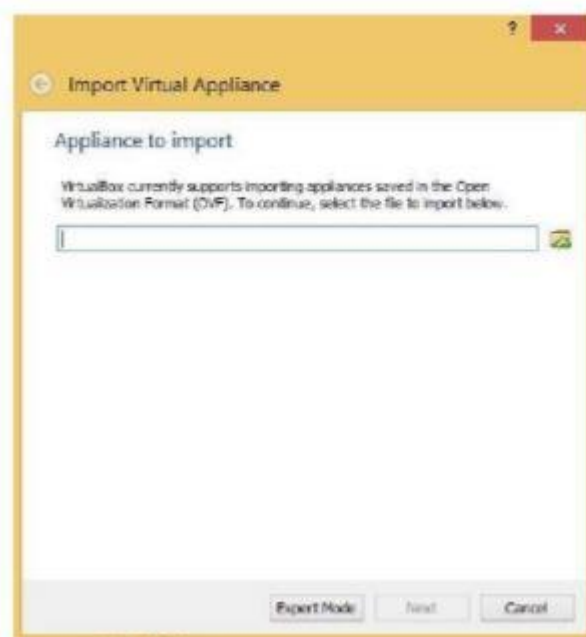


- Setelah itu, klik import



- Tunggu proses impornya selesai, apabila sudah selesai, maka akan muncul Virtual Machine yang baru



5. Install features

- Install features di Open DayLight

```
opendaylight-user@...:~$ feature:install odl-restconf odl-l2switch-switch odl-mdsal-apidocs odl-dlux-all
```

⌘

```
opendaylight-user@...:~$ feature:install odl-l2switch-switch odl-mdsal-apidocs odl-dlux-all
Refreshing bundles: com.google.guava (64), org.jboss.netty (157), org.eclipse.persistence.moxy (121), org.eclipse.persistence.core (129)
opendaylight-user@...:~$
```

6. Download Mininet VM Image

- Buka situs <https://mininet.org/download> untuk mendownload mininet.
- Extract file yang sudah didownload. Didalam folder tersebut terdapat 2 file, yang akan kita gunakan adalah file yang berformat .ovf
- Di virtualbox, klik file, lalu klik Import Appliance.
- Klik icon folder yang disebelah kanan, lalu carilah file mininet. Jika sudah dapat, klik next

- Setelah itu, masuk kedalam direktorinya dengan menggunakan perintah cd distribution-karaf-0.4.0-Beryllium

```
kelompok@ubuntu:~$ cd distribution-karaf-0.4.0-Beryllium
kelompok@ubuntu:~/distribution-karaf-0.4.0-Beryllium$
```

- Jalankan dengan mengetikkan perintah ./bin/karaf

```
kelompok@ubuntu:~/distribution-karaf-0.4.0-Beryllium$ ./bin/karaf

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@...:~$
```

```
SDN [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
kelompok@ubuntu:~$ tar -xvf distribution-karaf-0.4.0-Beryllium.tar.gz_

SDN [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
distribution-karaf-0.4.0-Beryllium/system/org/springframework/spring-webmvc/3.1.4.RELEASE/spring-webmvc-3.1.4.RELEASE.jar
distribution-karaf-0.4.0-Beryllium/system/org/springframework/spring-webmvc/maven-metadata-local.xml
distribution-karaf-0.4.0-Beryllium/system/org/uncommons/natho/uncommons-natho/1.2.2a/uncommons-natho-1.2.2a.jar
distribution-karaf-0.4.0-Beryllium/system/org/uncommons/natho/uncommons-natho/maven-metadata-local.xml
distribution-karaf-0.4.0-Beryllium/version.properties
distribution-karaf-0.4.0-Beryllium/bin/
distribution-karaf-0.4.0-Beryllium/bin/client
distribution-karaf-0.4.0-Beryllium/bin/configure_cluster.sh
distribution-karaf-0.4.0-Beryllium/bin/instance
distribution-karaf-0.4.0-Beryllium/bin/karaf
distribution-karaf-0.4.0-Beryllium/bin/setenv
distribution-karaf-0.4.0-Beryllium/bin/shell
distribution-karaf-0.4.0-Beryllium/bin/start
distribution-karaf-0.4.0-Beryllium/bin/status
distribution-karaf-0.4.0-Beryllium/bin/stop
distribution-karaf-0.4.0-Beryllium/bin/client.bat
distribution-karaf-0.4.0-Beryllium/bin/instance.bat
distribution-karaf-0.4.0-Beryllium/bin/karaf.bat
distribution-karaf-0.4.0-Beryllium/bin/setenv.bat
distribution-karaf-0.4.0-Beryllium/bin/shell.bat
distribution-karaf-0.4.0-Beryllium/bin/start.bat
distribution-karaf-0.4.0-Beryllium/bin/status.bat
distribution-karaf-0.4.0-Beryllium/bin/stop.bat
kelompok@ubuntu:~$
```

```
SDN [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
kelompok@ubuntu:~$ wget https://nexus.opendaylight.org/content/groups/public/org.opendaylight/integration/distribution-karaf/0.4.0-Beryllium/distribution-karaf-0.4.0-Beryllium.tar.gz
--2016-11-03 11:25:19-- https://nexus.opendaylight.org/content/groups/public/org.opendaylight/integration/distribution-karaf/0.4.0-Beryllium/distribution-karaf-0.4.0-Beryllium.tar.gz
Resolving nexus.opendaylight.org (nexus.opendaylight.org)... 72.3.167.142, 2001:4800:1681:103:ff7a:1993:14ea:bc0d
Connecting to nexus.opendaylight.org (nexus.opendaylight.org):72.3.167.142:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 293750321 (280M) [application/x-gzip]
Saving to: 'distribution-karaf-0.4.0-Beryllium.tar.gz'

26% [=====>] 178,790,214 92.6KB/s eta 27m 28s^
55% [=====>] 162,635,446 138KB/s eta 18m 3s^
77% [=====>] 1228,277,942 40.5KB/s eta 9m 21s^
97% [=====>] 1287,506,102 116KB/s eta 57s^
97% [=====>] 1287,514,294 118KB/s eta 55s^
100%[=====>] 293,750,321 127KB/s in 43m 8s

2016-11-03 12:00:29 (111 KB/s) - 'distribution-karaf-0.4.0-Beryllium.tar.gz' saved [293750321/293750321]

kelompok@ubuntu:~$ clear
```

