



# **OPNFV(Brahmaputra) Compass4nfv installation instructions**

*Release draft (30a0253)*

**OPNFV**

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# INSTALLATION INSTRUCTIONS FOR THE BRAHMAPUTRA RELEASE OF OPNFV WHEN USING COMPASS4NFV AS A DEPLOYMENT TOOL

## 1.1 Abstract

This document describes how to install the Brahmaputra release of OPNFV when using Compass4nfv as a deployment tool covering it's limitations, dependencies and required system resources.

## 1.2 Version history

Date	Ver.	Author	Comment
2016-01-17	1.0.0	Justin chi (HUAWEL)	Rewritten for Compass4nfv B release
2015-12-16	0.0.2	Matthew Li (HUAWEL)	Minor changes & formatting
2015-09-12	0.0.1	Chen Shuai (HUAWEL)	First draft

## 1.3 Introduction

This document describes providing guidelines on how to install and configure the Brahmaputra release of OPNFV when using Compass as a deployment tool including required software and hardware configurations.

Installation and configuration of host OS, OpenStack, OpenDaylight, ONOS, Ceph etc. can be supported by Compass on VMs or Bare Metal nodes.

The audience of this document is assumed to have good knowledge in networking and Unix/Linux administration.

## 1.4 Preface

Before starting the installation of the Brahmaputra release of OPNFV, some planning must be done.

### 1.4.1 Retrieving the installation ISO image

First of all, The installation ISO is needed for deploying your OPNFV environment, it included packages of Compass, OpenStack, OpenDaylight, ONOS and so on. the iso can be retrieved via OPNFV artifacts repository:

<http://artifacts.opnfv.org/>

NOTE: Search the keyword “Compass4nfv/Brahmaputra” to locate the ISO image.

E.g. `compass4nfv/brahmaputra/opnfv-2016-01-16_15-03-18.iso` `compass4nfv/brahmaputra/opnfv-2016-01-16_15-03-18.properties`

The name of iso image includes the time of iso building, you can get the daily ISO according the building time. The git url and sha1 of Compass4nfv are recorded in properties files, According these, the corresponding deployment scripts can be retrieved.

### 1.4.2 Getting the deployment scripts

To retrieve the repository of Compass4nfv on Jumphost use the following command:

- `git clone https://gerrit.opnfv.org/gerrit/compass4nfv`

NOTE: PLEASE DO NOT GIT CLONE COMPASS4NFV IN root DIRECTORY.

If you don't have a Linux foundation user id, get your own by the url:

[https://wiki.opnfv.org/developer/getting\\_started](https://wiki.opnfv.org/developer/getting_started)

Set the branch to the corresponding deployment scripts:

E.g. Git sha1 in file “`opnfv-2016-01-16_15-03-18.properties`” is `d5a13ce7cc2ce89946d34b0402ecf33c1d291851`

- `git checkout d5a13ce7cc2ce89946d34b0402ecf33c1d291851`

### 1.4.3 Preparing the installation environment

If you have only 1 Bare Metal server, Virtual deployment is recommended. if more than or equal 3 servers, the Bare Metal deployment is recommended. The minimum number of servers for Bare metal deployment is 3, 1 for JumpServer(Jumphost), 1 for controller, 1 for compute.

## 1.5 Setup Requirements

### 1.5.1 Jumphost Requirements

The Jumphost requirements are outlined below:

1. Ubuntu 14.04 (Pre-installed).
2. Root access.
3. libvirt virtualization support.
4. Minimum 2 NICs.
  - PXE installation Network (Receiving PXE request from nodes and providing OS provisioning)
  - IPMI Network (Nodes power control and set boot PXE first via IPMI interface)
  - External Network (Optional: Internet access)
5. 16 GB of RAM for a Bare Metal deployment, 64 GB of RAM for a VM deployment.
6. Minimum 100G storage.



## 1.5.2 Bare Metal Node Requirements

Bare Metal nodes require:

1. IPMI enabled on OOB interface for power control.
2. BIOS boot priority should be PXE first then local hard disk.
3. Minimum 3 NICs.
  - PXE installation Network (Broadcasting PXE request)
  - IPMI Network (Receiving IPMI command from Jumpost)
  - External Network (OpenStack mgmt/external/storage/tenant network)

## 1.5.3 Network Requirements

Network requirements include:

1. No DHCP or TFTP server running on networks used by OPNFV.
2. 2-6 separate networks with connectivity between Jumpost and nodes.
  - PXE installation Network
  - IPMI Network
  - Openstack mgmt Network\*
  - Openstack external Network\*
  - Openstack tenant Network\*
  - Openstack storage Network\*
3. Lights out OOB network access from Jumpost with IPMI node enabled (Bare Metal deployment only).
4. External network has Internet access, meaning a gateway and DNS availability.

