New York University Computer Science Department
Courant Institute of Mathematical Sciences

Course Title: Data Communications & Networks
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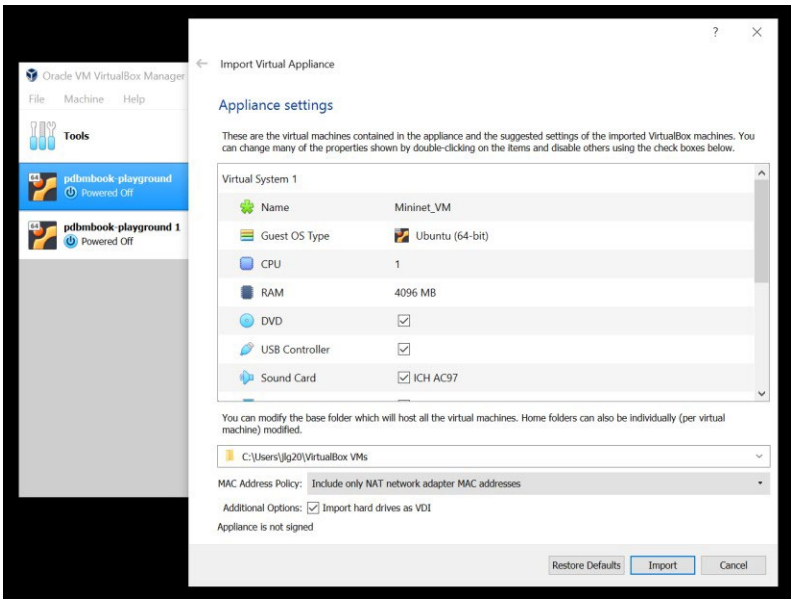
Course Number: CSCI-GA.2662-001
Session: 12

Assignment 8: Final Project Support Documentation

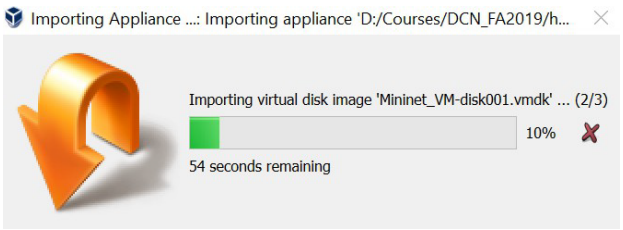
Virtual Box Software Instructions

Oracle Virtual Box v6.0

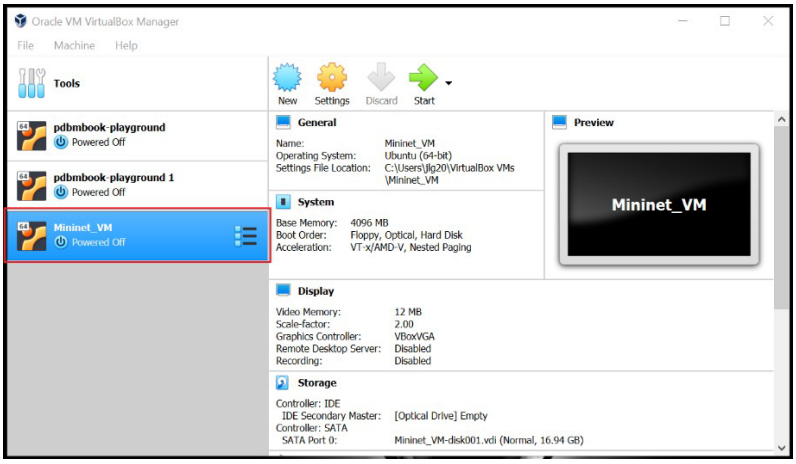
1. Double-click on the Mininet_VM.ova file ➔ it should launch Oracle VM VirtualBox Manager
2. Should get prompted to import the virtual appliance, and so click “Import”:



