CYSE 270: Linux System for Cybersecurity

Lab 12 – Advanced Network configurations

Scenario: You, as a network admin, are going to set up your Ubuntu VM as a gateway to provide Internet access to another client Ubuntu VM. The client VM needs to be in the same internal network as the gateway (**as shown in Figure 1**). Once the connection is ready, you need to configure the firewall to secure the network properly. The following requirements need to be satisfied to receive full credits.

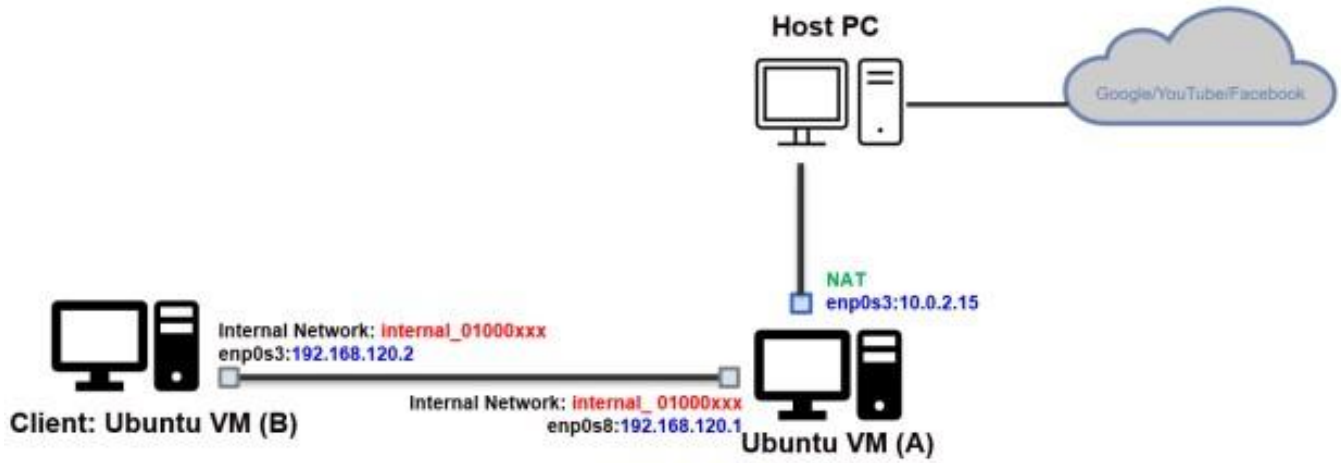


Figure 1 Desired Network Topology

Please note that you need to customize the value in the fields marked in RED above.

