

**Mininet
And
OpenDayLight
Based
SDN Test-bed**

- **REQUIREMENTS**

- **Ubuntu** **14.04 LTS**
 - **Mininet** **version 2.2.1**
 - **OpenDayLight Controller** **Carbon**
-

- **INSTALLATION**

- **Mininet Installation**

- Command to Download and Install Mininet

sudo apt-get install mininet

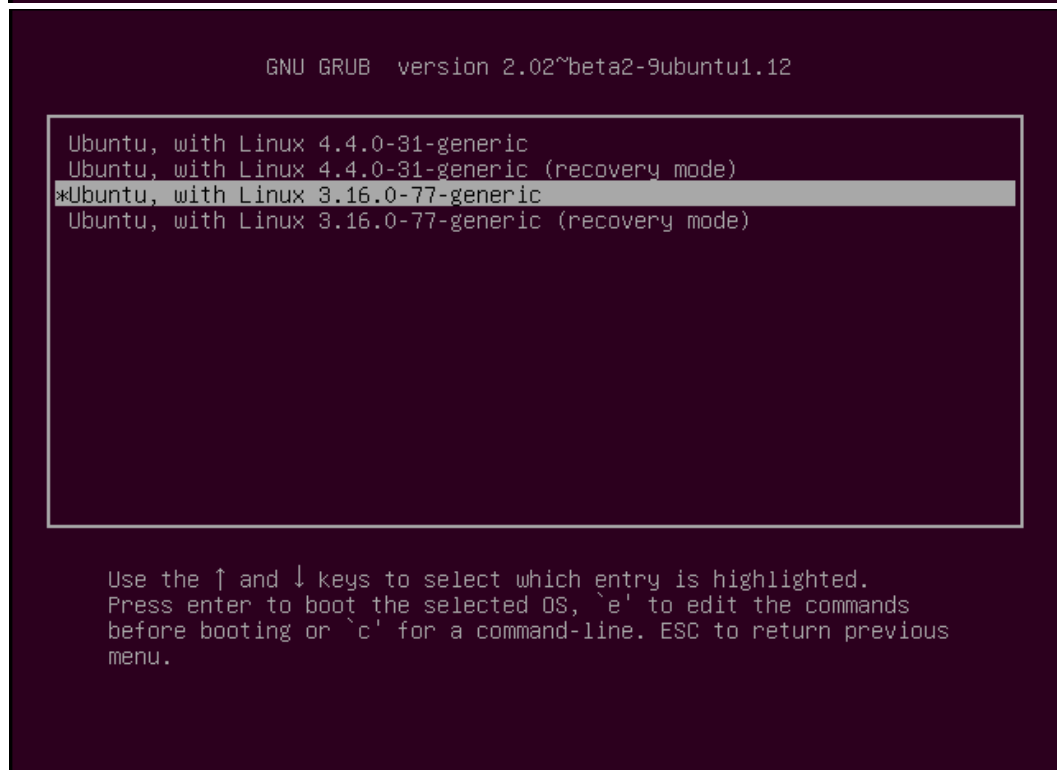
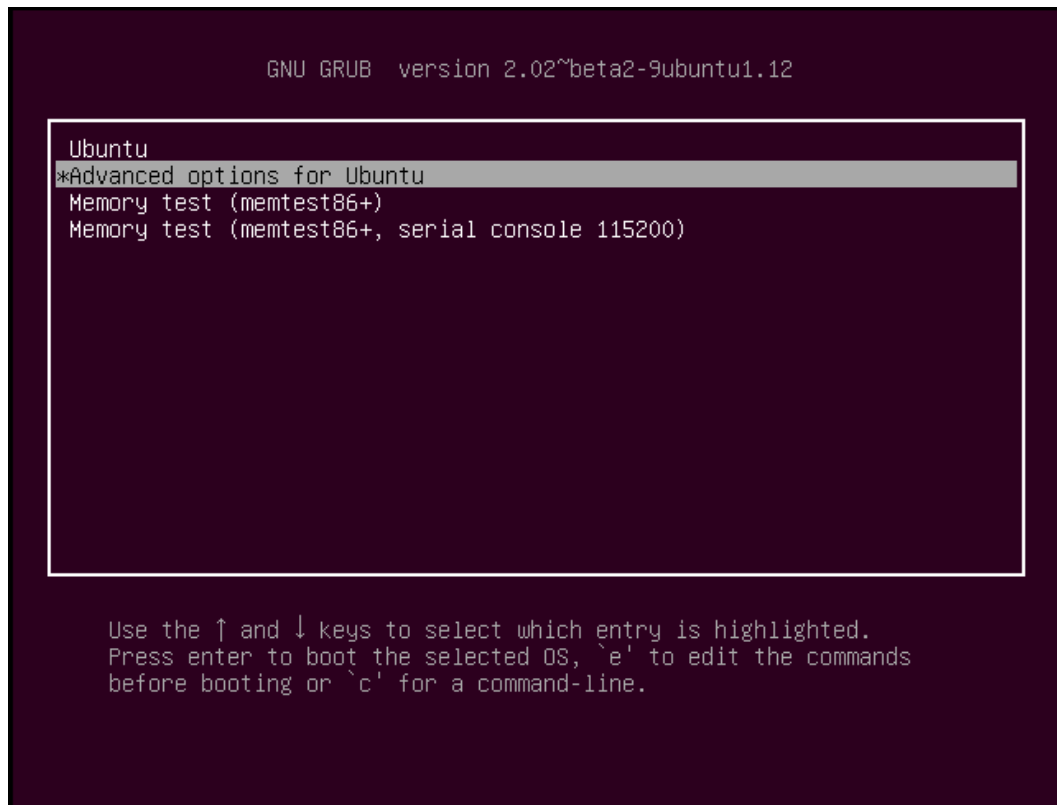
- **Problems in Mininet Installation**