3. Will get a status bar:

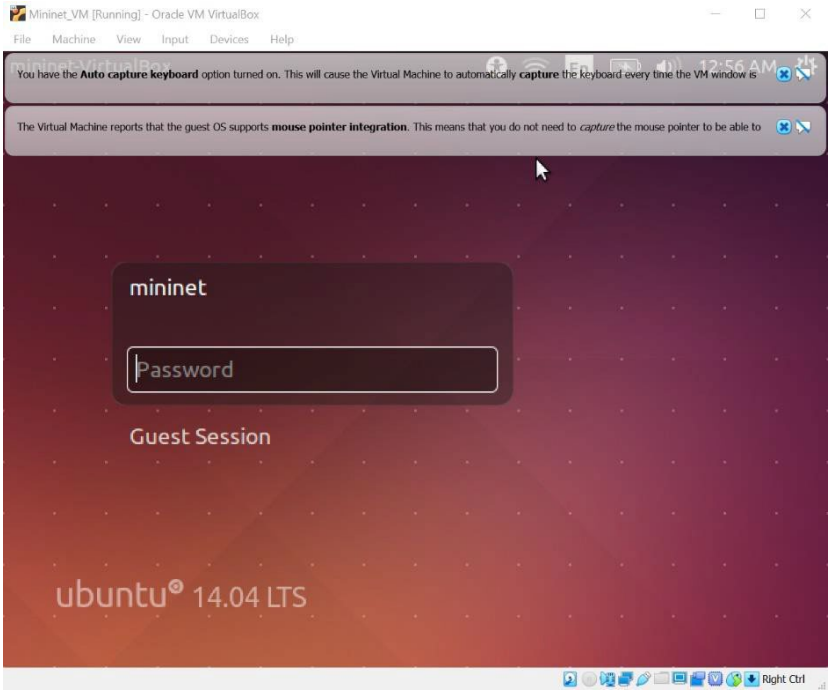


4. After the virtual appliance imports, it should be listed in the Oracle VM VirtualBox Manager:


Oracle VM VirtualBox Manager
File
Machine
Help
Tools
New
Settings
Discard
Start
pdbmbook-playground
Powered Off
pdbmbook-playground 1
Powered Off
Mininet_VM
Powered Off
General
Name: Mininet_VM
Operating System: Ubuntu (64-bit)
Settings File Location: C:\Users\jlg20\VirtualBox VMs\Mininet_VM
System
Base Memory: 4096 MB
Boot Order: Floppy, Optical, Hard Disk
Acceleration: VT-x/AMD-V, Nested Paging
Preview
Mininet_VM
Display
Video Memory: 12 MB
Scale-factor: 2.00
Graphics Controller: VBoxVGA
Remote Desktop Server: Disabled
Recording: Disabled
Storage
Controller: IDE
IDE Secondary Master: [Optical Drive] Empty
Controller: SATA
SATA Port 0: Mininet_VM-disk001.vdi (Normal, 16.94 GB)

5. Double-click on the Mininet_VM virtual appliance to launch it (the username and password are provided in the homework specification):

   NOTE: if prompted to update Ubuntu, click “Don’t Upgrade”.

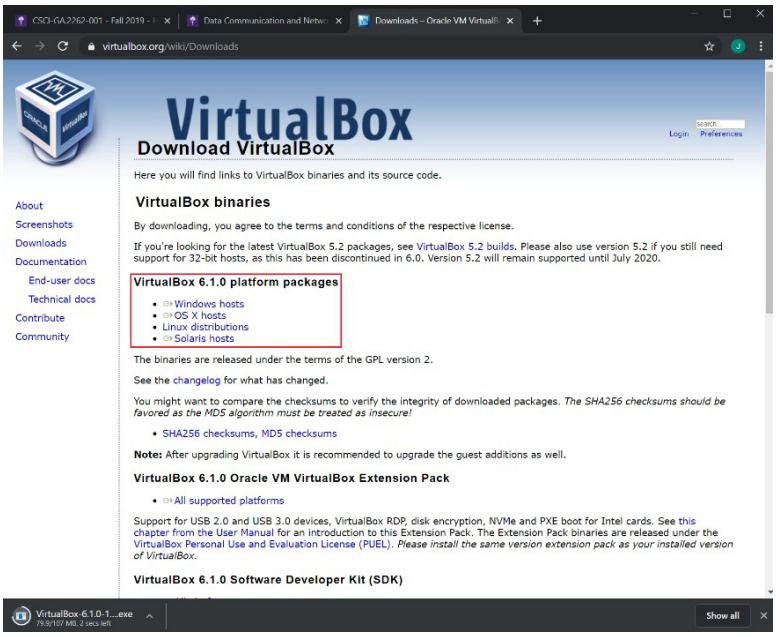


6. After logging in, all necessary software is provided.

Oracle Virtual Box v6.1

1. Under “Software Required” from the homework specification, click on the “Oracle VirtualBox” link that will launch the https://www.virtualbox.org/ website.
2. Click on the “Download VirtualBox 6.1” button:

3. Select the version for the appropriate host operating system to begin the download. These instructions use “Windows hosts”:

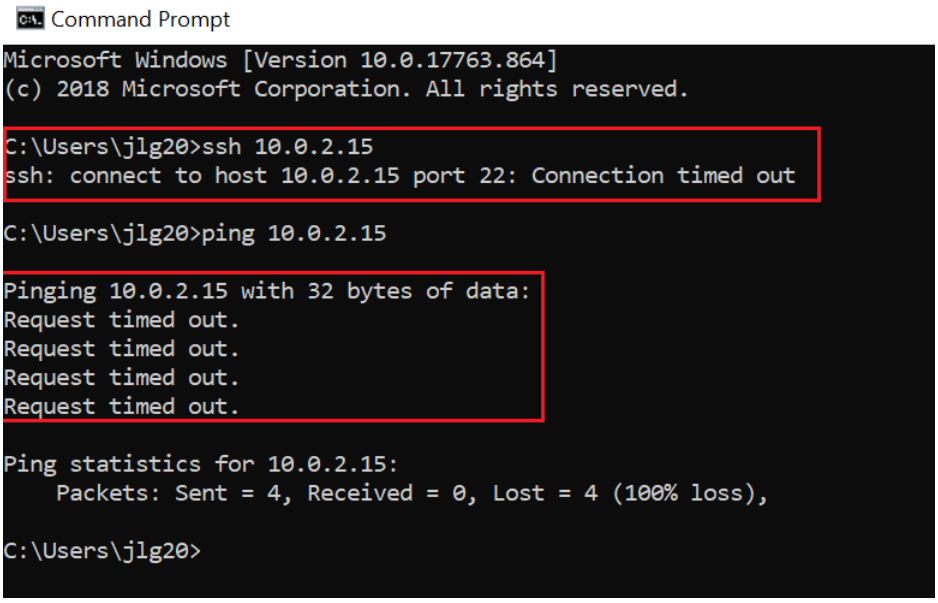


4. Click on the VirtualBox executable that was downloaded to launch the installer and follow the install wizard:

5. Repeat the steps above under “Oracle VirtualBox v6.0”. The Mininet_VM.ova file works in both versions 6.0 and 6.1.

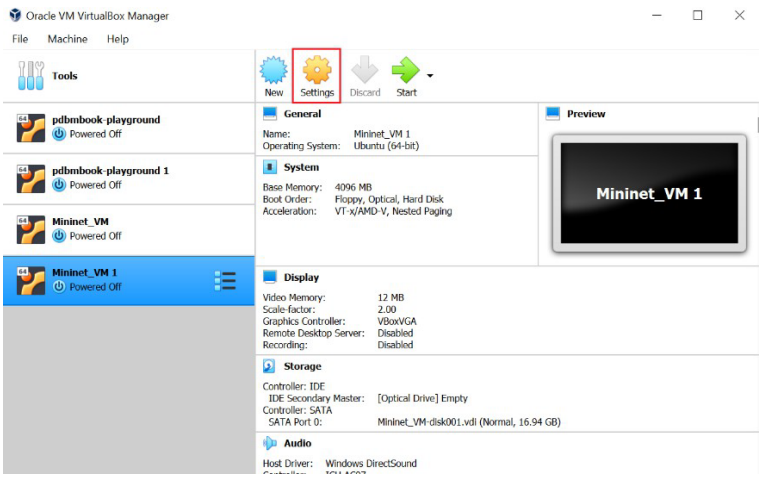
Connecting to the Mininet_VM from the host computer:

1. Launch the Mininet VM in the Oracle VirtualBox.
2. On the left of the Ubuntu screen, there are a series of buttons. Click on button “Search your computer and online sources” (tis is the top button).
3. In the main window, a list of applications will be displayed. Click on “Terminal”.
4. Once a Terminal window launches, at the command prompt, type “ifconfig” and click “Enter”
5. Open a command prompt in the host computer. Try to ssh to the IP address that was obtained running ifconfig in the VM. Below, trying the “SSH” command results in a “Connection timed out” error. Doing a simple “ping” also results in a “Request timed out” error. If you see this, then you will need to configure the Oracle VirtualBox to allow connections to it.

