Fuel VMware DVS plugin testing documentation

Release 1.1.0

Mirantis Inc.

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CHAPTER

ONE

INTRODUCTION

1.1 Key terms, acronyms and abbreviation

Term/abbreviation	Definition
VM	Virtual Machine
MOS	Mirantis OpenStack
OVS	Open vSwitch
Neutron ML2 plugin	The Neutron Modular Layer 2 plugin is a framework allowing OpenStack Networking to simultaneously utilize the variety of layer 2 networking technologies
vmware_dvs driver	The driver in the Neutron ML2 plugin which provides interaction with dvSwitch on vCenter
VMware DVS plugin	The plugin for Fuel which installs and configures vmware_dvs driver on a MOS environment
dvSwitch	distributed vSwitch on VMware ESXi
VMware ESXi	bare-metal hypervisor
VMware vCenter Server	Central control point for VMware vSphere
VMware vSphere	VMware's cloud computing virtualization operating system

1.2 The VMware DVS plugin

MOS supports using vCenter as a hypervisor in a vCenter-only or heterogeneous, mixed with KVM environments. There is the vmware_dvs driver for Neutron ML2 plugin which provides usage Neutron for networking in such environments. Thereby environments receives an advanced network features:

- Ability to create multi-tier networks (e.g., web tier, db tier, app tier).
- Control over IP addressing.
- Ability to insert an configure their own services (e.g., firewall, IPS)
- VPN/Bridge to remote physical hosting or customer premises.

1.3 Licensing information

Component	License
vmware_dvs driver	Apache 2.0
VMware DVS plugin	Apache 2.0

1.4 Requirements

The plugin has the following requirements for software:

Requirement	Version
Fuel	7.0
vCenter	5.5/6.0

1.5 Limitations

- VMware DVS plugin be enabled only in environments with Neutron as the networking option.
- Only VLANs are supported for tenant network separation.
- Only vSphere 5.5 & 6.0 are supported.

CHAPTER

TWO

INSTALLATION AND CREATE AN ENVIRONMENT

2.1 Installing the VMware DVS plugin

Make sure that:

- you have the installed the Fuel Master node
- all the nodes of your future environment are discovered and functional.
- there is a connectivity to correctly configured vCenter with dvSwitch and clusters created. Please, see the Mirantis OpenStack Planning Guide, User Guide and this plugin's specification for information on configuring vCenter.

1. Download the plugin from the Fuel Plugin Catalog.
2. Copy the plugin into Fuel Master node:

```
$ scp fuel-plugin-vmware-dvs-1.1-1.1.0-1.noarch.rpm <Fuel Master node ip>:/tmp
```

3. Log into the Fuel Master node and install the plugin:

```
$ ssh root@<Fuel Master node ip>
[root@nailgun ~]# fuel plugins --install /
/tmp/fuel-plugin-vmware-dvs-1.1-1.1.0-1.noarch.rpm
[root@nailgun  ]# fuel plugins
DEPRECATION WARNING: /etc/fuel/client/config.yaml exists and will
be used as the source for settings. This behavior is deprecated.
Please specify the path to your custom settings file in the
FUELCLIENT_CUSTOM_SETTINGS environment variable.

+------+--------------------------+-----------+--------------------+
| id   | name                     | version   | package\_version   |
+------+--------------------------+-----------+--------------------+
| 2    | fuel-plugin-vmware-dvs   | 1.1.0     | 3.0.0              |
+------+--------------------------+-----------+--------------------+
```

2.2 Removing the VMware DVS plugin

To uninstall VMware DVS plugin, follow these steps:

1. Delete all environments in which VMware DVS plugin has been enabled.
2. Uninstall the plugin:

```
# fuel plugins --remove fuel-plugin-vmware-dvs--1.1.0
```

