



Infoblox Installation Guide

vNIOS™ for OpenStack with SRIOV

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ENABLING SRIOV ON RHEL 7

Pre-requisite:

- SRIOV capable hardware
- System BIOS configured with SRIOV enabled
- System installed with RHEL 7.2 with sufficient disk space allocated to /

Once the system is ready with RHEL 7.2 and SRIOV feature enabled from BIOS, make the following changes to the system configuration to enable Virtual Function (SRIOV) on the NIC card:

1. Add "*intel_iommu=on igb.max_vfs=7*" to the default GRUB file.

```
[root@rhops2 ~]# cat /etc/default/grub
GRUB_TIMEOUT=5
GRUB_DISTRIBUTOR="$(sed 's, release .*,g' /etc/system-release)"
GRUB_DEFAULT=saved
GRUB_DISABLE_SUBMENU=true
GRUB_TERMINAL_OUTPUT="console"
GRUB_CMDLINE_LINUX="crashkernel=auto rhgb quiet intel_iommu=on igb.max_vfs=7"
GRUB_DISABLE_RECOVERY="true"
```

2. Re-compile GRUB to make this change the default on bootup.

```
[root@rhops2 ~]# /sbin/grub2-mkconfig -o /boot/grub2/grub.cfg
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-3.10.0-327.el7.x86_64
Found initrd image: /boot/initramfs-3.10.0-327.el7.x86_64.img
Found linux image: /boot/vmlinuz-0-rescue-156e082173f7431fa38c0afa16c3704a
Found initrd image: /boot/initramfs-0-rescue-156e082173f7431fa38c0afa16c3704a.img
done
```

3. Create or edit network the driver config file to enable Virtual functions on the NIC card. Specify the number of required *vifs* on each network interface. [This is OPTIONAL if GRUB is already modified as mentioned in step #1.]

```
[root@rhosp ~]# cat /etc/modprobe.d/igb.conf
options igb max_vfs=7
```

4. Reboot the system to reflect performance changes on the system.

```
[root@rhosp ~]# reboot
```

5. Upon system reboot, Virtual functions will be enabled on network interfaces.

```
[root@rhosp ~]# lspci --nn | grep -i net
```

INSTALLING OPENSTACK ON RHEL 7.2

Follow the steps to install the OpenStack package on the system.

- `$ subscription-manager register --username <USERNAME> --password <PASSWORD>`
- `$ subscription-manager list --available --all`
- `$ subscription-manager list --available | grep -A8 "Red Hat Enterprise Linux Server"`
- `$ subscription-manager list --available | grep -A8 "Red Hat Enterprise Linux OpenStack Platform"`
- `$ subscription-manager attach --auto`
- `$ subscription-manager repos --disable=*`
- `$ subscription-manager repos --enable=rhel-7-server-rpms`
- `$ subscription-manager repos --enable=rhel-7-server-rh-common-rpms`
- `$ subscription-manager repos --enable=rhel-7-server-optional-rpms`
- `$ subscription-manager attach --pool=<POOL ID>`
- `$ subscription-manager list`
- `$ subscription-manager repos --enable=rhel-7-server-openstack-7.0-rpms`
- `$ subscription-manager list`
- `$ yum install -y yum-utils`
- `$ yum -y update`

- `$ systemctl disable NetworkManager`
- `$ systemctl stop NetworkManager`

- `$ yum install -y openstack-packstack`

To configure the OpenStack package:

- `packstack --allinone`

Sample Configuration Output

```
[root@rhosp ~]# packstack --allinone
Welcome to the Packstack setup utility

The installation log file is available at:
/var/tmp/packstack/20160128-142827-xesixM/openstack-setup.log
Packstack changed given value to required value /root/.ssh/id_rsa.pub

Installing:
Clean Up [ DONE ]
Discovering ip protocol version [ DONE ]
Setting up ssh keys [ DONE ]
Preparing servers [ DONE ]
Preinstalling Puppet and discovering hosts' details [ DONE ]
Adding pre install manifest entries [ DONE ]
Setting up CACERT [ DONE ]
Adding AMQP manifest entries [ DONE ]
Adding MariaDB manifest entries [ DONE ]
Fixing Keystone LDAP config parameters to be undef if empty [ DONE ]
```

```

Adding Keystone manifest entries           [ DONE ]
Adding Glance Keystone manifest entries    [ DONE ]
Adding Glance manifest entries             [ DONE ]
Adding Cinder Keystone manifest entries    [ DONE ]
Checking if the Cinder server has a cinder-volumes v [ DONE ]
Adding Cinder manifest entries             [ DONE ]
Adding Nova API manifest entries           [ DONE ]
Adding Nova Keystone manifest entries      [ DONE ]
Adding Nova Cert manifest entries          [ DONE ]
Adding Nova Conductor manifest entries     [ DONE ]
Creating ssh keys for Nova migration       [ DONE ]
Gathering ssh host keys for Nova migration [ DONE ]
Adding Nova Compute manifest entries       [ DONE ]
Adding Nova Scheduler manifest entries     [ DONE ]
Adding Nova VNC Proxy manifest entries     [ DONE ]
Adding OpenStack Network-related Nova manifest entries [ DONE ]
Adding Nova Common manifest entries        [ DONE ]
Adding Neutron FWaaS Agent manifest entries [ DONE ]
Adding Neutron LBaaS Agent manifest entries [ DONE ]
Adding Neutron API manifest entries        [ DONE ]
Adding Neutron Keystone manifest entries   [ DONE ]
Adding Neutron L3 manifest entries         [ DONE ]
Adding Neutron L2 Agent manifest entries   [ DONE ]
Adding Neutron DHCP Agent manifest entries [ DONE ]
Adding Neutron Metering Agent manifest entries [ DONE ]
Adding Neutron Metadata Agent manifest entries [ DONE ]
Checking if NetworkManager is enabled and running [ DONE ]
Adding OpenStack Client manifest entries   [ DONE ]
Adding Horizon manifest entries            [ DONE ]
Adding Swift Keystone manifest entries     [ DONE ]
Adding Swift builder manifest entries      [ DONE ]
Adding Swift proxy manifest entries        [ DONE ]
Adding Swift storage manifest entries      [ DONE ]
Adding Swift common manifest entries       [ DONE ]
Adding Provisioning Demo manifest entries  [ DONE ]
Adding Provisioning Glance manifest entries [ DONE ]
Adding MongoDB manifest entries            [ DONE ]
Adding Redis manifest entries              [ DONE ]
Adding Ceilometer manifest entries         [ DONE ]
Adding Ceilometer Keystone manifest entries [ DONE ]
Adding Nagios server manifest entries       [ DONE ]
Adding Nagios host manifest entries         [ DONE ]
Adding post install manifest entries        [ DONE ]
Copying Puppet modules and manifests       [ DONE ]
Applying 10.36.31.90_prescript.pp
10.36.31.90_prescript.pp:                 [ DONE ]
Applying 10.36.31.90_amqp.pp
Applying 10.36.31.90_mariadb.pp
10.36.31.90_amqp.pp:                     [ DONE ]
10.36.31.90_mariadb.pp:                   [ DONE ]
Applying 10.36.31.90_keystone.pp
Applying 10.36.31.90_glance.pp

