CI stable, CI latest, Dev/test, Stand-alone, Virtual, . . .
- **Status:** Assigned, Configuring, Active, Troubleshooting, Available, . . .

1.5.5.1.3 Acceptable Usage Policy

Define lab user policies and expectations

1.5.5.1.4 Remote Access Infrastructure

The Orange Paris OPNFV test lab is free to use for the OPNFV community.

A VPN is used to provide access to the Orange Paris Testlab.

To access the Testlab, please contact Auboin Cyril (cyril.auboin@orange.com) with the following details: * Name * Organization * Purpose of using the labs * Dates start / end

Processing the request can take 3-4 business days.

1.5.5.1.5 Remote Access Procedure

Define lab process for requesting access to the lab (e.g. VPN guide, how to modify BIOS settings, etc.)

1.5.5.1.6 Lab Documentation

List lab specific documents here

1.5.5.1.7 Lab Topology

Provide a diagram showing the network topology of lab including lights-out network. Any security sensitive details should not be exposed publically. The following diagram is an example only.

1.5.5.2 POD Specification Template

1.5.5.2.1 Introduction

Orange is hosting an OPNFV test lab at Chatillon (near Paris) facility. The test lab would host 4 (1 controller and 3 computes) baremetal servers for the use of OPNFV community as part of the OPNFV Pharos Project.

Version: Brahmaputra Installer: Fuel (with Ceph)

1.5.5.2.2 Additional Requirements

1.5.5.2.3 Server Specifications

Switch

Hostname	Vendor	Model	Serial Number	CPUs	Memory	Local storage	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
pod1-switch	JUNIPER	EX-R4550	750-045407				172.31.2.254 CC:E1:7F:86:38:80			32 ports

Jump Host

Hostname	Vendor	Model	Serial Number	CPUs	Memory	Local storage	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
pod1-jump-host	DELL	Proliant DL 360e Gen8	CZJ4090	1PV Intel Xeon E5-2430 v2.2 2,5Ghz 24 core	16 GB	300GB SAS 300GB SAS		IF0: 172.31.13.5		

Firewall

Hostname	Vendor	Model	Serial Number	CPUs	Memory	Local storage	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
pod1-firewall	IBM	@Server xSerie 336	KK-TVY4M	In-tel Xeon	4 GB	36GB SATA 36GB SATA		IF0: 161.105.211.2		

Controller Node

Hostname	Vendor	Model	Serial Number	CPUs	Memory	Local storage	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
pod1-ctrl1	HP	Proliant DL 360e Gen8	CZJ4090118	Intel Xeon E5-2430 v2.2 2,5Ghz 24 core	16GB	300GB SAS 300GB SAS		**IF0: 9C:B6:54:95:E4:74** Admin **IF1: 9C:B6:54:95:E4:75** 18: Public 1500: Storage 17: Management 1502: Private		

Compute Nodes

Hostname	Vendor	Model	Serial Number	CPUs	Memory	Local storage	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
pod1-node1	DELL	R730	8F3J642	Intel Xeon E5-2603 v3 1,6Ghz 12 core	128GB (8x16GB) 1600Mhz	250GB SATA 480GB SSD 480GB SSD		**IF0: EC:F4:BB:CB:62:9C** Admin **IF1: EC:F4:BB:CB:62:9A** 18: Public 1500: Storage 17: Management 1502: Private		
pod1-node2	HP	Proliant DL 360e Gen8	CZJ4090188	Intel Xeon E5-2430 v2.2 2,5Ghz 24 core	16GB	300GB SAS 300GB SAS		**IF0: 9C:B6:54:95:D4:F0** Admin **IF1: 9C:B6:54:95:D4:F1** 18: Public 1500: Storage 17: Management 1502: Private		
pod1-node3	DELL	R730	FG3J642	Intel Xeon E5-2603 v3 1,6Ghz 12 core	128GB (8x16GB) 1600Mhz	256GB SATA 480GB SSD 480GB SSD		**IF0: EC:F4:BB:CB:62:E4** Admin **IF1: EC:F4:BB:CB:62:E2** 18: Public 1500: Storage 17: Management 1502: Private		

1.5.5.2.4 Users

Name	Email	Company	Role	Notes

1.5.5.2.5 Firewall Rules

Port(s)	Service	Note
22, 43, 80	Jenkins CI	

1.5.5.2.6 POD Topology

Provide a diagram showing the network topology of the POD. Any security sensitive details should not be exposed publically and can be stored in the secure Pharos repo. The following diagram is an example only.

release/release-notes/labs/orange-paris-lab/./images/orange_paris_pod1.jpg

1.5.6 Orange OPNFV Testlab

1.5.6.1 Overview

Orange Labs is hosting an OPNFV testlab at its Lannion facility. The testlab would host baremetal servers for the use of OPNFV community as part of the OPNFV Pharos Project

The Orange Testlab consists of PODs

- POD2 for Joid

POD2 consists of 8 servers

- 1 Jump Server
- 4 Servers for Control Nodes
- 3 Servers for Compute Nodes

1.5.6.2 Hardware details

All the servers within the two PODs reside within a two chassis and have the following specifications:

1.5.6.2.1 POD2-Joid

Host-name	Model	Mem-ory	Storage	Processor 1	Cores	Threads	Processor 2	Cores	Threads
Node1	ProLiant DL380 Gen9	128 GB	2xIntel SSD S3500 480GB+1 SAS 300GB	Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz	18	36	Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz	18	36
Node2	ProLiant DL380 Gen9	128 GB	2xIntel SSD S3500 480GB+ SAS 300GB	Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz	18	36	Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz	18	36
Node3	ProLiant DL380 Gen9	128 GB	2xIntel SSD S3500 480GB+1 SAS 300GB	Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz	18	36	Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz	18	36
Node4	ProLiant DL380 Gen9	128 GB	2xIntel SSD S3500 480GB+1 SAS 300GB	Intel(R) Xeon(R) CPU E5-2609 v3 @ 1.90GHz	6	6	Intel(R) Xeon(R) CPU E5-2609 v3 @ 1.90GHz	6	6
Node5	ProLiant DL360 Gen9	32 GB	2xSAS 300GB	Intel(R) Xeon(R) CPU E5-2683 v3 @ 2.00GHz	14	28	N/A		
Node6	ProLiant DL360 Gen9	32 GB	2xSAS 300GB	Intel(R) Xeon(R) CPU E5-2683 v3 @ 2.00GHz	14	28	N/A		
Node7	ProLiant DL360 Gen9	32 GB	2xSAS 300GB	Intel(R) Xeon(R) CPU E5-2683 v3 @ 2.00GHz	14	28	N/A		

1.5.6.3 Software

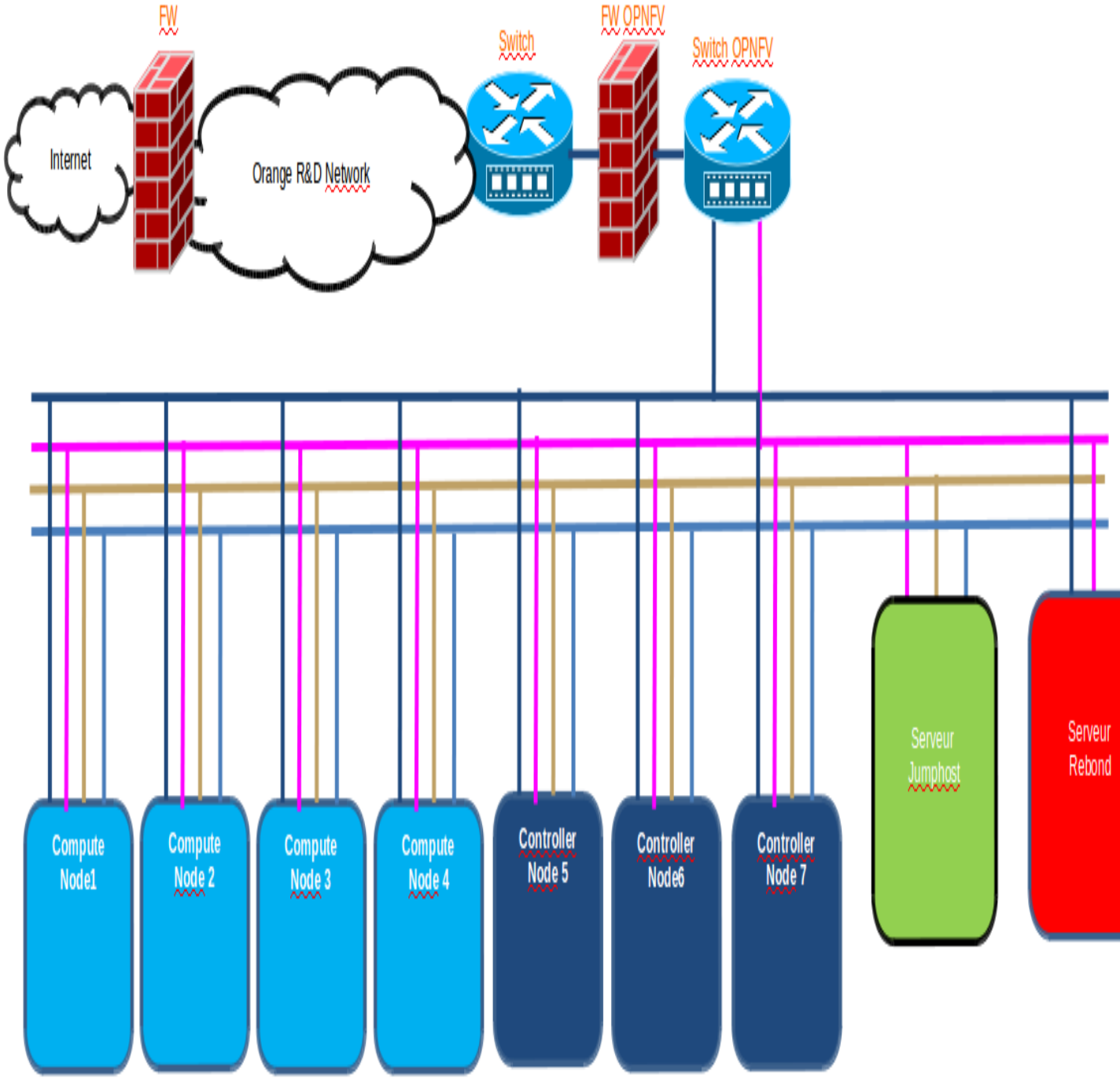
The Jump servers in the Testlab are pre-provisioned with the following softwares:

- Joid-Jump Server:

1. OS: Ubuntu 14.04

1.5.6.4 Networks

1.5.6.4.1 POD2-Joid



Hostname	NIC Model	Ports	MAC	BW	Roles
Node1	1, Broadcom NetXtreme BCM5719	eth0	38:63:bb:3f:bc:c8	10G	Admin