- Current release of Mininet has a problem with Linux Kernel 4.2.x of Ubuntu 14.04.
- We can check the Linux Kernel version using the command
uname -a

- We can add Linux Kernel 3.16.x in Ubuntu 14.04 using the following command

sudo apt-get install linux-image-generic-lts-utopic

- Restart and press and hold “Shift” key at boot time and the following screen will appear
 - **Select** -> Advanced Options for Ubuntu
 - **Select** -> Ubuntu, with Linux 3.16.0-77-generic



- **OpenDayLight Installation**
 - **Setting Up the Environment - OpenJDK or Oracle Java**

- The latest release of OpenDayLight – Carbon requires minimum Java 8
- Ubuntu 14.04 does not support Java 8
- To install OpenJDK 8, first use the command:

```
sudo add-apt-repository ppa:openjdk-r/ppa
sudo apt-get update
sudo apt-get install openjdk-8-jre
sudo apt-get update
```

- Set JAVA_HOME environment variable
- Open file “.profile” using an editor

gedit .profile

Or

nano .profile

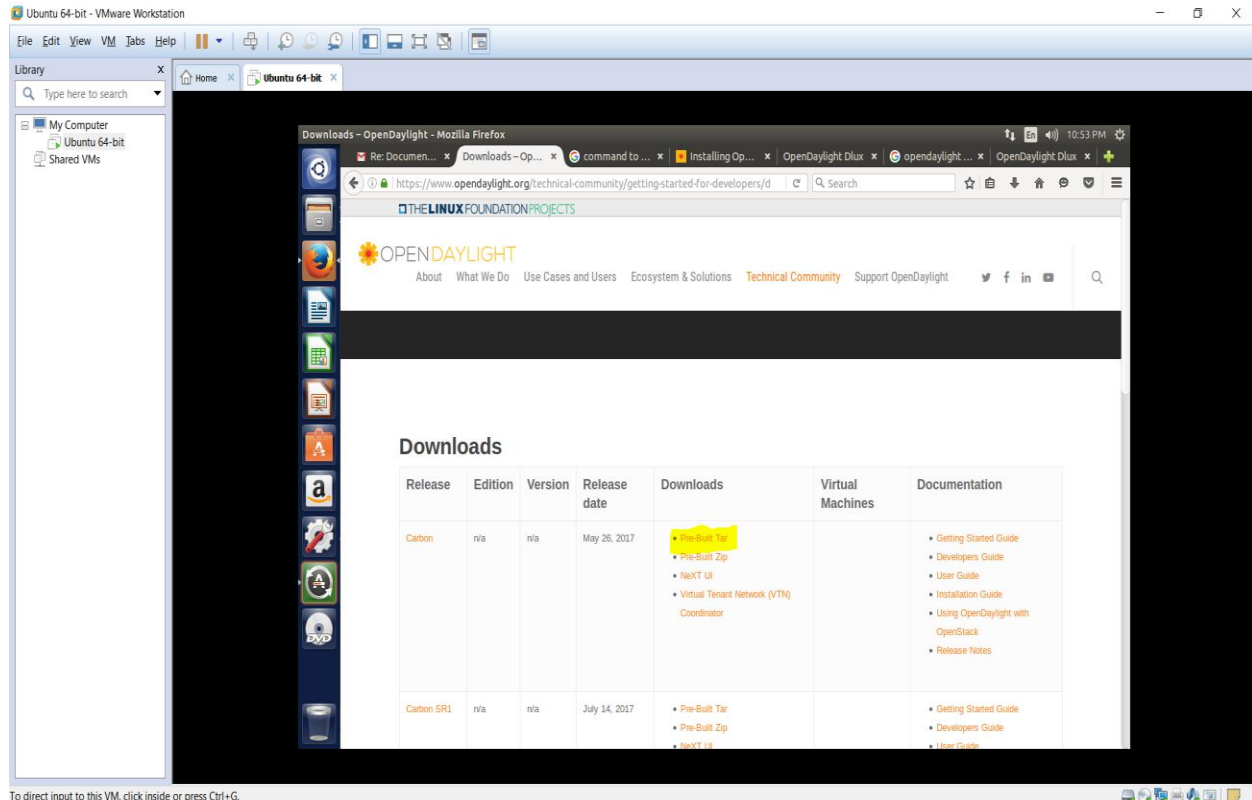
- Add the following at the end of the file and save

```
export JAVA_HOME=/usr/lib/jvm/java-1.8.0-openjdk-amd64
```

