Single Node Setup of Openstack with OpenContrail

Step by Step Deployment Guide

Generated For: **Juniper**

Generated On: 10/11/2014

Corporate and Sales Headquarters
Juniper Networks, Inc.
1194 North Mathilda Avenue
Sunnyvale, CA 94089 USA
Phone: 888.JUNIPER (888.586.4737)
or 408.745.2000

APAC Headquarters
Juniper Networks (Hong Kong)
26/F, Cityplaza One
1111 King's Road
Taikoo Shing, Hong Kong
Phone: 852.2332.3636

EMEA Headquarters
Juniper Networks Ireland
Airside Business Park
Swords, County Dublin, Ireland
Phone: 35.31.8903.600
EMEA Sales: 00800.4586.4737

November 2009

Table of Contents

Document Version Control

Version Number	Author	Date	Reason for Change
0.1 (draft)	Harsha G	10/11/2014	Initial draft
0.2	Shravani	12/11/2014	Modified single node diagram, local rc changes, verify the installation sections.
0.3	Shahid	11/11/2014	Review
0.4	Shravani	17/11/2014	Addressed comments from Juniper
0.5	Ramakrishna/Raviteja	20/11/2014	Reviewed.

1. Introduction

Single-node setup typically serves for the purpose of deploying the controller and compute nodes in a single environment.

1.1 Document Purpose

The purpose of this document is to explain the installation steps to be followed for setting up OpenContrail with DevStack in single node.Also To test/validate OpenStack integration with OpenContrail in single node environment.

1.2 Setup Overview

There are two simple topologies in which DevStack with OpenContrail environment can be deployed.

1.2.1 Single Node

A single node setup where both Openstack controller and compute reside in a single physical host or VM.

1.2.2 Multi Node

Multi-node setup has one physicalhost (or) VM as controller/master node and one or more physicalhost (or) VMs as compute nodes. The controller node and one or more compute nodes needed to be connected to each other on an IP capable physical network. There is no specific physical network topology needed for this setup to work seamlessly.

1.3 System Requirements

- Linux distribution – Ubuntu 12.04 / Ubuntu 14.04
- Size – 4GB RAM

2. Single Node Environment Setup

The Single Node setup can be deployed using the following model.

2.1 Setup Model

This model of deployment contains one physicalhost (or) VM running controller and compute services together

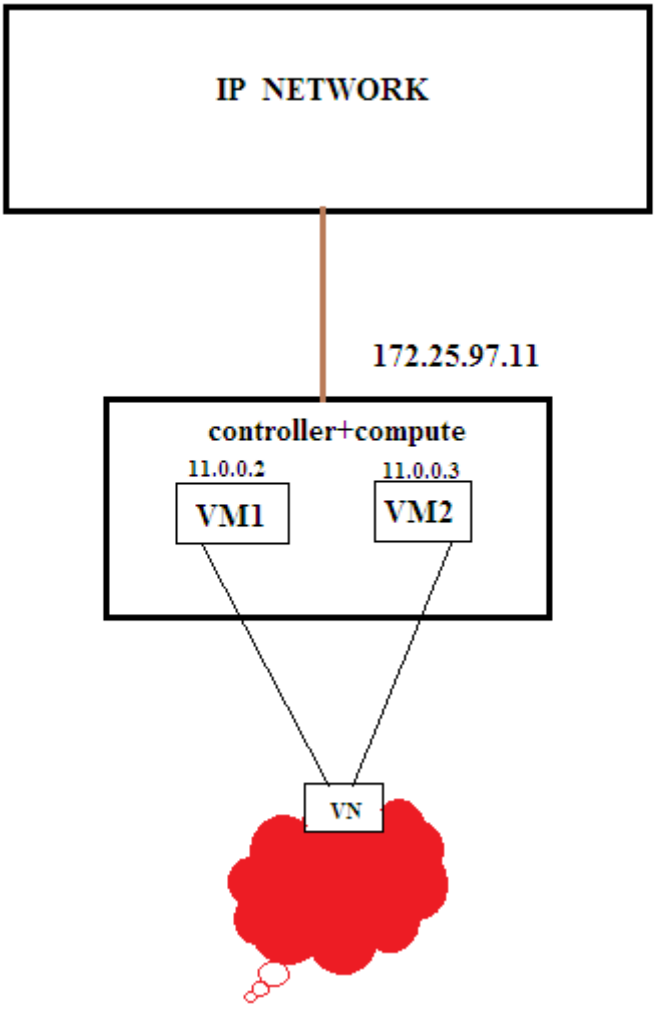


Figure 1 Single Node

2.2 Installation of OpenContrail with OpenStack

OpenContrail installation is based on the localrc, which contains all local configuration and customizations.