```

```

Applying 10.36.31.90_cinder.pp
10.36.31.90_keystone.pp: [ DONE ]
10.36.31.90_glance.pp: [ DONE ]
10.36.31.90_cinder.pp: [ DONE ]
Applying 10.36.31.90_api_nova.pp
10.36.31.90_api_nova.pp: [ DONE ]
Applying 10.36.31.90_nova.pp
10.36.31.90_nova.pp: [ DONE ]
Applying 10.36.31.90_neutron.pp
10.36.31.90_neutron.pp: [ DONE ]
Applying 10.36.31.90_osclient.pp
Applying 10.36.31.90_horizon.pp
10.36.31.90_osclient.pp: [ DONE ]
10.36.31.90_horizon.pp: [ DONE ]
Applying 10.36.31.90_ring_swift.pp
10.36.31.90_ring_swift.pp: [ DONE ]
Applying 10.36.31.90_swift.pp
Applying 10.36.31.90_provision_demo.pp
Applying 10.36.31.90_provision_glance
10.36.31.90_swift.pp: [ DONE ]
10.36.31.90_provision_demo.pp: [ DONE ]
10.36.31.90_provision_glance: [ DONE ]
Applying 10.36.31.90_mongodb.pp
Applying 10.36.31.90_redis.pp
10.36.31.90_mongodb.pp: [ DONE ]
10.36.31.90_redis.pp: [ DONE ]
Applying 10.36.31.90_ceilometer.pp
10.36.31.90_ceilometer.pp: [ DONE ]
Applying 10.36.31.90_nagios.pp
Applying 10.36.31.90_nagios_nrpe.pp
10.36.31.90_nagios.pp: [ DONE ]
10.36.31.90_nagios_nrpe.pp: [ DONE ]
Applying 10.36.31.90_postscript.pp
10.36.31.90_postscript.pp: [ DONE ]
Applying Puppet manifests [ DONE ]
Finalizing [ DONE ]

```

**** Installation completed successfully ****

Additional information:

- * A new answerfile was created in: /root/packstack-answers-20160128-142828.txt
- * Time synchronization installation was skipped. Please note that unsynchronized time on server instances might be problem for some OpenStack components.
- * File /root/keystonerc_admin has been created on OpenStack client host 10.36.31.90. To use the command line tools you need to source the file.
- * To access the OpenStack Dashboard browse to <http://10.36.31.90/dashboard> . Please, find your login credentials stored in the keystonerc_admin in your home directory.
- * To use Nagios, browse to <http://10.36.31.90/nagios> username: nagiosadmin, password: 154262e46c914c2b
- * The installation log file is available at: /var/tmp/packstack/20160128-142827-xesixM/openstack-setup.log

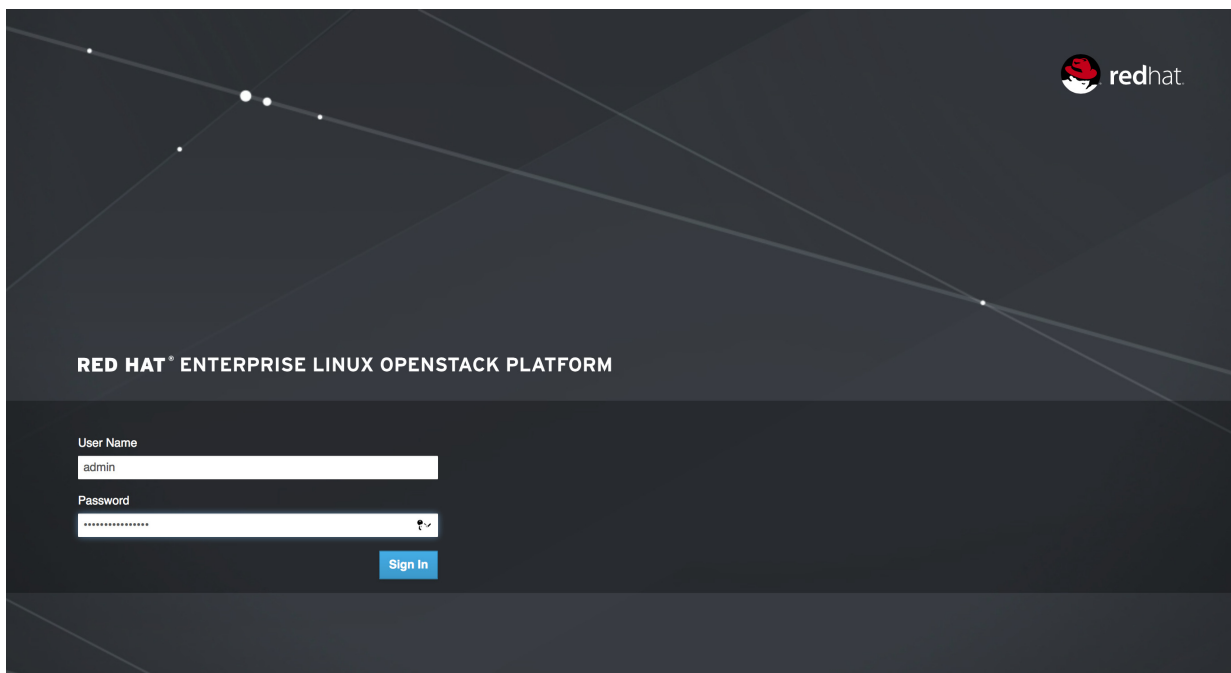
* The generated manifests are available at:
 /var/tmp/packstack/20160128-142827-xesixM/manifests
 Reboot the system once all the packages are installed and configured

```
[root@rhosp ~]# reboot
```

Once the system is back online, log in to the OpenStack GUI and change the default password.
 The default password is created in the /root/keystonerc_admin file.

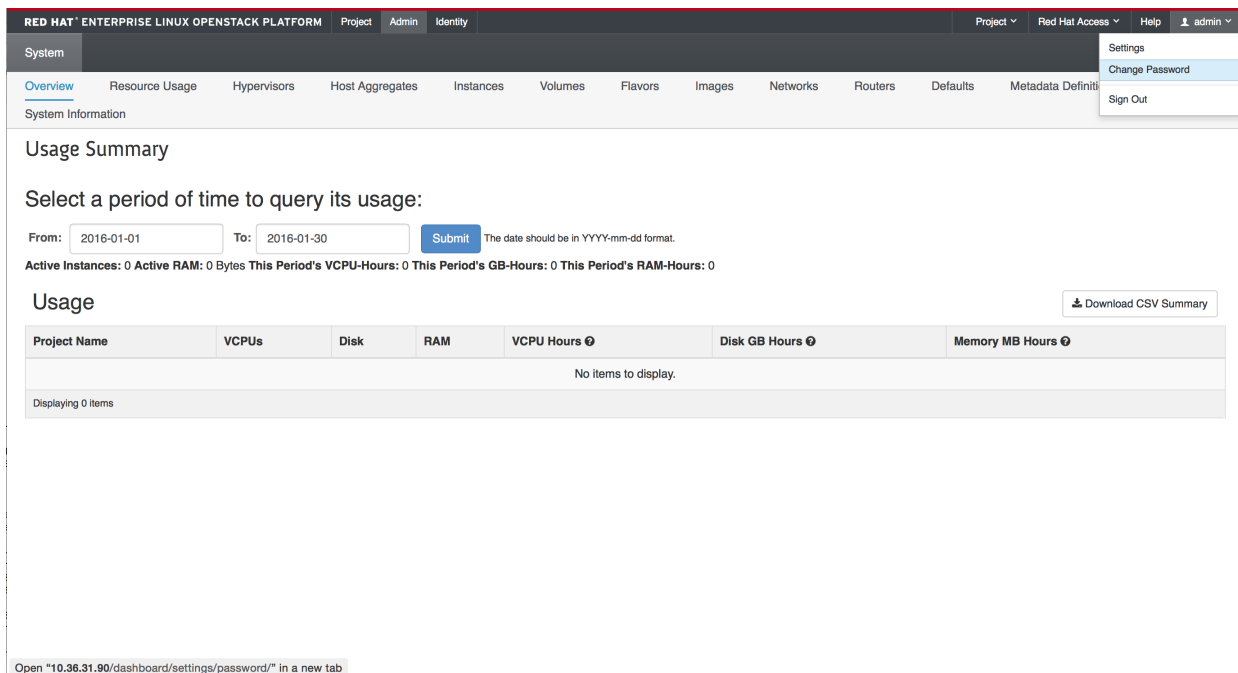
```
[root@rhops2 ~]# cat /root/keystonerc_admin
unset OS_SERVICE_TOKEN
export OS_USERNAME=admin
export OS_PASSWORD=c4b0a987075b44df
export OS_AUTH_URL=http://10.36.31.90:5000/v2.0
export PS1='[\u@\h \W(keystone_admin)]\$ '

export OS_TENANT_NAME=admin
export OS_REGION_NAME=RegionOne
```