■ **Downloading OpenDayLight Controller**

- The latest release of OpenDayLight is - Carbon
- It can be download from -
<https://www.opendaylight.org/technical-community/getting-started-for-developers/downloads-and-documentation>
- Unpack the tar file

```
tar -xvzf distribution-karaf-0.6.1-Carbon.tar.gz
```



■ Running and Configuring OpenDayLight Controller

- Go to the directory

cd distribution-karaf-0.6.1-Carbon.tar.gz/bin

- run karaf

./karaf

- OpenDayLight will run as follows

```
root@dinesh-virtual-machine: /home/dinesh/Downloads/distribution-karaf-0.6.0-Carbon/bi

Karaf started in 40s. Bundle stats: 330 active, 330 total

      _____
     /_____/
    /_____/
   /_____/
  /_____/
 /_____/
/_____/

Hit '<tab>' for a list of available commands
and '[cmd] --help' for help on a specific command.
Hit '<ctrl-d>' or type 'system:shutdown' or 'logout' to shutdown OpenDaylight.

opendaylight-user@root>
```

- OpenDaylight's Karaf is now running,
- We have deploy the features that we want
- By default no feature is deployed other than a few karaf-related bundles.
- To see the available list of features use the command

feature:list -i

- Minimum Packages Required:
 - L2switch bundle (L2 Switch)

feature:install odl-l2switch-switch-ui

- DLUX bundle (Web –based GUI application)

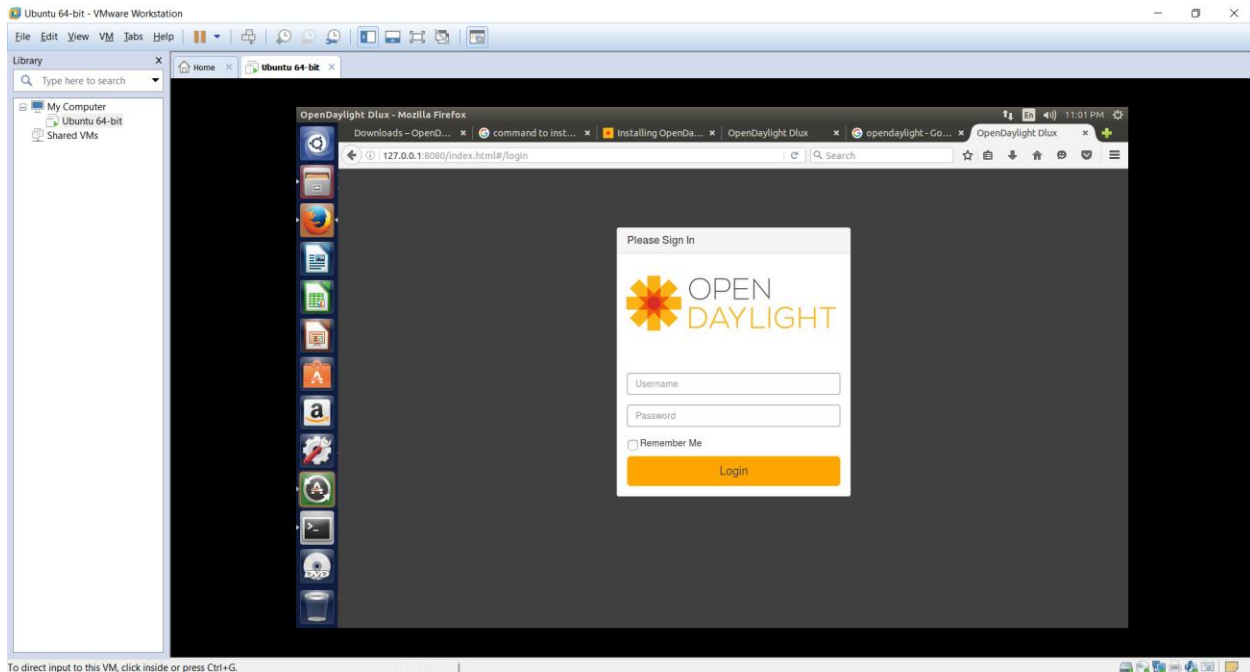
feature:install odl-dluxapps-applications