Continued on next page

Table 5 – continued from previous page

		eth1	38:63:bb:3f:bc:c9	10G	Public
	2, Broadcom NetXtreme BCM5719	eth2	38:63:bb:3f:bc:ca	10G	N/A
		eth3	38:63:bb:3f:bc:cb	10G	N/A
	3, Intel X540-AT2 DPDK	eth4	a0:36:9f:4e:88:5c	10G	Storage
		eth5	a0:36:9f:4e:88:5e	10G	VM
Node2	1, Broadcom NetXtreme BCM5719	eth0	38:63:bb:44:34:84	10G	Admin
		eth1	38:63:bb:44:34:85	10G	Public
	2, Broadcom NetXtreme BCM5719	eth2	38:63:bb:44:34:86	10G	N/A
		eth3	38:63:bb:44:34:87	10G	N/A
	3, Intel X540-AT2 DPDK	eth4	a0:36:9f:4e:8b:0c	10G	Storage
		eth5	a0:36:9f:4e:8b:0e	10G	VM
Node3	1, Broadcom NetXtreme BCM5719	eth0	38:63:bb:3f:1d:8c	10G	Admin
		eth1	38:63:bb:3f:1d:8d	10G	Public
	1, Broadcom NetXtreme BCM5719	eth2	38:63:bb:3f:1d:8e	10G	N/A
		eth3	38:63:bb:3f:1d:8f	10G	N/A
	3, Intel X540-AT2 DPDK	eth4	a0:36:9f:4e:88:38	10G	Storage
		eth5	a0:36:9f:4e:88:3a	10G	VM
Node4	1, Broadcom NetXtreme BCM5719	eth0	38:63:bb:3f:2d:a8	10G	Admin
		eth1	38:63:bb:3f:2d:a9	10G	Public
	1, Broadcom NetXtreme BCM5719	eth2	38:63:bb:3f:2d:aa	10G	N/A
		eth3	38:63:bb:3f:2d:ab	10G	N/A
	3, Intel X540-AT2 DPDK	eth4	a0:36:9f:4e:8b:18	10G	Storage
		eth5	a0:36:9f:4e:8b:1a	10G	VM
Node5	1, Broadcom NetXtreme BCM5719	eth0	94:57:a5:52:c9:48	10G	Admin
		eth1	94:57:a5:52:c9:49	10G	Public
	1, Broadcom NetXtreme BCM5719	eth2	94:57:a5:52:c9:4a	10G	Storage
		eth3	94:57:a5:52:c9:4b	10G	VM
Node6	1, Broadcom NetXtreme BCM5719	eth0	94:57:a5:52:63:b0	10G	Admin
		eth1	94:57:a5:52:63:b1	10G	Public
	1, Broadcom NetXtreme BCM5719	eth2	94:57:a5:52:63:b2	10G	Storage
		eth3	94:57:a5:52:63:b3	10G	VM
Node7	1, Broadcom NetXtreme BCM5719	eth0	94:57:a5:52:f1:80	10G	Admin
		eth1	94:57:a5:52:f1:81	10G	Public
	1, Broadcom NetXtreme BCM5719	eth2	94:57:a5:52:f1:82	10G	Storage
		eth3	94:57:a5:52:f1:83	10G	VM

1.5.6.4.2 Subnet allocations Pod2

Network	Address	Mask	Gateway	VLAN id
Admin	192.168.2.0	255.255.255.0	192.168.2.1	200
Public	161.105.231.0	255.255.255.192	161.105.231.1	135
Storage	192.168.12.0	255.255.255.0	192.168.2.1	210
VM	192.168.22.0	255.255.255.0	192.168.22.1	230

1.5.6.4.3 ILO Pod2

POD2

Hostname	Lights-out address	MAC	Username	Password
Node1	192.168.2.11	38:63:bb:39:b2:2e	Administrator	pod2Admin
Node2	192.168.2.12	14:58:d0:48:7b:7a	Administrator	pod2Admin
Node3	192.168.2.13	38:63:bb:39:b2:86	Administrator	pod2Admin
Node4	192.168.2.14	38:63:bb:39:b2:40	Administrator	pod2Admin
Node5	192.168.2.15	94:57:a5:62:73:c2	Administrator	pod2Admin
Node6	192.168.2.16	94:57:a5:62:72:90	Administrator	pod2Admin
Node7	192.168.2.17	94:57:a5:62:f4:c6	Administrator	pod2Admin

1.5.6.5 Remote access infrastructure

The Orange OPNFV testlab is free to use for the OPNFV community.

To access the Testlab, please contact bertrand.lelamer AT orange.com with the following details: * Name * Email * Designation * Organization * Purpose of using the lab * SSH public key

1.5.6.6 *Accessing the Orange Lannion Testlab*

1.5.6.6.1 POD2 JumpServer

1.5.7 Spirent Virtual Cloud Test Lab

A community provided metal resource hosted at Nephoscale, leveraged for SDN/NFV public testing and OpenDaylight, OpenStack, OPNFV projects.

Spirent VCT Lab is currently working on 3 different **OpenStack** environments each one of them deployed on different hardware configuration:

- **OpenStack Juno - 2014.2.2 release** (CentOS 7, 20 Cores, 64 GB RAM, 1 TB SATA, 40 Gbps)
- **OpenStack Juno - 2014.2.2 release** (Ubuntu 14.04, 8 cores, 32 GB RAM, 500 GB SATA, 10 Gbps)
- **OpenStack Icehouse - 2014.1.3 release**
- **OpenStack Icehouse - 2014.1.3 release**

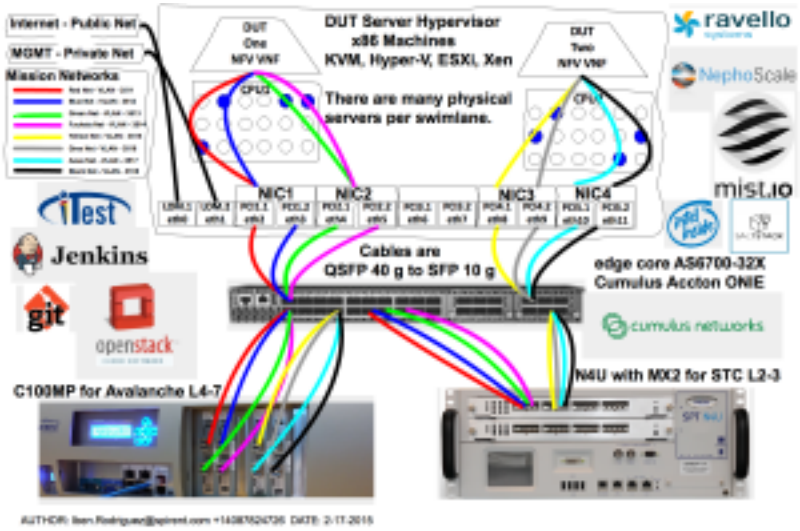
There are a number of different networks referenced in the VPTC Design Blueprint.