- Ketika sudah berhasil di download, extract file tar OpenDayLight tadi, dengan menggunakan perintah `tar -xvf distribution-karaf-0.4.0-Beryllium.tar.gz`

- Setelah berhasil mengkonfigurasi IP Address, mari kita coba menginstall Prerequisites. Pertama, kita lakukan dengan melakukan instalasi Java di Ubuntu server. Ketikkanlah command `sudo apt-get install default-jre-headless`

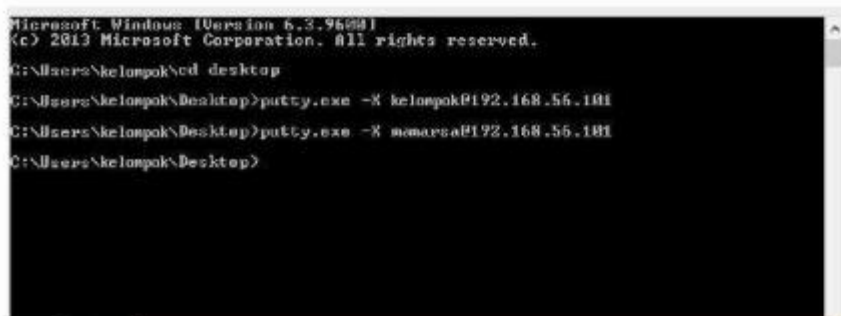


```
kelompok@ubuntu:~$ sudo apt-get install default-jre-headless
```

Tunggu proses selesai, lalu ketikkan perintah `nano ~/.bashrc`, lalu tambahkan `export JAVA_HOME=/usr/lib/jvm/default-java`, dan jalankan file tersebut dengan perintah `source ~/.bashrc`

4. Download dan Install OpenDayLight

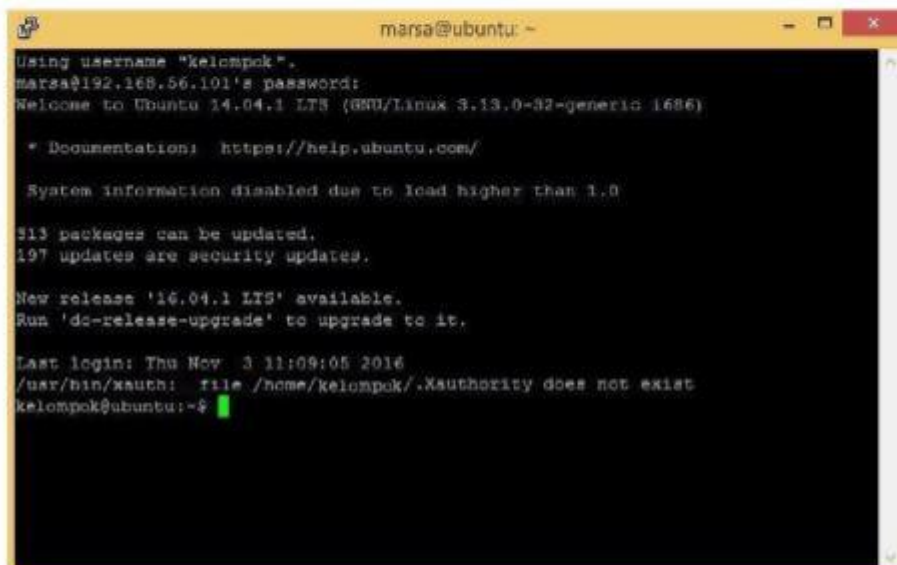
- Ketikkan command ini di terminal Ubuntu server : `wget https://nexus.opendaylight.org/content/groups/public/org.opendaylight/integration/distribution-karaf/0.4.0-Beryllium/distribution-karaf-0.4.0-Beryllium.tar.gz` dan tunggu hingga proses selesai.



```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\kelompok>cd desktop
C:\Users\kelompok\Desktop>putty.exe -X kelompok@192.168.56.101
C:\Users\kelompok\Desktop>putty.exe -X marsa@192.168.56.101
C:\Users\kelompok\Desktop>
```

Buka Command Prompt di Windows, lalu arahkan lokasi anda ke tempat anda menyimpan file putty.exe, lalu ketikkan perintah diatas. Berikut tampilan jika sudah berhasil melakukan SSH



```

Using username "kelompok".
marsa@192.168.56.101's password:
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-32-generic 1686)

 * Documentation:  https://help.ubuntu.com/

System information disabled due to load higher than 1.0

313 packages can be updated.
197 updates are security updates.

New release '16.04.1 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Thu Nov  3 11:09:05 2016
/usr/bin/ssh: file /home/kelompok/.Xauthority does not exist
kelompok@ubuntu:~$
```

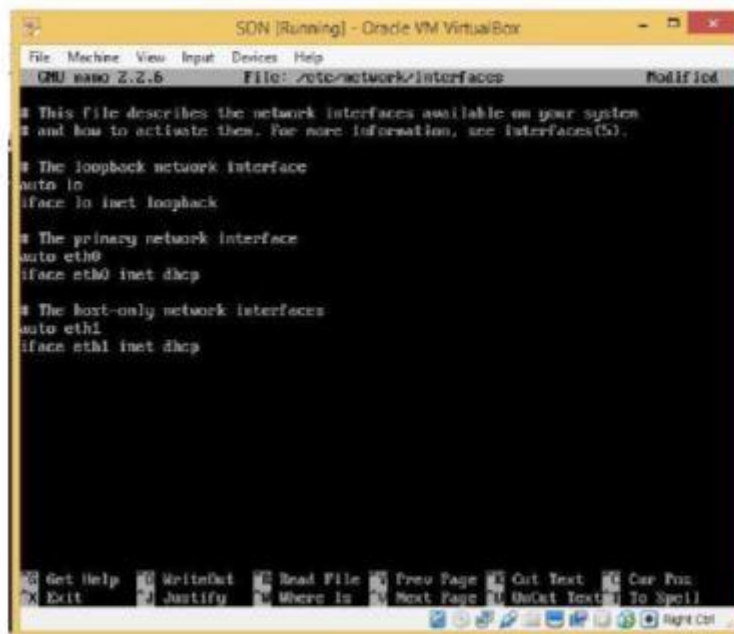
```
eth1: Link encap:Ethernet HWaddr 08:00:27:82:75:2F
      inet addr:192.168.56.191 Bcast:192.168.56.255 Mask:255.255.255.0
      inet6 addr: fe80::a00:27ff:fe02:752f/64 Scope:Link
      UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
      RX packets:46 errors:0 dropped:0 overruns:0 frame:0
      TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:1000
      RX bytes:7341 (7.3 KB) TX bytes:1062 (1.0 KB)

lo: Link encap:Local Loopback
      inet addr:127.0.0.1 Mask:255.0.0.0
      inet6 addr: ::1/128 Scope:Host
      UP LOOPBACK RUNNING MTU:65536 Metric:1
      RX packets:41 errors:0 dropped:0 overruns:0 frame:0
      TX packets:41 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:0
      RX bytes:17761 (17.7 KB) TX bytes:17761 (17.7 KB)

virbr0: Link encap:Ethernet HWaddr 52:53:00:12:35:9b
      inet addr:192.168.122.1 Bcast:192.168.122.255 Mask:255.255.255.0
      UP BROADCAST MULTICAST MTU:1500 Metric:1
      RX packets:0 errors:0 dropped:0 overruns:0 frame:0
      TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:0
      RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

mars@ubuntu:~$
```