**The networks with(\*) can be share one NIC(Default configuration) or use an exclusive NIC(Reconfigured in network.yml).**

## 1.5.4 Execution Requirements (Bare Metal Only)

In order to execute a deployment, one must gather the following information:

1. IPMI IP addresses for the nodes.
2. IPMI login information for the nodes (user/pass).
3. MAC address of Control Plane / Provisioning interfaces of the Bare Metal nodes.

## 1.6 Installation Guide (BM Deployment)

### 1.6.1 Nodes Configuration

The bellow file is the inventory template of deployment nodes:

“compass4nfv/deploy/conf/hardware\_environment/huawei\_us\_lab/pod1/dha.yml”

You can write your own IPMI IP/User/Password/Mac address/roles reference to it.

- ipmiVer – IPMI interface version for deployment node support. IPMI 1.0 or IPMI 2.0 is available.
- ipmiIP – IPMI IP address for deployment node. Make sure it can access from JumpHost.
- ipmiUser – IPMI Username for deployment node.
- ipmiPass – IPMI Password for deployment node.
- mac – MAC Address of deployment node PXE NIC .
- name – Host name for deployment node after installation.
- roles – Components deployed.

### Assignment of different roles to servers

E.g. Openstack only deployment roles setting

```
hosts:
- name: host1
  roles:
  - controller
  - ha

- name: host2
  roles:
  - compute
```

NOTE: IF YOU SELECT MULTIPLE NODES AS CONTROLLER, THE 'ha' role MUST BE SELECT, TOO.

E.g. Openstack and ceph deployment roles setting

```
hosts:
- name: host1
  roles:
  - controller
  - ha
  - ceph-admin
  - ceph-mon

- name: host2
  roles:
  - compute
  - ceph-osd
```

E.g. Openstack and ODL deployment roles setting

```
hosts:
- name: host1
  roles:
  - controller
  - ha
  - odl

- name: host2
  roles:
  - compute
```

E.g. Openstack and ONOS deployment roles setting

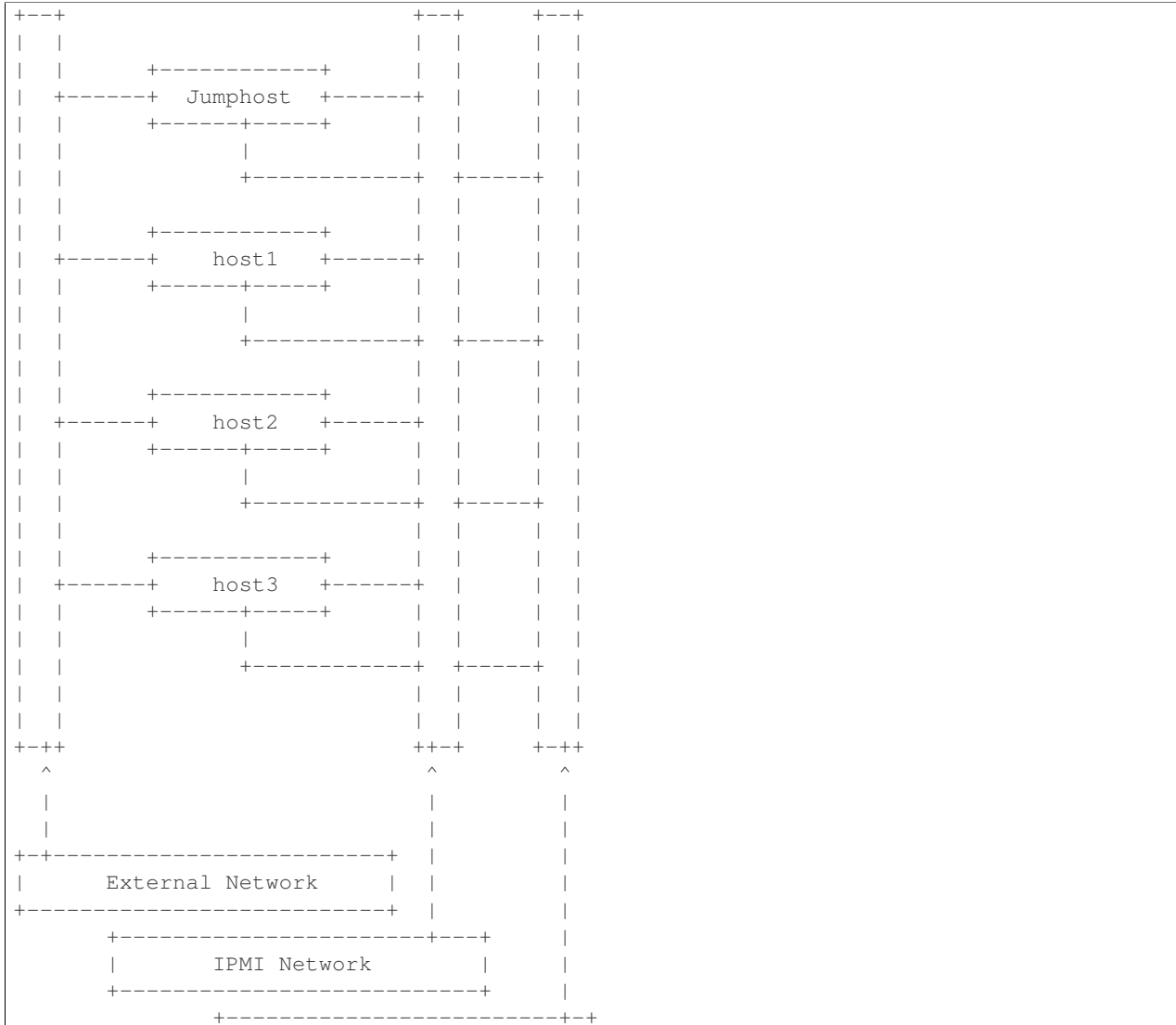
```
hosts:
  - name: host1
    roles:
      - controller
      - ha
      - onos

  - name: host2
    roles:
      - compute
```