■ Run OpenDayLight Web based GUI

- Open a Web Browser and type

<http://127.0.0.1:8181/index.html> (Localhost)

<http://192.168.206.128:8181/index.html> (Example: Remote host)



Login using

- Username admin
- Password admin

● RUNNING A SCENARIO WITH MININET AND OPENDAYLIGHT

- Example:

sudo mn -topo=linear,3 -controller=remote,ip=127.0.0.1:6653

(Check the listening port for the Controller using netstat command otherwise mininet will not be able to connect with ODL Controller)

netstat -at

```

dinesh@dinesh-virtual-machine: ~
tcp        0      0 192.168.216.129:46177  bom05s09-in-f14.1e:http ESTABLISHED
tcp        0      0 localhost:45537        localhost:8181            ESTABLISHED
tcp        1      0 192.168.216.129:33209  productsearch.ubu:https  CLOSE_WAIT
tcp        0      0 192.168.216.129:45130  117.18.237.29:http       ESTABLISHED
tcp        1      0 192.168.216.129:34003  productsearch.ubu:https  CLOSE_WAIT
tcp        0      0 192.168.216.129:35389  maa03s22-in-f174.:https  ESTABLISHED
tcp6       0      0 [::]:6653             [::]:*                   LISTEN
tcp6       0      0 [::]:8101             [::]:*                   LISTEN
tcp6       0      0 localhost:33512        [::]:*                   LISTEN
tcp6       0      0 [::]:rmiregistry       [::]:*                   LISTEN
tcp6       0      0 [::]:http-alt          [::]:*                   LISTEN
tcp6       0      0 [::]:8181              [::]:*                   LISTEN
tcp6       0      0 localhost:2550         [::]:*                   LISTEN
tcp6       0      0 ip6-localhost:ipp     [::]:*                   LISTEN
tcp6       0      0 [::]:8185              [::]:*                   LISTEN
tcp6       0      0 [::]:41275             [::]:*                   LISTEN
tcp6       0      0 [::]:44444             [::]:*                   LISTEN
tcp6       0      0 localhost:8181         localhost:45536           ESTABLISHED
tcp6       0      0 localhost:8181         localhost:45538           ESTABLISHED
tcp6       0      0 localhost:8181         localhost:45540           ESTABLISHED
tcp6       0      0 localhost:8181         localhost:45539           ESTABLISHED
tcp6       0      0 localhost:8181         localhost:45537           ESTABLISHED
tcp6       0      0 localhost:8181         localhost:45534           ESTABLISHED
dinesh@dinesh-virtual-machine:~$

```

```

root@dinesh-virtual-machine: /home/dinesh
root@dinesh-virtual-machine:/home/dinesh# mn --topo=linear,3 --controller=remote
,ip=127.0.0.1:6653
*** Creating network
*** Adding controller
Unable to contact the remote controller at 127.0.0.1:6653:6633
*** Adding hosts:
h1 h2 h3
*** Adding switches:
s1 s2 s3
*** Adding links:
(h1, s1) (h2, s2) (h3, s3) (s1, s2) (s2, s3)
*** Configuring hosts
h1 h2 h3
*** Starting controller
*** Starting 3 switches
s1 s2 s3
*** Starting CLI:
mininet> pingall
*** Ping: testing ping reachability
h1 -> h2 h3
h2 -> h1 h3
h3 -> h1 h2
*** Results: 0% dropped (6/6 received)
mininet>

```

Now you can check the network topology in ODL Controller