- IP Address sudah ada, untuk mengecek keaktifan dari jaringan tersebut, gunakan cara SSH IP Address dengan menggunakan Putty di windows.



```
SON [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
GNU nano 2.2.6 /etc/network/interfaces Modified

# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
auto eth0
iface eth0 inet dhcp

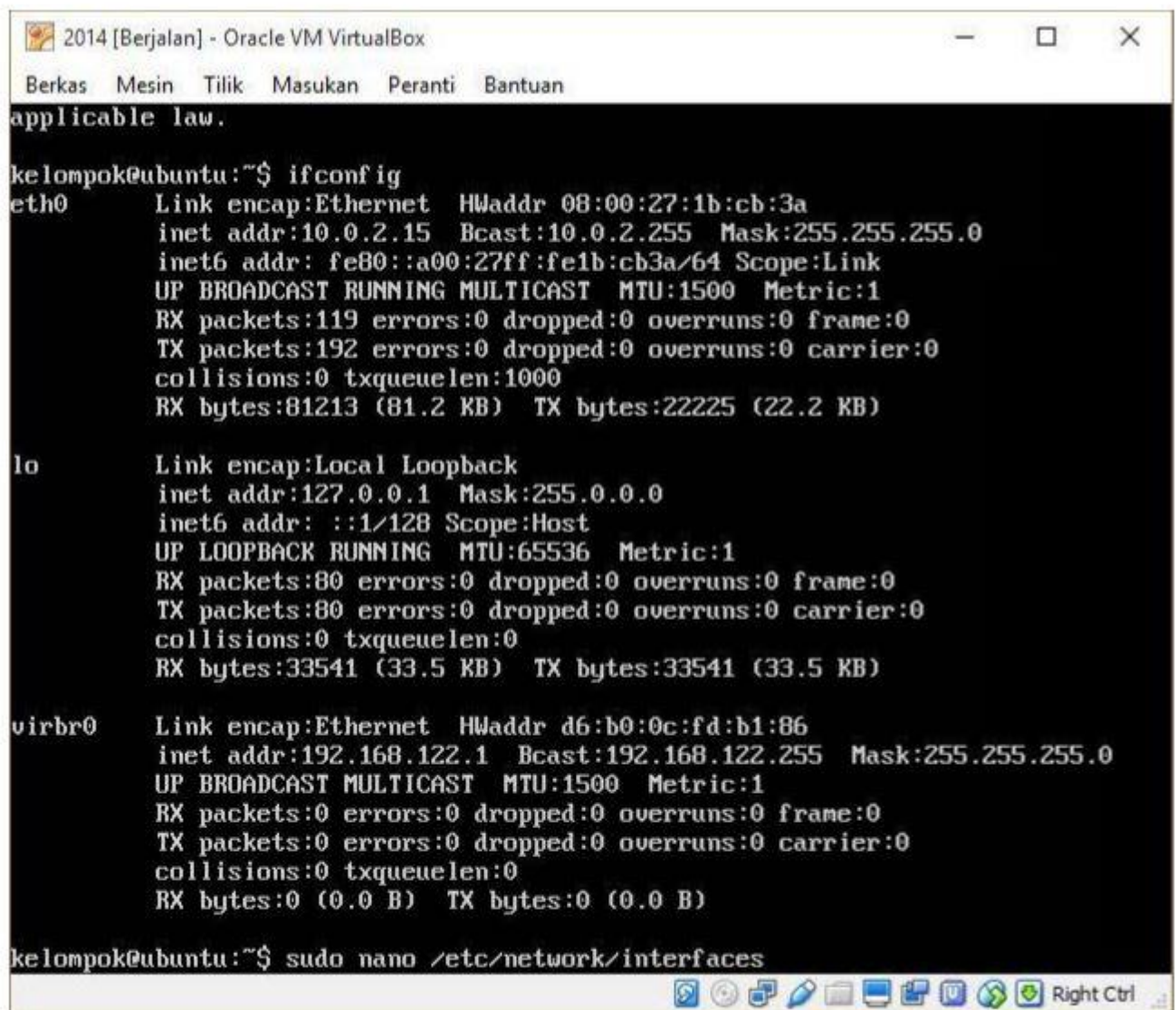
# The host-only network interfaces
auto eth1
iface eth1 inet dhcp

Get Help WriteOut Read File Prev Page Cut Text Car Pos
Exit Justify Where Is Next Page UnCut Text To Spell
```

- Setelah anda menambahkan baris tersebut, save dengan menekan tombol ctrl + O, lalu ikuti perintah nya, dan tekan tombol ctrl + X untuk keluar dari editor. Restart kembali Ubuntu Server anda untuk melihat perubahan IP Address anda dengan mengetikkan ifconfig

Terlihat pada gambar diatas eth1 belum memiliki IP Address. Jaringan eth1 harus kita konfigurasi sebagai default host dengan cara mengedit file `/etc/network/interfaces`. Ketiklah perintah `sudo nano /etc/network/interfaces`, dan tambahkan baris :

```
# The host-only network interface
auto eth1
iface eth1 inet dhcp
```