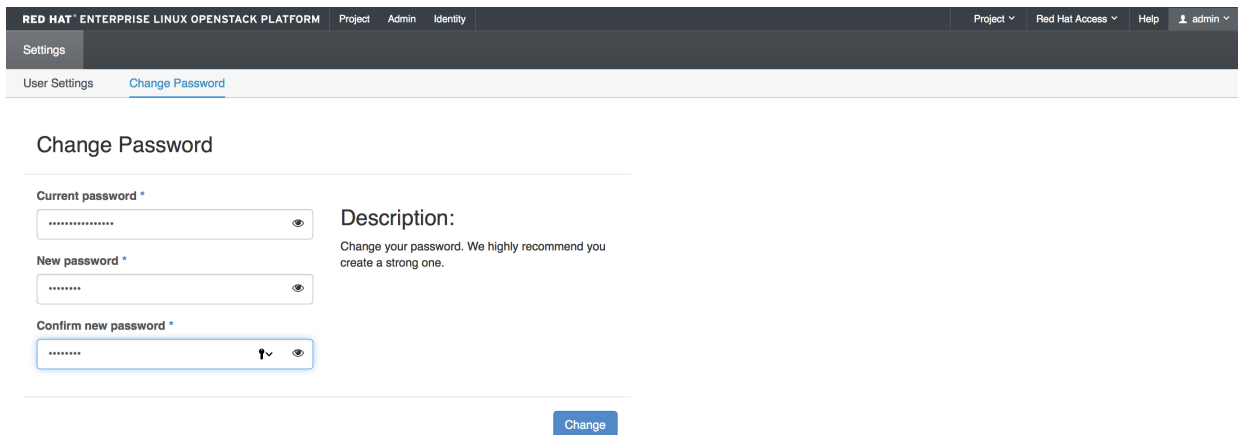


Follow these procedures:

1. Upon login, update the admin credentials.
2. Click “admin” on the top left corner of the screen.
3. Click “Change Password”



4. Click the “Change” button to submit the password change.
5. Once the password is updated, you will be logged out of the current session immediately.



6. Use the new credentials to log in to the GUI.
7. Once the new password has been updated from the GUI session, update the password in `/root/keystone_admin` and save the file.

```
[root@rhops2 ~]# cat /root/keystonerc_admin
unset OS_SERVICE_TOKEN
export OS_USERNAME=admin
```

```
export OS_PASSWORD=<NEW PASSWORD>
export OS_AUTH_URL=http://10.36.31.90:5000/v2.0
export PS1='[\u@\h \W(keystone_admin)]\$ '

export OS_TENANT_NAME=admin
export OS_REGION_NAME=RegionOne
```

To perform any OpenStack CLI operation, this file needs to be sourced.

```
[root@rhops2 ~]# source /root/keystonerc_admin
[root@rhops2 ~(keystone_admin)]#
```

The system will return an error message if the files are not sourced.

```
[root@rhops2 ~]# neutron port-list
You must provide a username or user ID via --os-username, env[OS_USERNAME] or --os-user-id,
env[OS_USER_ID].
```

SETTING UP OPENSTACK WITH SRIOV

1. Modify the OpenStack config files to enable SRIOV support.

1. `/etc/nova/nova.conf`
2. `/etc/neutron/plugins/ml2/ml2_conf.ini`
3. `/etc/neutron/plugins/ml2/ml2_conf_sriov.ini`
4. `/usr/lib/systemd/system/neutron-server.service`

2. Find out the PCI address for the Virtual functions that you intend to use and add it to `/etc/nova/nova.conf`.

```
[root@rhops2 ~]# lspci -nn | grep -i net
01:00.0 Ethernet controller [0200]: Intel Corporation I350 Gigabit Network Connection
[8086:1521] (rev 01)
01:00.1 Ethernet controller [0200]: Intel Corporation I350 Gigabit Network Connection
[8086:1521] (rev 01)
01:10.0 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:10.1 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:10.4 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:10.5 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:11.0 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:11.1 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:11.4 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:11.5 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:12.0 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:12.1 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:12.4 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:12.5 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:13.0 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
01:13.1 Ethernet controller [0200]: Intel Corporation I350 Ethernet Controller Virtual
Function [8086:1520] (rev 01)
```

3. Since this server has two interfaces, you will be using VFs on one interface for “MGMT” and the VFs on other interface for “LAN”, “HA” and “LAN2.” If the server has more than two interfaces, they can be mapped differently. (Infoblox recommends that you map the NIOS interfaces individually with virtual functions bound to a different physical interface. This helps HA failover situations).

```
[root@rhops2 ~]# cat /etc/nova/nova.conf
```

```
.....
.....
.....
```

```

# White list of PCI devices available to VMs. For example:
# pci_passthrough_whitelist = [{"vendor_id": "8086",
# "product_id": "0443"}] (multi valued)
#pci_passthrough_whitelist=
## Virtual Functions on eth0
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:10.0",
"physical_network": "mgmt"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:10.1",
"physical_network": "lan1"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:10.4",
"physical_network": "mgmt"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:10.5",
"physical_network": "ha"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:11.0",
"physical_network": "mgmt"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:11.1",
"physical_network": "lan2"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:11.4",
"physical_network": "mgmt"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:11.5",
"physical_network": "lan1"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:12.0",
"physical_network": "mgmt"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:12.1",
"physical_network": "ha"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:12.4",
"physical_network": "mgmt"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:12.5",
"physical_network": "lan2"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:13.0",
"physical_network": "mgmt"}
pci_passthrough_whitelist = {"vendor_id": "8086", "product_id": "1520", "address": "01:13.1",
"physical_network": "lan1"}
.....
.....
.....
#
# Options defined in nova.scheduler.host_manager
#

# Filter classes available to the scheduler which may be
# specified more than once. An entry of
# "nova.scheduler.filters.all_filters" maps to all filters
# included with nova. (multi valued)
scheduler_available_filters=nova.scheduler.filters.all_filters

# Which filter class names to use for filtering hosts when not
# specified in the request. (list value)
#scheduler_default_filters=RetryFilter,AvailabilityZoneFilter,RamFilter,ComputeFilter,Comp
uteCapabilitiesFilter,ImagePropertiesFilter,Server
GroupAntiAffinityFilter,ServerGroupAffinityFilterscheduler_default_filters=RetryFilter,Ava
ilabilityZoneFilter,RamFilter,ComputeFilter,ComputeCapabilitiesFilter,ImagePropertiesFilt
er,CoreFilter,PciPassthroughFilter

```

.....
.....
.....