Localrc parameters which define the opencontrail installation are below:

- CONTRAIL_DEFAULT_INSTALL
  i. Set this to 'True' for binary mode installation.With this mode,the built in binaries available in Launchpad are downloaded for installation.
  ii. Set this to 'False' for source mode installation.With this mode,the source code is downloaded and compiled.
  iii. By default this is set to 'True'.

- LAUNCHPAD_BRANCH
  iv. Applicable only when CONTRAIL_DEFAULT_INSTALL is set to True.
  v. For baseline/released packages enable it by uncommenting.
  vi. Default is to use latest snapshots/mainline.

- INSTALL_PROFILE
  vii. Set this to 'ALL' for full mode installation.With this mode,all the contrail services will be available in one node.
  viii. Set this to 'COMPUTE' for compute mode installation.With this mode,only compute services of contrail will be available.
  ix. By default this is set to 'ALL'.

- LOG_LEVEL
  x. set loglevel to 1/2/3 . Always stderr into logfile,console.
  xi. For LOG_LEVEL 1 stdout into logfile.
  xii. For LOG_LEVEL 2 stdout into logfile and xtrace commands into console.
  xiii. For LOG_LEVEL 3 stdout and xtrace into logfile,console.
  xiv. Default LOG_LEVEL value is set to '3'.

2.2.1 Steps for OpenContrail installation

i. Login to Master or Controller host(VM or physical machine)

ii. Download contrail-installer

git clone https://github.com/juniper/contrail-installer

iii. Edit localrc as shown below:

cd contrail-installer
cp samples/localrc-all localrc

Change PHYSICAL_INTERFACE to match your setup.

iv. Run ./contrail.sh

The installer script is meant to install, configure OpenContrail either from source or prebuilt packages.

2.2.2 Steps for Openstack installation

i. Download devstack

git clone https://github.com/openstack-dev/devstack.git

ii. Switch to the desired branch

cd devstack
git checkout branchname

iii. Copy the following files from contrail-installer cloned directory to devstack cloned directory.

cp ~/contrail-installer/devstack/lib/neutron_plugins/opencontrail
~/devstack/lib/neutron_plugins/opencontrail

cp ~/contrail-installer/devstack/samples/localrc-all
~/devstack/localrc

iv. Run ./stack.sh

The above process of OpenStack with OpenContrail installation is automated with the script **task.sh (located at https://github.com/Juniper/contrail-installer/tree/master/utilities) .**

To run the script file (task.sh), a configuration file (auto.conf) should be passed as Input parameter.

- The .conf file contains all the configuration details of OpenContrail and Devstack.
- Command to execute the script:
  ./task.sh auto.conf

Sample auto.conf file for source installation:

#This variable if set to False to install the script from contrail-installer/utilites.
#The false setting will not perform the cloning of contrail-installation.
#Set to True means task.sh runs from outside the contrail-installation folder and
#cloning of contrail-installation will be perfomed in the same folder where task.sh executed
#

WITH_CONTRAIL_CLONE=True

#To run sanity script at the end, set it to True, default value false
run_sanity=True

#The branch of contrail-installer to be cloned(ex: "R1.06")
#Comment the below line to use default branch "master"
CONTRAIL_INSTALLER_BRANCH=master

Binary baseline installation (set **LAUNCHPAD_PPA=Baseline**) or mainline/snapshot installation (set **LAUNCHPAD_PPA=mainline**).
#LAUNCHPAD_PPA=Baseline

#Binary installation(set True) or source code installation(set False)
#Comment the below line to use default value "False" for source code installation
ENABLE_BINARY=False

#The branch of devstack to be cloned (ex: "stable/icehouse")
#Comment the below line to use default branch "stable/icehouse"
DEVSTACK_CLONE_BRANCH=stable/juno

#Setting True will enable Continuous Integration mode, False will do AutoBuild
#Comment the below line to use default value "False"
ENABLE_CI=False

#The location of contrail source directory when ENBALE_CI=True
#Comment the below line to use default location "/opt/stack/contrail"

CONTRAIL_SRC=/opt/stack/contrail

#name of VM network to be created
#Default network name "net" Uncomment the below line to use diffenent VM name
NETWORK_NAME=net

#name of VM subnet to be created
#Default Subnet name "sub". Uncomment the below line to use custom subnet name
SUBNET_NAME=sub

#subnet CIDR address
#Default Subnet "11.0.0.0/24". Uncomment the below line to use custom CIDR address
SUBNET_CIDR=11.0.0.0/24

#name of the tenant
#Default Tenant "demo". Uncomment the below line to use custome name
TENANT_NAME=demo

Sample auto.conf file for binary installation:

#This variable if set to False to install the script from contrail-installer/utilites.
#The false setting will not perform the cloning of contrail-installation.
#Set to True means task.sh runs from outside the contrail-installation folder and
#cloning of contrail-installation will be perfomed in the same folder where task.sh executed
#

WITH_CONTRAIL_CLONE=True

#To run sanity script at the end, set it to True, default value false
run_sanity=True

#The branch of contrail-installer to be cloned(ex: "R1.06")
#Comment the below line to use default branch "master"
CONTRAIL_INSTALLER_BRANCH=master

Binary baseline installation (set **LAUNCHPAD_PPA=Baseline**) or mainline/snapshot installation (set **LAUNCHPAD_PPA=mainline**).
LAUNCHPAD_PPA=Baseline

#Binary installation(set True) or source code installation(set False)
#Comment the below line to use default value "False" for source code installation
ENABLE_BINARY=True

#The branch of devstack to be cloned (ex: "stable/icehouse")
#Comment the below line to use default branch "stable/icehouse"
DEVSTACK_CLONE_BRANCH=stable/juno

#Setting True will enable Continuous Integration mode, False will do AutoBuild
#Comment the below line to use default value "False"
ENABLE_CI=False

#The location of contrail source directory when ENBALE_CI=True
#Comment the below line to use default location "/opt/stack/contrail"
CONTRAIL_SRC=/opt/stack/contrail

#name of VM network to be created
#Default network name "net" Uncomment the below line to use diffenent VM name
NETWORK_NAME=net

#name of VM subnet to be created
#Default Subnet name "sub". Uncomment the below line to use custom subnet name
SUBNET_NAME=sub

#subnet CIDR address
#Default Subnet "11.0.0.0/24". Uncomment the below line to use custom CIDR address
SUBNET_CIDR=11.0.0.0/24

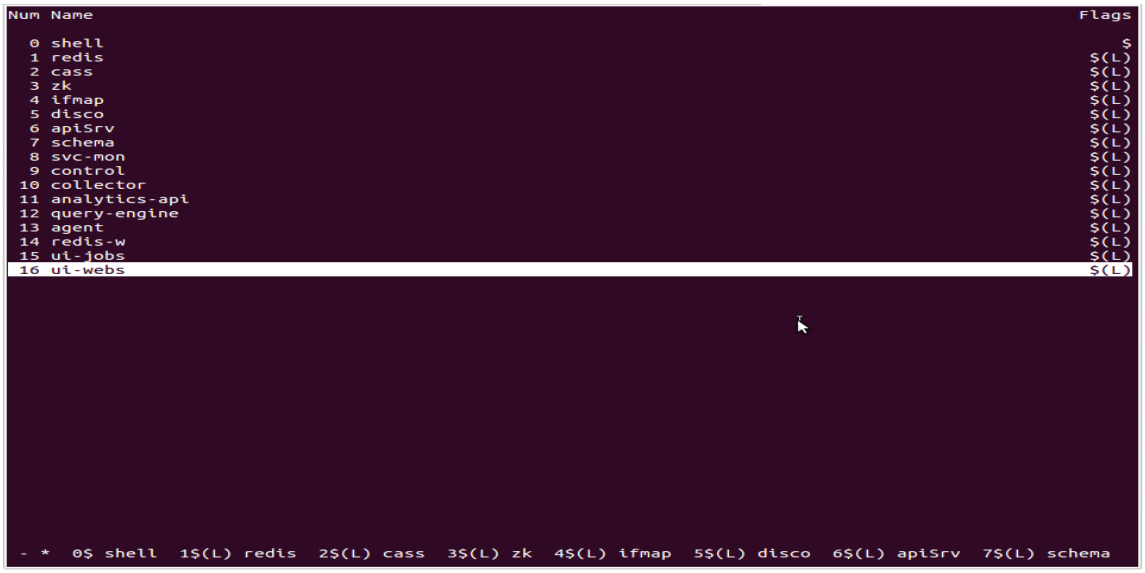
#name of the tenant
#Default Tenant "demo". Uncomment the below line to use custome name
TENANT_NAME=demo