The screenshot shows a terminal window titled "2014 [Berjalan] - Oracle VM VirtualBox". The terminal output displays the results of the `ifconfig` command for three network interfaces: `eth0`, `lo`, and `virbr0`. The `eth0` interface is configured with IP address `10.0.2.15` and netmask `255.255.255.0`. The `lo` interface is the local loopback with IP `127.0.0.1`. The `virbr0` interface is a virtual bridge with IP `192.168.122.1`. At the bottom of the terminal, the command `sudo nano /etc/network/interfaces` is entered.

```
2014 [Berjalan] - Oracle VM VirtualBox
Berkas  Mesin  Tilik  Masukan  Peranti  Bantuan
applicable law.

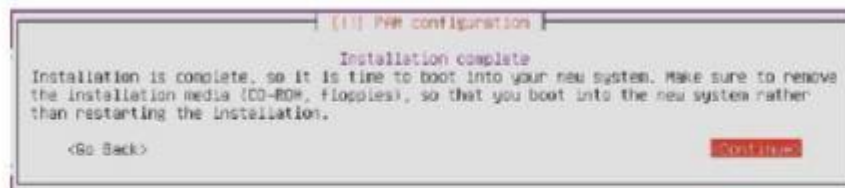
kelompok@ubuntu:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 08:00:27:1b:cb:3a
          inet addr:10.0.2.15  Bcast:10.0.2.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fe1b:cb3a/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:119 errors:0 dropped:0 overruns:0 frame:0
          TX packets:192 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:81213 (81.2 KB)  TX bytes:22225 (22.2 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:80 errors:0 dropped:0 overruns:0 frame:0
          TX packets:80 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:33541 (33.5 KB)  TX bytes:33541 (33.5 KB)

virbr0    Link encap:Ethernet  HWaddr d6:b0:0c:fd:b1:86
          inet addr:192.168.122.1  Bcast:192.168.122.255  Mask:255.255.255.0
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

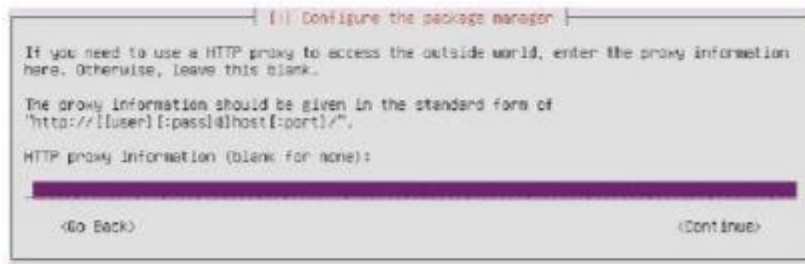
kelompok@ubuntu:~$ sudo nano /etc/network/interfaces
```

- Tunggulah dalam proses instalasi Ubuntu server. Apabila perbaikan sudah selesai, maka akan muncul begini, lalu pilih continue. Proses instalasi selesai.



3. Download dan install *prerequisites*

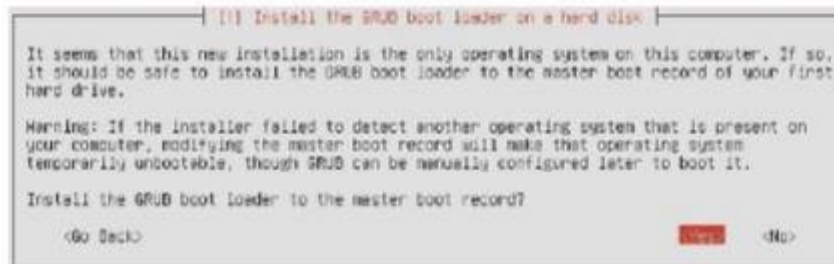
- Pertama sekali, kita lihat dan konfigurasi IP Address di Ubuntu server dengan menggunakan perintah *ip addr show*

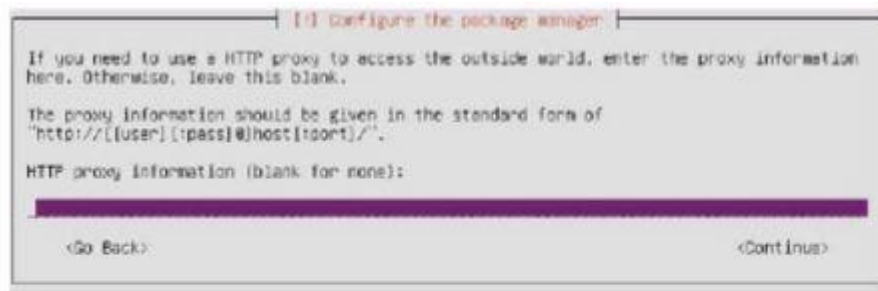


- Pilih lah software yang perlu diinstal. Software yang diinstal adalah : OpenSSH Server, DNS server, PostgreSQL database, Print server, Samba File Sercver, dan Virtual Machine Test.

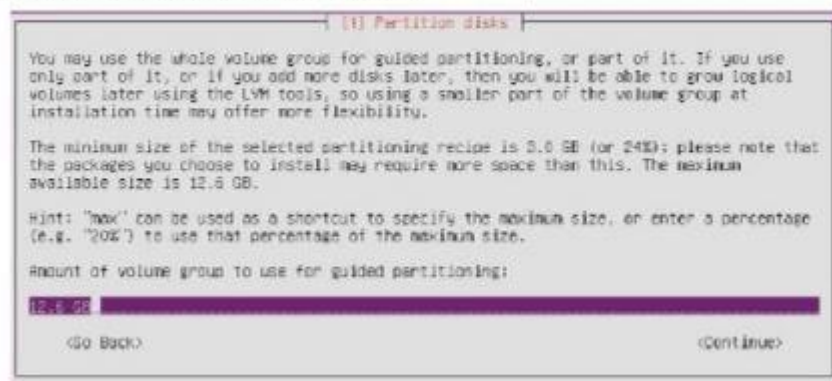


- Tunggulah beberapa proses, lalu apabila muncul permintaan GRUB LOADER, pilihlah Yes.