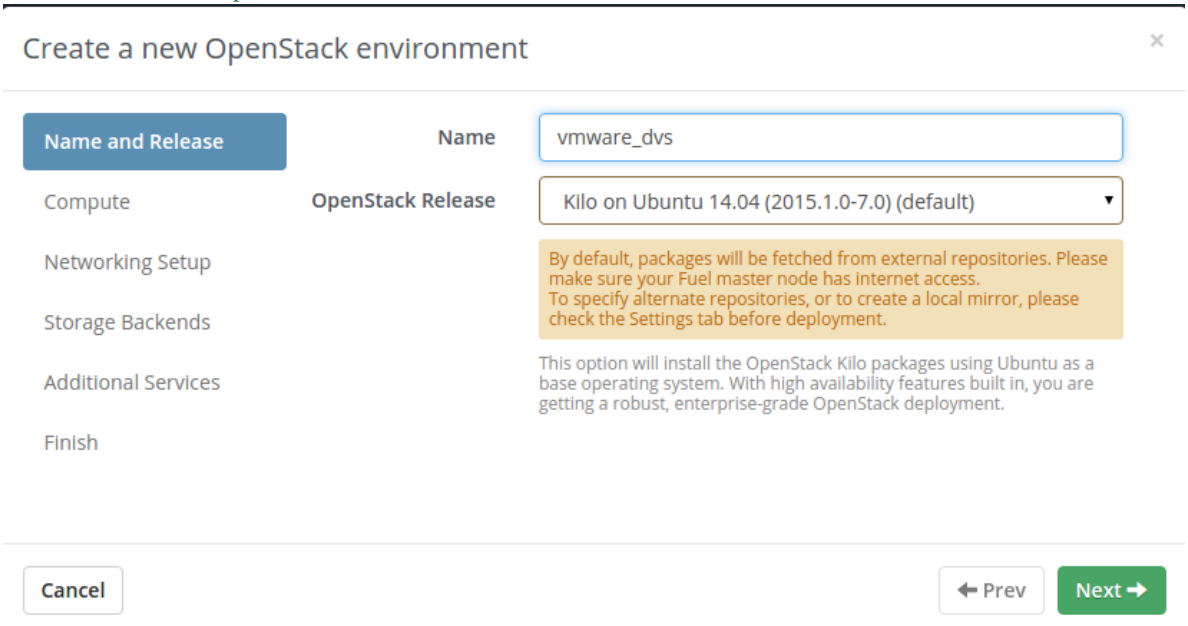
3. Check if the plugin was uninstalled successfully:

```
+------+--------+----------+--------------------+
| id   | name   | version  | package_version    |
+------+--------+----------+--------------------+
+------+--------+----------+--------------------+
```