- Public Internet – 1 g
- Private Management – 1g
- Mission Clients – 10g
- Mission Servers – 10g

These can be added or removed as specified by the test methodology. There are 8 x 10 gige SFP+ ports available on a typical C100MP used for Avalanche Layer 4-7 testing. The N4U offers 2 x 40 gige QSFP+ ports with the MX-2 Spirent Test Center Layer 2-3 testing. There are 2 x Cumulus switches with 32 ports of 40 gige QSFP+ ports for a total capacity of 256 ports of 10 gige. We use QSFP+ to SFP+ break out cables to convert a single 40 gige port into 4 x 10 gige ports. Together these offer a flexible solution to allow up to 8 simultaneous tests to take place with physical traffic generators at the same time. Assuming a 10 to 1 oversubscription ratio we could handle 80 community users with the current environment.

For example:

- An 80 Gbps test would need 4 port pairs of 10 gige each and require 8 mission networks.
- Multiple clients sharing common test hardware might have dedicated management networks for their DUTs yet communicate with the APIs and Management services via a shared DMZ network protected by a firewall.
- SSL and IPSec VPN will typically be leveraged to connect networks across the untrusted Internet or other third party networks.
- Stand-alone DUT servers using STCv and AVv traffic generators could easily scale to hundreds of servers as needed.



1.5.8 ZTE SH Pharos Lab Configuration Files

1.5.8.1 ZTE SH Lab Specification

1.5.8.1.1 Introduction

ZTE SH Pharos lab currently has three PODs available in Shanghai. Each POD has 5 servers, 3 controller nodes and 2 computer nodes. These PODs are dedicated for use by Production/CI. These PODs focus scenarios related with **test** projects, **installer** projects and performance enhancement projects, such as KVM, OVS, FDS, etc.

Scenarios planned are list here:

- os-nosdn-kvm-ha
- os-nosdn-kvm_ovs-ha

Scenarios are defined in Colorado Scenario Status

1.5.8.1.2 Lab Resources

POD Name	Project(s)	PTL(s)	Email(s)	POD Role	Status	Notes
POD1	FUEL	Gregory Elkinbard	gelkinbard@mirantis.com	CI: latest	Active	Yardstick Funtest Doctor Parser
POD2	FUEL	Gregory Elkinbard	gelkinbard@mirantis.com	CI: latest	Active	Qtip
POD3	FUEL	Gregory Elkinbard	gelkinbard@mirantis.com	CI: latest	Active	NFV-KVM OVSNFV

- POD1-3 wiki page
- POD1 jenkins slave
- POD2 jenkins slave
- POD3 jenkins slave

1.5.8.1.3 Acceptable Usage Policy

Resources located in OPNFV ZTE SH lab shall only be used for CI, infra setup/configuration and troubleshooting purposes. No development work is allowed in these PODs.

1.5.8.1.4 Remote Access Infrastructure

ZTE SH lab provide the OpenVPN access for you.

1.5.8.1.5 Remote Access Procedure

Access to this environment can be granted by sending an e-mail to: **yangyang1@zte.com.cn**.

Subject: opnfv zte-pod[1-3] access.

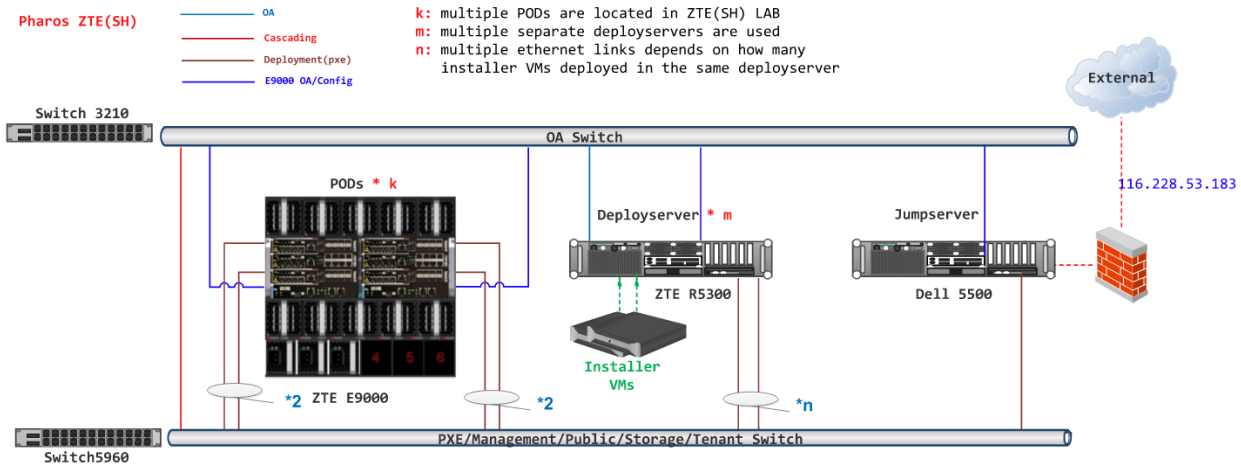
The following information should be provided in the request:

```
Full name:
E-mail:
Organization:
Why is access needed:
How long is access needed:
What specific Host will be accessed:
What support is needed from zte admin:
```

Once access requirment is approved, the instructions for setting up VPN access will be send to you by mail.