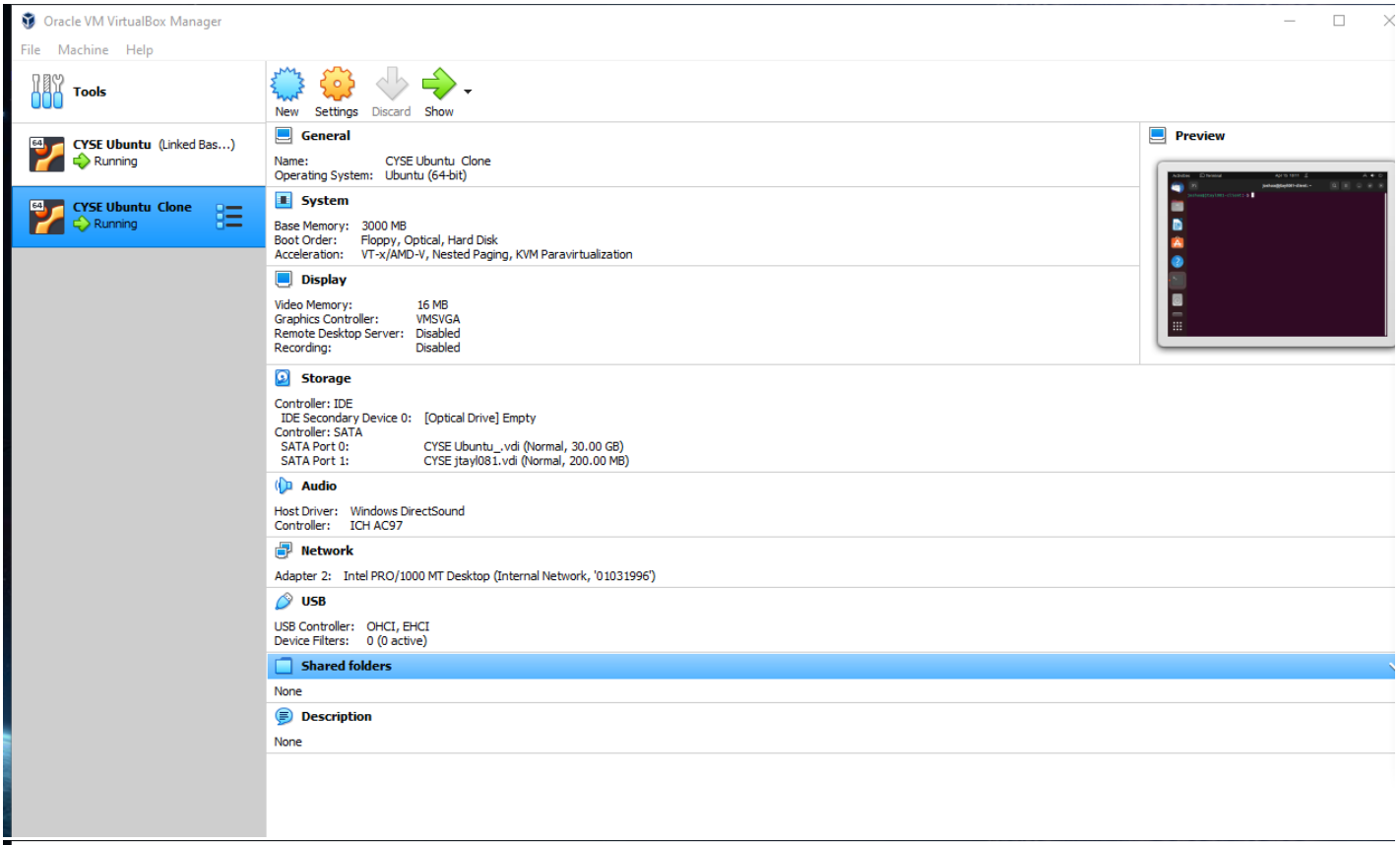
Please configure the network with the following requirement: (You need to clone the existing VM)