4. Now add the sriovnic option and flat_network configuration to the ml2_conf.ini file.

```
[root@rhops2 ~]# cat /etc/neutron/plugins/ml2/ml2_conf.ini | grep -v ^$ | grep -v ^#
[ml2]
type_drivers = flat,vlan,gre,vxlan
tenant_network_types = vxlan
mechanism_drivers = openvswitch,sriovnicswitch
[ml2_type_flat]
flat_networks = mgmt,lan1,ha,lan2
[ml2_type_vlan]
[ml2_type_gre]
[ml2_type_vxlan]
vni_ranges = 10:100
vxlan_group = 224.0.0.1
[securitygroup]
enable_security_group = True
firewall_driver = neutron.agent.linux.iptables_firewall.OVSHybridIptablesFirewallDriver
[ovs]
local_ip = 10.36.31.90
```

5. Add supported PCI “vendor id : product id” and physical device mapping to the */etc/neutron/plugins/ml2/ml2_conf_sriov.ini* file.

```
[root@rhops2 ~]# cat /etc/neutron/plugins/ml2/ml2_conf_sriov.ini | grep -v ^$ | grep -v ^#
[ml2_sriov]
supported_pci_vendor_devs = 8086:1520
agent_required = False
[sriov_nic]
physical_device_mappings = mgmt:eno1,lan1:eno2,ha:eno2,lan2:eno2
```

Add “ml2_conf_sriov.ini” config file details in
“/usr/lib/systemd/system/neutron-server.service”

```
[root@rhops2 ~]# cat /usr/lib/systemd/system/neutron-server.service
[Unit]
Description=OpenStack Neutron Server
After=syslog.target network.target

[Service]
Type=notify
User=neutron
ExecStart=/usr/bin/neutron-server --config-file /usr/share/neutron/neutron-dist.conf
--config-dir /usr/share/neutron/server --config-file /etc/neutron/neutron.conf
--config-file /etc/neutron/plugin.ini --config-dir /etc/neutron/conf.d/common --config-dir
/etc/neutron/conf.d/neutron-server --config-file
/etc/neutron/plugins/ml2/ml2_conf_sriov.ini --log-file /var/log/neutron/server.log
PrivateTmp=true
```

```

NotifyAccess=all
KillMode=process

[Install]
WantedBy=multi-user.target

```

6. Now restart the OpenStack service for the new configuration to take affect.

```
[root@rhops2 ~]# openstack-service restart
```

Warning: neutron-server.service changed on disk. Run 'systemctl daemon-reload' to reload units.

7. Now create networks in OpenStack setup and map interface (sriov) to these new networks.

```
[root@rhops2 ~(keystone_admin)]# neutron net-list
```

id	name	subnets
43a84db7-acf6-4404-b6af-f8601fbb8eec	public	4d176229-3207-4e5e-b1eb-b638accf59f5 172.24.4.224/28
ec7e97b9-8f2f-41c4-bac8-c91352fb2f2a	private	f4c9ded8-07aa-42da-b962-81fb9e691403 10.0.0.0/24

```
[root@rhops2 ~(keystone_admin)]# neutron net-create --provider:physical_network=mgmt
--provider:network_type=flat mgmt.
```

Created a new network:

Field	Value
admin_state_up	True
id	a72836cb-87b5-46c8-ada9-efbde7ed1698
mtu	0
name	mgmt
provider:network_type	flat
provider:physical_network	mgmt
provider:segmentation_id	
router:external	False
shared	False
status	ACTIVE
subnets	
tenant_id	d57f8170a21a4f5f970fb7a72f3202a6

```
[root@rhops2 ~(keystone_admin)]# neutron net-create --provider:physical_network=lan1
--provider:network_type=flat lan1
```

Created a new network:

Field	Value
admin_state_up	True
id	37cae5b8-4598-43e6-8c53-fd23f2c7c45c
mtu	0
name	lan1
provider:network_type	flat
provider:physical_network	lan1
provider:segmentation_id	
router:external	False
shared	False
status	ACTIVE
subnets	
tenant_id	d57f8170a21a4f5f970fb7a72f3202a6

```
[root@rhops2 ~(keystone_admin)]# neutron net-create --provider:physical_network=ha
--provider:network_type=flat ha
```

Created a new network:

Field	Value
admin_state_up	True
id	0e7efa05-82b9-4498-9915-48a1748a0238
mtu	0
name	ha
provider:network_type	flat
provider:physical_network	ha
provider:segmentation_id	
router:external	False
shared	False
status	ACTIVE
subnets	
tenant_id	d57f8170a21a4f5f970fb7a72f3202a6

```
[root@rhops2 ~(keystone_admin)]# neutron net-create --provider:physical_network=lan2  
--provider:network_type=flat lan2
```

Created a new network:

Field	Value
admin_state_up	True
id	073b66886-7875-47af-b7aa-44b792099337
mtu	0
name	lan2
provider:network_type	flat
provider:physical_network	lan2
provider:segmentation_id	
router:external	False
shared	False
status	ACTIVE
subnets	
tenant_id	d57f8170a21a4f5f970fb7a72f3202a6

```
[root@rhops2 ~(keystone_admin)]# neutron subnet-create --name subnet-mgmt mgmt 10.36.0.0/16  
--allocation-pool start=10.36.31.221,end=10.36.31.225 --disable-dhcp
```

Created a new subnet:

Field	Value
allocation_pools	{ "start": "10.36.31.221", "end": "10.36.31.225" }
cidr	10.36.0.0/16
dns_nameservers	
enable_dhcp	False
gateway_ip	10.36.0.1
host_routes	
id	824f9edb-3b30-4179-88f1-eb24a8a1b53b
ip_version	4
ipv6_address_mode	
ipv6_ra_mode	
name	subnet-mgmt
network_id	a72836cb-87b5-46c8-ada9-efbde7ed1698
subnetpool_id	
tenant_id	d57f8170a21a4f5f970fb7a72f3202a6

```
[root@rhops2 ~(keystone_admin)]# neutron subnet-create --name subnet-lan1 lan1  
10.34.31.0/24 --allocation-pool start=10.34.31.221,end=10.34.31.225 --disable-dhcp
```

Created a new subnet:

Field	Value
allocation_pools	{ "start": "10.34.31.221", "end": "10.34.31.225" }
cidr	10.34.31.0/24
dns_nameservers	
enable_dhcp	False
gateway_ip	10.34.31.1
host_routes	
id	fefb9dda-d6e6-43b6-af59-db6f747a7440
ip_version	4
ipv6_address_mode	
ipv6_ra_mode	
name	subnet-lan1
network_id	37cae5b8-4598-43e6-8c53-fd23f2c7c45c


```
| subnetpool_id |
| tenant_id    | d57f8170a21a4f5f970fb7a72f3202a6 |
+-----+-----+-----+
```

```
[root@rhops2 ~(keystone_admin)]# neutron subnet-create --name subnet-ha ha 10.34.31.0/24
--allocation-pool start=10.34.31.226,end=10.34.31.230 --disable-dhcp
```

Created a new subnet:

```
+-----+-----+-----+
| Field      | Value |
+-----+-----+-----+
| allocation_pools | {"start": "10.34.31.226", "end": "10.34.31.230"} |
| cidr        | 10.34.31.0/24 |
| dns_nameservers | |
| enable_dhcp   | False |
| gateway_ip    | 10.34.31.1 |
| host_routes   | |
| id           | 2a81d4fc-2790-4072-9e83-ac075fcbddde |
| ip_version    | 4 |
| ipv6_address_mode | |
| ipv6_ra_mode  | |
| name         | subnet-ha |
| network_id    | 0e7efa05-82b9-4498-9915-48a1748a0238 |
| subnetpool_id | |
| tenant_id     | d57f8170a21a4f5f970fb7a72f3202a6 |
+-----+-----+-----+
```

```
[root@rhops2 ~(keystone_admin)]# neutron subnet-create --name subnet-lan2 lan2
10.34.31.0/24 --allocation-pool start=10.34.31.231,end=10.34.31.235 --disable-dhcp
```

Created a new subnet:

```
+-----+-----+-----+
| Field      | Value |
+-----+-----+-----+
| allocation_pools | {"start": "10.34.31.231", "end": "10.34.31.235"} |
| cidr        | 10.34.31.0/24 |
| dns_nameservers | |
| enable_dhcp   | False |
| gateway_ip    | 10.34.31.1 |
| host_routes   | |
| id           | 485d714e-f34c-4994-9bff-ef9edecf507e |
| ip_version    | 4 |
| ipv6_address_mode | |
| ipv6_ra_mode  | |
| name         | subnet-lan2 |
| network_id    | 073b6886-7875-47af-b7aa-44b792099337 |
| subnetpool_id | |
| tenant_id     | d57f8170a21a4f5f970fb7a72f3202a6 |
+-----+-----+-----+
```

```
[root@rhops2 ~(keystone_admin)]# neutron net-list
```

```
+-----+-----+-----+
| id | name | subnets |
+-----+-----+-----+
| 073b6886-7875-47af-b7aa-44b792099337 | lan2 | 485d714e-f34c-4994-9bff-ef9edecf507e 10.34.31.0/24 |
| 0e7efa05-82b9-4498-9915-48a1748a0238 | ha | 2a81d4fc-2790-4072-9e83-ac075fcbddde 10.34.31.0/24 |
| 37cae5b8-4598-43e6-8c53-fd23f2c7c45c | lan1 | fefb9dda-d6e6-43b6-af59-db6f747a7440 10.34.31.0/24 |
| 43a84db7-acf6-4404-b6af-f8601fbb8eec | public | 4d176229-3207-4e5e-b1eb-b638accf59f5 172.24.4.224/28 |
| a72836cb-87b5-46c8-ada9-efbde7ed1698 | mgmt | 824f9edb-3b30-4179-88f1-eb24a8a1b53b 10.36.0.0/16 |
| ec7e97b9-8f2f-41c4-bac8-c91352fb2f2a | private | f4c9ded8-07aa-42da-b962-81fb9e691403 10.0.0.0/24 |
+-----+-----+-----+
```

8. Create ports and associate them with appropriate VFs, as follows:

```
[root@rhops2 ~(keystone_admin)]# neutron port-list
```

```
+-----+-----+-----+-----+
| id | name | mac_address | fixed_ips |
+-----+-----+-----+-----+
| a4f13d16-5e90-46d7-8a9e-ea5c117e6b1d | | fa:16:3e:20:64:4e | {"subnet_id": "f4c9ded8-07aa-42da-b962-81fb9e691403", "ip_address": "10.0.0.1"} |
| a5d4c50f-d092-43ce-868b-7d7ee5f4e0c5 | | fa:16:3e:58:6c:13 | {"subnet_id": "f4c9ded8-07aa-42da-b962-81fb9e691403", "ip_address": "10.0.0.2"} |
| af026bf1-8c2e-4ea8-9dcf-5f2b1c6954b2 | | fa:16:3e:82:34:0d | {"subnet_id": "4d176229-3207-4e5e-b1eb-b638accf59f5", "ip_address": "172.24.4.226"} |
+-----+-----+-----+-----+
```

```
[root@rhops2 ~(keystone_admin)]# neutron port-create mgmt --name sriov.mgmt.4010
--binding:vnic-type direct
```

Created a new port:

Field	Value
admin_state_up	True
allowed_address_pairs	
binding:host_id	
binding:profile	{}
binding:vif_details	{}
binding:vif_type	unbound
binding:vnic_type	direct
device_id	
device_owner	
fixed_ips	{"subnet_id": "824f9edb-3b30-4179-88f1-eb24a8a1b53b", "ip_address": "10.36.31.221"}
id	86a8baa1-0184-46a6-a761-9f4558a66006
mac_address	fa:16:3e:a5:99:3c
name	sriov.mgmt.4010
network_id	a72836cb-87b5-46c8-ada9-efbde7ed1698
security_groups	eeb24d27-7d4f-4a74-819a-bb828c838a33
status	DOWN
tenant_id	d57f8170a21a4f5f970fb7a72f3202a6

```
[root@rhops2 ~(keystone_admin)]# neutron port-create lan1 --name sriov.lan1.4010
--binding:vnic-type direct
```

Created a new port:

Field	Value
admin_state_up	True
allowed_address_pairs	
binding:host_id	
binding:profile	{}
binding:vif_details	{}
binding:vif_type	unbound
binding:vnic_type	direct
device_id	
device_owner	
fixed_ips	{"subnet_id": "fefb9dda-d6e6-43b6-af59-db6f747a7440", "ip_address": "10.34.31.221"}
id	fa8efa4b-434d-4dbf-956e-423f431059cc
mac_address	fa:16:3e:42:fc:c9
name	sriov.lan1.4010
network_id	37cae5b8-4598-43e6-8c53-fd23f2c7c45c
security_groups	eeb24d27-7d4f-4a74-819a-bb828c838a33
status	DOWN
tenant_id	d57f8170a21a4f5f970fb7a72f3202a6

```
[root@rhops2 ~(keystone_admin)]# neutron port-create ha --name sriov.ha.4010
--binding:vnic-type direct
```

Created a new port:

Field	Value
admin_state_up	True
allowed_address_pairs	
binding:host_id	
binding:profile	{}
binding:vif_details	{}
binding:vif_type	unbound
binding:vnic_type	direct
device_id	
device_owner	
fixed_ips	{"subnet_id": "2a81d4fc-2790-4072-9e83-ac075fcfbdde", "ip_address": "10.34.31.226"}
id	2ee3079a-79ea-4c82-8fee-037abebb8171
mac_address	fa:16:3e:da:aa:97
name	sriov.ha.4010
network_id	0e7efa05-82b9-4498-9915-48a1748a0238
security_groups	eeb24d27-7d4f-4a74-819a-bb828c838a33
status	DOWN
tenant_id	d57f8170a21a4f5f970fb7a72f3202a6

```
[root@rhops2 ~(keystone_admin)]# neutron port-create lan2 --name sriov.lan2.4010
--binding:vnic-type direct
```

