ONOS, OpenStack 설치 및 통합방법

1. ONOS 설치

1.1 ONOS 설치

```
git clone https://gerrit.onosproject.org/onos
cd onos
git checkout master(or onos-version)
```

1.2 Java 설치

```
sudo apt-get install software-properties-common -y
sudo add-apt-repository ppa:webupd8team/java -y
sudo apt-get update
sudo apt-get install oracle-java8-installer oracle-java8-set-default -y
export JAVA_HOME=/usr/lib/jvm/java-8-oracle
```

1.3 Maven, Karaf 설치

```
cd; mkdir Downloads Applications
cd Downloads
wget http://archive.apache.org/dist/karaf/3.0.5/apache-karaf-3.0.5.tar.gz
wget http://archive.apache.org/dist/maven/maven-3/3.3.9/binaries/apache-maven-3.3.9-bin.tar.gz
tar -zxvf apache-karaf-3.0.5.tar.gz -C ../Applications/
tar -zxvf apache-maven-3.3.9-bin.tar.gz -C ../Applications/
```

1.4 ONOS 환경설정

```
vi ~/.bash_profile
```
```
export ONOS_ROOT=~/onos
source $ONOS_ROOT/tools/dev/bash_profile

export ONOS_IP=<ONOS Controller IP>
```

1.5 ONOS 빌드 및 실행

```
. ~/.bash_profile

cd ~/onos
mvn clean install
ok clean
```

2. OpenStack 설치

2.1 networking-sfc 설치

```
sudo mkdir /opt/stack
cd /opt/stack/
sudo git clone git://git.openstack.org/openstack/networking-sfc.git
cd /opt/stack/networking-sfc
sudo python setup.py install
```

2.2 devstack 설치

```
git clone https://git.openstack.org/openstack-dev/devstack -b stable/mitaka
```

2.3 local.conf 파일 생성

```
vi local.conf
[[local|localrc]]
DEST=/opt/stack
#OFFLINE=True

# Logging
LOGFILE=$DEST/logs/stack.sh.log
VERBOSE=True
LOG_COLOR=False
SCREEN_LOGDIR=$DEST/logs/screen

# Credentials
ADMIN_PASSWORD=openstack
MYSQL_PASSWORD=openstack
RABBIT_PASSWORD=openstack
SERVICE_PASSWORD=openstack
SERVICE_TOKEN=tokentoken

# Neutron - Networking Service
#DISABLED_SERVICES=n-net
ENABLED_SERVICES+=,q-svc,q-agt,q-dhcp,q-l3,q-meta,neutron
enable_plugin networking-sfc /opt/stack/networking-sfc
```

2.4 devstack 실행

```
./stack.sh
```

3. ONOS, OpenStack 통합

3.1 커널 업데이트, ovs, nsh 설치

```
sudo apt-get install linux-image-generic-lts-wily linux-headers-generic-lts-wily
sudo reboot
sudo apt-get install openvswitch-switch
./install_ovs_nsh.sh(파일 따로 첨부하였습니다)
```

3.2 networking-onos 설치

```
git clone https://github.com/openstack/networking-onos.git
cd networking-onos
sudo python setup.py install
```

3.3 /etc/neutron/plugins/ml2/conf_onos.ini 생성

```
vi conf_onos.ini
```
```
[onos]
url_path = http://<ONOS Controller IP>:8181/onos/vtn
username = karaf
password = karaf
```

3.4 /etc/neutron/plugins/ml2/ml2.conf 파일 수정

```
...
mechanism_drivers = onos_ml2
...
```

3.5 /opt/stack/neutron/neutron.egg-info/entry_points.txt 파일 수정

```
...
[neutron.ml2.mechanism_drivers]
...
onos_ml2 = networking_onos.plugins.ml2.driver:ONOSMechanismDriver
...
[neutron.service_plugins]
...
onos_router = networking_onos.plugins.l3.driver:ONOSL3Plugin
...
```

3.6 neutron-server 재시작

```
screen -x -r stack
/usr/local/bin/neutron-server \
```

```
    --config-file /etc/neutron/neutron.conf \
    --config-file /etc/neutron/plugins/ml2/ml2_conf.ini \
    --config-file /etc/neutron/plugins/ml2/conf_onos.ini \
    & echo $! >/opt/stack/status/stack/q-svc.pid; fg || echo "q-svc failed to start" | tee
"/opt/stack/status/stack/q-svc.failure"
```

3.7 ONOS feature 설치

```
feature:install onos-openflow
feature:install onos-openflow-base
feature:install onos-ovsdatabase
feature:install onos-ovsdb-base
feature:install onos-drivers-ovsdb
feature:install onos-ovsdb-provider-host
feature:install onos-app-vtn-onosfw
externalportname-set -n onos_port2
```

3.8 ovs manager 설정

```
sudo ovs-vsctl set-manager tcp:<ONOS IP>:6640
```