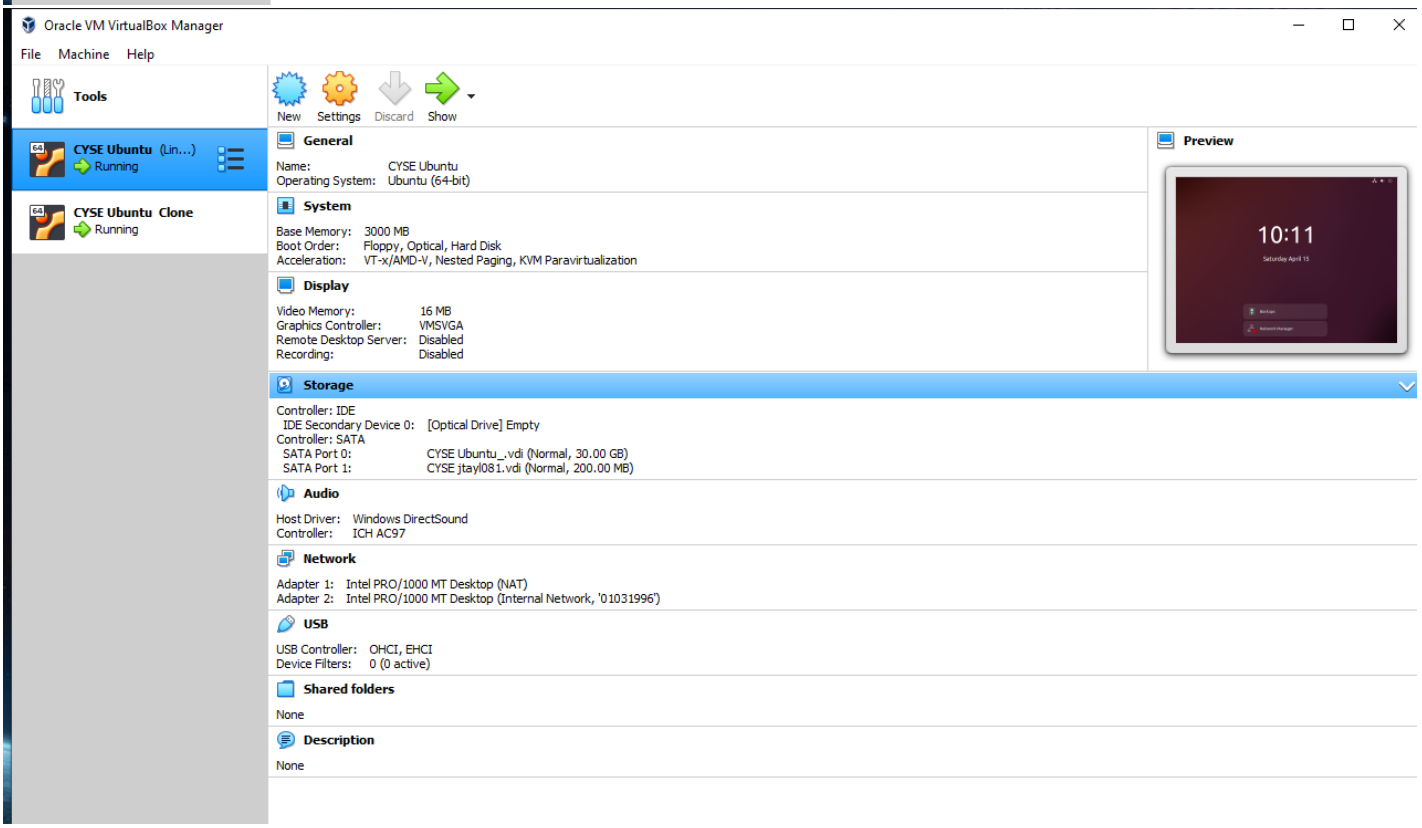
Task A –Network Configuration (**60 points**)

Please submit the screenshot for all the steps.

1. In the virtual box setting, connect two VMs in the same internal network, "internal_{UIN}".

Replace {UIN} with your real UIN.