Note: task.sh detailed description and usage is available in the document 'Auto_Build_and_CI_Utility_Usage_Guide_V0.2'

3. Verify the installation

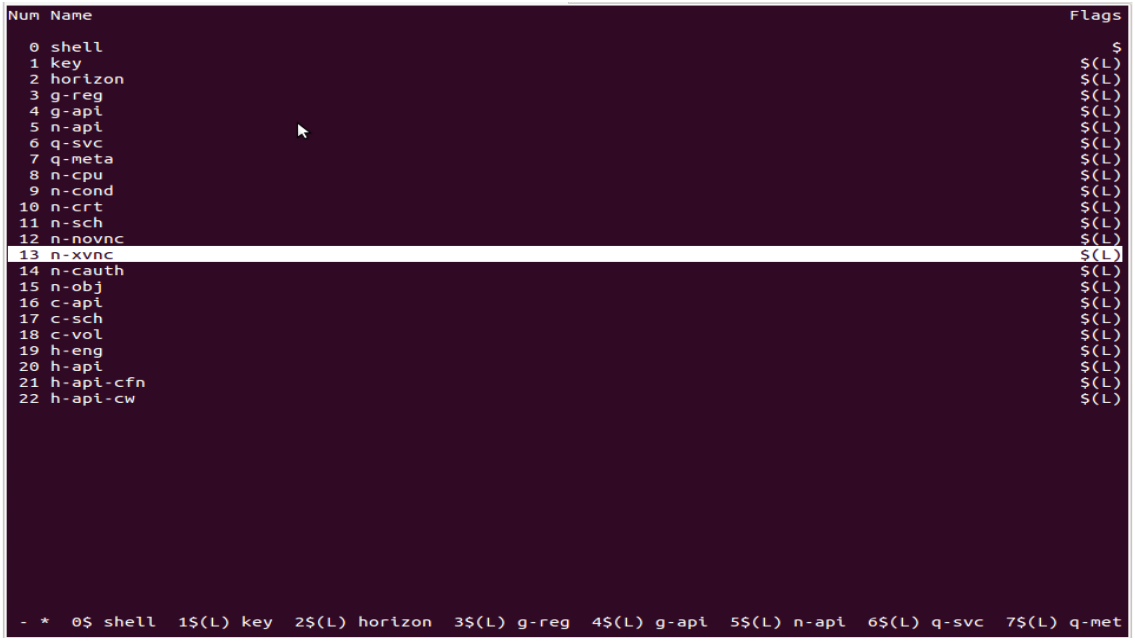
a) Verify the OpenContrail installation.

$ screen –x contrail



b) Verify the OpenStack installation.

$ screen –x stack



Once the stack.sh has completed its execution successfully, you can check to make sure the services show smiley faces and not XXX with 'nova-manage service list' command on the node of your setup.

```
Binary           Host                                 Zone             Status     State Updated_At
nova-conductor   singlenode                           internal         enabled    :-)   2014-11-10 16:33:55
nova-cert        singlenode                           internal         enabled    :-)   2014-11-10 16:33:58
nova-scheduler   singlenode                           internal         enabled    :-)   2014-11-10 16:34:01
nova-compute     singlenode                           nova             enabled    :-)   2014-11-10 16:33:53
nova-consoleauth singlenode                           internal         enabled    :-)   2014-11-10 16:34:00
```

Now you have OpenContrail with latest release of Openstack running in your environment.

You can access the Openstack horizon dashboard of this version using http://<IP-Address-of-Host>.