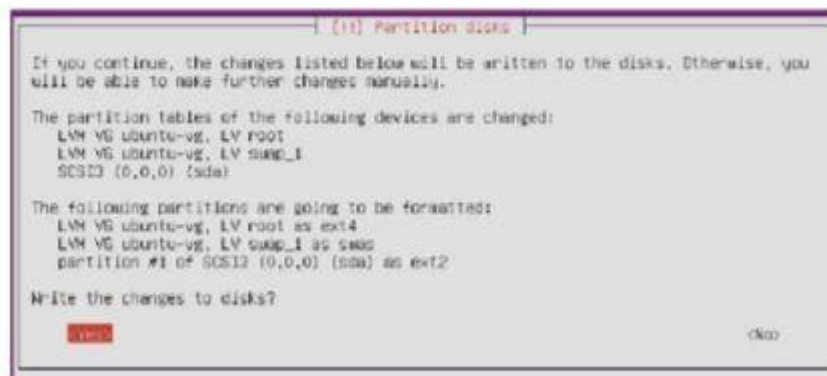




- Setelah menunggu beberapa proses, pilih No Automatic Updates, agar sistem operasi tidak mengupdate sistemnya secara otomatis.
- Lalu, alokasikan lah memori yang akan digunakan. Disini saya tidak mengubah size nya, dan langsung mengenter pilihan continue.

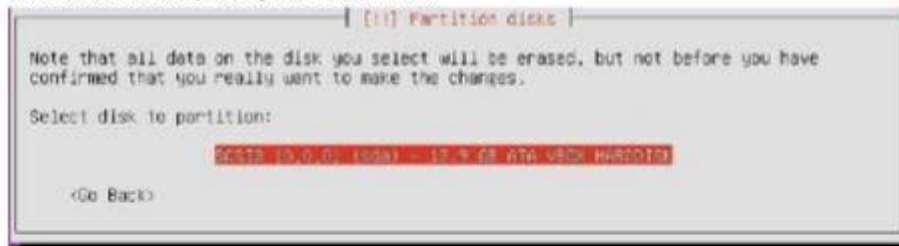


- Lalu pilih Yes

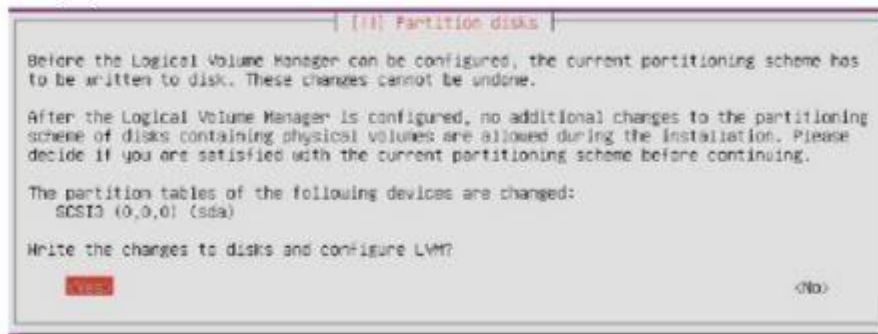


- Di bagian ini, kita diminta untuk mengisi HTTP Proxy Information, tidak perlu diisi. Apabila tidak mau diisi, kosongkan saja.

- Pilih disk untuk di partisi, lalu tekan enter.

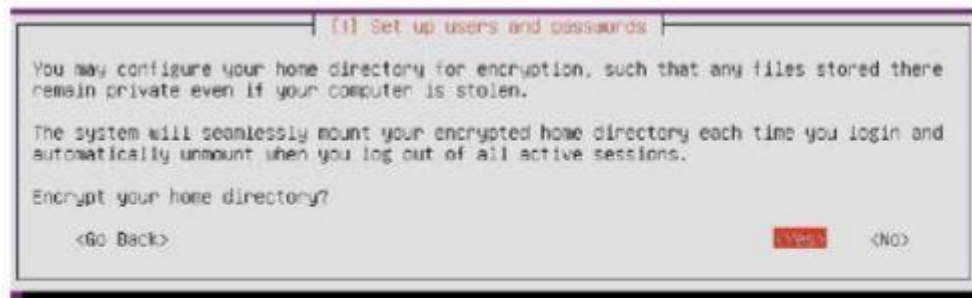


- Pilih yes, lalu enter

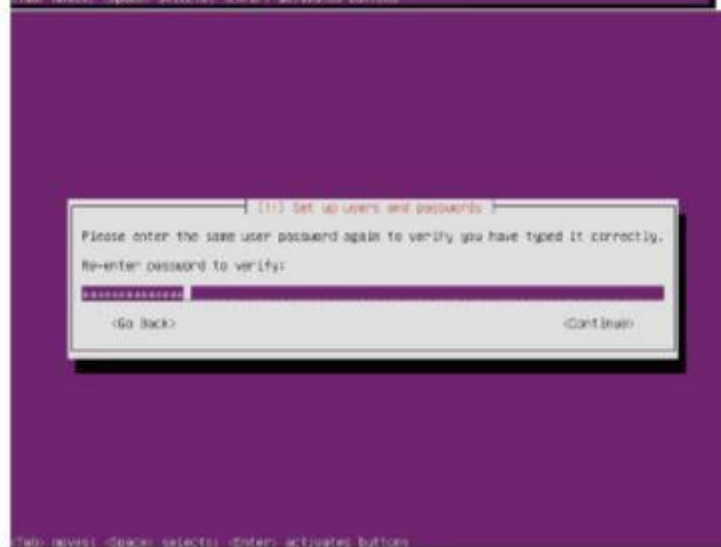
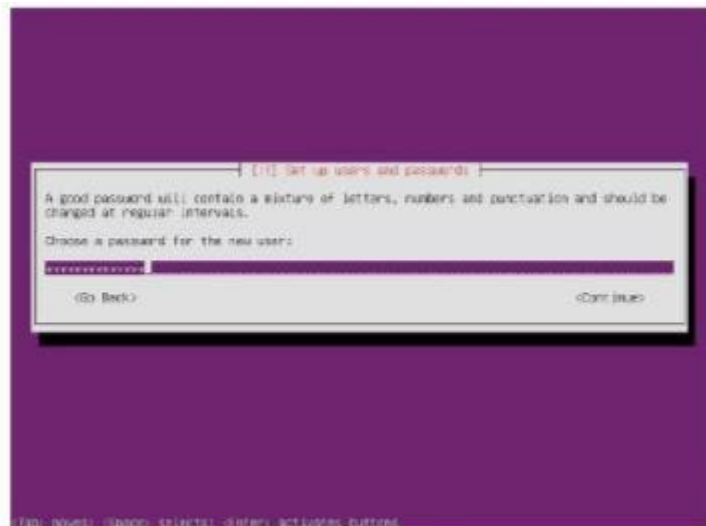


- Pilih Guided – use entire disk and set up LVM pada pengaturan partitioning method

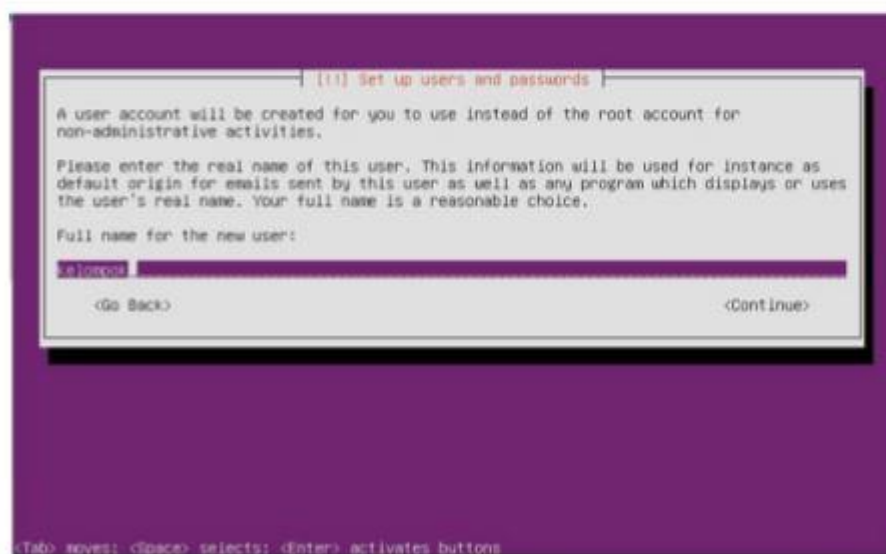
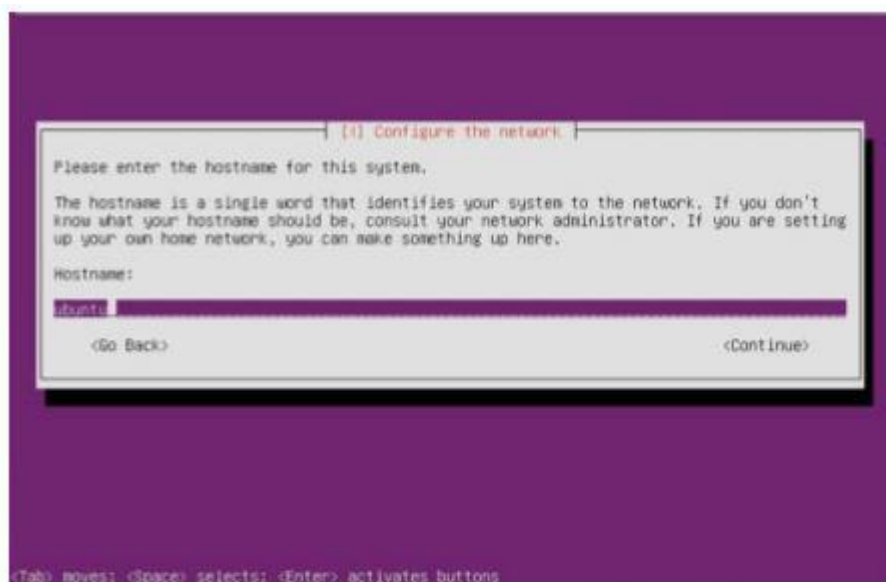
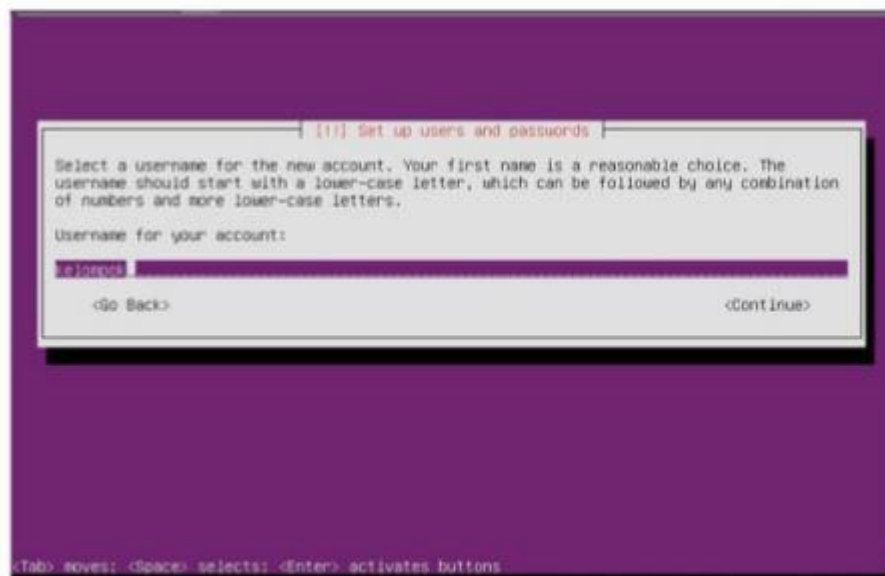