Oracle VM VirtualBox Manager
File Machine Help
Tools
CYSE Ubuntu (Linked Bas...)
Running
CYSE Ubuntu Clone
Running
New Settings Discard Show
General
Name: CYSE Ubuntu Clone
Operating System: Ubuntu (64-bit)
System
Base Memory: 3000 MB
Boot Order: Floppy, Optical, Hard Disk
Acceleration: VT-x/AMD-V, Nested Paging, KVM Paravirtualization
Display
Video Memory: 16 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled
Preview
Storage
Controller: IDE
IDE Secondary Device 0: [Optical Drive] Empty
Controller: SATA
SATA Port 0: CYSE Ubuntu_.vdi (Normal, 30.00 GB)
SATA Port 1: CYSE jtayl081.vdi (Normal, 200.00 MB)
Audio
Host Driver: Windows DirectSound
Controller: ICH AC97
Network
Adapter 2: Intel PRO/1000 MT Desktop (Internal Network, '01031996')
USB
USB Controller: OHCI, EHCI
Device Filters: 0 (0 active)
Shared folders
None
Description
None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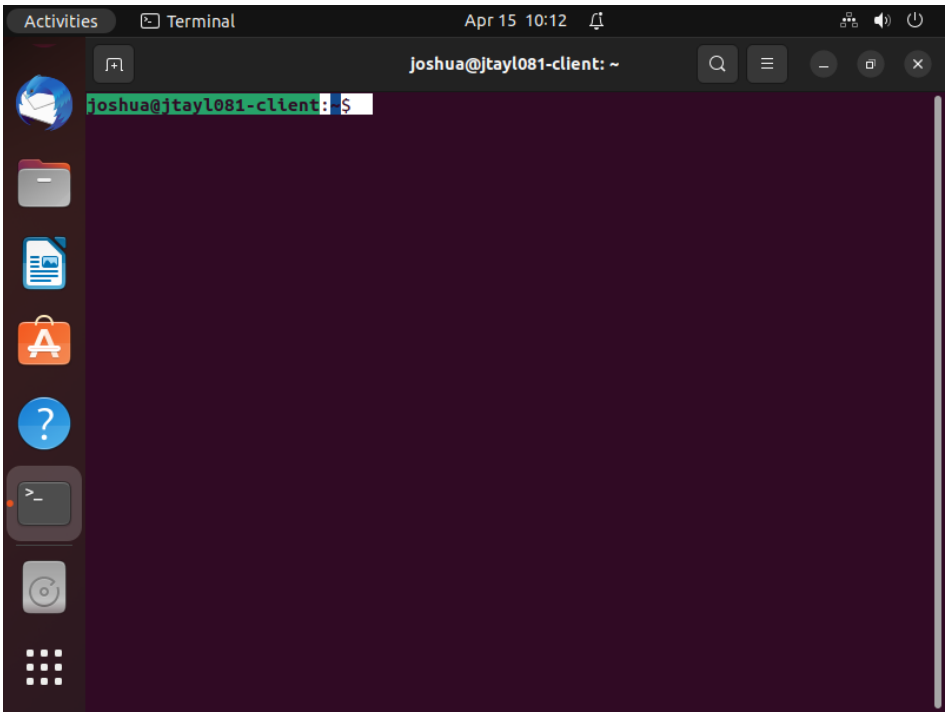
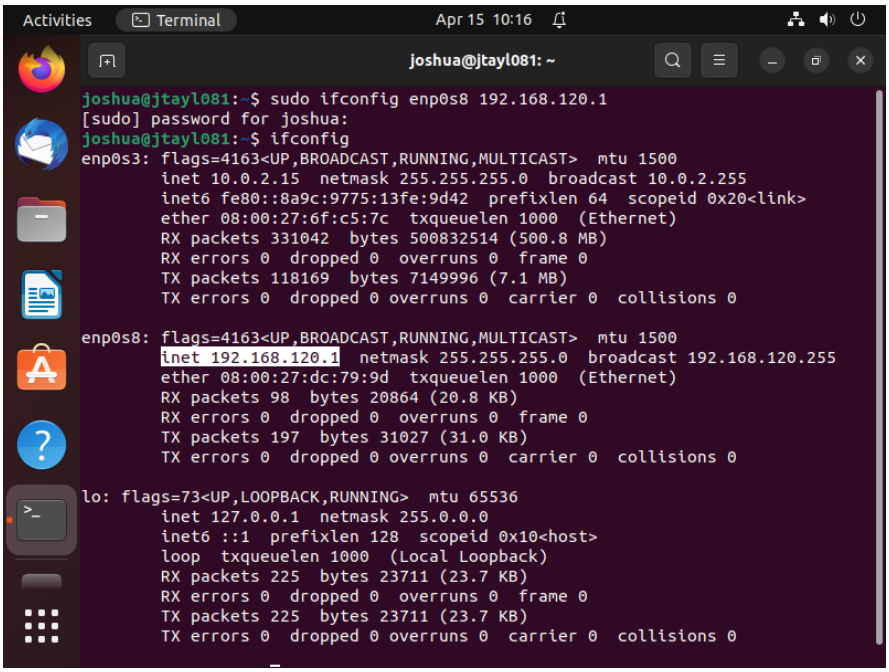
Video Memory: 16 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled
Preview
10:11
Storage
Controller: IDE
IDE Secondary Device 0: [Optical Drive] Empty
Controller: SATA
SATA Port 0: CYSE Ubuntu_.vdi (Normal, 30.00 GB)
SATA Port 1: CYSE jtayl081.vdi (Normal, 200.00 MB)
Audio
Host Driver: Windows DirectSound
Controller: ICH AC97
Network
Adapter 1: Intel PRO/1000 MT Desktop (NAT)
Adapter 2: Intel PRO/1000 MT Desktop (Internal Network, '01031996')
USB
USB Controller: OHCI, EHCI
Device Filters: 0 (0 active)
Shared folders
None
Description
None

