

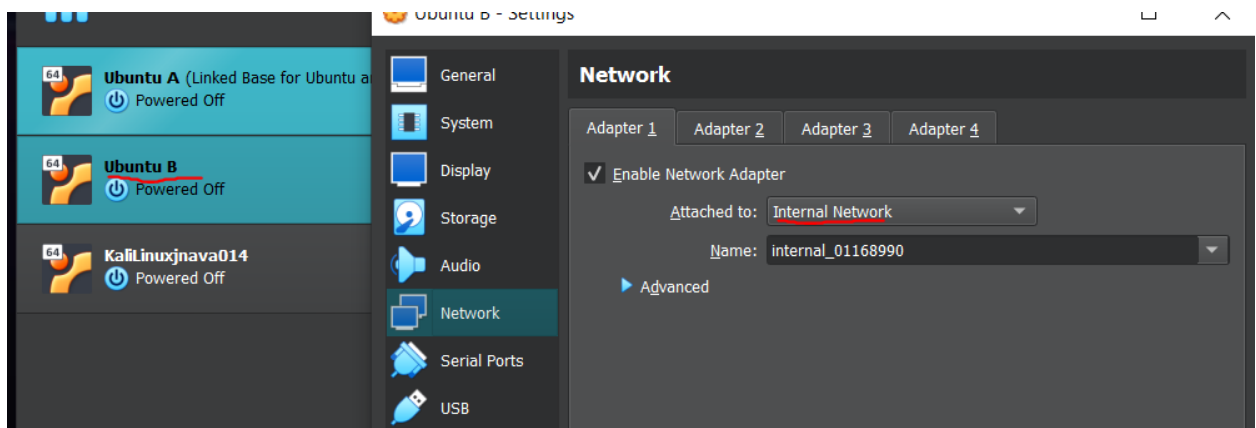
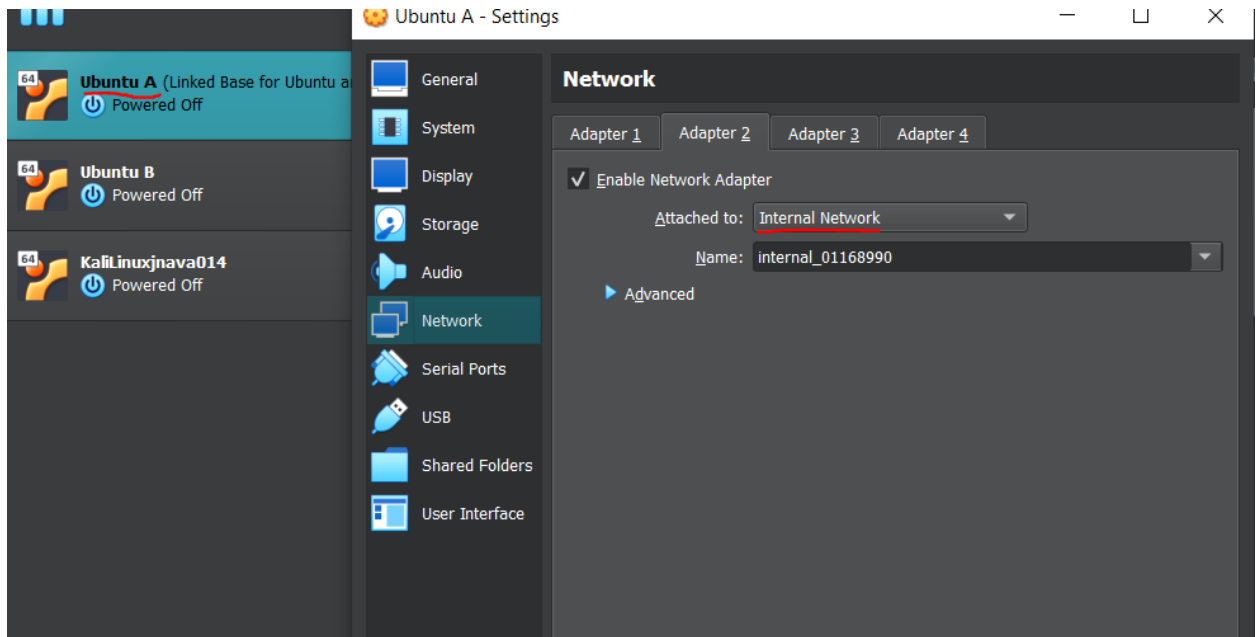
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CYSE 270

## Assignment 12 – Advanced Network Configurations

### Task A

1.



2. Using the “`sudo nano /etc/hostname`” command, I opened the hostname file to change the name.

```
jnava014@jnava014-VirtualBox: ~
GNU nano 7.2 /etc/hostname *
jnava014-Client
```

3. Configuring temporary IP address with sudo ifconfig command

```
jnava014@jnava014-VirtualBox: ~
jnava014@jnava014-VirtualBox:~$ sudo ifconfig enp0s8 192.168.120.1
jnava014@jnava014-VirtualBox:~$
```

4. Same command except with enp0s3 and different IP address

```
jnava014@jnava014-Client: ~
jnava014@jnava014-Client:~$ sudo ifconfig enp0s3 192.168.120.2
[sudo] password for jnava014:
jnava014@jnava014-Client:~$
```

Configuring routing table

```
jnava014@jnava014-Client:~$ route -n
Kernel IP routing table
Destination    Gateway         Genmask         Flags Metric Ref    Use Iface
169.254.0.0    0.0.0.0         255.255.0.0     U        1000   0      0 enp0s3
192.168.120.0  0.0.0.0         255.255.255.0   U         0      0      0 enp0s3
jnava014@jnava014-Client:~$ sudo ip route add default via 192.168.120.1
jnava014@jnava014-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 enp0s3
169.254.0.0    0.0.0.0         255.255.0.0     U        1000   0      0 enp0s3
192.168.120.0  0.0.0.0         255.255.255.0   U         0      0      0 enp0s3
jnava014@jnava014-Client:~$
```

To configure the DNS server, I used the “sudo nano /etc/resolv.conf” command

```
jnava014@jnava014-Client: ~
GNU nano 7.2 /etc/resolv.conf *
# /etc/resolv.conf and seeing this text, you have followed the symlink.
#
# This is a dynamic resolv.conf file for connecting local clients to the
# internal DNS stub resolver of systemd-resolved. This file lists all
# configured search domains.
#
# Run "resolvectl status" to see details about the uplink DNS servers
# currently in use.
#
# Third party programs should typically not access this file directly, but only
# through the symlink at /etc/resolv.conf. To manage man:resolv.conf(5) in a
# different way, replace this symlink by a static file or a different symlink.
#
# See man:systemd-resolved.service(8) for details about the supported modes of
# operation for /etc/resolv.conf.

nameserver 8.8.8.8
options edns0 trust-ad
search .
```

5. I enabled IP forwarding by switching to the root user using su root and using the command below

```
root@jnava014-VirtualBox:/home/jnava014# echo 1 > /proc/sys/net/ipv4/ip_forward
root@jnava014-VirtualBox:/home/jnava014# cat /proc/sys/net/ipv4/ip_forward
1
```

For the NAT configuration, I used the following commands

```
jnava014@jnava014-VirtualBox:~$ sudo iptables -t nat -A POSTROUTING -o enp0s3 -j MASQUERADE

jnava014@jnava014-VirtualBox:~$ sudo iptables -A FORWARD -i enp0s3 -o enp0s8 -m state --state RELATED,ESTABLISHED -j ACCEPT
jnava014@jnava014-VirtualBox:~$ sudo iptables -A FORWARD -i enp0s8 -o enp0s3 -j ACCEPT
```

6. Pinging google.com and 8.8.8.8

```
jnava014@jnava014-Client: ~  
jnava014@jnava014-Client:~$ ping www.google.com  
PING www.google.com (172.253.63.106) 56(84) bytes of data.  
64 bytes from bi-in-f106.1e100.net (172.253.63.106): icmp_seq=1 ttl=57 time=56.2  
ms  
64 bytes from bi-in-f106.1e100.net (172.253.63.106): icmp_seq=2 ttl=57 time=54.9  
ms  
64 bytes from bi-in-f106.1e100.net (172.253.63.106): icmp_seq=3 ttl=57 time=54.8  
ms  
64 bytes from bi-in-f106.1e100.net (172.253.63.106): icmp_seq=4 ttl=57 time=58.7  
ms  
64 bytes from bi-in-f106.1e100.net (172.253.63.106): icmp_seq=5 ttl=57 time=31.5  
ms  
64 bytes from bi-in-f106.1e100.net (172.253.63.106): icmp_seq=6 ttl=57 time=27.5  
ms  
64 bytes from bi-in-f106.1e100.net (172.253.63.106): icmp_seq=7 ttl=57 time=32.2  
ms  
64 bytes from bi-in-f106.1e100.net (172.253.63.106): icmp_seq=8 ttl=57 time=28.0  
ms  
64 bytes from bi-in-f106.1e100.net (172.253.63.106): icmp_seq=9 ttl=57 time=25.2  
ms  
64 bytes from bi-in-f106.1e100.net (172.253.63.106): icmp_seq=10 ttl=57 time=62.  
4 ms  
^C  
--- www.google.com ping statistics ---
```

```
jnava014@jnava014-Client: ~  
jnava014@jnava014-Client:~$ ping 8.8.8.8  
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.  
64 bytes from 8.8.8.8: icmp_seq=1 ttl=115 time=28.1 ms  
64 bytes from 8.8.8.8: icmp_seq=2 ttl=115 time=21.1 ms  
64 bytes from 8.8.8.8: icmp_seq=3 ttl=115 time=25.5 ms  
64 bytes from 8.8.8.8: icmp_seq=4 ttl=115 time=52.3 ms  
64 bytes from 8.8.8.8: icmp_seq=5 ttl=115 time=43.4 ms  
64 bytes from 8.8.8.8: icmp_seq=6 ttl=115 time=22.8 ms  
64 bytes from 8.8.8.8: icmp_seq=7 ttl=115 time=24.7 ms  
64 bytes from 8.8.8.8: icmp_seq=8 ttl=115 time=30.8 ms  
64 bytes from 8.8.8.8: icmp_seq=9 ttl=115 time=25.7 ms  
64 bytes from 8.8.8.8: icmp_seq=10 ttl=115 time=20.1 ms  
^C  
--- 8.8.8.8 ping statistics ---  
10 packets transmitted, 10 received, 0% packet loss, time 10216ms  
rtt min/avg/max/mdev = 20.121/29.459/52.280/9.848 ms  
jnava014@jnava014-Client:~$
```

## Task B

1.

```
jnava014@jnava014-VirtualBox:~$ sudo iptables -A INPUT -i enp0s8 -s 192.168.120.2 -p icmp --icmp-type echo-request -j DROP
```

Ping shows that packets are blocked from the client machine.

```
jnava014@jnava014-Client:~$ ping 192.168.120.1
PING 192.168.120.1 (192.168.120.1) 56(84) bytes of data.
█
```

2.

```
jnava014@jnava014-VirtualBox:~$ sudo iptables -A OUTPUT -o enp0s8 -p icmp --icmp-type echo-request -j DROP
```

Packets blocked by the gateway machine

```
jnava014@jnava014-VirtualBox:~$ ping 192.168.120.2
PING 192.168.120.2 (192.168.120.2) 56(84) bytes of data.
█
```