1.5.8.1.6 Lab Documentation

1.5.8.1.7 Lab Topology



All the PODs share the same **Jump Host** for only one public IP address is allocated for ZTE Pharos Lab. Deploy servers are separated from Jump Host. Each POD has itsown **Deploy Server**.

Jump Host

Hostname	Vendor	Model	Serial Number	CPUs	Memory (GB)	Local Storage	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
Rabbit	HP	5500	•	X5647x2	24	250GB SAS 2 TB HDD	IF0: a0:36:9f:00:11:34/ 192.168.1.1/ native vlan/OA IF1: a0:36:9f:00:11:35/ 172.10.0.1/ vlan 103/Public 172.20.0.1/ vlan 113/Public 172.60.0.1/ vlan 163/Public 172.70.0.1/ vlan 173/Public IF2: a0.36:9:00:11:37/ 116.228.53.183/ native vlan/ Internet		

1.5.8.2 ZTE POD1 Specification

1.5.8.2.1 Introduction

POD1(means ZTE-POD1) uses Fuel as the installer and performs os-odl_l2-nofeature-ha CI latest verification. Currently, test projects such as Yardstick, Functest are performing daily CI tasks. Fueature projects such as Doctor, Parser will perform daily and verify CI tasks.

1.5.8.2.2 Additional Requirements

1.5.8.2.3 Server Specifications

Jump Host

POD1 share the same **Jump Host** in the lab.

Deploy server

Hostname	Vendor	Model	Serial Number	CPUs	Memory (GB)	Local Storage	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
Jellyfish	ZTE	R5300	2776625600093	Intel Xeon E5-2620x2	128	600GB SAS 4 TB HDD	IF0: 74:4a:a4:00:91:b3/ 10.20.6.1/ native vlan/PXE IF1: 74:4a:a4:00:91:b4/ 10.20.7.1/ native vlan/PXE		

Nodes/Servers

Hostname	Vendor	Model	Serial Number	CPUs	Memory (GB)	Local Storage	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
node1	ZTE	E9000	7017631500025	Intel Xeon E5-2650x2	128	600GB SAS 4 TB HDD	IP: 172.168.1.101 74:4a:a4:00:7d:da/ zte-root/superuser	ens4f0: 74:4a:a4:00:7d:d9 native vlan	ens12f0: 74:4a:a4:00:b0:e1 vlan 161/ management ens12f1: 74:4a:a4:00:b0:e2 vlan 162/ storage ens44f0: 74:4a:a4:00:b0:dd vlan 1120/ private ens44f1: 74:4a:a4:00:b0:de vlan 163/ public	
node2	ZTE	E9000	7017631500224	Intel Xeon E5-2650x2	128	600GB SAS 4 TB HDD	IP: 172.168.1.102 74:4a:a4:00:7e:4a/ zte-root/superuser	ens4f0: 74:4a:a4:00:7e:49 native vlan	ens12f0: 74:4a:a4:00:d6:ad vlan 161/ management ens12f1: 74:4a:a4:00:d6:ae vlan 162/ storage ens44f0: 74:4a:a4:00:d6:a9 vlan 1120/ private ens44f1: 74:4a:a4:00:d6:aa vlan 163/ public	
node3	ZTE	E9000	7017631500064	Intel Xeon E5-2650x2	128	600GB SAS 4 TB HDD	IP: 172.168.1.103 74:4a:a4:00:7e:5a/ zte-root/superuser	ens4f0: 74:4a:a4:00:7e:59 native vlan	ens12f0: 74:4a:a4:00:d6:ab vlan 161/ management ens12f1: 74:4a:a4:00:d6:ac vlan 162/ storage ens44f0: 74:4a:a4:00:d6:af vlan 1120/ private ens44f1: 74:4a:a4:00:d6:b0 vlan 163/ public	
node4	ZTE	E9000	2898422500103	Intel Xeon E5-2650x2	128	600GB SAS 4 TB HDD	IP: 172.168.1.104 74:4a:a4:00:7e:8a/ zte-root/superuser	ens4f0: 74:4a:a4:00:7e:89 native vlan	ens12f0: 74:4a:a4:00:b1:a5 vlan 161/ management ens12f1: 74:4a:a4:00:b1:a6 vlan 162/ storage ens44f0: 74:4a:a4:00:b1:b1 vlan 1120/ private ens44f1: 74:4a:a4:00:b1:b2 vlan 163/ public	
node5	ZTE	E9000	7017631500220	Intel Xeon E5-2650x2	128	600GB SAS 4 TB HDD	IP: 172.168.1.105 74:4a:a4:00:7e:4a/ zte-root/superuser	ens4f0: 74:4a:a4:00:7e:49 native vlan	ens12f0: 74:4a:a4:00:d6:8d vlan 2161/ management ens12f1: 74:4a:a4:00:d6:8e vlan 162/ storage ens44f0: 74:4a:a4:00:d6:9b vlan 1120/ private ens44f1: 74:4a:a4:00:d6:9c vlan 163/ public	

Subnet allocations

Network name	Address	Mask	Gateway	VLAN id
Public	172.60.0.0	255.255.255.0	172.60.0.1	163
Fuel Admin/PXE	10.20.6.0	255.255.255.0	10.20.6.2	native vlan 160
Fuel Mangement	192.168.61.0	255.255.255.0		161
Fuel Storage	192.168.62.0	255.255.255.0		162

1.5.8.2.4 VPN Users

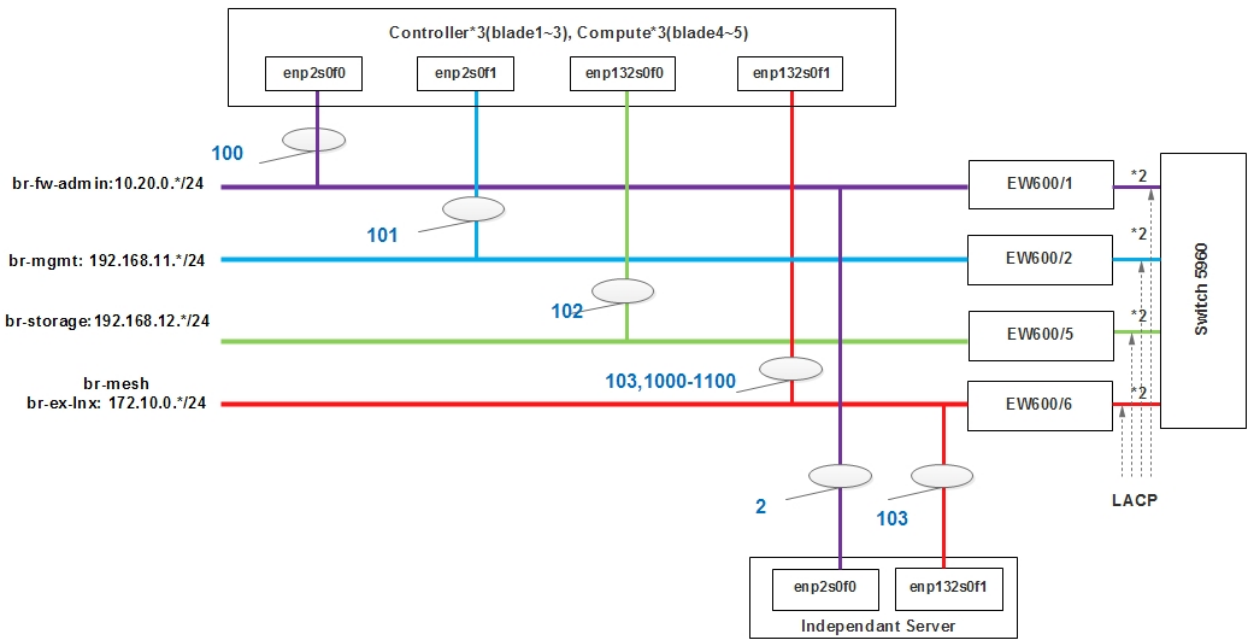
Name	Email	Project	Role	Notes

1.5.8.2.5 Firewall Rules

Port(s)	Service	Note
1194(OpenVPN)	Jenkins	

1.5.8.2.6 POD Topology

POD3-FUEL-BM-SH



1.5.8.3 ZTE POD2 Specification

1.5.8.3.1 Introduction

POD2(means ZTE-POD2) uses Fuel as the installer and performs os-odl_l2-nofeature-ha CI latest verification. Qtip daily CI task will be migrated from POD1 to POD2. Qtip is also working on integration with Yardstick umbrella project.

1.5.8.3.2 Additional Requirements

1.5.8.3.3 Server Specifications

Jump Host

POD2 share the same **Jump Host** in the lab.

Deploy Server

POD2 share the same **Deploy Server** with POD1.

Hostname	Vendor	Model	Serial Number	CPUs	Memory (GB)	Local Storage	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
Jellyfish	ZTE	R5300	2776625[illegible]	Intel 2620x2	128	600GB SAS 4 TB HDD	IF0: 74:4a:a4:00:91:b3/ 10.20.6.1/ native vlan/PXE IF1: 74:4a:a4:00:91:b4/ 10.20.7.1/ native vlan/PXE		

Nodes/Servers

Hostname	Vendor	Model	Serial Number	CPUs	Memory (GB)	Local Storage	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
node1	ZTE	E9000	7017631500114	28 2650x2	128	600GB HDD	IP: 22.168.1.106 74:4a:a4:00:74:6a zte-root/superuser	ens4f0: 74:4a:a4:00:74:6b native vlan 170/PXE	ens12f0: 74:4a:a4:00:b0:e9 vlan 171/ management ens12f1: 74:4a:a4:00:b0:ea vlan 172/ storage ens44f0: 74:4a:a4:00:b0:eb vlan 1130/ private ens44f1: 74:4a:a4:00:b0:ec vlan 173/ public	
node2	ZTE	E9000	7013603500105	28 2650x2	128	600GB HDD	IP: 22.168.1.107 74:4a:a4:00:74:e2 zte-root/superuser	ens4f0: 74:4a:a4:00:74:e3 native vlan 170/PXE	ens12f0: 74:4a:a4:00:d6:a3 vlan 171/ management ens12f1: 74:4a:a4:00:d6:a4 vlan 172/ storage ens44f0: 74:4a:a4:00:d6:99 vlan 1130/ private ens44f1: 74:4a:a4:00:d6:9a vlan 173/ public	
node3	ZTE	E9000	7013603500026	28 2650x2	128	600GB HDD	IP: 22.168.1.108 74:4a:a4:00:74:4e zte-root/superuser	ens4f0: 74:4a:a4:00:74:4f native vlan 170/PXE	ens12f0: 74:4a:a4:00:d6:9d vlan 171/ management ens12f1: 74:4a:a4:00:d6:9e vlan 172/ storage ens44f0: 74:4a:a4:00:d3:15 vlan 1130/ private ens44f1: 74:4a:a4:00:d3:16 vlan 173/ public	
node4	ZTE	E9000	7017631500099	28 2650x2	128	600GB HDD	IP: 22.168.1.109 74:4a:a4:00:74:3a zte-root/superuser	ens4f0: 74:4a:a4:00:74:3b native vlan 170/PXE	ens12f0: 74:4a:a4:00:d6:a5 vlan 171/ management ens12f1: 74:4a:a4:00:d6:a6 vlan 172/ storage ens44f0: 74:4a:a4:00:d6:a7 vlan 1130/ private ens44f1: 74:4a:a4:00:d6:a8 vlan 173/ public	
node5	ZTE	E9000	7017631500018	28 2650x2	128	600GB HDD	IP: 22.168.1.110 74:4a:a4:00:74:4a zte-root/superuser	ens4f0: 74:4a:a4:00:74:4b native vlan 170/PXE	ens12f0: 74:4a:a4:00:d2:c3 vlan 171/ management ens12f1: 74:4a:a4:00:d2:c4 vlan 172/ storage ens44f0: 74:4a:a4:00:d2:c1 vlan 1130/ private ens44f1: 74:4a:a4:00:d2:c2 vlan 173/ public	

Subnet allocations

Network name	Address	Mask	Gateway	VLAN id
Public	172.70.0.0	255.255.255.0	172.70.0.1	173
Fuel Admin	10.20.7.0	255.255.255.0	10.20.7.1	native vlan 170
Fuel Mangement	192.168.71.0	255.255.255.0		171
Fuel Storage	192.168.72.0	255.255.255.0		172

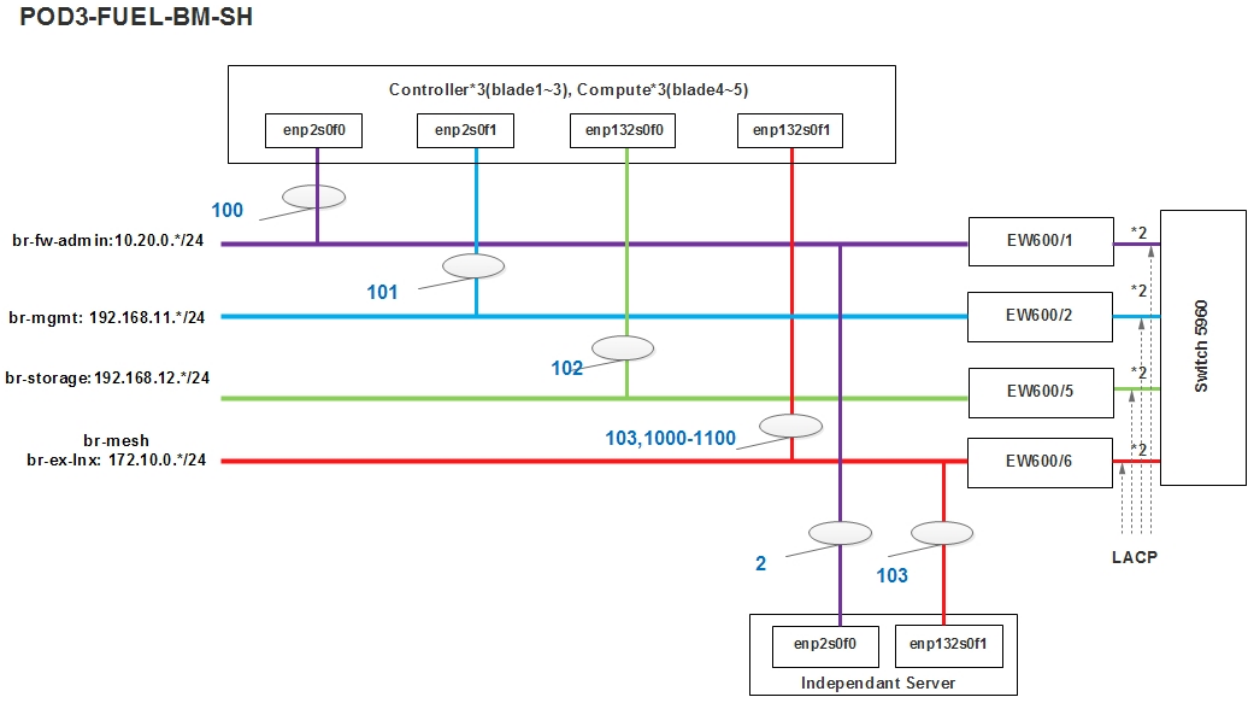
1.5.8.3.4 VPN Users

Name	Email	Project	Role	Notes

1.5.8.3.5 Firewall Rules

Port(s)	Service	Note
1194(OpenVPN)	Jenkins	

1.5.8.3.6 POD Topology



1.5.8.4 ZTE SH POD3 Specification

1.5.8.4.1 Introduction

POD3(means ZTE-POD3) uses Fuel as the installer and performs os-nosdn-kvm-ha CI latest verification. Feature projects like NFV-KVMV, OVSNFV will be run in this POD.

1.5.8.4.2 Additional Requirements

1.5.8.4.3 Server Specifications

Jump Host

POD3 share the same **Jump Host** in the lab.

Deploy Server

Hostname	Vendor	Model	Serial Number	CPUs	Memory (GB)	Local Storage	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
Spider	ZTE	R5300	2100773057600732	Intel(R) Xeon(R) CPU E5-2609x1	16	600GB SAS 1.2TB SCSI	IF0: 74:4a:a4:00:21:0b/ 10.20.0.1/ native vlan/PXE IF1: 74:4a:a4:00:21:0c/ 10.20.1.1/ native vlan/PXE		