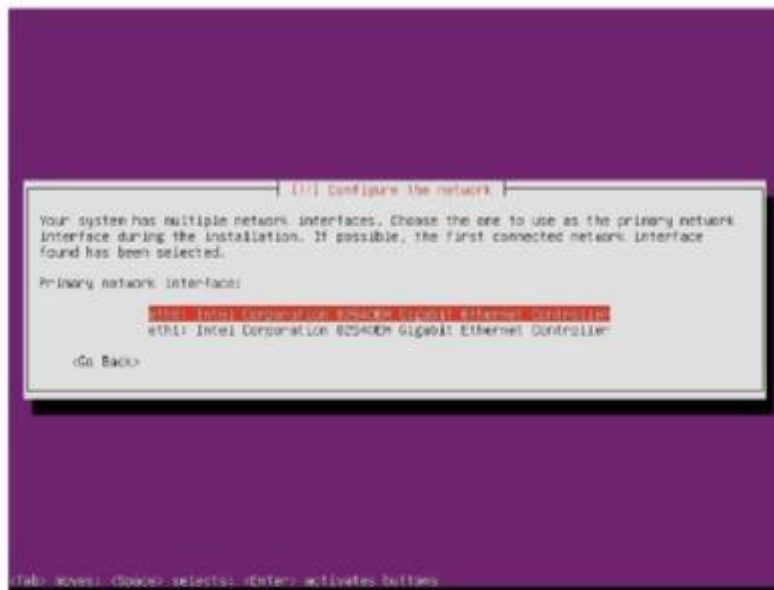


➤ Pilih Zona Waktu

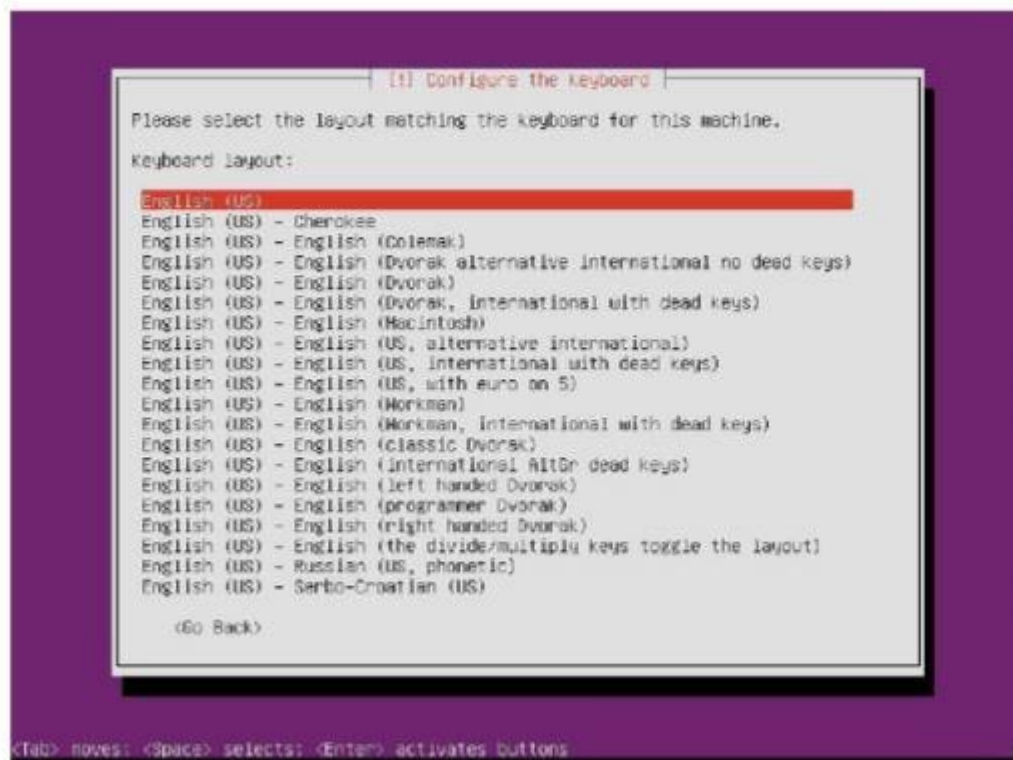


➤ Pilih no pada pengaturan Encrypt your Home Directory. Jika memilih No, maka semua user bisa melihat direktori home anda

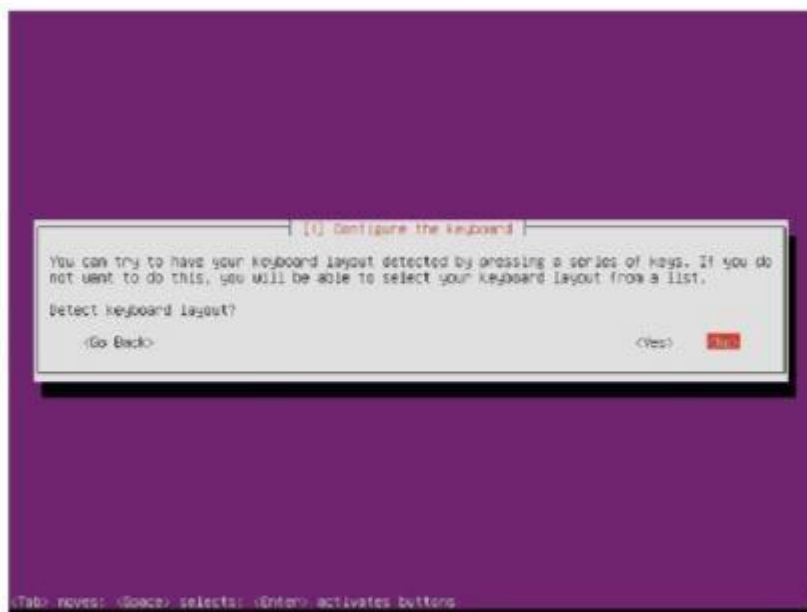
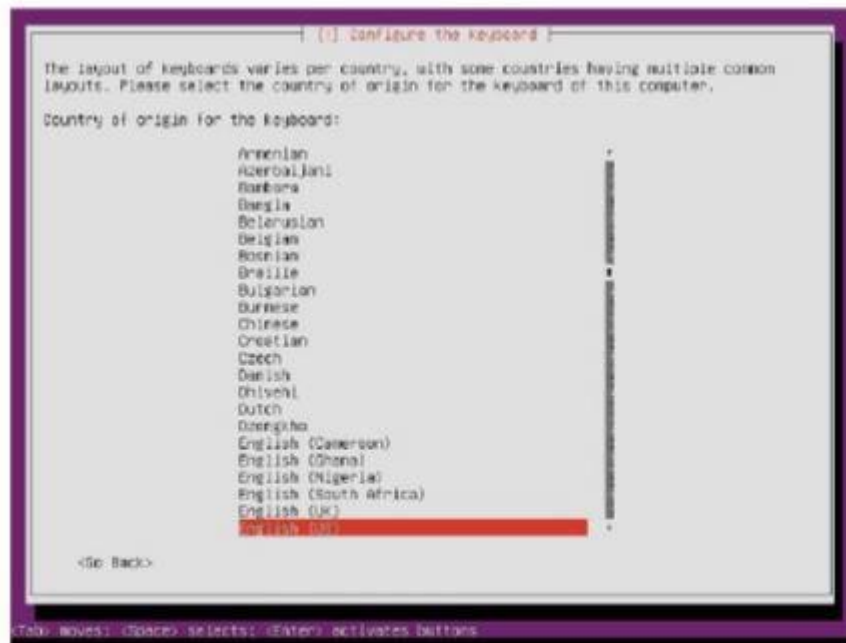




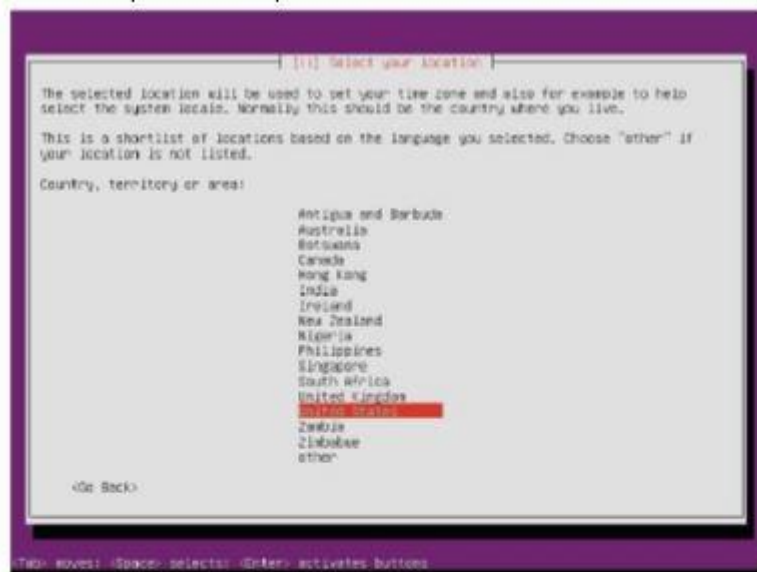
- Isilah nama hostname (disini saya mengisi hostname nya dengan nama Ubuntu), lalu isi Full Name anda, Username dan password untuk anda gunakan sewaktu login.



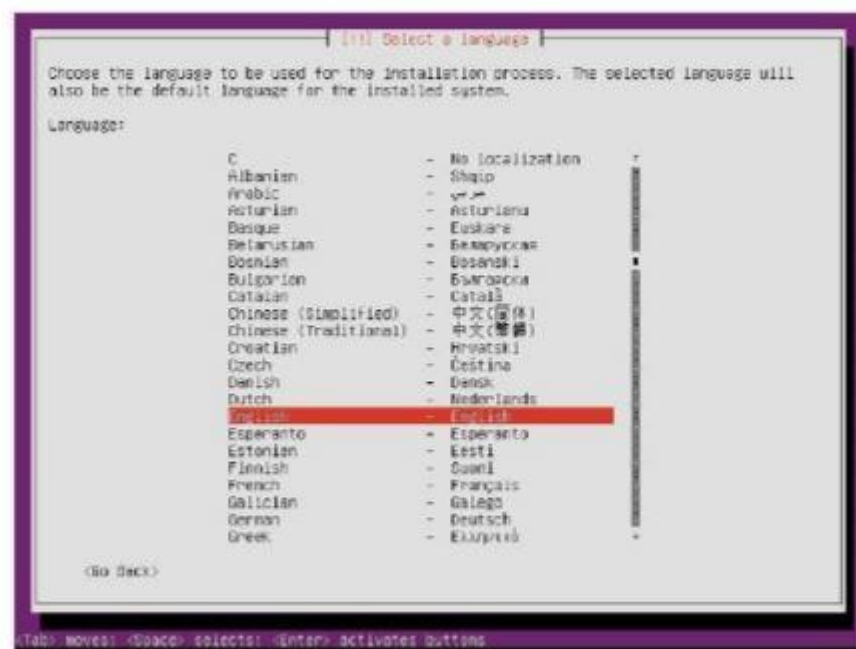
- Setelah proses selesai, pilih eth0 pada pengaturan primary network.



- Pilih pilihan English (US) untuk mengatur keyboard layout, lalu tunggu hingga proses selesai.



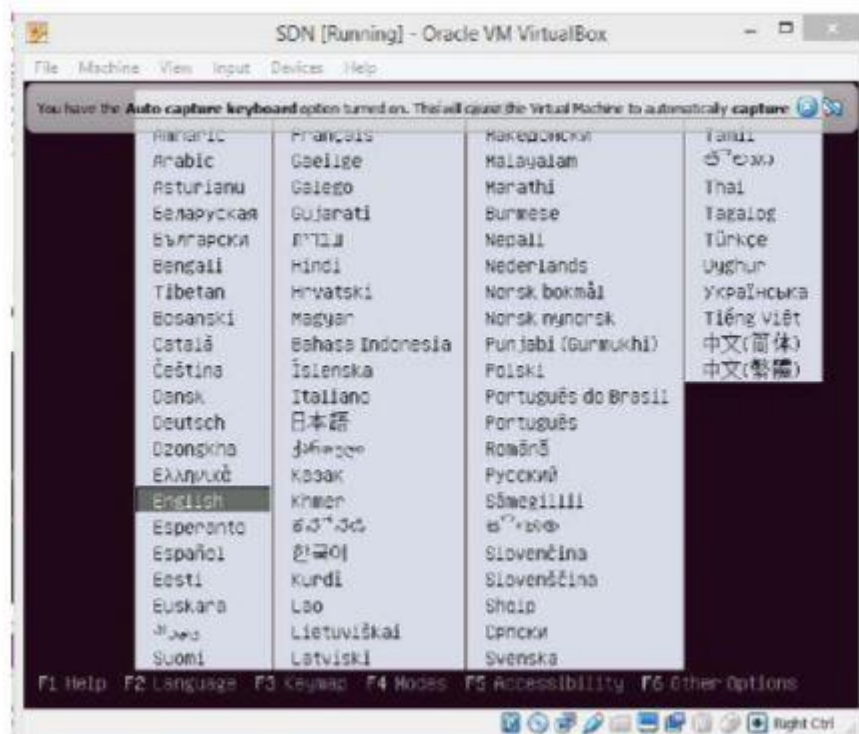
- Pilih No pada pengaturan Detect Keyboard Layout.



- Pilih country atau territory area



- Pilih Language



- Lalu pilih pilihan Install Ubuntu Server