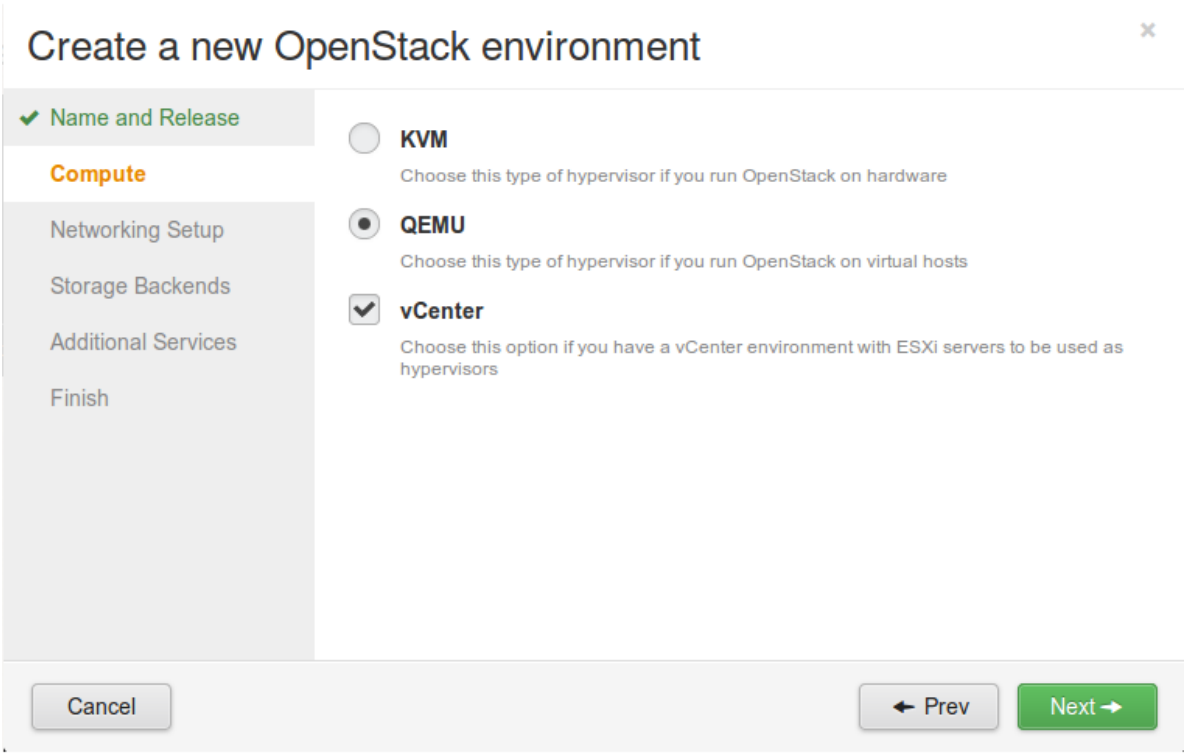
There is one issue with wizard on the Fuel WEB UI. Please be informed that after removing this plugin the option "Neutron with VLAN segmentation" stays unlocked when the 'vCenter' checkbox is selected. Therefore there is a possibilities for deployment environment with vCenter as a hypervisor, Neutron for networking and without the VMware DVS plugin. If no other plugin provides this functionality such environment will be misconfigured.

2.3 Create and Configure an environment with VMware DVS plugin

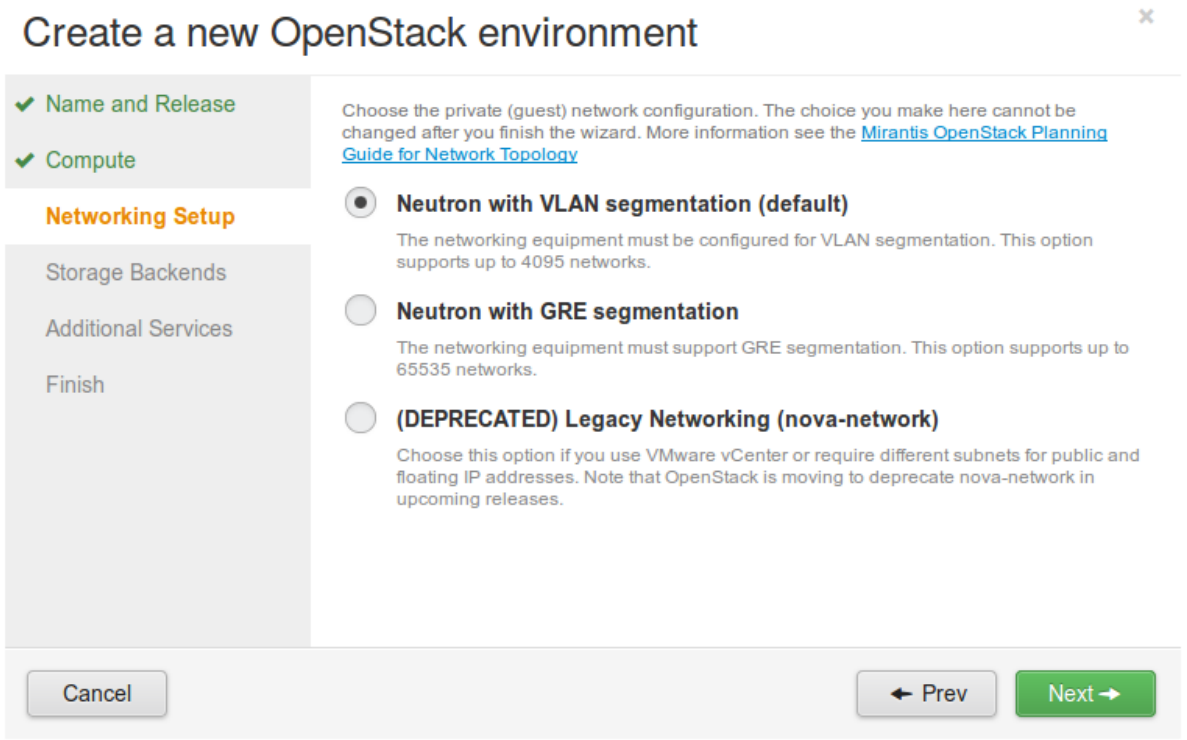
1. Create a new OpenStack environment with Fuel UI wizard.