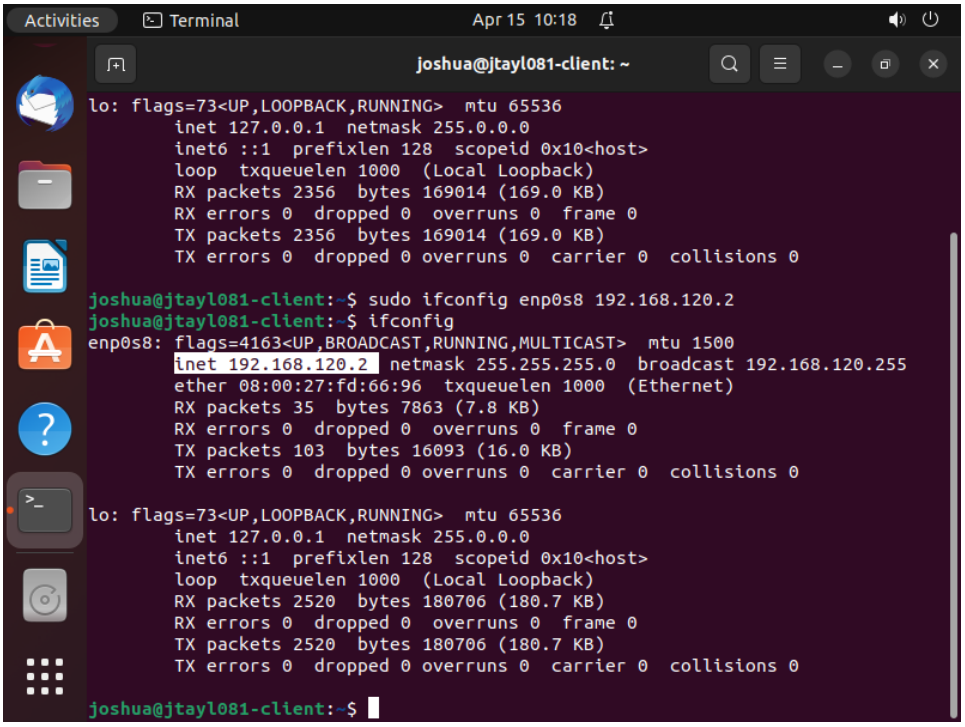
2. Change the hostname of the Client VM to “{MIDASname}-Client.” **Replace {MIDAS name} with your real MIDAS name.** **Don't forget to reboot your client VM to reflect the change in hostname.**

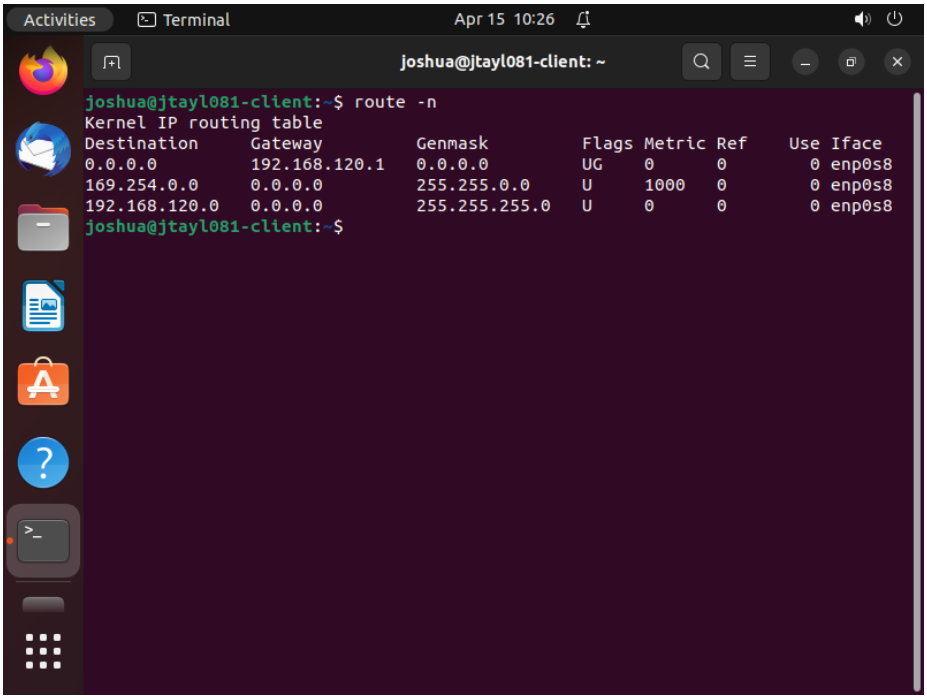


3. Configure the temporary IP address on the Gateway Ubuntu, as shown in Figure 1.

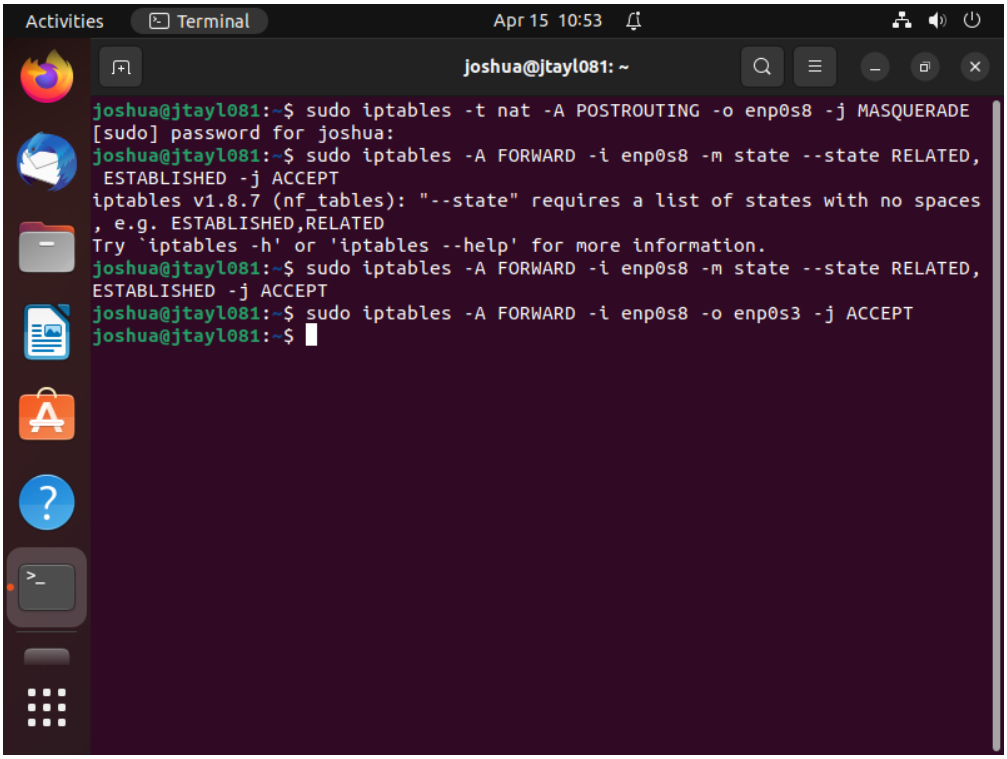


4. Configure the temporary IP address, routing table, and DNS server on Client VM as shown in Figure 1.





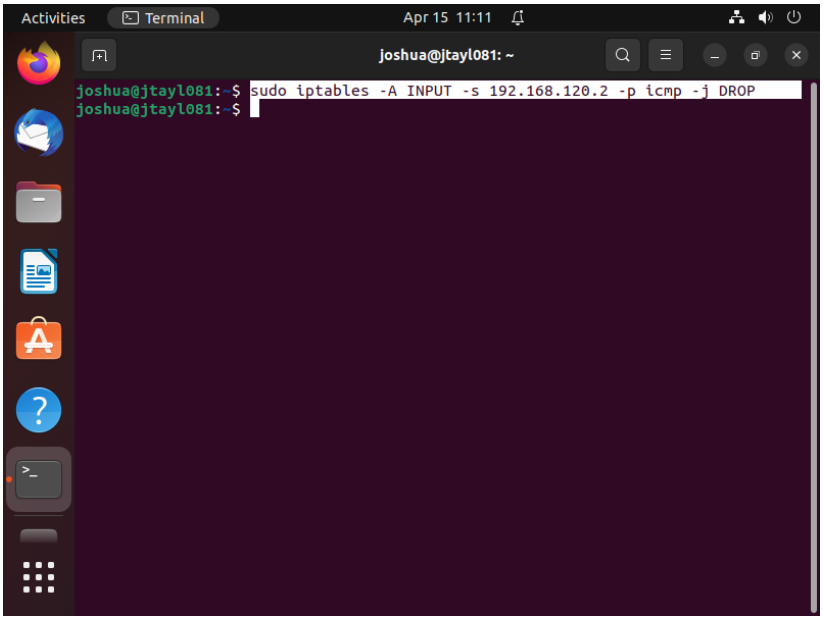
5. Configure gateway Ubuntu to enable IP forwarding (to forward the traffic) (also NAT configuration)



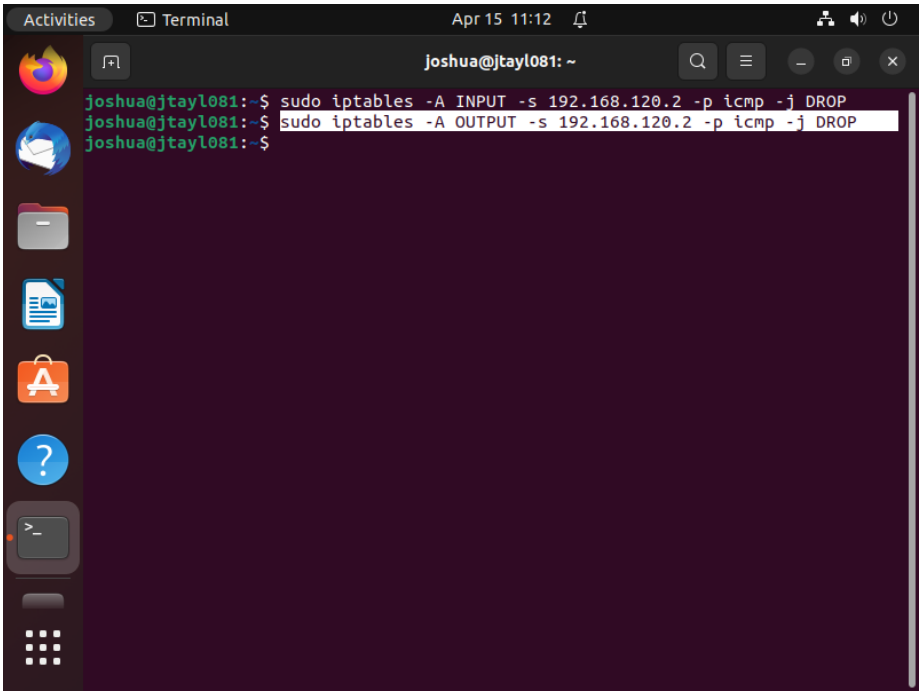
6. Test your ping connection to 8.8.8.8 and www.google.com in the client VM, respectively.

Task B –Firewall Configuration (**40 points**)

1. Configure the iptables on the gateway Ubuntu to block all the inbound ICMP packets from the Client VM.



2. Configure the iptables on the gateway Ubuntu to block all the outbound ICMP packets that originated from the gateway Ubuntu itself.



Extra credit:

Set the permanent IP address on the Client Ubuntu based on the above network topology.