## 1.6.2 Network Configuration

Before deployment, there are some network configuration to be checked based on your network topology. Compass4nfv network default configuration file is “compass4nfv/deploy/conf/network\_cfg.yaml”. You can write your own reference to it.

**The following figure shows the default network configuration.**



```
| PXE(Installation) Network |  
+-----+  
+-----+
```

### 1.6.3 Start Deployment

1. Set PXE/Installation NIC for Jumphost. (set eth1 E.g.)

```
export INSTALL_NIC=eth1
```

2. Set OS version for nodes provisioning. (set Ubuntu14.04 E.g.)

```
export OS_VERSION=trusty
```

3. Set OpenStack version for deployment nodes. (set liberty E.g.)

```
export OPENSTACK_VERSION=liberty
```

4. Set ISO image that you want to deploy

```
export ISO_URL=file:///${YOUR_OWN}/compass.iso  
or  
export ISO_URL=http://artifacts.opnfv.org/compass4nfv/brahmaputra/opnfv-release.iso
```

5. Run `deploy.sh` with inventory and network configuration

```
./deploy.sh --dha ${YOUR_OWN}/dha.yml --network ${YOUR_OWN}/network.yml
```

## 1.7 Installation Guide (VM Deployment)

### 1.7.1 Nodes Configuration

Please follow the instructions in section *Installation Guide (BM Deployment)*, and no need to set IPMI/PXE/MAC parameters.

### 1.7.2 Network Configuration

Please follow the instructions in section *Installation Guide (BM Deployment)*.

### 1.7.3 Start Deployment

1. Set OS version for nodes provisioning. (set Ubuntu14.04 E.g.)

```
export OS_VERSION=trusty
```

3. Set OpenStack version for deployment nodes. (set liberty E.g.)

```
export OPENSTACK_VERSION=liberty
```

4. Set ISO image that you want to deploy

```
export ISO_URL=file:///${YOUR_OWN}/compass.iso  
or  
export ISO_URL=http://artifacts.opnfv.org/compass4nfv/brahmaputra/opnfv-release.iso
```

5. Run `deploy.sh` with inventory and network configuration

```
./deploy.sh --dha ${YOUR_OWN}/dha.yml --network ${YOUR_OWN}/network.yml
```

## 1.8 References

### 1.8.1 OPNFV

[OPNFV Home Page](#)

[OPNFV Genesis project page](#)

[OPNFV Compass4nfv project page](#)

### 1.8.2 OpenStack

[OpenStack Liberty Release artifacts](#)

[OpenStack documentation](#)

### 1.8.3 OpenDaylight

[OpenDaylight artifacts](#)

### 1.8.4 ONOS

[ONOS artifacts](#)

### 1.8.5 Compass

[Compass Home Page](#)

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