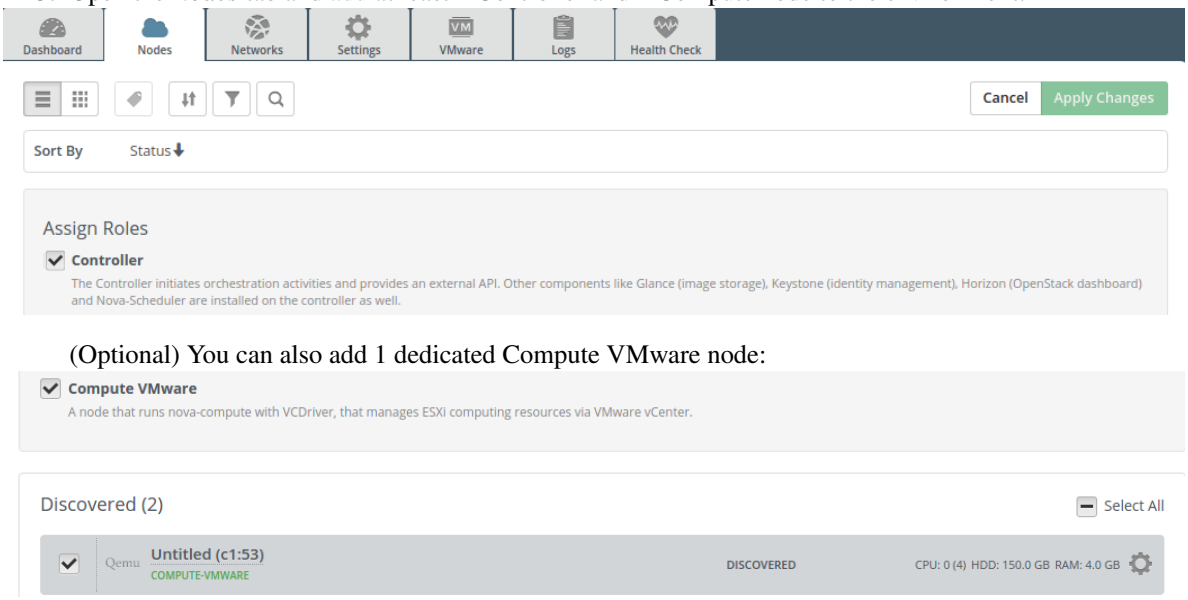
2. In *Compute* menu, select *vCenter* checkbox:



3. Select *Neutron with VLAN segmentation* for *Networking Setup* - it is the only networking configuration supported with VMware DVS plugin:

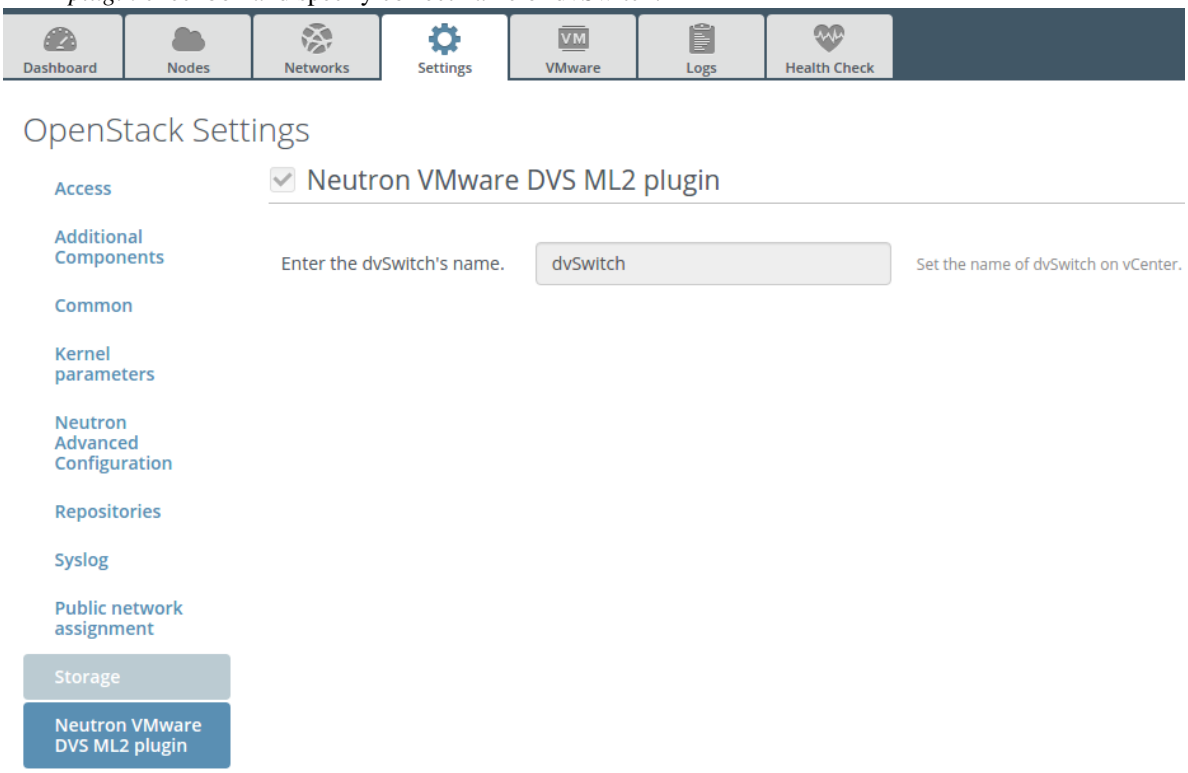


4. Finish environment creation following documentation.
5. Open the *Nodes* tab and add at least 1 Controller and 1 Compute node to the environment:



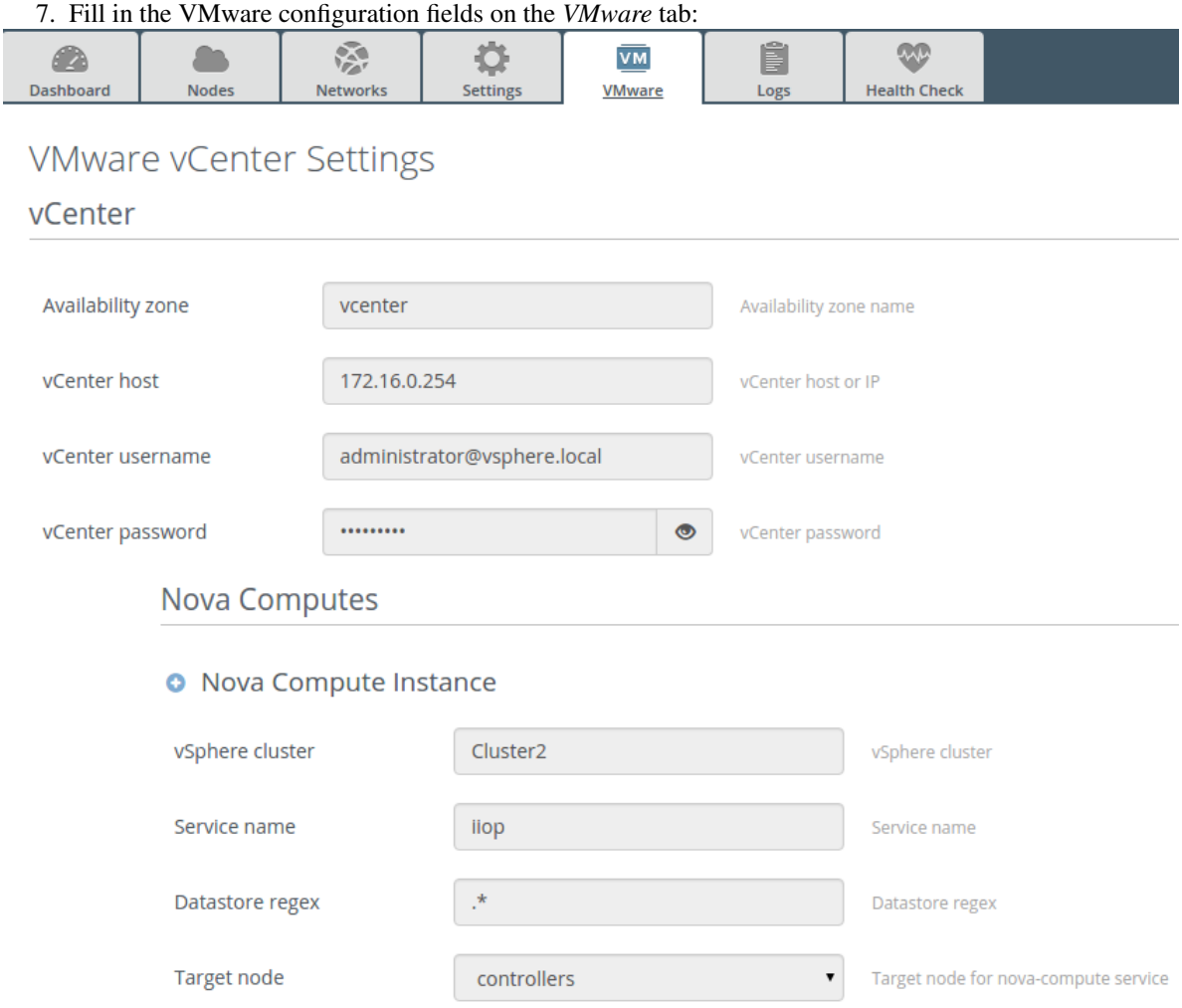
(Optional) You can also add 1 dedicated Compute VMware node:

6. Open the *Settings* tab of the Fuel Web UI and scroll down the page. Select the *use Neutron VMware DVS ML2 plugin* checkbox and specify correct name of dvSwitch:

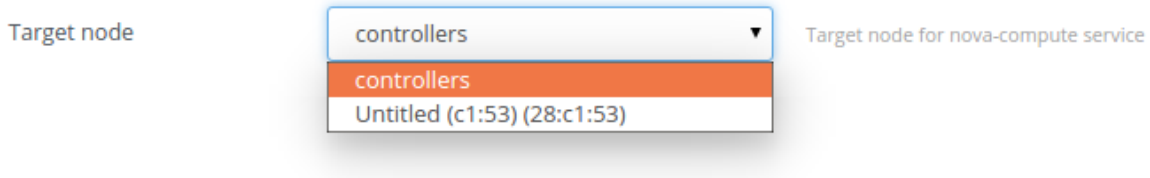


VMware DVS ML2 plugin does not support DVR feature. Keep Neutron DVR checkbox on Neutron Advanced Configuration tab at unchecked state.

7. Fill in the VMware configuration fields on the *VMware* tab:



(Optional) Choose Compute VMware node if your environment has the role:



8. The rest of configuration is up to you. See Mirantis OpenStack User Guide for instructions.
9. Click *Deploy changes* button to finish.

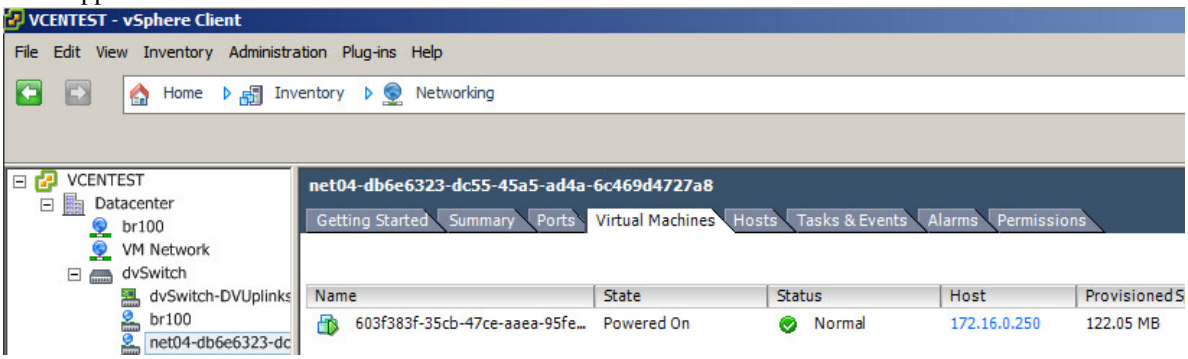
CHAPTER

THREE

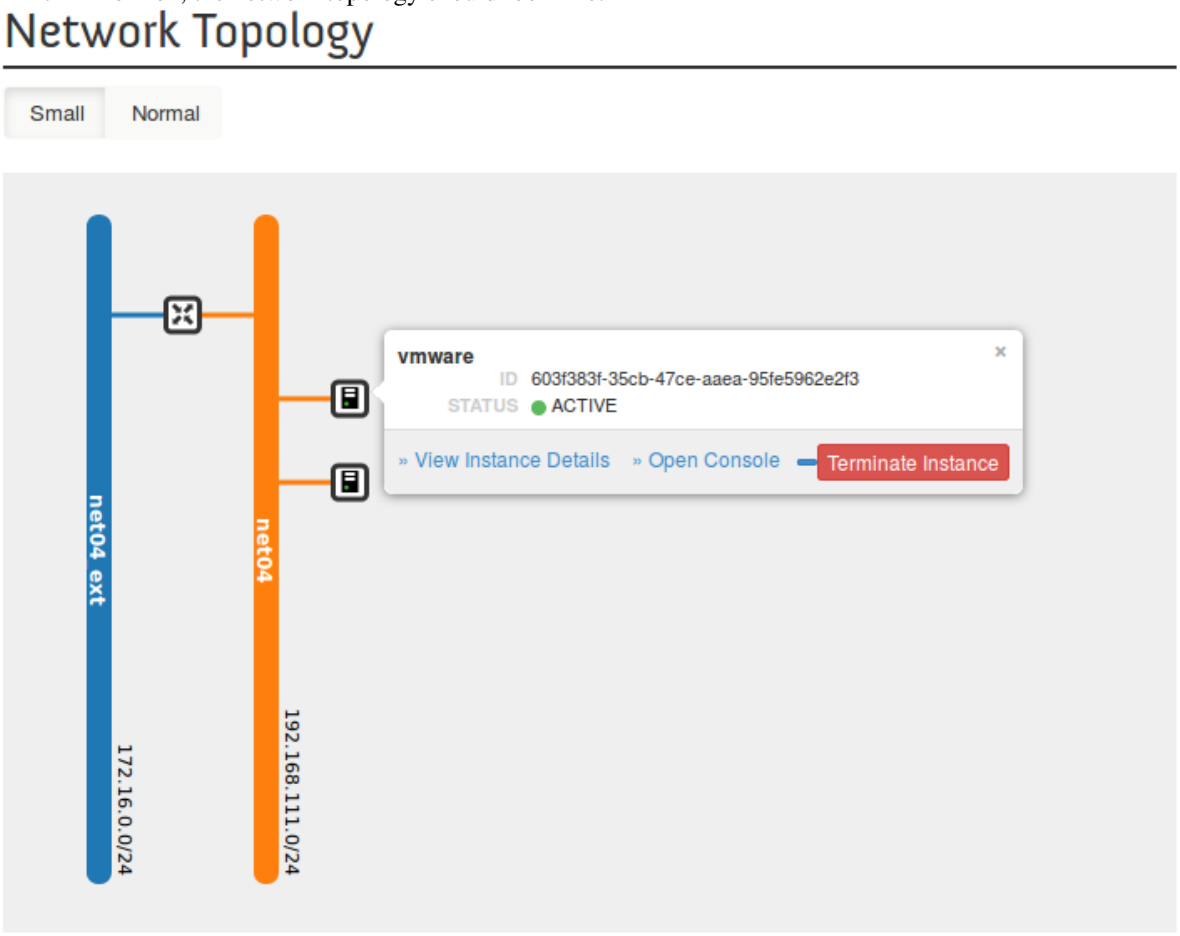
USER GUIDE

3.1 Using advanced neutron's possibilities with VMware DVS plugin

1. Once OpenStack has been deployed, we can start using Neutron for networking. The net04 port group should appear on the vCenter:



2. In Horizon, the network topology should look like:



where VMware is the name of the instance located on the vCenter.

3. You can use Neutron for such instance brand the same way as for KVM-located instances.

4. DVS Security groups functionality differs from KVM implementatin. VMWare DVS does not support stateful firewall properties and ICMP types. DVS Plugin realises emulation logic to support the similar behavior. It installs reverse traffic rule for each SG rule. VMWare DVS plugin state emulation logic uses ephemeral port range filter to rise security of reverse rules implementation.

   Does not recommended to use Remote Security Group in your rules. SG engine for DVS ignores those rules.

   Just add only those rules if you want to correctly launch EC2 compatible image with matadata request and DNS access:

   Implement Custom TCP Ergess rule to 169.254.169.254/32 CIDR port 80 Implement Custom UDP Egress rule to '<DNS server IP or 0.0.0.0/0>' CIDR port 53

   DVS plugin will install four rules:

   TCP Egress from any IP ports 32768-65535 to metadata IP port 80 TCP Ingress from metadata IP port 80 to any IP ports 32768-65535 UDP Egress from any IP ports 32768-65535 to DNS IP port 53 UDP Ingress from DNS IP port 53 to any IP ports 32768-65535

   32768-65535 is the useful ethemetal port range for most Linux kernels and Windows hosts.

   Common egress TCP rule looks like this:

   TCP Egress to any ports 0.0.0.0/0 CIDR

It works like:

TCP Egress from any IP ports 32768-65535 to any IP any port TCP Ingress from any IP any port to any IP ports 32768-65535

and private ports of your VM like http or ssh will be closed.

DVS plugin support only symmectric ICMP interaction. If your host can ping destination host, it means the destination host can ping your host by reverse rules.

5. Sometimes the error at log files happens "Cannot complete operation due to concurrent modification by another operation." due to absence of concurrent access to modify resources by vSphere. Do not panic. Driver has special wrapper for this exception.