Branden Barnes

Professor Shobha Vatsa CYSE 270

Lab 12 – Advanced Network Configuration

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.

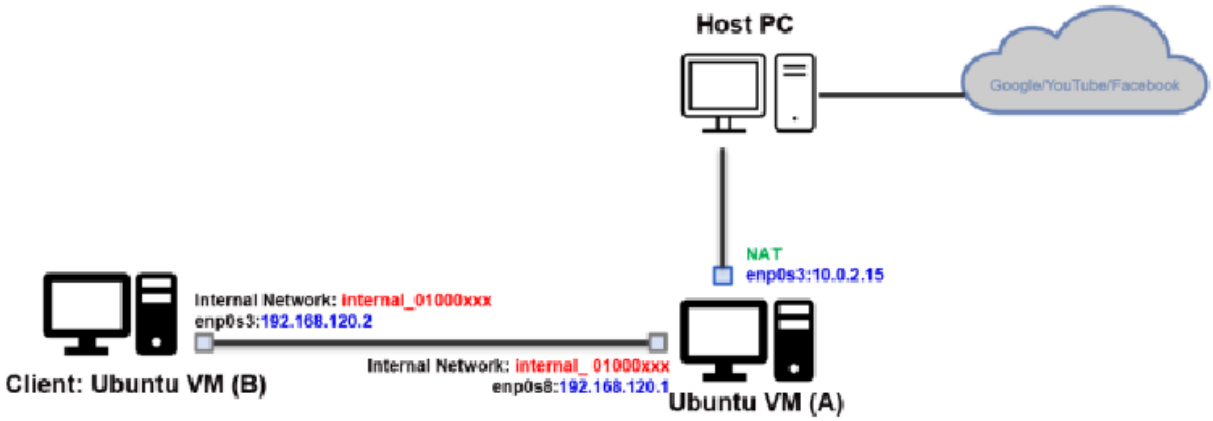
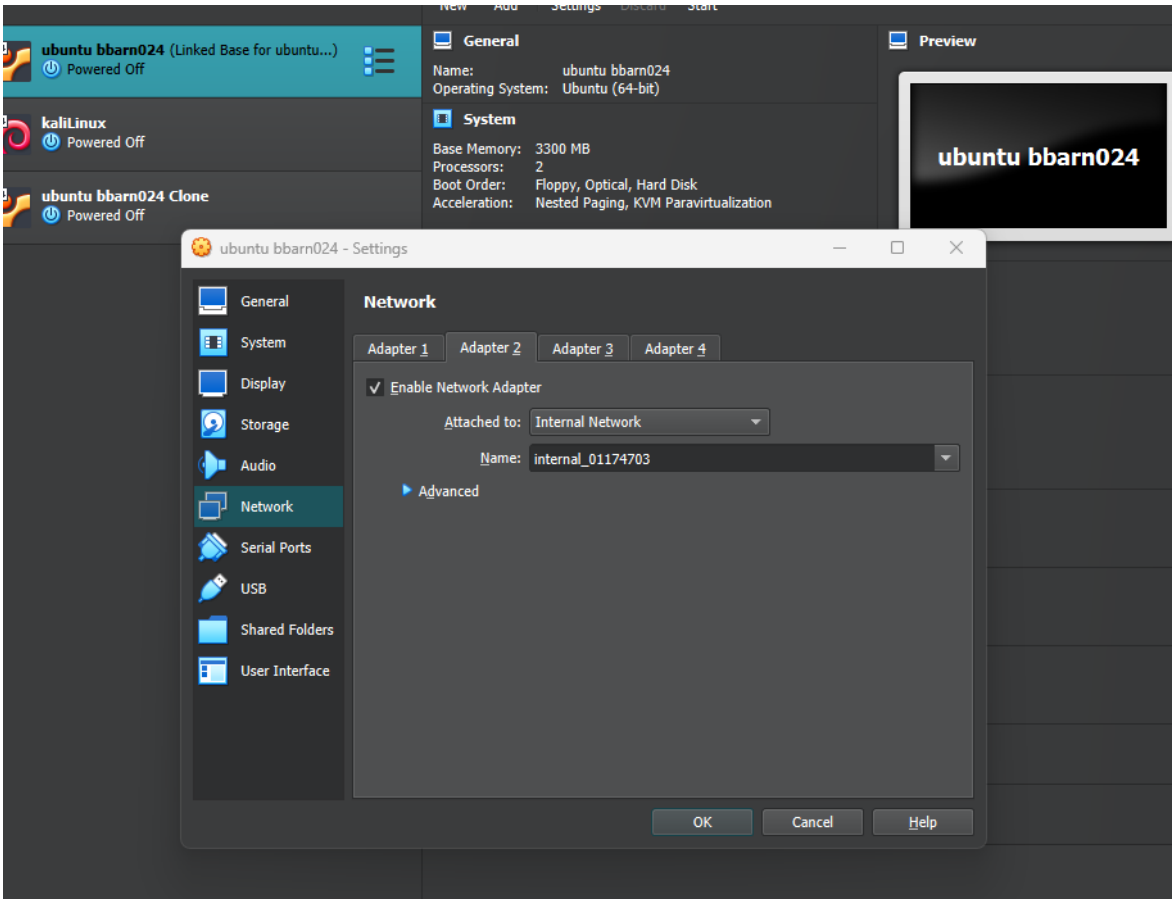
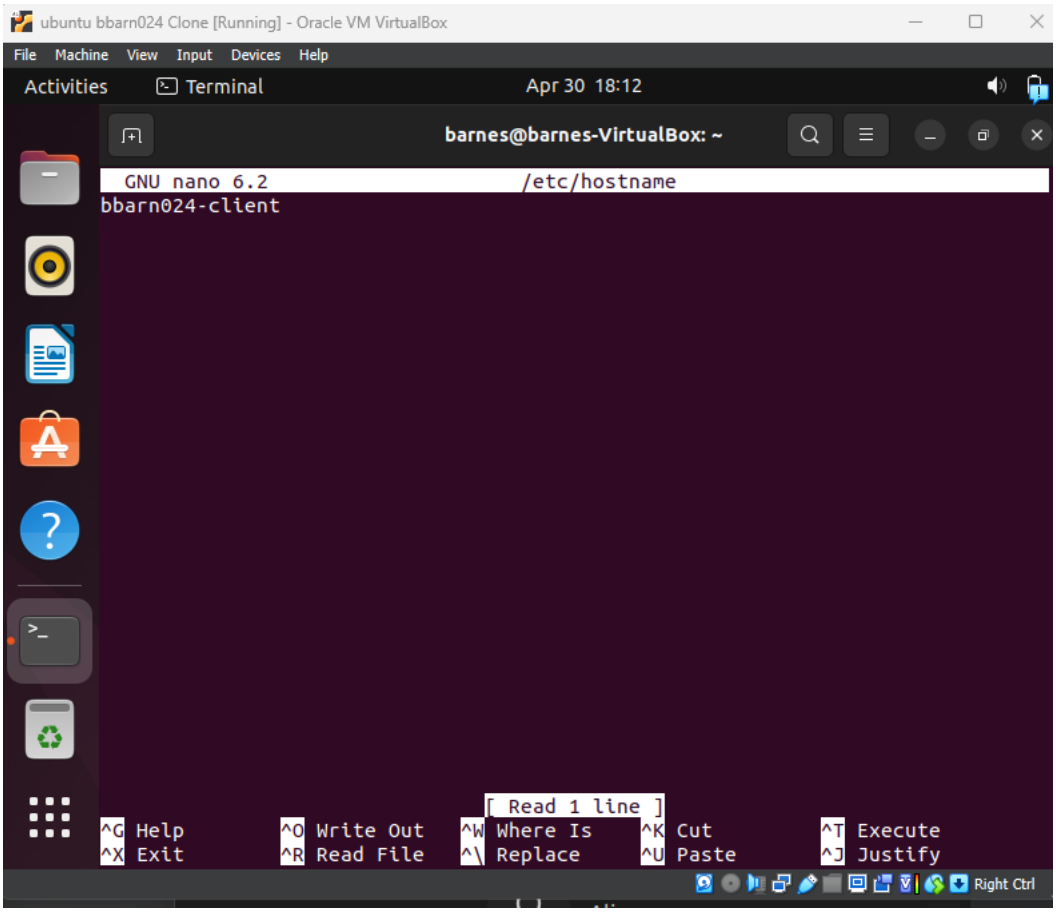


