Contents

Title: Setting Up Lenovo Open Cloud Networks Date: 2018-09-14 09:35 Tags: reference architecture Slug: ibb network design Author: Feng Xia

Abstract

The purpose of this document is to provide guidelines and considerations for setting up Lenovo Open Cloud (aka. LOC) networks.

Executive Summary

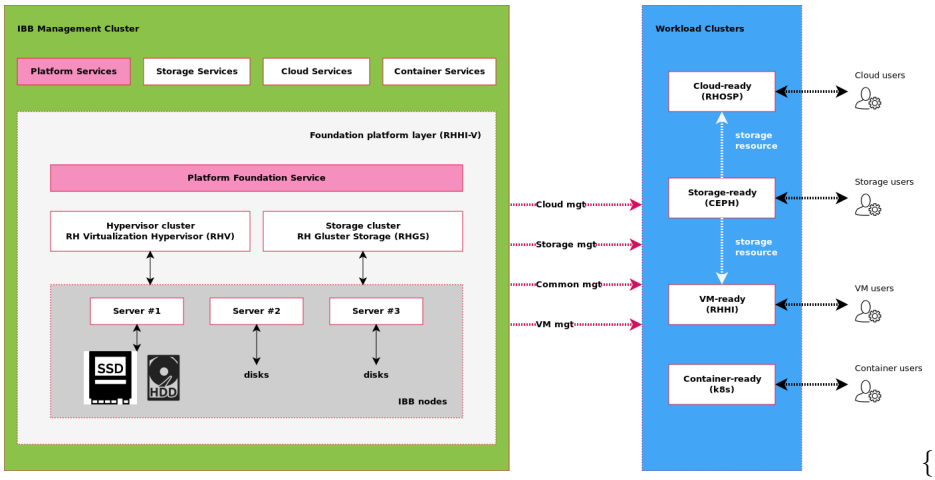
Lenovo Open Cloud consists of a list of physical servers (aka. nodes) and virtual machines (VMs). This reference environment provides a comprehensive example demonstrating how to set up networks to connect these servers and VMs together.

Lenovo Open Cloud is a highly configurable system. From the point of view of physical servers, LOC can be deployed on a 6-server or 9-server configuration. In this document we will use a 9-server configuration as example.

Components and Considerations

Lenovo Open Cloud consists of three major components:

1. **Platform services**: Platform services are built upon Red Hat Hyperconverged Infrastructure (RHHI). It provides LOC core services each deployed in one or more virtual machines.
2. **Storage services**: Storage services are built upon Ceph. It provides capability to manage Ceph cluster up to xx.
3. **Cloud services**: Cloud is built upon Red Hat Openstack.



{.col
.s12} *Lenovo Open Cloud Architecture*

Services

Platform services

Storage services

Cloud services

Physical Servers

HW BOM as reference. Description of servers, including:

1. picture
2. general description
3. HW configuration → best recipe? eg. RAID feature enabled

Network Switches

HW BOM reference. Description of switches, including:

1. picture
2. general description
3. HW configuration → best recipe?

Software

SW BOM as reference. Description of Red Hat software:

RHV

RHGS

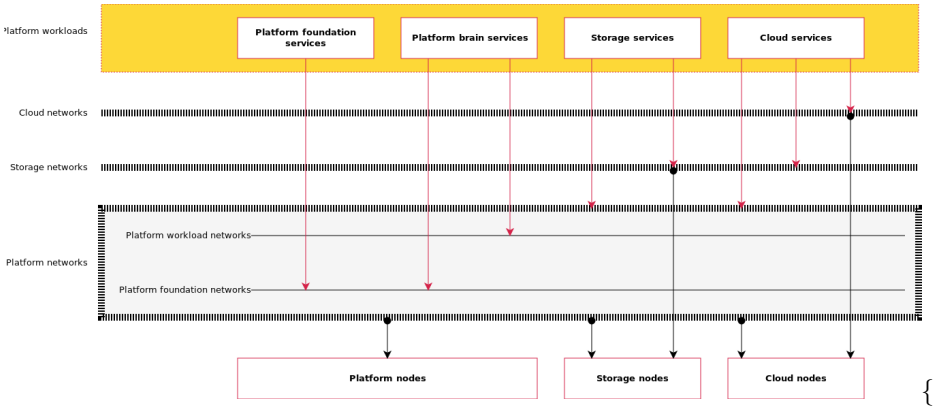
Satellite

Tower

Ceph

Openstack

Network Design



{.col .s12} *Lenovo Open Cloud Network Overview*

LOC networks can be viewed in three groups whereas:

1. **platform network**: to support platform services.
2. **storage network**: built on top of platform network with added networks to handle Ceph data storage traffic and Ceph management functions.
3. **cloud network**:

Conventions

Hardware can break. It is important to keep it in mind when designing a network connection. In this architecture we have followed these conventions:

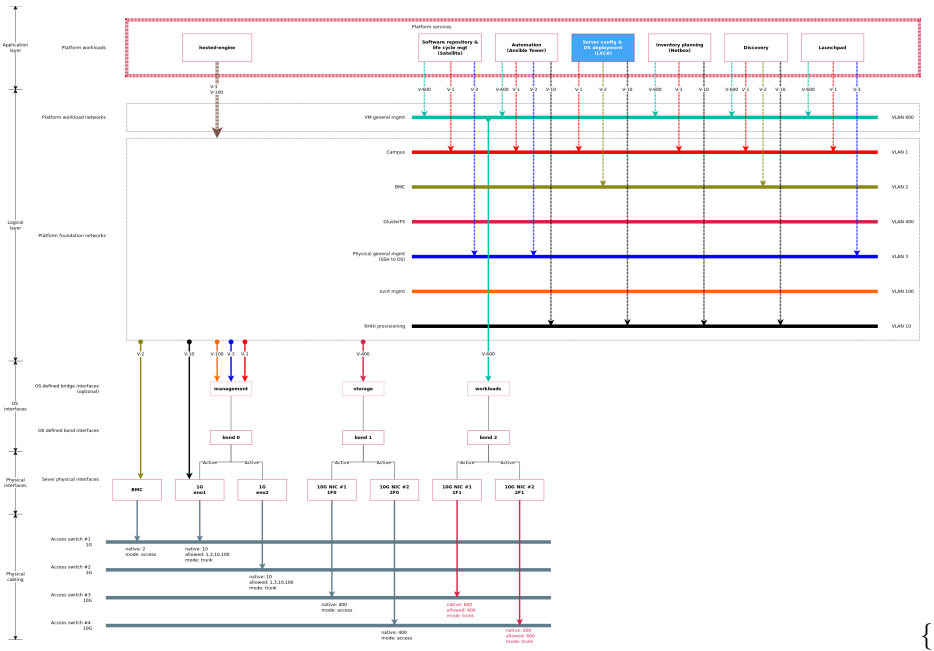
1. Inter switch connections are paired.
2. Except BMC connection, server to switch connections are paired.
    1. Each pair connect to separate NICs on the server at north bound, and separate switch at south bound.

Connection To Upstream

Showing switch topology within IBB as well as how it is connected to upstream → what is required from upstream, eg. dhcp, dns, gateway, access to RH CDN.