OpenContrail should be having keystone project list

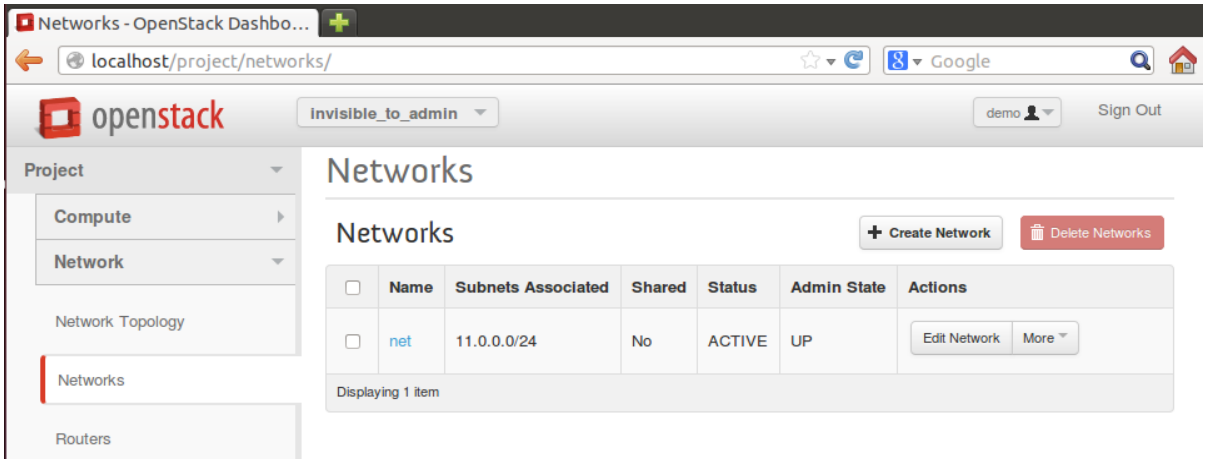
```
tcs@CONTROLLER:~$ curl -s -H "X-Auth-Token: $(keystone token-get | awk '/ id / {print $4}')" 192.168.122.
192:8082/projects | python -mjson.tool
{
    "projects": [
        {
            "fq_name": [
                "default-domain",
                "admin"
            ],
            "href": "http://192.168.122.192:8082/project/dd028318-b927-4745-86e1-1f9423dd775b",
            "uuid": "dd028318-b927-4745-86e1-1f9423dd775b"
        },
        {
            "fq_name": [
                "default-domain",
                "default-project"
            ],
            "href": "http://192.168.122.192:8082/project/7645fc32-6ec1-4e44-8e59-aeae6be45f5d",
            "uuid": "7645fc32-6ec1-4e44-8e59-aeae6be45f5d"
        },
        {
            "fq_name": [
                "default-domain",
                "demo"
            ],
            "href": "http://192.168.122.192:8082/project/cde4abb8-095f-44c1-ab53-7f95340df6a9",
            "uuid": "cde4abb8-095f-44c1-ab53-7f95340df6a9"
        }
    ]
}
```

4. Testing the setup

a. Test Case: launch VM's

Test step1: Create network 'net' using horizon webui

Expected Result: Network must get created



Test Step2:Launch VM's in network 'net' .

Expected Result: All VM's must get launched in active state.

```
tcs@singlenode:~/devstack$ nova list --all-tenants
+--------------------------------------+------+--------+------------+-------------+-------------+
| ID                                   | Name | Status | Task State | Power State | Networks    |
+--------------------------------------+------+--------+------------+-------------+-------------+
| 395d39da-ebcd-4384-9a92-7f8ed826e447 | vm1  | ACTIVE | -          | Running     | net=11.0.0.2 |
| da6829c6-61cb-4b0f-ab90-7d2243052798 | vm2  | ACTIVE | -          | Running     | net=11.0.0.3 |
+--------------------------------------+------+--------+------------+-------------+-------------+
tcs@singlenode:~/devstack$
```

b. Test Case :Ping between VM's

Test Step1: Ping between VM1,VM2

Expected Result: Packet transfer between VM1 and VM2

```
Connected (unencrypted) to: QEMU (instance-00000003)                Send C
$ ping 11.0.0.3
PING 11.0.0.3 (11.0.0.3): 56 data bytes
64 bytes from 11.0.0.3: seq=0 ttl=64 time=2.166 ms
64 bytes from 11.0.0.3: seq=1 ttl=64 time=1.685 ms
64 bytes from 11.0.0.3: seq=2 ttl=64 time=1.358 ms

--- 11.0.0.3 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 1.358/1.736/2.166 ms
$ _
```

5. Restarting OpenContrail + OpenStack

To restart the setup, do the following:

Stop the contrail services

```
cd  ~/contrail-installer
  ./contrail.sh stop
```

Stop the stack services

```
cd ~/devstack
./unstack.sh
```

Start the contrail services

```
cd ~/contrail-installer
./contrail.sh start
```

Start the stack services

```
cd ~/devstack
./stack.sh
```

6. Review inputs

S. No.	Juniper Comments	Date Received	TCS Updates	Status
1	i. Explanation of localrc knobs one by one (source or binary, which package to use …) ii. How to use task.sh script? Provide sample config files for simple source or binary scenarios. Do not mention CI related knobs in this document as that is internal only. iii. How to restart (for example if developer made a code change)?	13/11/2014	17/11/2014	Addressed comments.
2				

End of Document