Compute Nodes

Hostname	Vendor	Model	Serial Number	CPUs	Memory (GB)	Local Storage	Lights-out network (IPMI): IP/MAC, U/P	1GbE: NIC#/IP MAC/VLAN/Network	10GbE: NIC#/IP MAC/VLAN/Network	Notes
node1	ZTE	E9000	2890165500200064	Intel(R) Xeon(R) CPU E5-2670x2	64	600GB HDD	192.168.1.32 0c:12:62:e4:bf:de zte-root/superuser		enp2s0f0: 74:4a:a4:00:0b:85 vlan 100/ Admin(PXE) enp2s0f1: 74:4a:a4:00:0b:86 vlan 101/ mgmt enp132s0f0: 74:4a:a4:00:0b:87 vlan 102/ storage enp132s0f1: 74:4a:a4:00:0b:88 vlan 103/ public vlan 1020/ private	
node2	ZTE	E9000	2890165500019664	Intel(R) Xeon(R) CPU E5-2670x2	64	600GB HDD	192.168.1.33 0C:12:62:E4:C0:33 zte-root/superuser		enp2s0f0: 74:4a:a4:00:5c:5d vlan 100/ Admin(PXE) enp2s0f1: 74:4a:a4:00:5c:5e vlan 101/ mgmt enp132s0f0: 74:4a:a4:00:5c:5f vlan 102/ storage enp132s0f1: 74:4a:a4:00:5c:60 vlan 103/ public vlan 1020/ private	
node3	ZTE	E9000	2890165500000664	Intel(R) Xeon(R) CPU E5-2670x2	64	600GB HDD	192.168.1.34 74:4A:A4:00:30:93 zte-root/superuser		enp2s0f0: 74:4a:a4:00:5c:35 vlan 100/ Admin(PXE) enp2s0f1: 74:4a:a4:00:5c:36 vlan 101/ mgmt enp132s0f0: 74:4a:a4:00:5c:37 vlan 102/ storage enp132s0f1: 74:4a:a4:00:5c:38 vlan 103/ public vlan 1020/ private	
node4	ZTE	E9000	2890165500010664	Intel(R) Xeon(R) CPU E5-2670x2	64	600GB HDD	192.168.1.35 0C:12:62:E4:C0:42 zte-root/superuser		enp2s0f0: 74:4a:a4:00:5c:69 vlan 100/ Admin(PXE) enp2s0f1: 74:4a:a4:00:5c:6a vlan 101/ mgmt enp132s0f0: 74:4a:a4:00:5c:6b vlan 102/ storage enp132s0f1: 74:4a:a4:00:5c:6c vlan 103/ public vlan 1020/ private	
node5	ZTE	E9000	2890165500019664	Intel(R) Xeon(R) CPU E5-2670x2	64	600GB HDD	192.168.1.36 74:4A:A4:00:30:43 zte-root/superuser		enp2s0f0: 74:4a:a4:00:5c:6d vlan 100/ Admin(PXE) enp2s0f1: 74:4a:a4:00:5c:6e vlan 101/ mgmt enp132s0f0: 74:4a:a4:00:5c:6f vlan 102/ storage enp132s0f1: 74:4a:a4:00:5c:70 vlan 103/ public vlan 1020/ private	

Subnet allocations

Network name	Address	Mask	Gateway	VLAN id
Public	172.10.0.0	255.255.255.0	172.10.0.1	103
Fuel Admin/PXE	10.20.0.0	255.255.255.0	10.20.0.1	native valn 100
Fuel Mangement	192.168.11.0	255.255.255.0		101
Fuel Storage	192.168.12.0	255.255.255.0		102

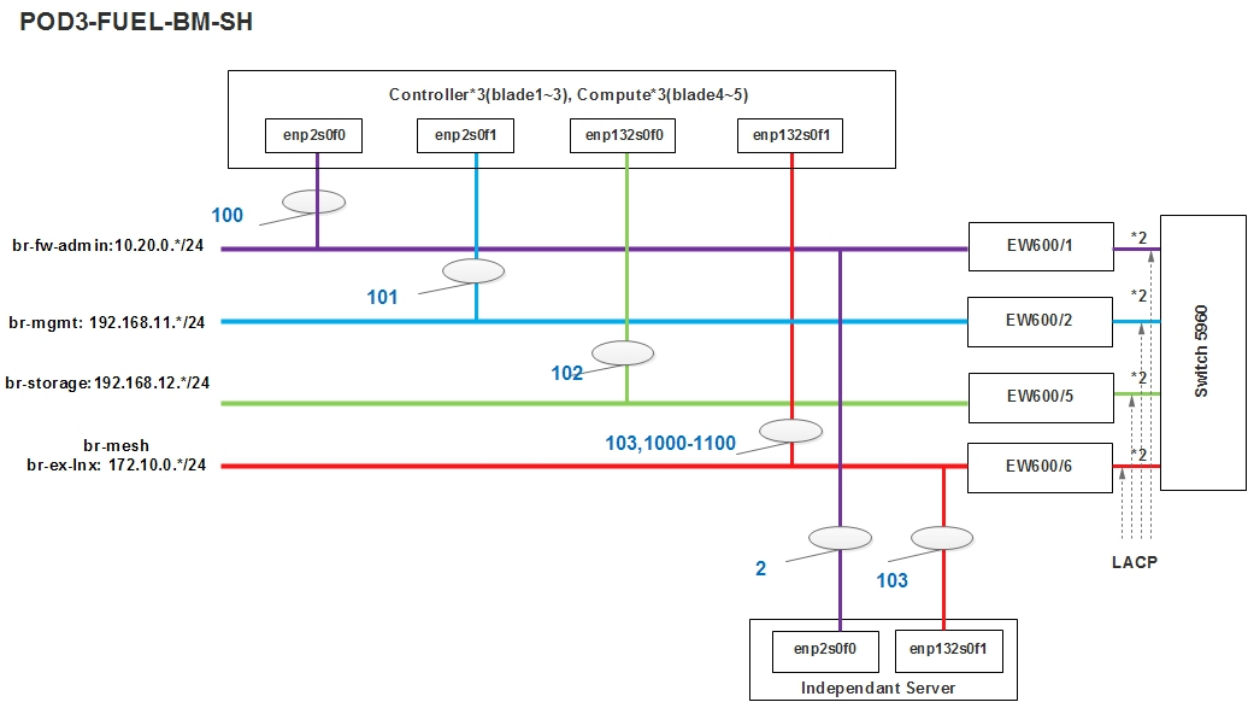
1.5.8.4.4 VPN Users

Name	Email	Project	Role	Notes

1.5.8.4.5 Firewall Rules

Port(s)	Service	Note
5000(OpenVPN)	Jenkins	

1.5.8.4.6 POD Topology



CHAPTER 2

Indices

- search