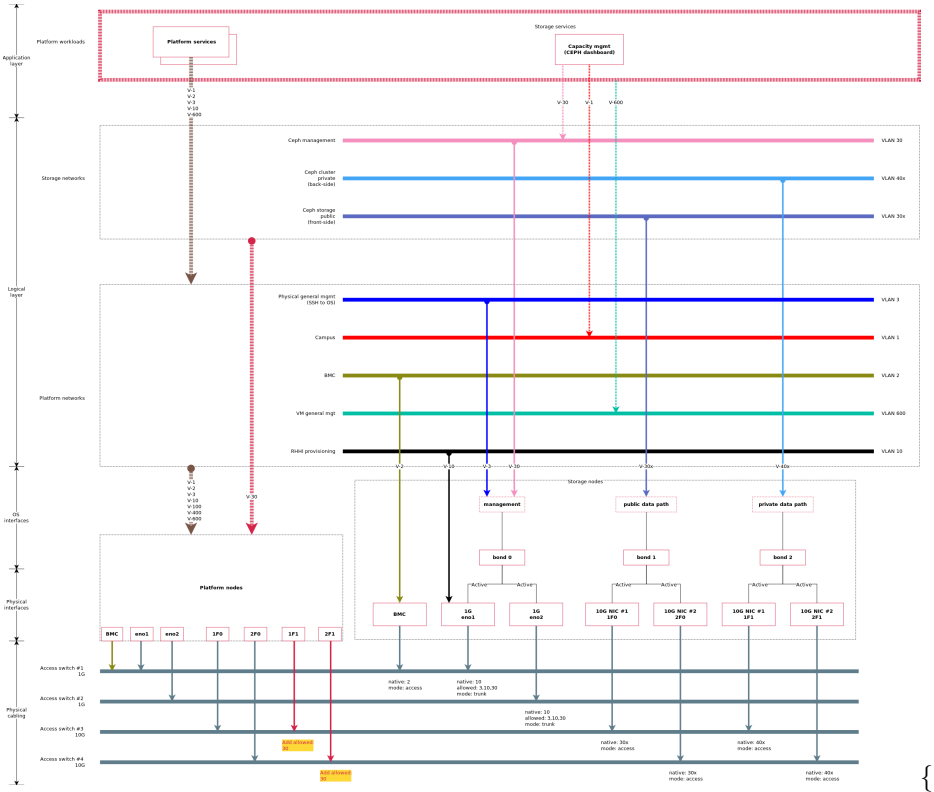
VLANs

Platform Network Design



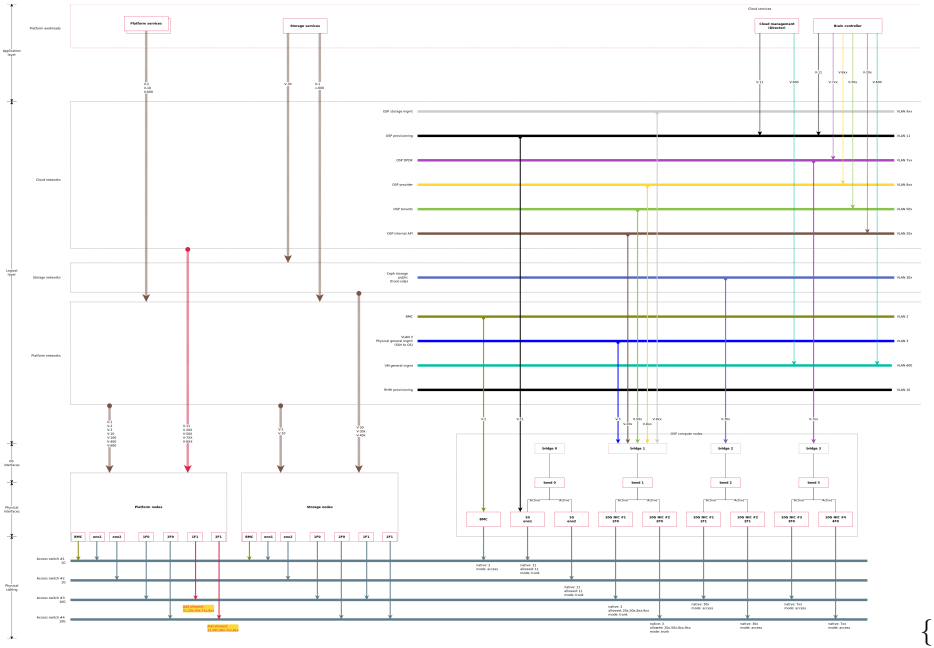
{.col .s12} *Lenovo Open Cloud Platform Network*

Storage Network Design



{.col .s12} *Lenovo Open Cloud Storage Network*

Cloud Network Design



{.col .s12} *Lenovo Open Cloud Cloud Network*

Server to Switch Cable Schema

Each environment is different. Here we present an example cable schema following the network designs laid out in previous sections. In the following sections we will use this schema to demonstrate switch port configurations.

Configure Switches

There are two aspects of switch configurations:

1. **inter switch connections**: switch are connected to form a topology allowing data traffic between Lenovo Open Cloud environment and its host environments, and between LOC switches within the LOC itself. All switches are paired for high availability.
2. **server connections**: are connections between server and switch. Except out-of-band connection which has only one connection between a server and a switch, thus does not have redundancy, all other server to switch connections

Configure Servers

Configure Virtual Machines

Appendix

Implementation Worksheet (questioinnaire)

Hardware BOM

Simplified version covers server & switch at high level should be fine.

Software BOM

BOM matrix without $$.