Figure 1 Desired Network Topology

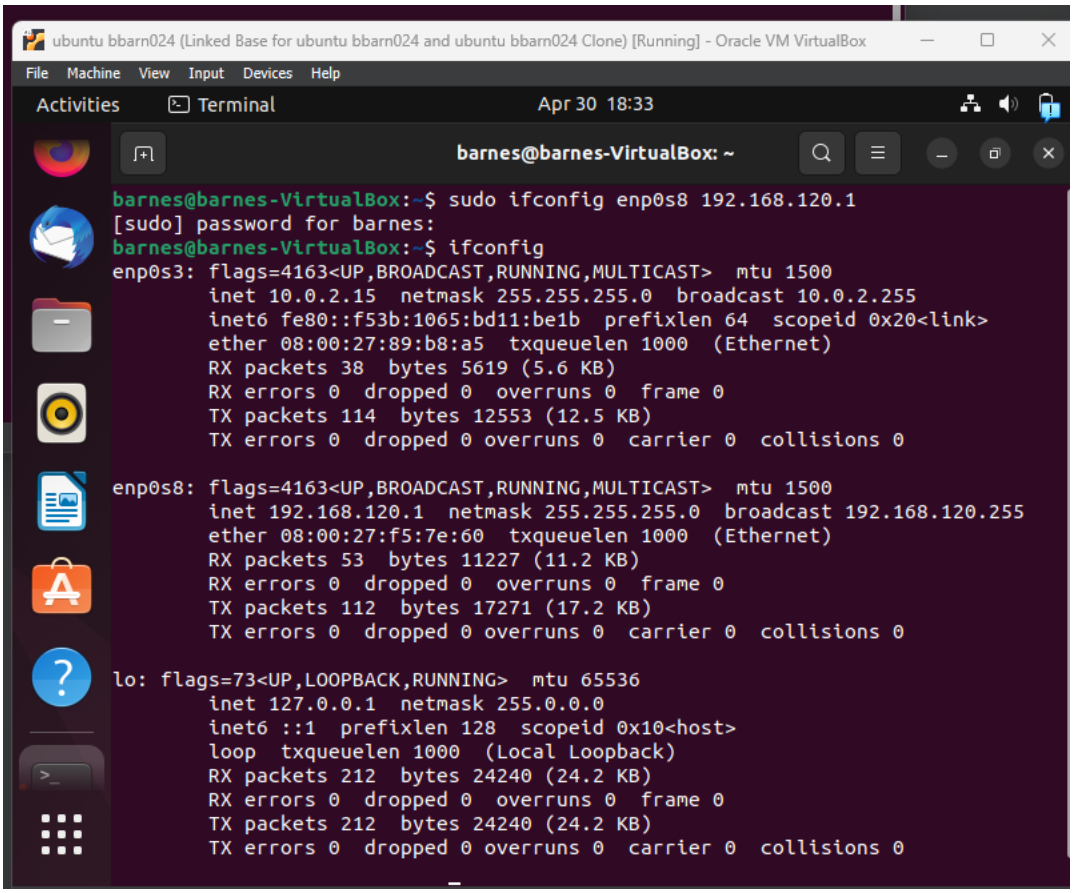
1. In the virtual box setting, connect two VMs in the same internal network, “internal_{UIN}”. Replace {UIN} with your real UIN.



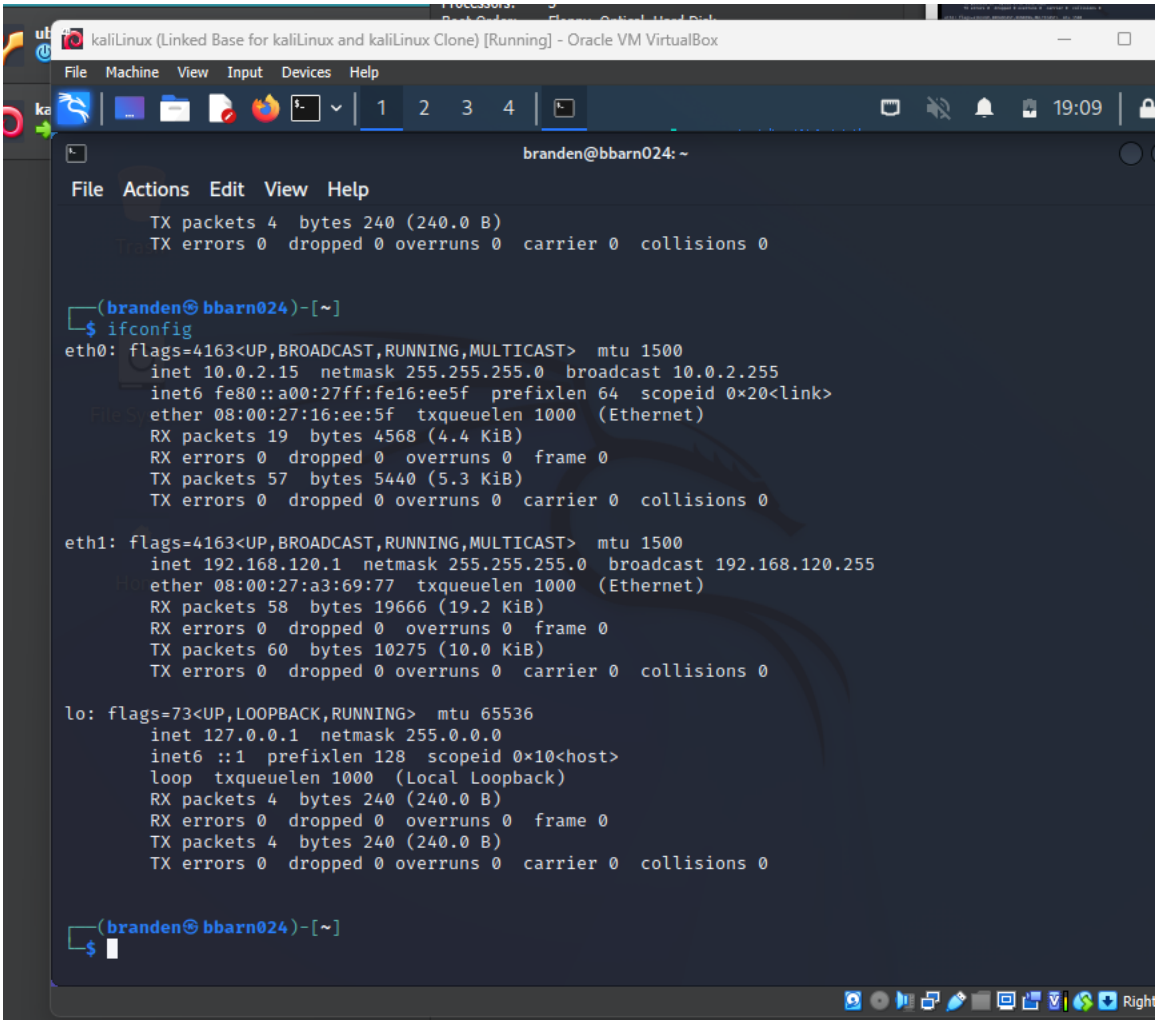
2. Change the hostname of the Client VM to “{MIDASname}-Client.” Replace {MIDAS name} with your real MIDAS name.



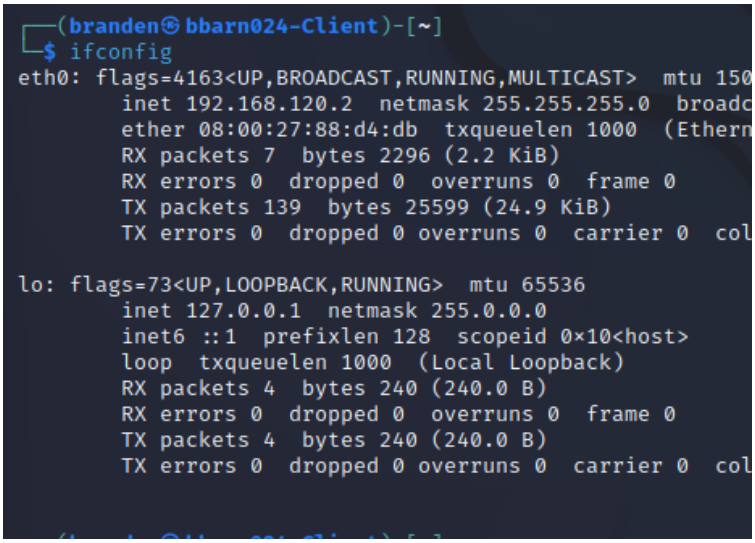
3. Configure the temporary IP address on the Gateway Ubuntu, as shown in Figure 1.



Switched to Kali Linux VM for the rest of the Lab.



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



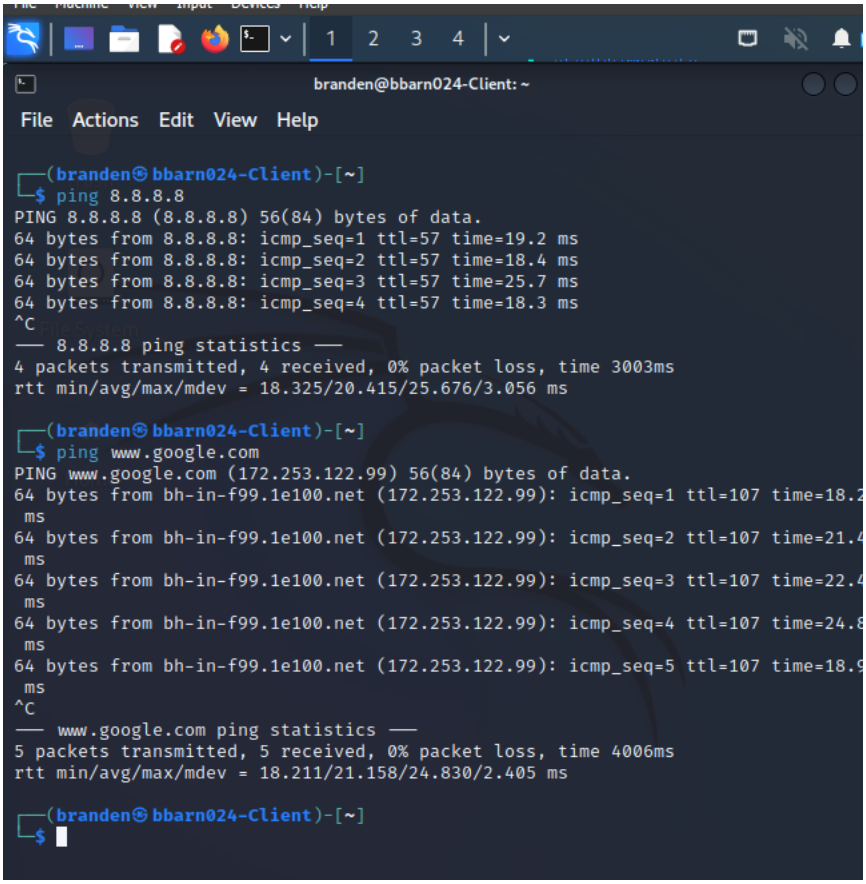
```
┌──(branden㉿bbarn024-Client)-[~]
└─$ sudo ip route add default via 192.168.120.1
sudo: unable to resolve host bbarn024-Client: Temporary failure in name resoluti
on

┌──(branden㉿bbarn024-Client)-[~]
└─$ route -n
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
0.0.0.0         192.168.120.1   0.0.0.0         UG    0      0        0 eth0
192.168.120.0   0.0.0.0         255.255.255.0   U     0      0        0 eth0

┌──(branden㉿bbarn024-Client)-[~]
└─$
```

```
branden@bbarn024-Client: ~
File  Actions  Edit  View  Help
┌──(branden㉿bbarn024-Client)-[~]
└─$ sudo vi /etc/resolv.conf
sudo: unable to resolve host bbarn024-Client: Temporary failure i
on
[sudo] password for branden:

┌──(branden㉿bbarn024-Client)-[~]
└─$ tail -2 /etc/resolv.conf
# Generated by NetworkManager
nameserver 8.8.8.8

┌──(branden㉿bbarn024-Client)-[~]
└─$
```

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

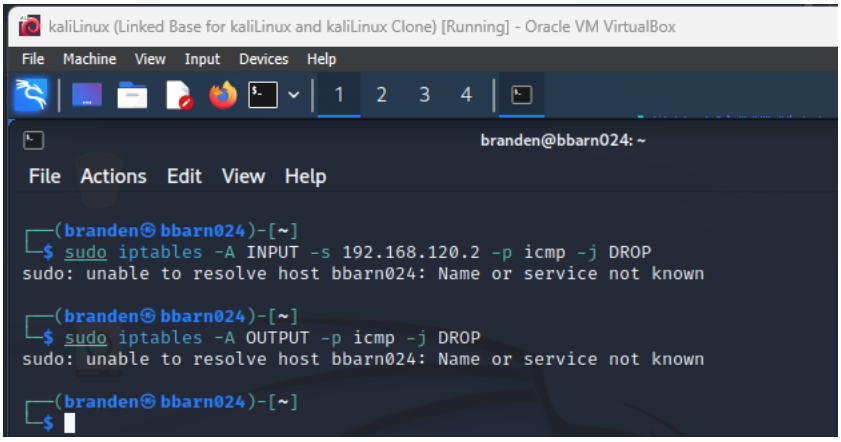
```
kaliLinux (Linked Base for kaliLinux and kaliLinux Clone) [Running] - Oracle VM VirtualBox
File  Machine  View  Input  Devices  Help
1  2  3  4
root@bbarn024: /home/branden
File  Actions  Edit  View  Help

┌──(root㉿bbarn024)-[/home/branden]
└─# echo 1 > /proc/sys/net/ipv4/ip forward
zsh: no such file or directory: /proc/sys/net/ipv4/ip

┌──(root㉿bbarn024)-[/home/branden]
└─# echo 1 > /proc/sys/net/ipv4/ip_forward

┌──(root㉿bbarn024)-[/home/branden]
└─# cat  /proc/sys/net/ipv4/ip_forward
1

┌──(root㉿bbarn024)-[/home/branden]
└─#
```

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

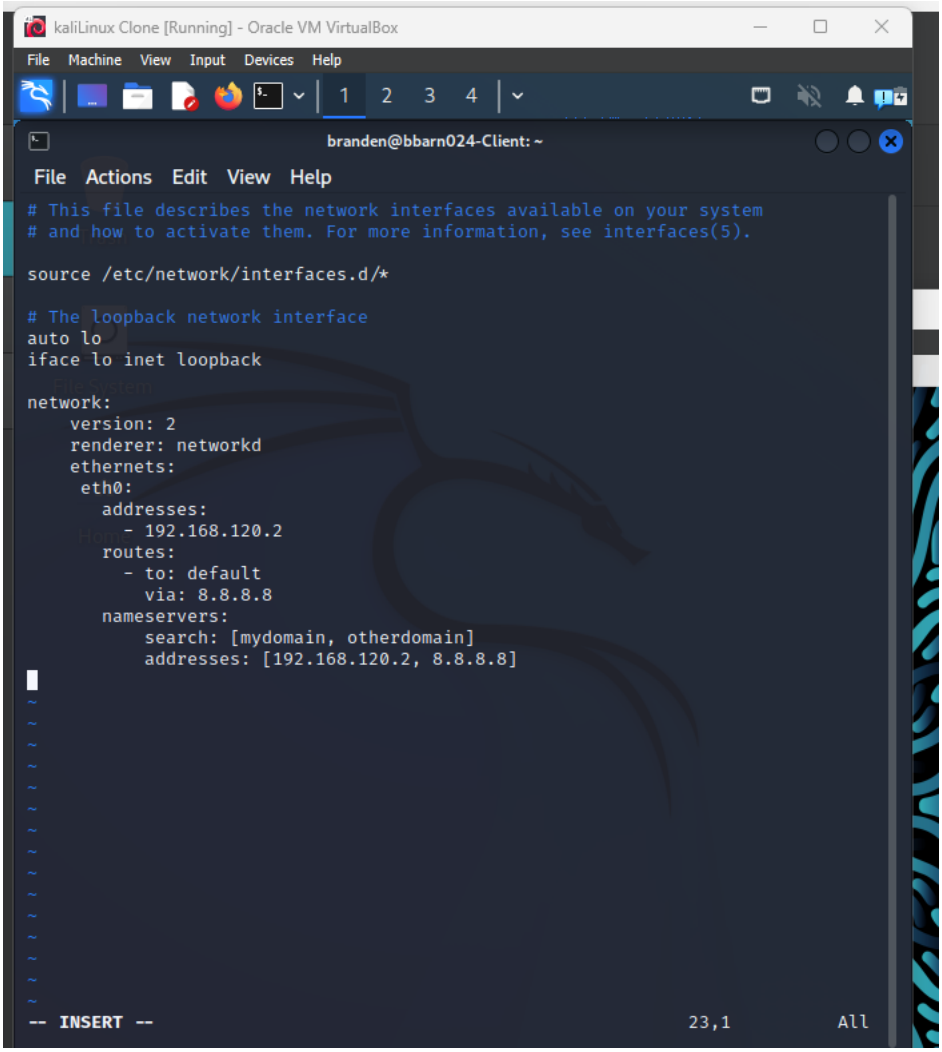


Task B

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.


kaliLinux Clone [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
1 2 3 4
branden@bbarn024-Client: ~
File Actions Edit View Help
This file describes the network interfaces available on your system
and how to activate them. For more information, see interfaces(5).
source /etc/network/interfaces.d/*
The loopback network interface
auto lo
iface lo inet loopback
network:
version: 2
renderer: networkd
ethernets:
eth0:
addresses:
- 192.168.120.2
routes:
- to: default
via: 8.8.8.8
nameservers:
search: [mydomain, otherdomain]
addresses: [192.168.120.2, 8.8.8.8]
-- INSERT --
23,1
All