Created a new port:

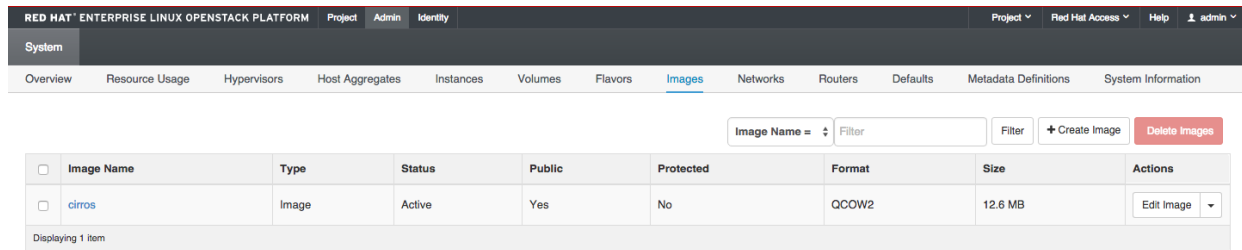
Field	Value
admin_state_up	True
allowed_address_pairs	
binding:host_id	
binding:profile	{}
binding:vif_details	{}
binding:vif_type	unbound
binding:vnic_type	direct
device_id	
device_owner	
fixed_ips	{ "subnet_id": "485d714e-f34c-4994-9bff-ef9edecf507e", "ip_address": "10.34.31.231" }
id	5b6d6231-52e7-4048-9a1a-da5106b167a4
mac_address	fa:16:3e:cc:76:88
name	sriov.lan2.4010
network_id	073b6886-7875-47af-b7aa-44b792099337
security_groups	eeb24d27-7d4f-4a74-819a-bb828c838a33
status	DOWN
tenant_id	d57f8170a21a4f5f970fb7a72f3202a6

```
[root@rhops2 ~(keystone_admin)]# neutron port-list
```

id	name	mac_address	fixed_ips
2ee3079a-79ea-4c82-8fee-037abeb8171	sriov.ha.4010	fa:16:3e:da:aa:97	{ "subnet_id": "2a81d4fc-2790-4072-9e83-ac075fcfbdde", "ip_address": "10.34.31.226" }
5b6d6231-52e7-4048-9a1a-da5106b167a4	sriov.lan2.4010	fa:16:3e:cc:76:88	{ "subnet_id": "485d714e-f34c-4994-9bff-ef9edecf507e", "ip_address": "10.34.31.231" }
86a8baa1-0184-46a6-a761-9f4558a66006	sriov.mgmt.4010	fa:16:3e:a5:99:3c	{ "subnet_id": "824f9edb-3b30-4179-88f1-eb24a8a1b53b", "ip_address": "10.36.31.221" }
a4f13d16-5e90-46d7-8a9e-ea5c117e6b1d		fa:16:3e:20:64:4e	{ "subnet_id": "f4c9ded8-07aa-42da-b962-81fb9e691403", "ip_address": "10.0.0.1" }
a5d4c50f-d092-43ce-868b-7d7ee5f4e0c5		fa:16:3e:58:6c:13	{ "subnet_id": "f4c9ded8-07aa-42da-b962-81fb9e691403", "ip_address": "10.0.0.2" }
af026bf1-8c2e-4ea8-9dcf-5f2b1c6954b2		fa:16:3e:82:34:0d	{ "subnet_id": "4d176229-3207-4e5e-b1eb-b638accf59f5", "ip_address": "172.24.4.226" }
fa8efa4b-434d-4dbf-956e-423f431059cc	sriov.lan1.4010	fa:16:3e:42:fc:c9	{ "subnet_id": "fefb9dda-d6e6-43b6-af59-db6f747a7440", "ip_address": "10.34.31.221" }

INSTALLING INFOBLOX VM IMAGE ON OPENSTACK WITH SRIOV

1. Create new flavor on OpenStack server that is suitable for the NIOS VM-4010 image.
 - 8x VCPU's
 - 24 GB Memory
 - 160 GB Root Disk
2. Log in to the OpenStack GUI. Go to the “Image” tab and click “Create Image.”



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Project Admin Identity

Project Red Hat Access Help admin

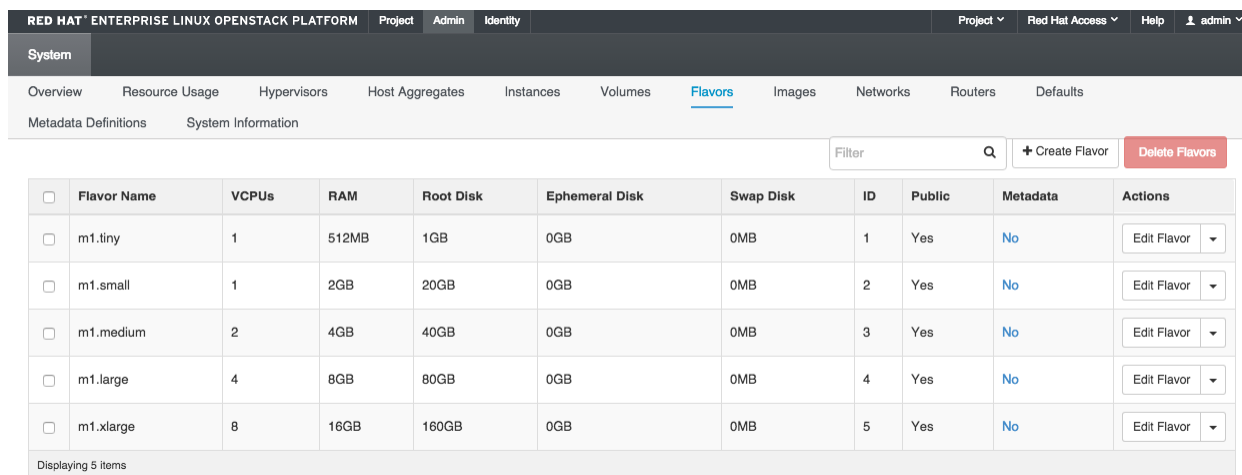
System

Overview Resource Usage Hypervisors Host Aggregates Instances Volumes Flavors **Images** Networks Routers Defaults Metadata Definitions System Information

Image Name Filter Filter + Create Image Delete Images

	Image Name	Type	Status	Public	Protected	Format	Size	Actions
<input type="checkbox"/>	cirros	Image	Active	Yes	No	QCOW2	12.6 MB	Edit Image

Displaying 1 item



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System

Overview Resource Usage Hypervisors Host Aggregates Instances Volumes **Flavors** Images Networks Routers Defaults Metadata Definitions System Information

Filter Q + Create Flavor Delete Flavors

	Flavor Name	VCPUs	RAM	Root Disk	Ephemeral Disk	Swap Disk	ID	Public	Metadata	Actions
<input type="checkbox"/>	m1.tiny	1	512MB	1GB	0GB	0MB	1	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.small	1	2GB	20GB	0GB	0MB	2	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.medium	2	4GB	40GB	0GB	0MB	3	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.large	4	8GB	80GB	0GB	0MB	4	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.xlarge	8	16GB	160GB	0GB	0MB	5	Yes	No	Edit Flavor

Displaying 5 items

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System Overview Resource Usage Metadata Definitions System Information

Create Flavor

Flavor Information * Flavor Access

Name *
Infoblox-VM-4010

ID ⓘ
auto

VCPUs *
8

RAM (MB) *
24576

Root Disk (GB) *
160

Ephemeral Disk (GB) *
0

Swap Disk (MB) *
0

Flavors define the sizes for RAM, disk, number of cores, and other resources and can be selected when users deploy instances.

Cancel Create Flavor

Defaults

+ Create Flavor Delete Flavors

Metadata Actions

No	Edit Flavor
No	Edit Flavor
No	Edit Flavor
No	Edit Flavor
No	Edit Flavor

Displaying 5 items

Note that for Reporting members, you must enter 500 GB in the **Ephemeral Disk (GB)** field.

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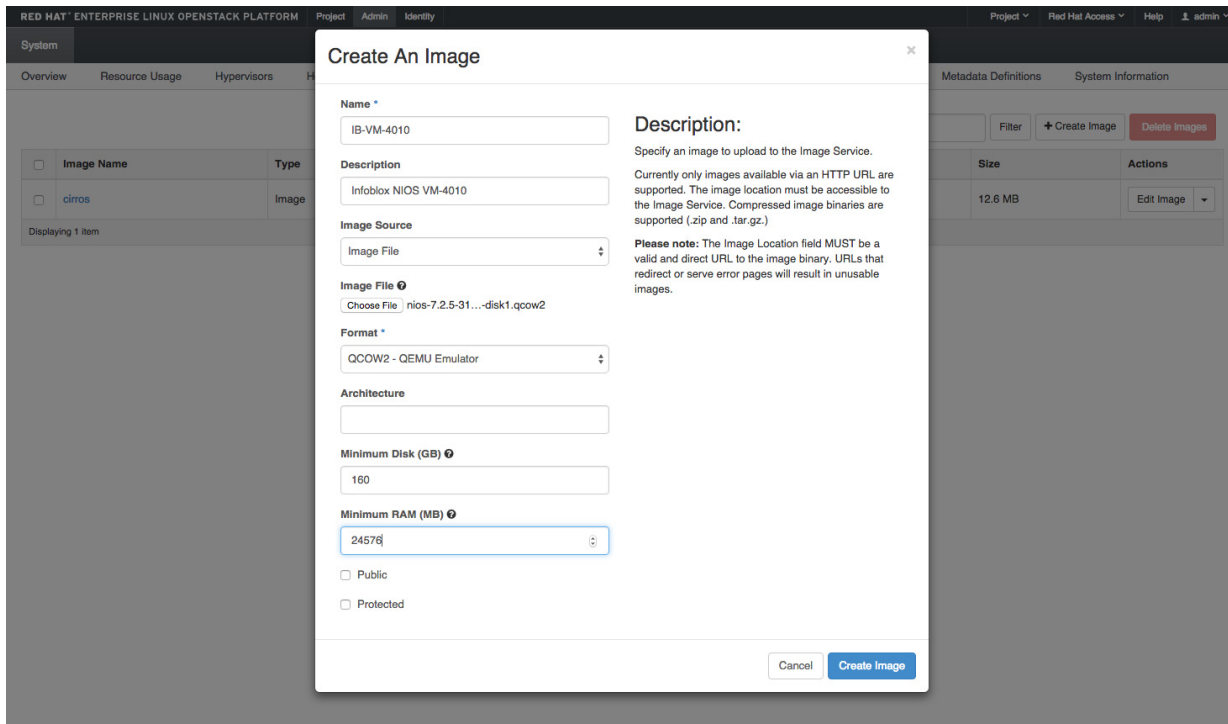
System Overview Resource Usage Hypervisors Host Aggregates Instances Volumes Flavors Images Networks Routers Defaults

Metadata Definitions System Information

Filter Q + Create Flavor Delete Flavors

	Flavor Name	VCPUs	RAM	Root Disk	Ephemeral Disk	Swap Disk	ID	Public	Metadata	Actions
<input type="checkbox"/>	m1.tiny	1	512MB	1GB	0GB	0MB	1	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.small	1	2GB	20GB	0GB	0MB	2	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.medium	2	4GB	40GB	0GB	0MB	3	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.large	4	8GB	80GB	0GB	0MB	4	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.xlarge	8	16GB	160GB	0GB	0MB	5	Yes	No	Edit Flavor
<input type="checkbox"/>	Infoblox-VM-4010	8	24GB	160GB	0GB	0MB	2e425be7-dc58-4a01-8c57-f862c60559a0	Yes	No	Edit Flavor

Displaying 6 items



RED HAT® ENTERPRISE LINUX OPENSTACK PLATFORM								
System								
Overview Resource Usage Hypervisors Host Aggregates Instances Volumes Flavors Images Networks Routers Defaults								
Metadata Definitions System Information								
Image Name = Filter Filter + Create Image Delete Images								
<input type="checkbox"/>	Image Name	Type	Status	Public	Protected	Format	Size	Actions
<input type="checkbox"/>	IB-VM-4010	Image	Active	No	No	QCOW2	700.4 MB	Edit Image
<input type="checkbox"/>	cirros	Image	Active	Yes	No	QCOW2	12.6 MB	Edit Image
Displaying 2 items								

- Once the image creation is finished, go back to the CLI login and bring up the instance.
- Get the SRIOV interface ID using the following command:

```
[root@rhops2 ~(keystone_admin)]# neutron port-list
```

id	name	mac_address	fixed_ips
2ee3079a-79ea-4c82-8fee-037abebb8171	sriov.ha.4010	fa:16:3e:da:aa:97	{"subnet_id": "2a81d4fc-2790-4072-9e83-ac075fcfbdde", "ip_address": "10.34.31.226"}
5b6d6231-52e7-4048-9a1a-da5106b167a4	sriov.lan2.4010	fa:16:3e:cc:76:88	{"subnet_id": "485d714e-f34c-4994-9bff-ef9edecf507e", "ip_address": "10.34.31.231"}
86a8baa1-0184-46a6-a761-9f4558a66006	sriov.mgmt.4010	fa:16:3e:a5:99:3c	{"subnet_id": "824f9edb-3b30-4179-88f1-eb24a8a1b53b", "ip_address": "10.36.31.221"}
a4f13d16-5e90-46d7-8a9e-ea5c117e6b1d		fa:16:3e:20:64:4e	{"subnet_id": "f4c9ded8-07aa-42da-b962-81fb9e691403", "ip_address": "10.0.0.1"}
a5d4c50f-d092-43ce-868b-7d7ee5f4e0c5		fa:16:3e:58:6c:13	{"subnet_id": "f4c9ded8-07aa-42da-b962-81fb9e691403", "ip_address": "10.0.0.2"}
af026bf1-8c2e-4ea8-9dcf-5f2b1c6954b2		fa:16:3e:82:34:0d	{"subnet_id": "4d176229-3207-4e5e-b1eb-b638accf59f5", "ip_address": "172.24.4.226"}
fa8efa4b-434d-4dbf-956e-423f431059cc	sriov.lan1.4010	fa:16:3e:42:fc:c9	{"subnet_id": "fefb9dda-d6e6-43b6-af59-db6f747a7440", "ip_address": "10.34.31.221"}

- Launch an instance using the following command:

```
[root@rhops2 ~(keystone_admin)]# nova boot --flavor Infoblox-VM-4010 --image IB-VM-4010
--nic port-id=86a8baa1-0184-46a6-a761-9f4558a66006 --nic
port-id=fa8efa4b-434d-4dbf-956e-423f431059cc --nic
port-id=2ee3079a-79ea-4c82-8fee-037abebb8171 --nic
port-id=5b6d6231-52e7-4048-9a1a-da5106b167a4 DDI-VM-4010
```

Property	Value
OS-DCF:diskConfig	MANUAL
OS-EXT-AZ:availability_zone	-
OS-EXT-SRV-ATTR:host	-
OS-EXT-SRV-ATTR:hypervisor_hostname	-
OS-EXT-SRV-ATTR:instance_name	instance-0000000e
OS-EXT-STS:power_state	0
OS-EXT-STS:task_state	scheduling
OS-EXT-STS:vm_state	building
OS-SRV-USG:launched_at	-
OS-SRV-USG:terminated_at	-
accessIPv4	
accessIPv6	
adminPass	tjY5xVsAkmJB
config_drive	
created	2016-02-02T02:22:28Z
flavor	Infoblox-VM-4010 (2e425be7-dc58-4a01-8c57-f862c60559a0)
hostId	
id	4c2fb9dd-fbe2-42db-9174-56cfa2449068
image	IB-VM-4010 (13e32e67-d6a0-4225-a127-64472c4cdb64)
key_name	-
metadata	{}
name	DDI-VM-4010
os-extended-volumes:volumes_attached	[]
progress	0
security_groups	default
status	BUILD
tenant_id	d57f8170a21a4f5f970fb7a72f3202a6
updated	2016-02-02T02:22:28Z
user_id	57770ecc6ca4457d83eb670055de8228

- Go back to the GUI and confirm if the image boots up without any errors.
- Go to **“Project” -> Instances**.

RED HAT

ENTERPRISE LINUX OPENSTACK PLATFORM

ProjectAdminIdentity

Project

Red Hat Access

Help

admin

Compute

Network

Object Store

Overview

Instances

Volumes

Images

Access & Security

Instance Name

Filter

Filter

Launch Instance

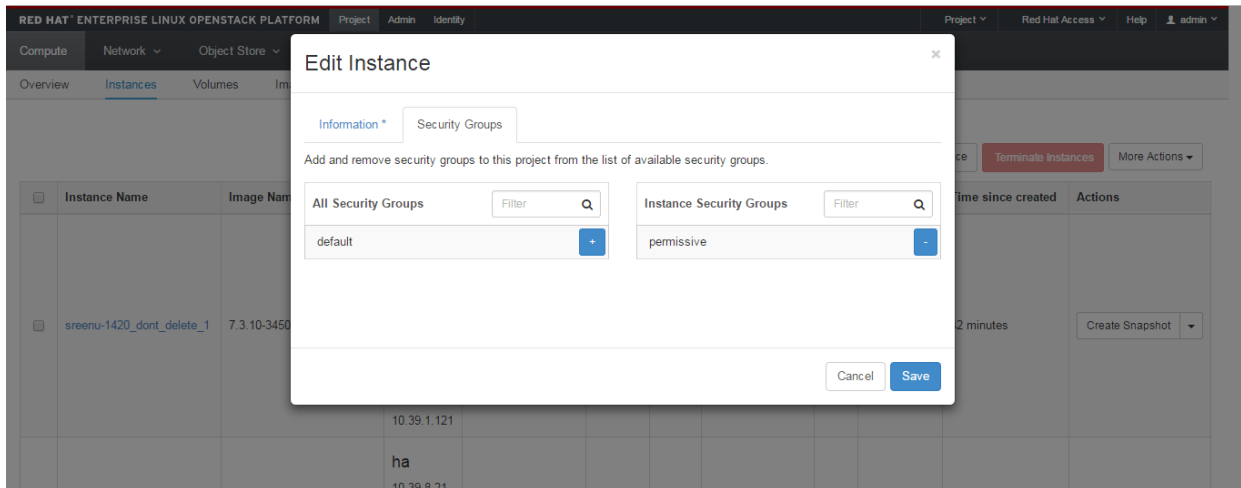
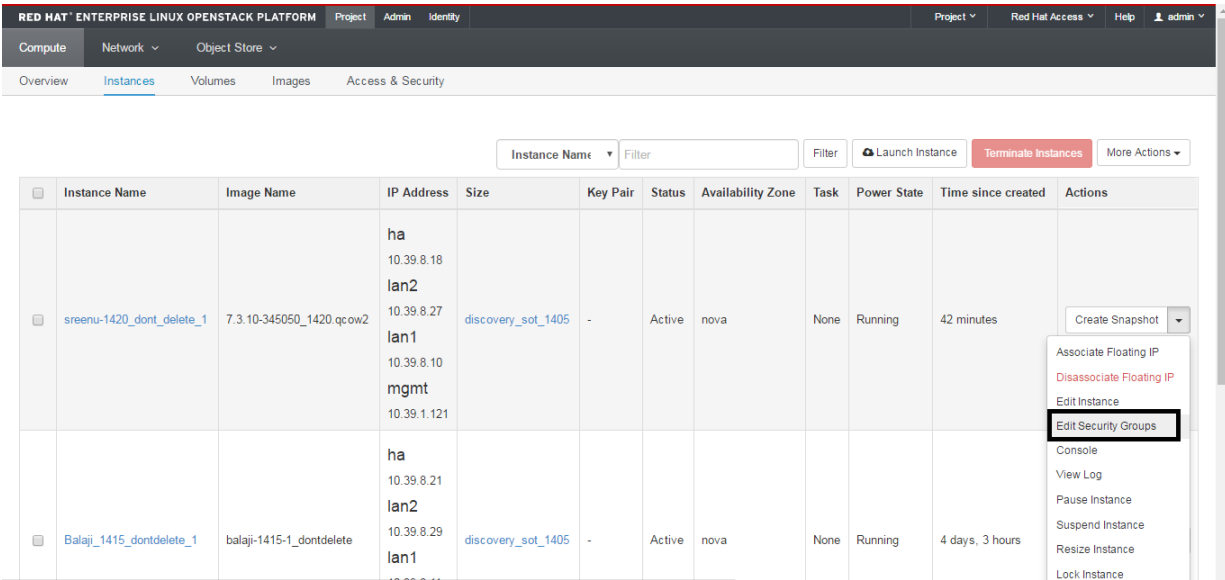
Terminate Instances

More Actions

	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Time since created	Actions
<input type="checkbox"/>			ha 10.34.31.226 lan2 10.34.31.231 lan1 10.34.31.221 mgmt 10.36.31.221								
<input type="checkbox"/>	DDI-VM-4010	IB-VM-4010		Infoblox-VM-4010	-	Active	nova	None	Running	1 hour, 4 minutes	Create Snapshot

Displaying 1 item

For Reporting and Blocks tools members, the **Instance Security Groups** must be set to **Permissive**.



- For console access to the instance, go to “DDI-VM-4010” -> Console.