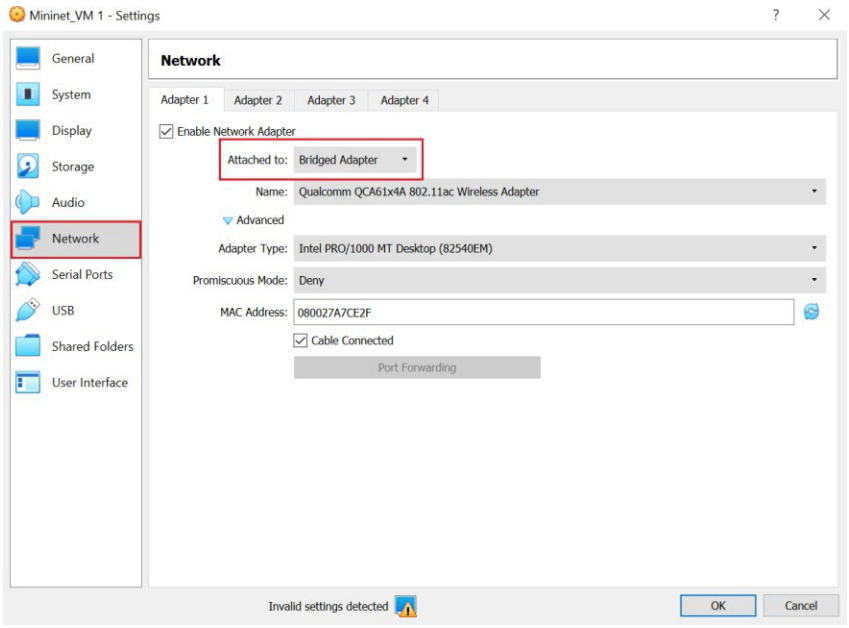


To connect to the Mininet VM, you will likely need to configure the Oracle VirtualBox to enable SSH connections. For the steps below, make sure that the Mininet VM is powered down.

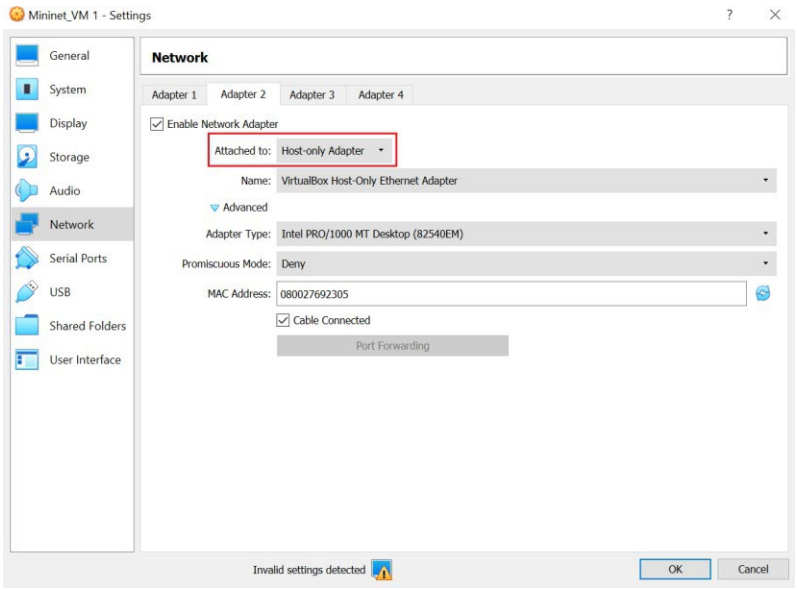
6. Click Settings in the Oracle VirtualBox:



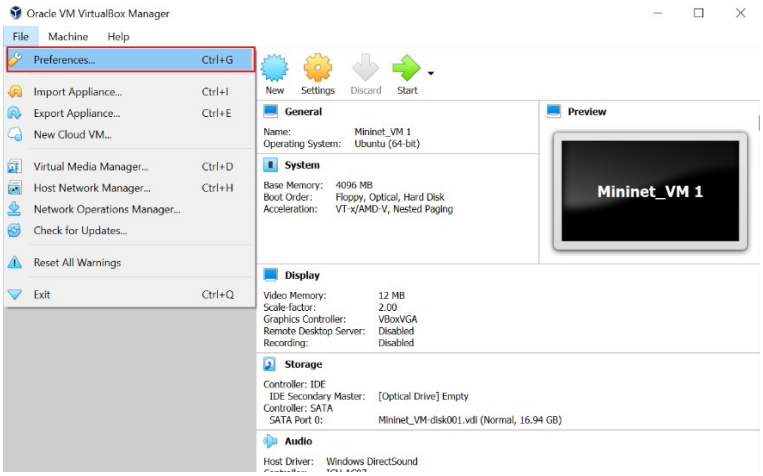
7. Click on “Network” in the left frame, and under the “Adapter 1” tab, select “Bridged Adapter” for the “Enabled Network Adapter”:



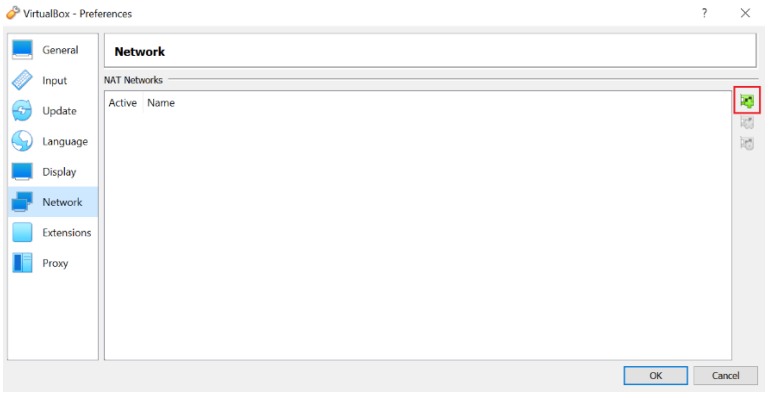
8. Click on the “Adapter 2” tab and select “Host-only Adapter” for “Enable Network Adapter”:



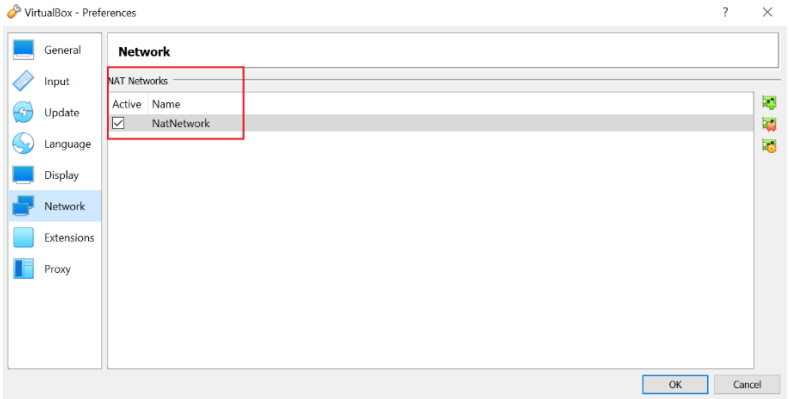
7. Go back to the Oracle VirtualBox main window, and click File ➔ Preferences:



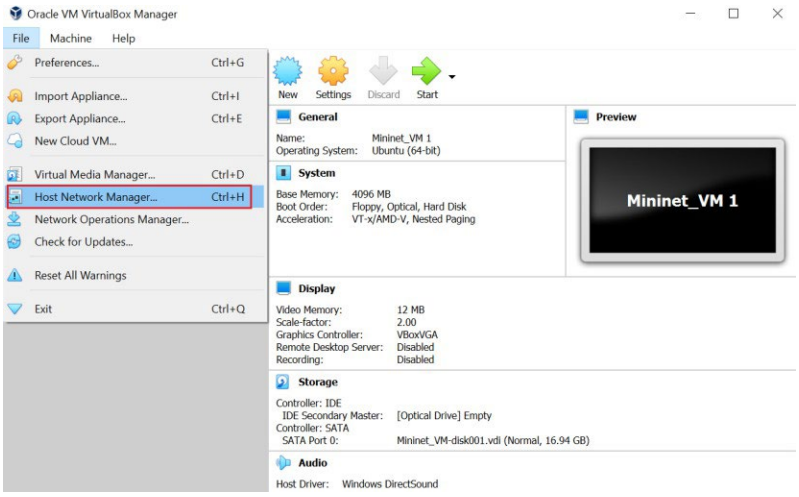
8. Click on “Network” from the left frame:



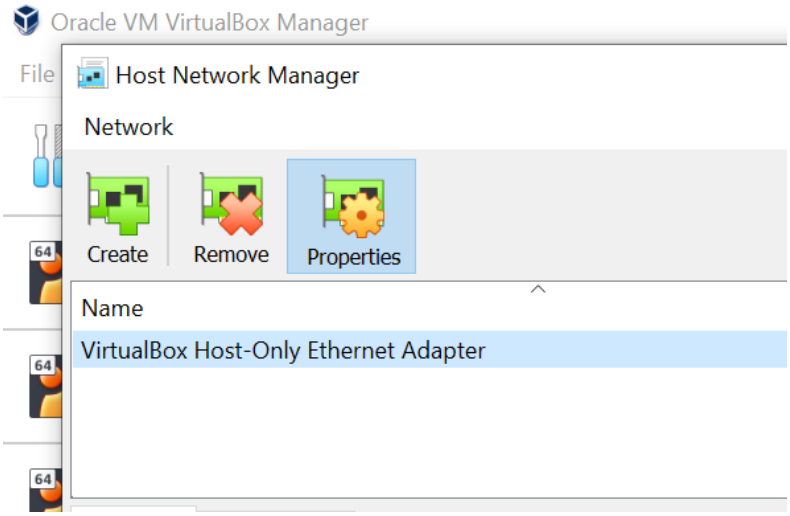
9. In the previous step, there is no “Nat Network” listed in the main frame. To add a Nat Network, click on the green ‘+’ button to the upper right of the main frame. A Nat Network will appear and will be configured (confirm by double-clicking on it:



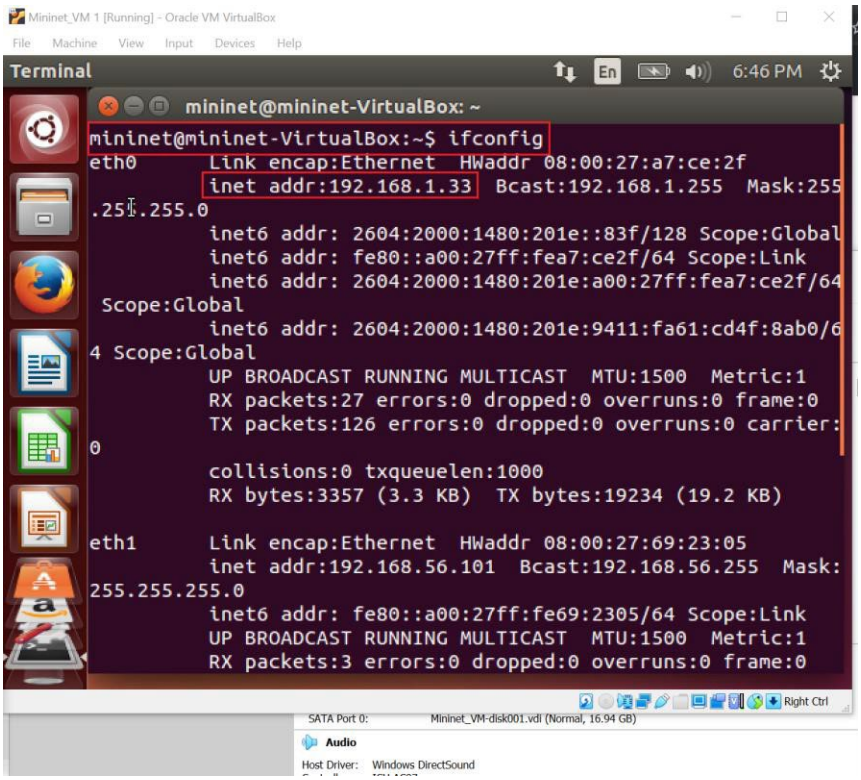
10. From File, select “Host Network Manager”:



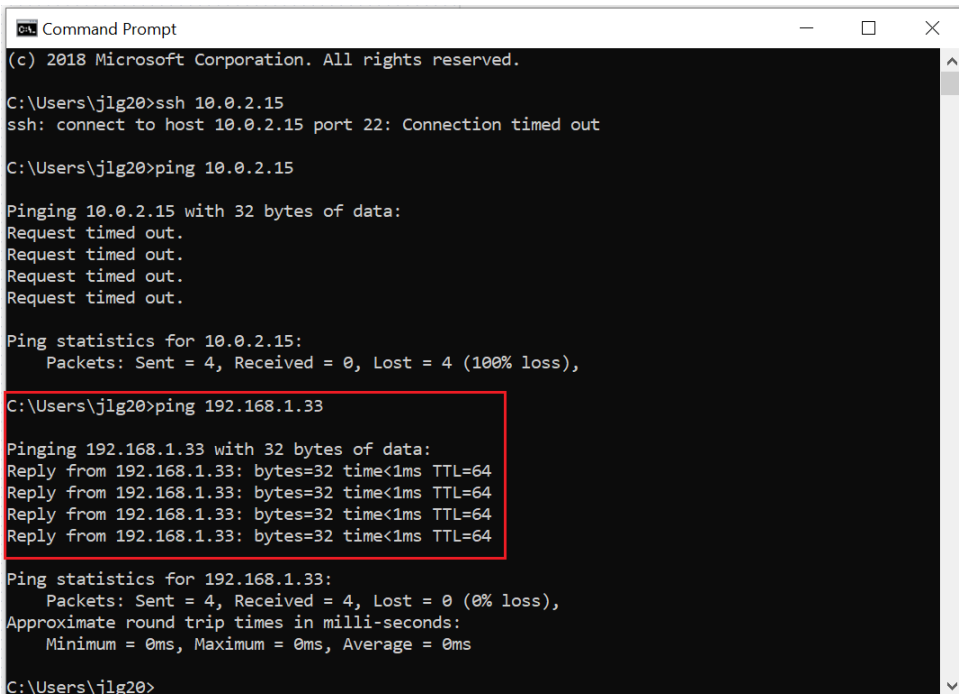
11. Confirm the Host-Only is configured with your local host machine IP address by double-clicking on “VirtualBox Host-Only Ethernet Adapter” to view the configurations:



12. Now that the network settings are configured, launch Mininet_VM within Oracle VirtualBox. Run the “ifconfig” command to obtain the IP address to connect to:

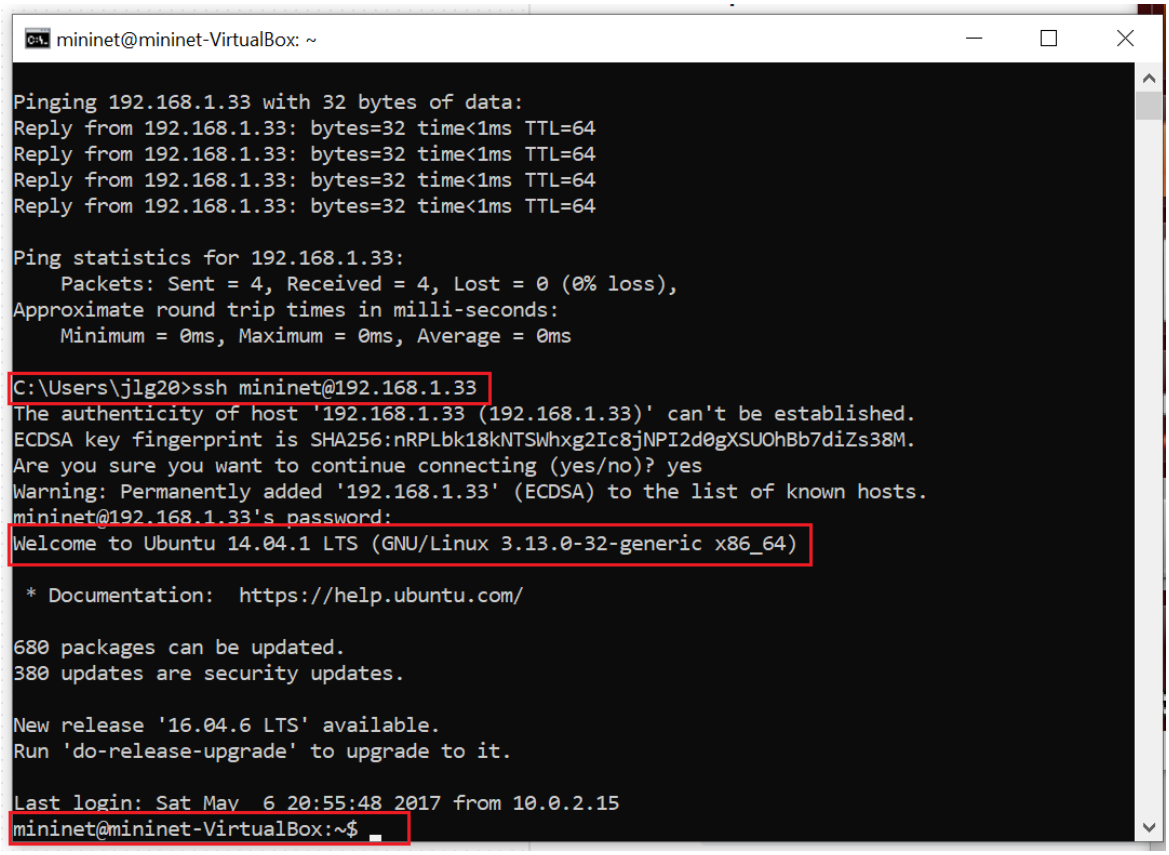
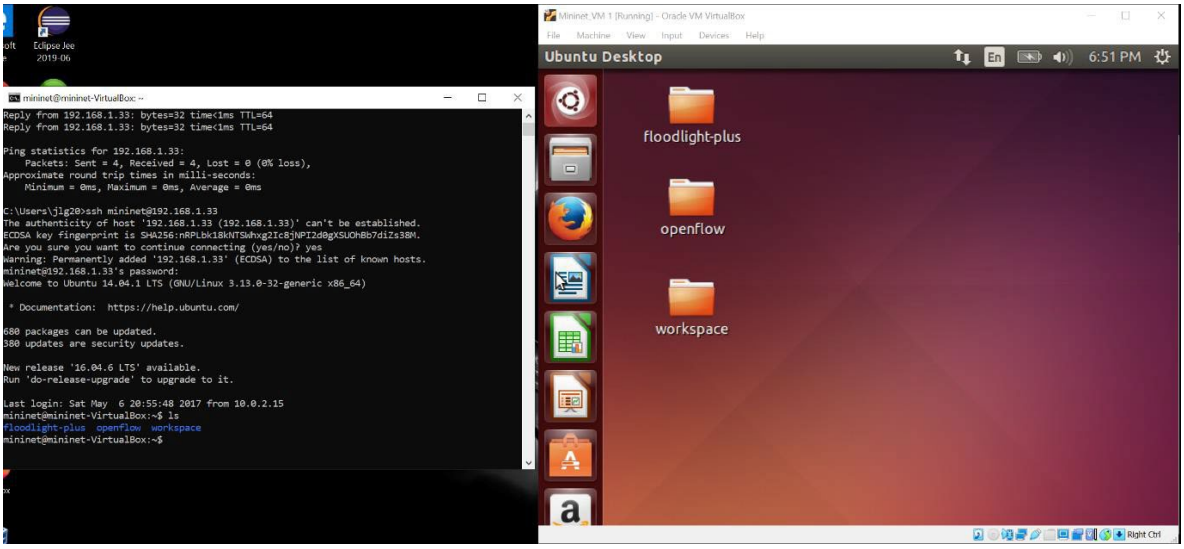


13. Try the ping command as did in step 5 above. This time, you should get a “Reply from …”



14. After getting a successful ping, retry the SSH command. The SSH command to use is:

```
ssh mininet@<IP_ADDRESS>
```



15. In the command prompt, after a successful SSH connection, the directory structure should match the files in the VM: