OpenStack Icehouse Multiple Virtual Machines Manual

Joseph Callen

August 12, 2014

Chapter 1

Packstack

1.1 Prerequisites

You can use any hypervisor: VMware Workstation, Fusion, Player, ESXi, KVM w/virt-manager (you don't really need virt-manager with KVM, just makes it easier) or VirtualBox. As of this writing download a network-based install CD of Fedora 20. This will allow you to create a minimal install that is all up to date. The OS disk needs minimally 8 GB and a secondary disk for cinder volumes which should be at least 20 GB. I recommend using the NAT network interface since it will provide a route and DNS. We will overlap IP addresses of the DHCP server but that shouldn't be an issue unless you have multiple virtual machines running.

After the OS has been installed lets create our cinder-volumes volume group. In this example the device is named vdb, yours could be different. To determine disk name use `dmesg` or `fdisk -l`.

Listing 1.1: Create Cinder Volume VG

```
1 vgcreate cinder-volumes /dev/vdb
```

Listing 1.2: Disable firewalld, enable iptables-services

```
1 systemctl enable network
2 systemctl disable firewalld
3 yum install iptables-services -y
4 systemctl enable iptables.service
```

The configurations files that Packstack creates will use your IP address not the hostname so we need to make sure that we have a static IP before generating the answer file. Lets first determine your current network information.

Listing 1.3: Current IP address

```
1 [root@virsatpaw001 ~]# ip a
2 1: lo: <LOOPBACK,UP,LOWER_UP> mtu 16436 qdisc noqueue state UNKNOWN
```

```
3     link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
4     inet 127.0.0.1/8 scope host lo
5     inet6 ::1/128 scope host
6        valid_lft forever preferred_lft forever
7  2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast
     state UP qlen 1000
8     link/ether 52:54:00:e7:12:47 brd ff:ff:ff:ff:ff:ff
9     inet 192.168.122.10/24 brd 192.168.122.255 scope global eth0
10    inet6 fe80::5054:ff:fee7:1247/64 scope link
11       valid_lft forever preferred_lft forever
```

Line 9 displays our current IP and subnet mask of 192.168.122.10 /24 (or 255.255.255.0).

Listing 1.4: Current Default Route

```
1 [root@virsatpaw001 ~]# ip route
2 192.168.122.0/24 dev eth0  proto kernel  scope link  src 192.168.122.10
3 169.254.0.0/16 dev eth0  scope link  metric 1002
4 default via 192.168.122.1 dev eth0
```

Line 4 displays our current default gateway of 192.168.122.1.

Listing 1.5: Current Resolver

```
1 [root@virsatpaw001 ~]# cat /etc/resolv.conf
2 nameserver 192.168.122.1
```

Based on your device name there will be a corresponding ifcfg file. DEVICE, IPADDR, NETMASK, GATEWAY and DNS1,2 will be based on your network. Modify the file removing options that don't exist in the example below, adding the options that do.

Listing 1.6: Modify Ethernet interface from DHCP to static

```
1 vi /etc/sysconfig/network-scripts/ifcfg-
```

Listing 1.7: Example Ethernet configuration

```
1 DEVICE=eth0
2 TYPE=Ethernet
3 ONBOOT=yes
4 NM_CONTROLLED=no
5 BOOTPROTO=static
6 NAME="eth0"
7 IPADDR=192.168.122.10
8 NETMASK=255.255.255.0
9 GATEWAY=192.168.122.1
10 DNS1=192.168.122.1
```

At this point let us reboot. When the virtual machine is available make sure that you can still reach the default gateway, then proceed to the next section.

Chapter 2

Physical Hardware

Listing 2.1: Open vSwitch

```
<network>
  <name>ovs-network</name>
  <uuid>2fde288e-242c-4b48-95f4-28f844c768f4</uuid>
  <forward mode='bridge'/>
  <bridge name='ovsbr0'/>
  <virtualport type='openvswitch'/>
  <portgroup name='vlan-252'>
    <vlan>
      <tag id='252'/>
    </vlan>
  </portgroup>
  <portgroup name='vlan-253'>
    <vlan>
      <tag id='253'/>
    </vlan>
  </portgroup>
  <portgroup name='vlan-all'>
    <vlan trunk='yes'>
      <tag id='80'/>
      <tag id='81'/>
    </vlan>
  </portgroup>
</network>
```

2.1 Clone and sysprep

Listing 2.2: Sysprep example

```
virt-sysprep -a /dev/virtualmachine/virctlpaw001 --hostname
    virctlpaw001.virtomation.com \
```

```
2 --firstboot-command "sed -i -r 's/IPADDR=(\b[0-9]{1,3}\.){3}[0-9]{1,3}\
    b'/IPADDR=10.53.252.61/ /etc/sysconfig/network-scripts/ifcfg-eth0" \
3 --firstboot-command 'systemctl restart network' \
4 --firstboot-command 'yum install -y http://rdo.fedorapeople.org/rdo-
    release.rpm' \
5 --firstboot-command 'yum install openstack-packstack -y'
```

Chapter 3

Prerequisites

Listing 3.1: Bash Aliases

```
alias yi="yum -y install"
alias start="systemctl start"
alias e="systemctl enable"
alias ocs="openstack-config --set"
```

Listing 3.2: Database Install

```
yi mariadb mariadb-server
e mariadb.service
start mariadb.service
netstat -tanp | grep 3306
mysql_secure_installation
```

Listing 3.3: RabbitMQ Install

```
yi rabbitmq-server
e rabbitmq-server
start rabbitmq-server.service
```

Listing 3.4: Create RabbitMQ User Accounts

```
for serv in "cinder" "nova" "neutron" "heat"; do passwd=`openssl rand -
    base64 8`; echo "$serv - $passwd"; rabbitmqctl add_user $serv
    $passwd; done
```

Listing 3.5: Result from user account creation

```
cinder - Q7gPp1FOK5g=
Creating user "cinder" ...
...done.
nova - 2mM7OaVNFKM=
```

```
5 Creating user "nova" ...
6 ...done.
7 neutron - krPOwjPbKJs=
8 Creating user "neutron" ...
9 ...done.
10 heat - l2iDSln7nmw=
11 Creating user "heat" ...
12 ...done.
```

Chapter 4

Keystone

4.1 Installation

Listing 4.1: foo

```
yi openstack-keystone openstack-utils
mysql -u root -p
export SERVICE_TOKEN=$(openssl rand -hex 10)
echo $SERVICE_TOKEN > ~/ks_admin_token
```

4.2 Database

Listing 4.2: foo

```
chown -R keystone:keystone /var/log/keystone /etc/keystone/ssl/
chmod -R o-rwx /etc/keystone/ssl
ocs /etc/keystone/keystone.conf DEFAULT admin_token $SERVICE_TOKEN
ocs /etc/keystone/keystone.conf sql connection mysql://keystone:
    trustn01@10.53.252.61/keystone
keystone-manage pki_setup --keystone-user keystone --keystone-group
    keystone
su -s /bin/sh -c "keystone-manage db_sync" keystone
```

Listing 4.3: Start and enable Keystone

```
start openstack-keystone
e openstack-keystone
```

4.3 Admin User and Tenant

Listing 4.4: Keystone ???

```
export OS_SERVICE_TOKEN=$SERVICE_TOKEN
export OS_SERVICE_ENDPOINT=http://10.53.252.61:35357/v2.0
source /etc/bash_completion.d/keystone.bash_completion

keystone user-create --name=admin --pass=trustn01
keystone role-create --name=admin
keystone tenant-create --name=admin --description="Admin Tenant"
keystone user-role-add --user=admin --tenant=admin --role=admin
keystone user-role-add --user=admin --role=_member_ --tenant=admin
keystone tenant-create --name=service --description="Service Tenant"
keystone service-create --name=keystone --type=identity --description="
    OpenStack Identity" keystone endpoint-create --service=keystone --
    publicurl=http://10.53.252.61:5000/v2.0 --internalurl=http
    ://10.53.252.61:5000/v2.0 --adminurl=http://10.53.252.61:35357/v2.0
```

Listing 4.5: Unset Environment variables

```
unset OS_SERVICE_ENDPOINT
unset OS_ENDPOINT
unset OS_SERVICE_TOKEN
unset SERVICE_TOKEN
```

 Make sure that you unset environmental variables or you will receive keystone errors like below.

Listing 4.6: Keystone Error Message

```
[root@virctlpaw001 ~]# keystone catalog
'NoneType' object has no attribute 'has_service_catalog'
```

Chapter 5

Swift

⚠ This chapter is a mess, ignore

Listing 5.1: Install Swift

```
yi glance...
yum install -y openstack-swift-proxy \
openstack-swift-object \
openstack-swift-container \
openstack-swift-account \
openstack-utils \
memcached
```

Listing 5.2: Install Swift

```
fdisk /dev/vdb
mkfs.ext4 /dev/vdb1
[root@virctlpaw001 ~(keystone_admin)]# blkid /dev/vdb1
/dev/vdb1: UUID="7cefc9b8-3313-40cb-941b-78b35c029bac" TYPE="ext4"
    PARTUUID="9faed234-01"
vi /etc/fstab
mkdir -p /srv/node/d1
mount -a
```

Listing 5.3: Swift account, container, object

```
ocs /etc/swift/swift.conf swift-hash swift_hash_path_prefix $(openssl
    rand -hex 10)
ocs /etc/swift/swift.conf swift-hash swift_hash_path_suffix $(openssl
    rand -hex 10)
ocs /etc/swift/object-server.conf DEFAULT bind_ip 10.53.252.61
ocs /etc/swift/account-server.conf DEFAULT bind_ip 10.53.252.61
ocs /etc/swift/container-server.conf DEFAULT bind_ip 10.53.252.61
for ops_service in "openstack-swift-account" "openstack-swift-container
    " "openstack-swift-object"; do systemctl enable $ops_service;
    systemctl start $ops_service; done
```

Listing 5.4: Swift Proxy

```
1 ocs /etc/swift/proxy-server.conf filter:authtoken auth_host
    10.53.252.61
2 ocs /etc/swift/proxy-server.conf filter:authtoken auth_tenant_name
    service
3 ocs /etc/swift/proxy-server.conf filter:authtoken admin_user swift
4 ocs /etc/swift/proxy-server.conf filter:authtoken admin_password
    trustn01
5 for ops_service in "memcached" "openstack-swift-proxy" ; do systemctl
    enable $ops_service; systemctl start $ops_service; done
```

Chapter 6

Glance

Listing 6.1: Glance Keystone create

```
keystone user-create --name glance --pass trustn01
keystone user-role-add --user glance --role admin --tenant service
keystone service-create --name glance --type image --description "
    Glance Image Service"
keystone endpoint-create --service glance --publicurl "http
    ://10.53.252.61:9292" --adminurl "http://10.53.252.61:9292" --
    internalurl "http://10.53.252.61:9292"
```

6.1 Configuration

Listing 6.2: Glance API

```
openstack-config --set /etc/glance/glance-api.conf DEFAULT
    sql_connection mysql://glance:trustn01@10.53.252.61/glance
ocs /etc/glance/glance-api.conf paste_deploy flavor keystone
ocs /etc/glance/glance-api.conf keystone_authtoken auth_host
    10.53.252.61
ocs /etc/glance/glance-api.conf keystone_authtoken auth_port 35357
ocs /etc/glance/glance-api.conf keystone_authtoken auth_protocol http
ocs /etc/glance/glance-api.conf keystone_authtoken admin_tenant_name
    service
ocs /etc/glance/glance-api.conf keystone_authtoken admin_user glance
ocs /etc/glance/glance-api.conf keystone_authtoen admin_password
    trustn01
```

Listing 6.3: Glance Registry

```
ocs /etc/glance/glance-registry.conf DEFAULT sql_connection mysql://
    glance:trustn01@10.53.252.61/glance
```

```
2 ocs /etc/glance/glance-registry.conf paste_deploy flavor keystone
3 ocs /etc/glance/glance-registry.conf keystone_authtoken auth_host
    10.53.252.61
4 ocs /etc/glance/glance-registry.conf keystone_authtoken auth_port 35357
5 ocs /etc/glance/glance-registry.conf keystone_authtoken auth_protocol
    http
6 ocs /etc/glance/glance-registry.conf keystone_authtoken
    admin_tenant_name service
7 ocs /etc/glance/glance-registry.conf keystone_authtoken admin_user
    glance
8 ocs /etc/glance/glance-registry.conf keystone_authtoken admin_password
    trustn01
```

Listing 6.4: Bugzilla 1090648 - glance-manage db_sync silently fails to prepare the database

```
2014-08-12 15:06:55.083 1694 CRITICAL glance [-] ValueError: Tables "
    migrate_version" have non utf8 collation, please make sure all
    tables are CHARSET=utf8
2014-08-12 15:06:55.083 1694 TRACE glance Traceback (most recent call
    last):
2014-08-12 15:06:55.083 1694 TRACE glance   File "/bin/glance-manage",
    line 10, in <module>
2014-08-12 15:06:55.083 1694 TRACE glance     sys.exit(main())
2014-08-12 15:06:55.083 1694 TRACE glance   File "/usr/lib/python2.7/
    site-packages/glance/cmd/manage.py", line 259, in main
2014-08-12 15:06:55.083 1694 TRACE glance     return CONF.command.
    action_fn()
2014-08-12 15:06:55.083 1694 TRACE glance   File "/usr/lib/python2.7/
    site-packages/glance/cmd/manage.py", line 160, in sync
2014-08-12 15:06:55.083 1694 TRACE glance     CONF.command.
    current_version)
2014-08-12 15:06:55.083 1694 TRACE glance   File "/usr/lib/python2.7/
    site-packages/glance/cmd/manage.py", line 137, in sync
2014-08-12 15:06:55.083 1694 TRACE glance     sanity_check=self.
    _need_sanity_check())
2014-08-12 15:06:55.083 1694 TRACE glance   File "/usr/lib/python2.7/
    site-packages/glance/openstack/common/db/sqlalchemy/migration.py",
    line 195, in db_sync
2014-08-12 15:06:55.083 1694 TRACE glance     _db_schema_sanity_check(
    engine)
2014-08-12 15:06:55.083 1694 TRACE glance   File "/usr/lib/python2.7/
    site-packages/glance/openstack/common/db/sqlalchemy/migration.py",
    line 221, in _db_schema_sanity_check
2014-08-12 15:06:55.083 1694 TRACE glance     ) % ',',.join(table_names)
    )
2014-08-12 15:06:55.083 1694 TRACE glance ValueError: Tables "
    migrate_version" have non utf8 collation, please make sure all
    tables are CHARSET=utf8
2014-08-12 15:06:55.083 1694 TRACE glance
```

Listing 6.5: Workaround - db_enforce_mysql_charset=False

```
vi /etc/glance/glance-api.conf
su -s /bin/sh -c "glance-manage db_sync" glance
mysql -u glance -p -e "show tables" glance
```

Listing 6.6: Start and enable Glance Services

```
for ops_service in "openstack-glance-registry" "openstack-glance-api" ;
    do systemctl enable $ops_service; systemctl start $ops_service;
   done
```

Listing 6.7: Add Cirros Image

```
wget http://download.cirros-cloud.net/0.3.2/cirros-0.3.2-x86_64-disk.
    img

glance image-create --name "cirros" --is-public true --disk-format
    qcow2 --container-format bare --file cirros-0.3.2-x86_64-disk.img
```