CSE434 Lab 1 Report
Group 82

Group Members:
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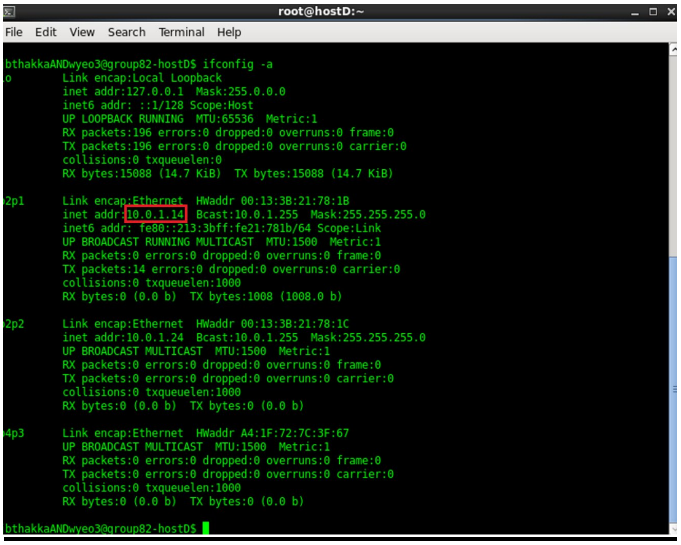
Exercise 1

Step 1

Running the command: ifconfig -a

The IP address is shown below (indicated in red).



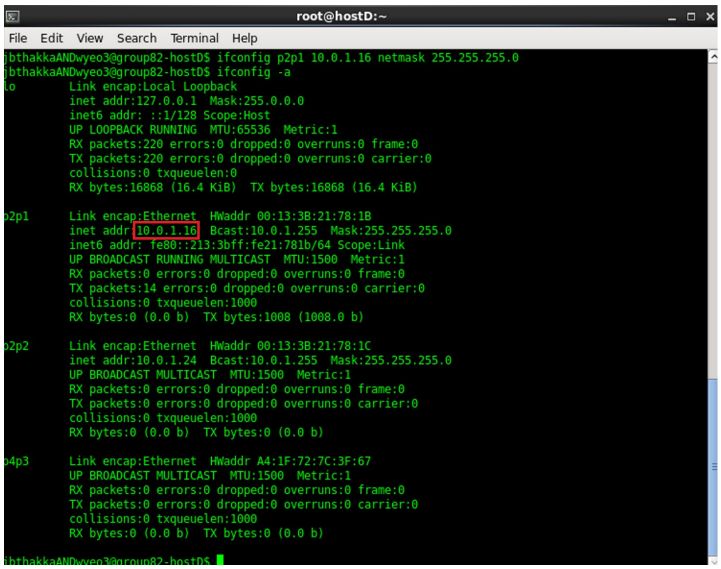
Step 2

Running the command: ifconfig p2p1 10.0.1.16 netmask 255.255.255.0 broadcast 10.0.1.255

Step 3

Running the command: ifconfig -a

The IP address has been changed from 10.0.1.14 to 10.0.1.16 (indicated in red).



Exercise 2

Step 1

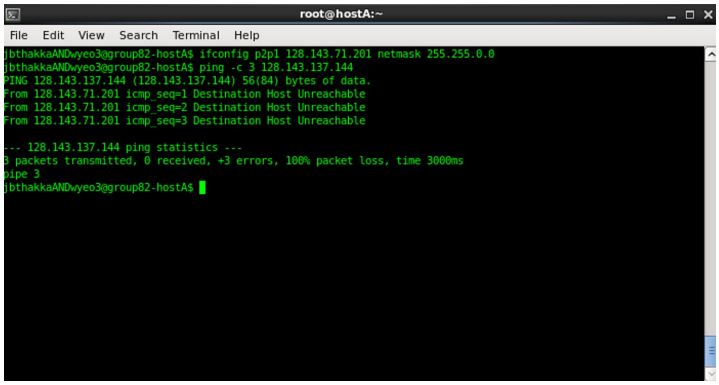
Commands used in the following computer to configure the IP address are shown below.

Computer A: ifconfig 128.143.71.201 netmask 255.255.0.0
Computer B: ifconfig 128.143.71.21 netmask 255.255.255.0
Computer C: ifconfig 128.143.137.144 netmask 255.255.255.192
Computer D: ifconfig 128.143.137.32 netmask 255.255.255.192

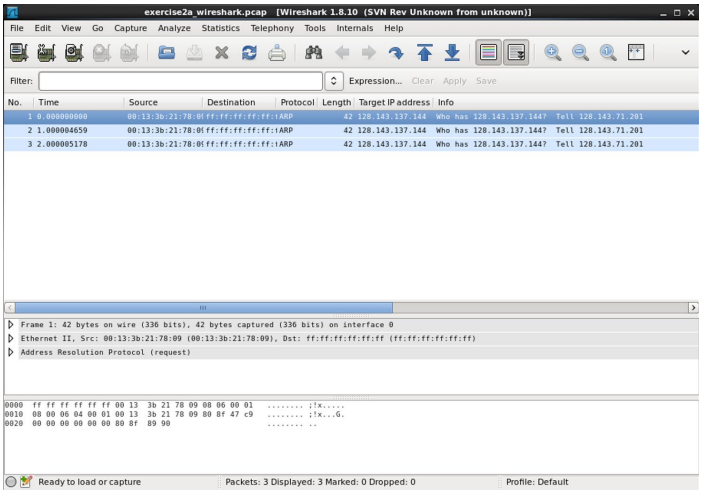
Step 2

(a)

From terminal:

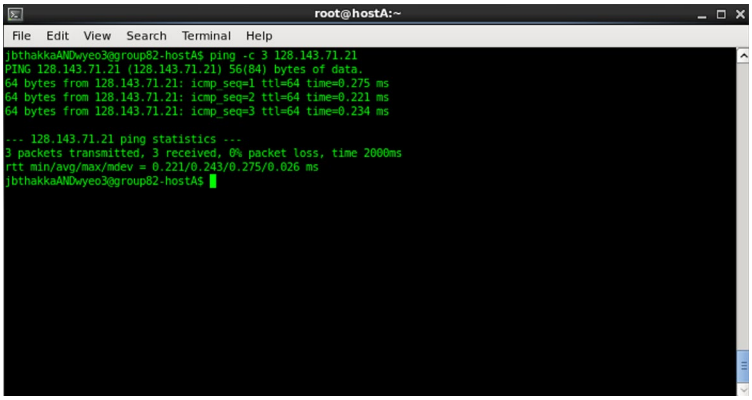


From Wireshark:

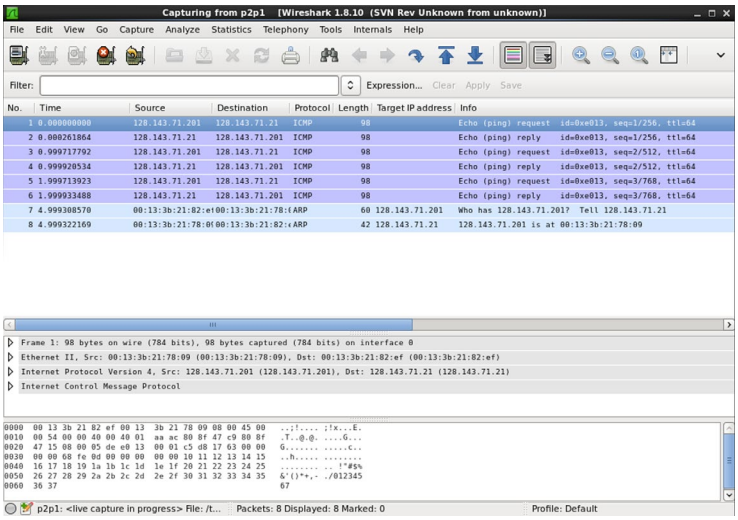


(b)

From Terminal:

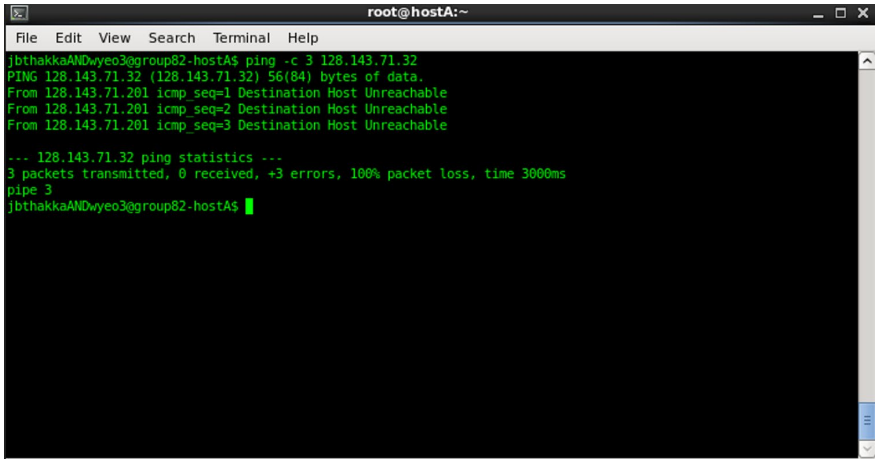


From Wireshark:

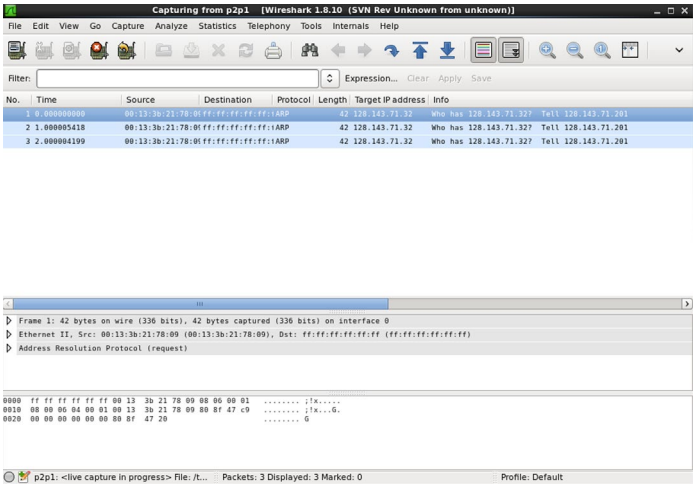


(c)

From Terminal:

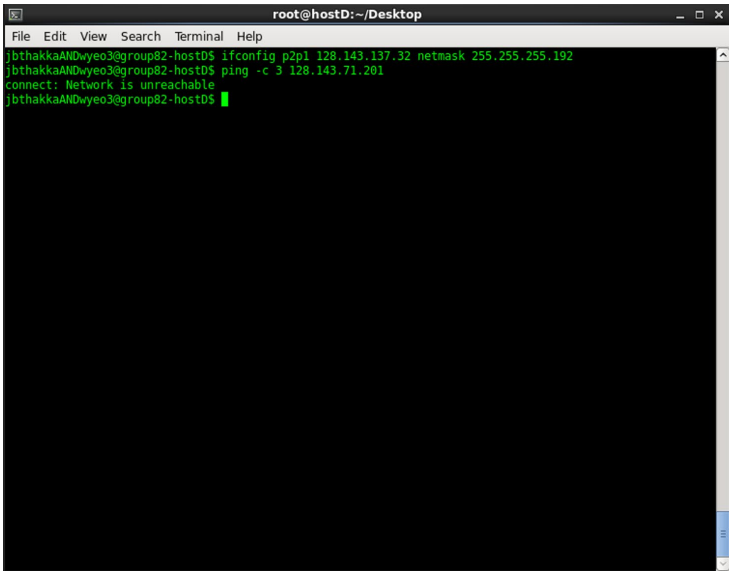


From Wireshark:

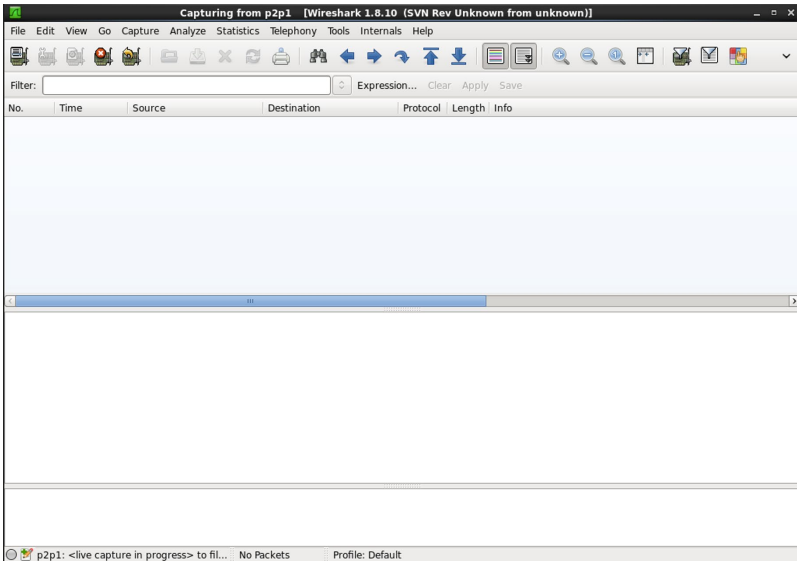


(d)

From Terminal:

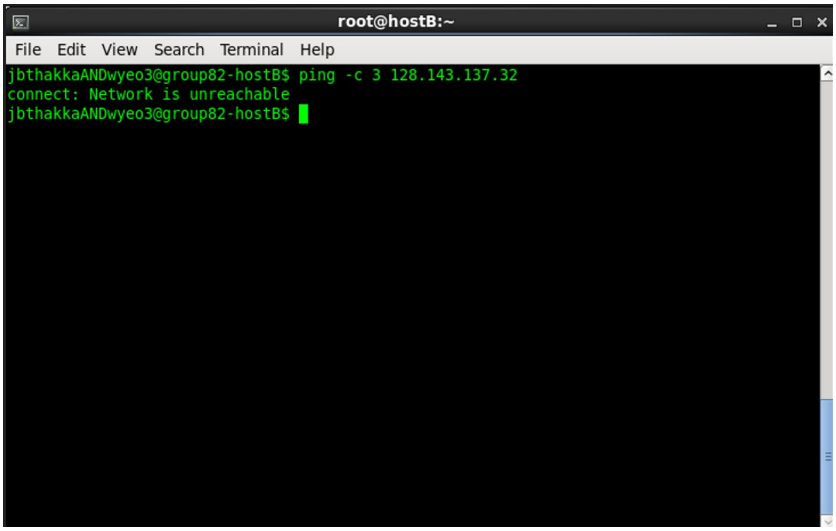


From Wireshark:

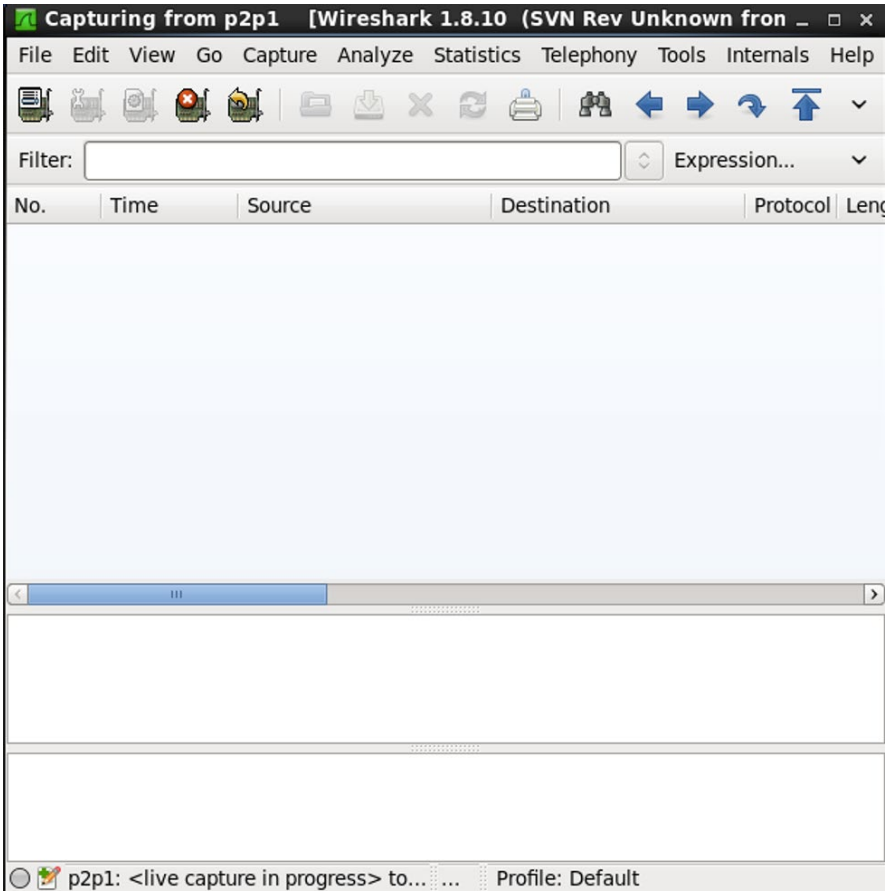


(e)

From Terminal:

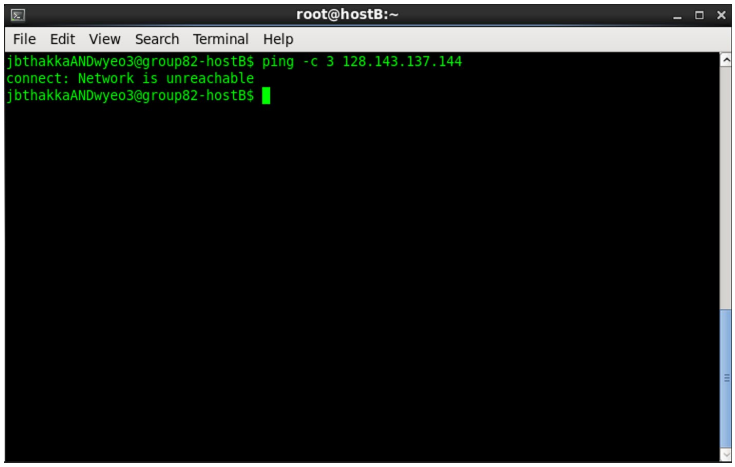


From Wireshark:

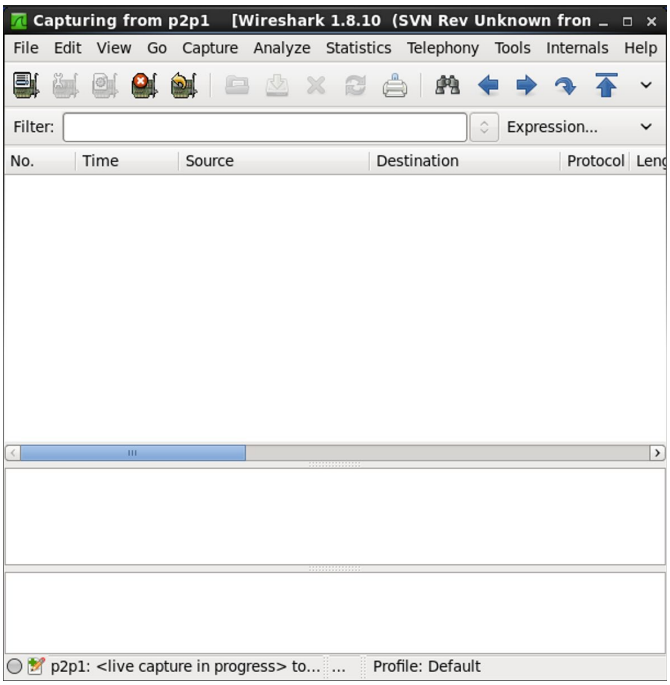


(f)

From Terminal:

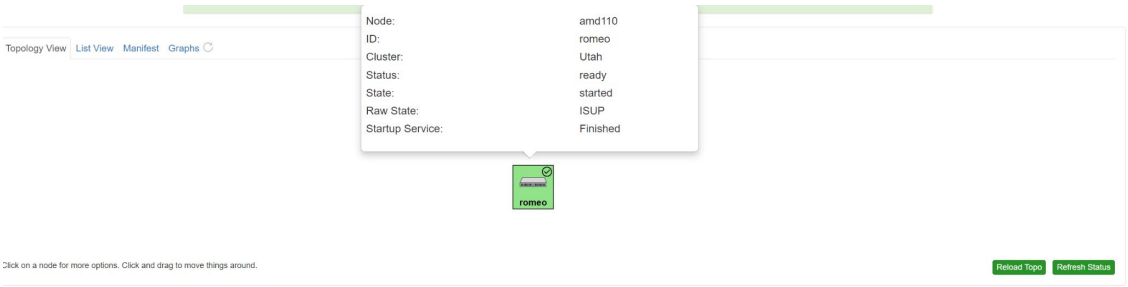


From Wireshark:

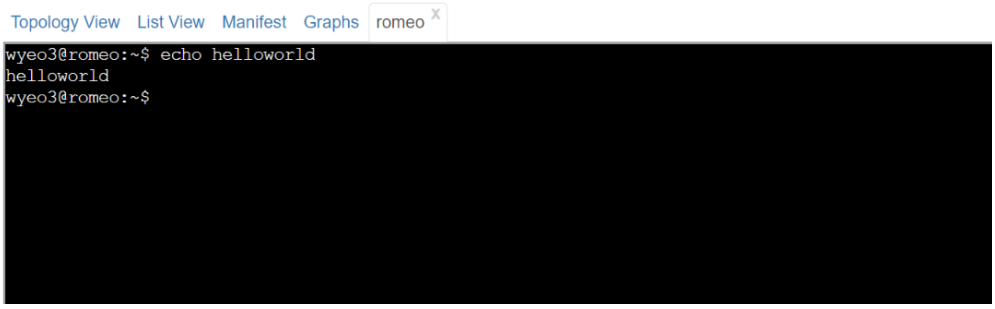


Exercise 3

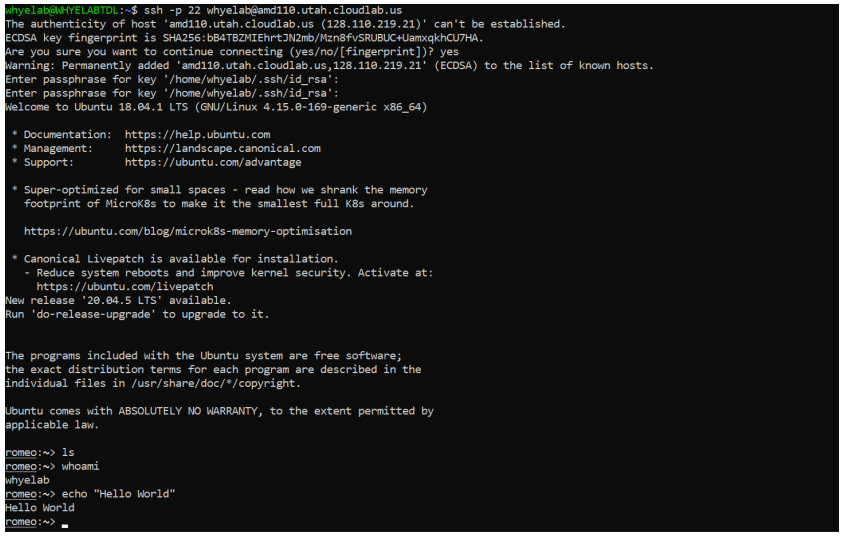
Step 1: Topology View



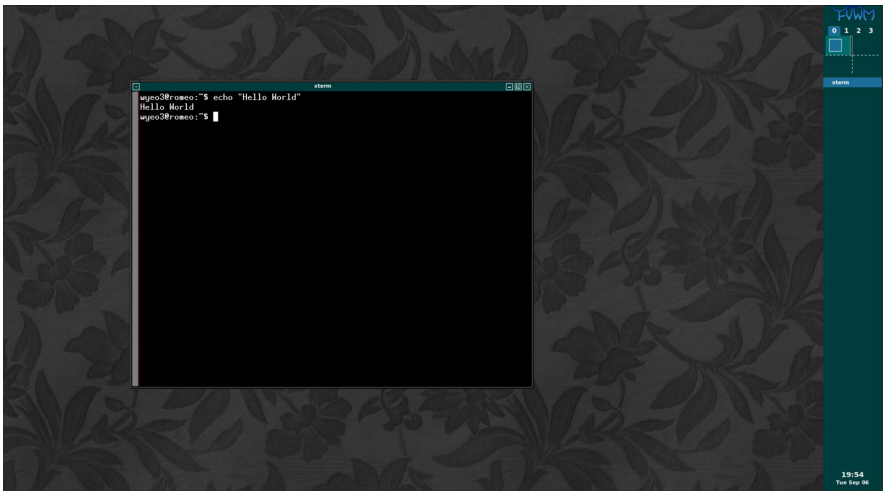
Step 2: Terminal Echo



Step 3: Connecting via Terminal and VNC View



Connection via Terminal


xterm
wyeo3@romeo:~$ echo "Hello World"
Hello World
wyeo3@romeo:~$
FVWM
0 1 2 3
xterm
19:54
Tue Sep 06

VNC view

Exercise 4

Hosts	Subnet Mask	Network Address	Smallest Host Address	Highest Host Address	Broadcast Address	Notes
LAN A: romeo and juliet	255.255.255.192	10.10.172.128	10.10.172.130	10.10.172.190	10.10.172.191	Should support at least 50 hosts
LAN B: othello and desdemona	255.255.255.128	10.10.172.0	10.10.172.2	10.10.172.126	10.10.172.127	Should support at least 75 hosts
LAN C: hamlet and ophelia	255.255.255.224	10.10.172.192	10.10.10.194	10.10.172.222	10.10.172.223	Should support at least 20 hosts

Exercise 5

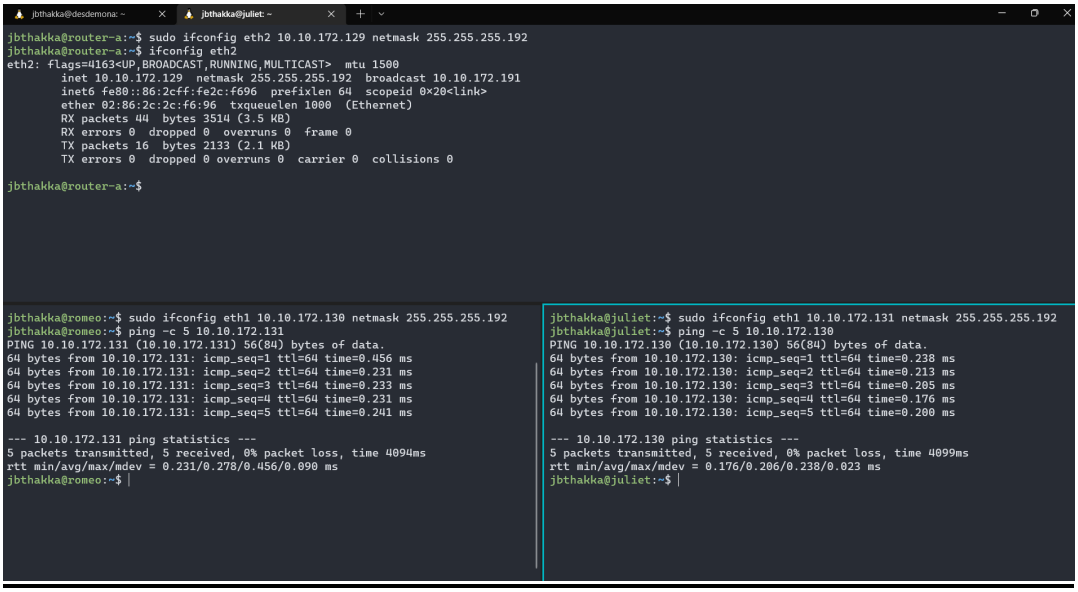
Commands

router-a: sudo ifconfig eth2 10.10.172.129 netmask 255.255.255.192 broadcast 10.10.172.191
romeo: sudo ifconfig eth1 10.10.172.130 netmask 255.255.255.192 broadcast 10.10.172.191
juliet: sudo ifconfig eth1 10.10.172.131 netmask 255.255.255.192 broadcast 10.10.172.191

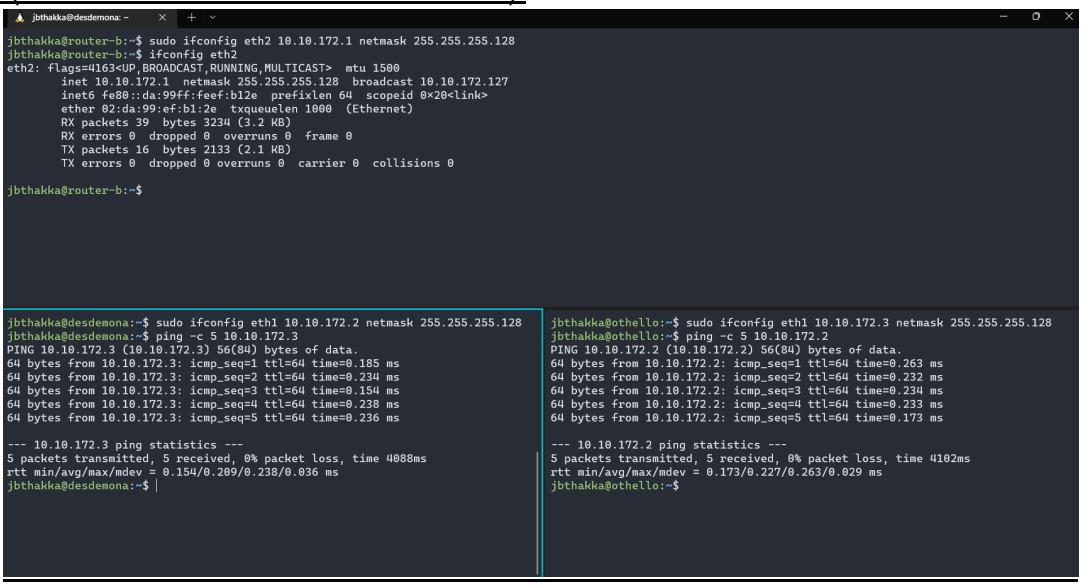
router-b: sudo ifconfig eth2 10.10.172.1 netmask 255.255.255.128 broadcast 10.10.172.127
othello: sudo ifconfig eth1 10.10.172.2 netmask 255.255.255.128 broadcast 10.10.172.127
desdemona: sudo ifconfig eth1 10.10.172.3 netmask 255.255.255.128 broadcast 10.10.172.127

router-c: sudo ifconfig eth2 10.10.172.193 netmask 255.255.255.224 broadcast 10.10.172.223
ophelia: sudo ifconfig eth1 10.10.172.194 netmask 255.255.255.224 broadcast 10.10.172.223
hamlet: sudo ifconfig eth1 10.10.172.195 netmask 255.255.255.224 broadcast 10.10.172.223

Step 1 (LAN A between romeo & juliet):



Step 1 (LAN B between desdemona & othello):

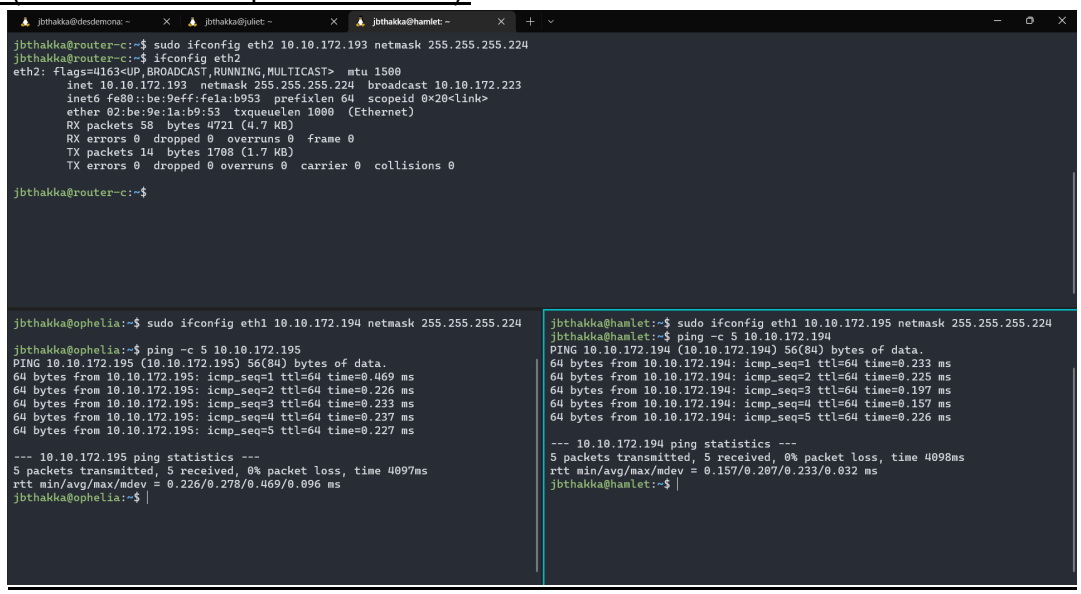


```
jbthakka@router-b:~$ sudo ifconfig eth2 10.10.172.1 netmask 255.255.255.128
jbthakka@router-b:~$ ifconfig eth2
eth2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.10.172.1  netmask 255.255.255.128  broadcast 10.10.172.127
        inet6 fe80::da:99ff:feef:b12e  prefixlen 64  scopeid 0x20<link>
        ether 02:da:99:ef:b1:2e  txqueuelen 1000  (Ethernet)
        RX packets 39  bytes 3234 (3.2 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 16  bytes 2133 (2.1 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

jbthakka@router-b:~$
```

```
jbthakka@desdemona:~$ sudo ifconfig eth1 10.10.172.2 netmask 255.255.255.128
jbthakka@desdemona:~$ ping -c 5 10.10.172.3
PING 10.10.172.3 (10.10.172.3) 56(84) bytes of data.
64 bytes from 10.10.172.3: icmp_seq=1 ttl=64 time=0.185 ms
64 bytes from 10.10.172.3: icmp_seq=2 ttl=64 time=0.234 ms
64 bytes from 10.10.172.3: icmp_seq=3 ttl=64 time=0.154 ms
64 bytes from 10.10.172.3: icmp_seq=4 ttl=64 time=0.238 ms
64 bytes from 10.10.172.3: icmp_seq=5 ttl=64 time=0.236 ms

--- 10.10.172.3 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4088ms
rtt min/avg/max/mdev = 0.154/0.209/0.238/0.036 ms
jbthakka@desdemona:~$
```

```
jbthakka@othello:~$ sudo ifconfig eth1 10.10.172.3 netmask 255.255.255.128
jbthakka@othello:~$ ping -c 5 10.10.172.2
PING 10.10.172.2 (10.10.172.2) 56(84) bytes of data.
64 bytes from 10.10.172.2: icmp_seq=1 ttl=64 time=0.263 ms
64 bytes from 10.10.172.2: icmp_seq=2 ttl=64 time=0.232 ms
64 bytes from 10.10.172.2: icmp_seq=3 ttl=64 time=0.234 ms
64 bytes from 10.10.172.2: icmp_seq=4 ttl=64 time=0.233 ms
64 bytes from 10.10.172.2: icmp_seq=5 ttl=64 time=0.173 ms

--- 10.10.172.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4102ms
rtt min/avg/max/mdev = 0.173/0.227/0.263/0.029 ms
jbthakka@othello:~$
```

Step 1 (LAN C between ophelia & hamlet):

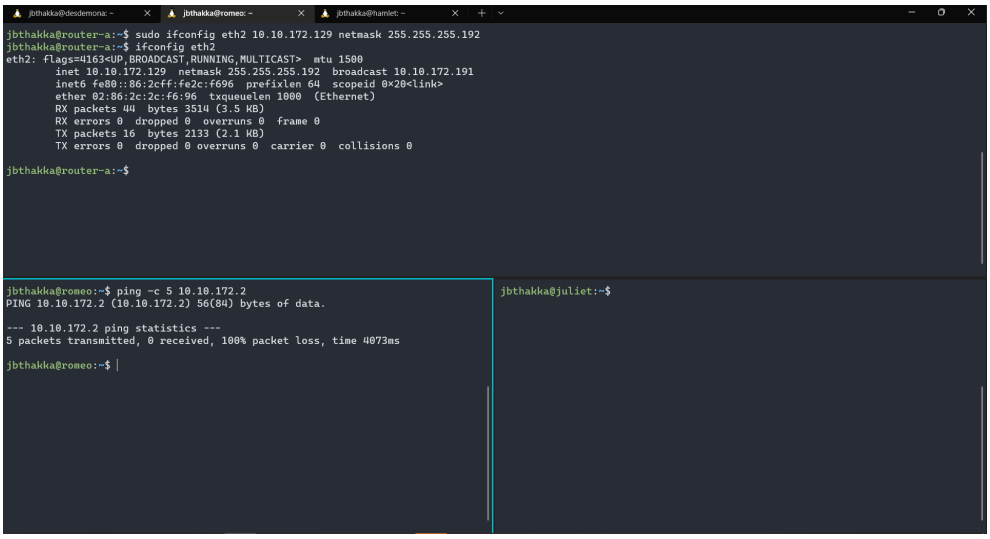


```
jbthakka@router-c:~$ sudo ifconfig eth2 10.10.172.193 netmask 255.255.255.224
jbthakka@router-c:~$ ifconfig eth2
eth2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.10.172.193  netmask 255.255.255.224  broadcast 10.10.172.223
        inet6 fe80::be:9eff:fe1a:b953  prefixlen 64  scopeid 0x20<link>
        ether 02:be:9e:1a:b9:53  txqueuelen 1000  (Ethernet)
        RX packets 58  bytes 4721 (4.7 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 14  bytes 1708 (1.7 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

jbthakka@router-c:~$
```

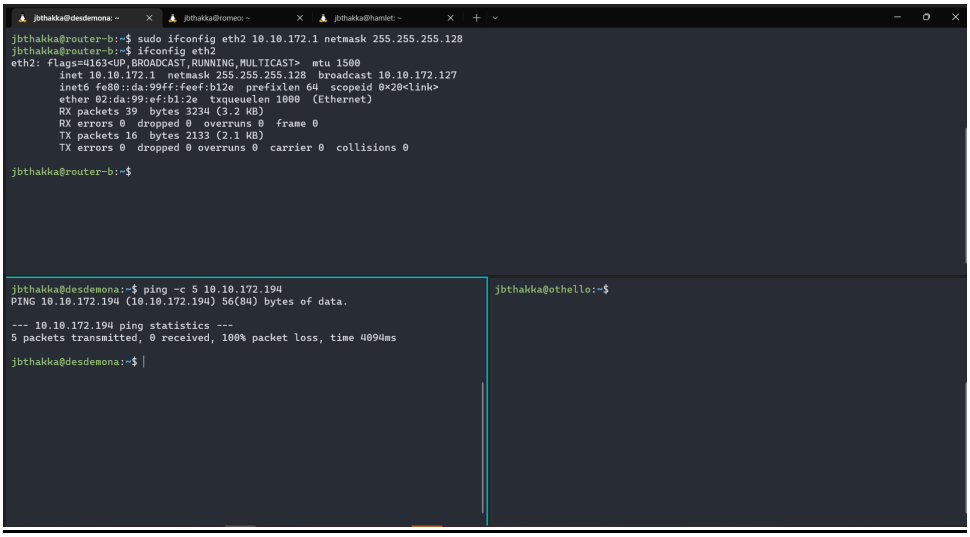
```
jbthakka@ophelia:~$ sudo ifconfig eth1 10.10.172.194 netmask 255.255.255.224

jbthakka@ophelia:~$ ping -c 5 10.10.172.195
PING 10.10.172.195 (10.10.172.195) 56(84) bytes of data.
64 bytes from 10.10.172.195: icmp_seq=1 ttl=64 time=0.469 ms
64 bytes from 10.10.172.195: icmp_seq=2 ttl=64 time=0.226 ms
64 bytes from 10.10.172.195: icmp_seq=3 ttl=64 time=0.233 ms
64 bytes from 10.10.172.195: icmp_seq=4 ttl=64 time=0.237 ms
64 bytes from 10.10.172.195: icmp_seq=5 ttl=64 time=0.227 ms

--- 10.10.172.195 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4097ms
rtt min/avg/max/mdev = 0.226/0.278/0.469/0.096 ms
jbthakka@ophelia:~$
```

```
jbthakka@hamlet:~$ sudo ifconfig eth1 10.10.172.195 netmask 255.255.255.224
jbthakka@hamlet:~$ ping -c 5 10.10.172.194
PING 10.10.172.194 (10.10.172.194) 56(84) bytes of data.
64 bytes from 10.10.172.194: icmp_seq=1 ttl=64 time=0.233 ms
64 bytes from 10.10.172.194: icmp_seq=2 ttl=64 time=0.225 ms
64 bytes from 10.10.172.194: icmp_seq=3 ttl=64 time=0.197 ms
64 bytes from 10.10.172.194: icmp_seq=4 ttl=64 time=0.157 ms
64 bytes from 10.10.172.194: icmp_seq=5 ttl=64 time=0.226 ms

--- 10.10.172.194 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4098ms
rtt min/avg/max/mdev = 0.157/0.207/0.233/0.032 ms
jbthakka@hamlet:~$
```

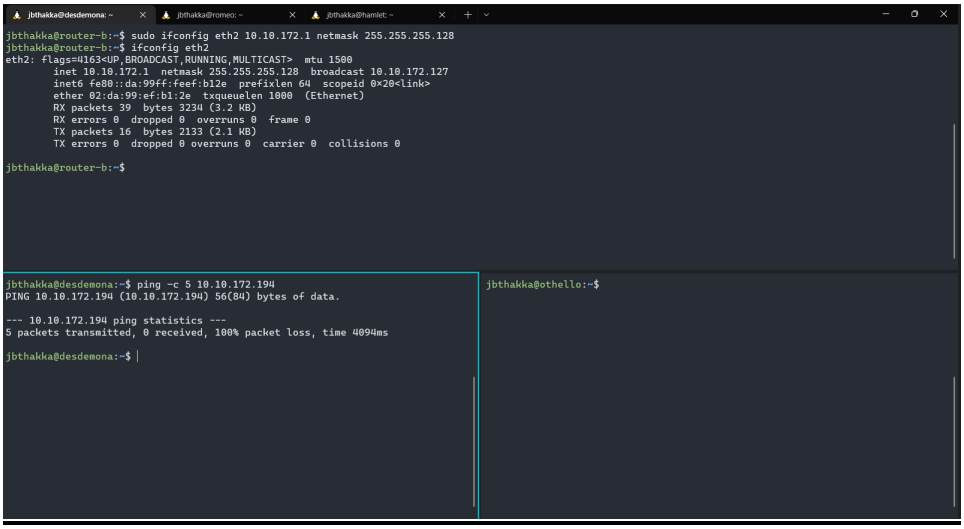
Step 2 Ping from LAN A (romeo) To LAN B (desdemona):



Step 2 Ping from LAN B (desdemona) To LAN C (othello):



Step 2 Ping from LAN C (othello) To LAN A (romeo):



Exercise 6

Router-A Configuration

(Router A-B): sudo route add -net 10.10.172.0 netmask 255.255.255.128 gw 10.10.100.2
(Router A-C): sudo route add -net 10.10.172.192 netmask 255.255.255.224 gw 10.10.100.3

Host Romeo Configuration

(romeo - LAN B): sudo route add -net 10.10.172.0 netmask 255.255.255.128 gw 10.10.172.129
(romeo - LAN C): sudo route add -net 10.10.172.192 netmask 255.255.255.224 gw 10.10.172.129

Host Juliet Configuration

(juliet - LAN B): sudo route add -net 10.10.172.0 netmask 255.255.255.128 gw 10.10.172.129
(juliet - LAN C): sudo route add -net 10.10.172.192 netmask 255.255.255.224 gw 10.10.172.129

Router-B Configuration

(Router B-A): sudo route add -net 10.10.172.128 netmask 255.255.255.192 gw 10.10.100.1
(Router B-C): sudo route add -net 10.10.172.192 netmask 255.255.255.224 gw 10.10.100.3

Host othello Configuration

(desdemona - LAN A): sudo route add -net 10.10.172.128 netmask 255.255.255.192 gw 10.10.172.1
(desdemona - LAN C): sudo route add -net 10.10.172.192 netmask 255.255.255.224 gw 10.10.172.1

Host desdemona Configuration

(desdemona - LAN A): sudo route add -net 10.10.172.128 netmask 255.255.255.192 gw 10.10.172.1
(desdemona - LAN C): sudo route add -net 10.10.172.192 netmask 255.255.255.224 gw 10.10.172.1

Router-C Configuration

(Router C-A): sudo route add -net 10.10.172.128 netmask 255.255.255.192 gw 10.10.100.1
(Router C-B): sudo route add -net 10.10.172.0 netmask 255.255.255.128 gw 10.10.100.2

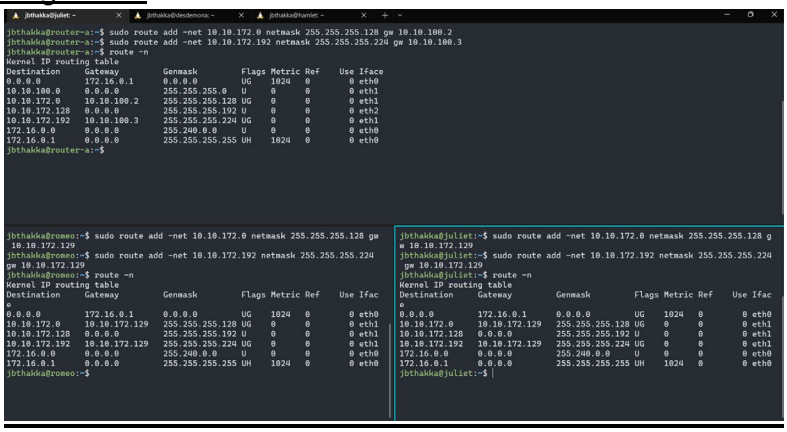
Host ophelia Configuration

(ophelia - LAN A): sudo route add -net 10.10.172.128 netmask 255.255.255.192 gw 10.10.172.193
(ophelia - LAN B): sudo route add -net 10.10.172.0 netmask 255.255.255.128 gw 10.10.172.193

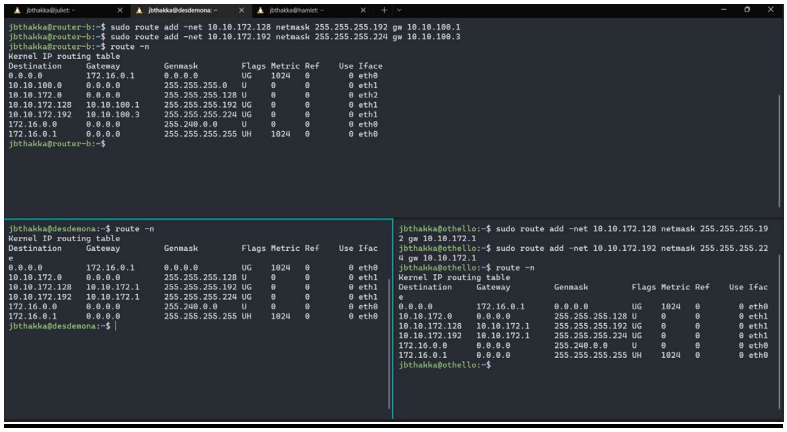
Host hamlet Configuration

(ophelia - LAN A): sudo route add -net 10.10.172.128 netmask 255.255.255.192 gw 10.10.172.193
(ophelia - LAN B): sudo route add -net 10.10.172.0 netmask 255.255.255.128 gw 10.10.172.193

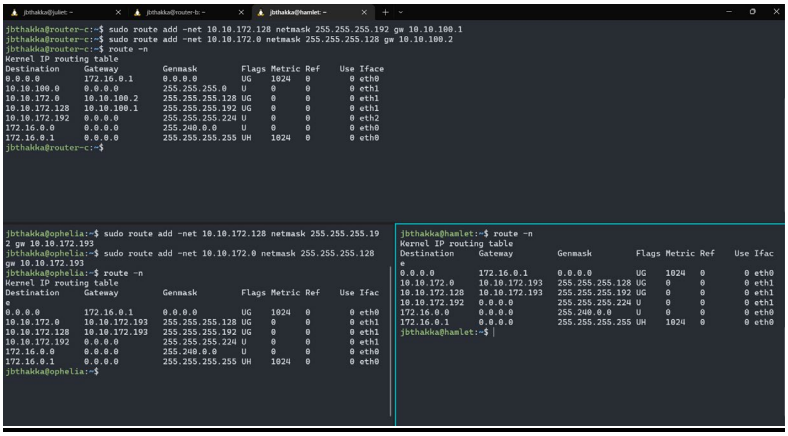
Step 1 LAN A Routing Table:



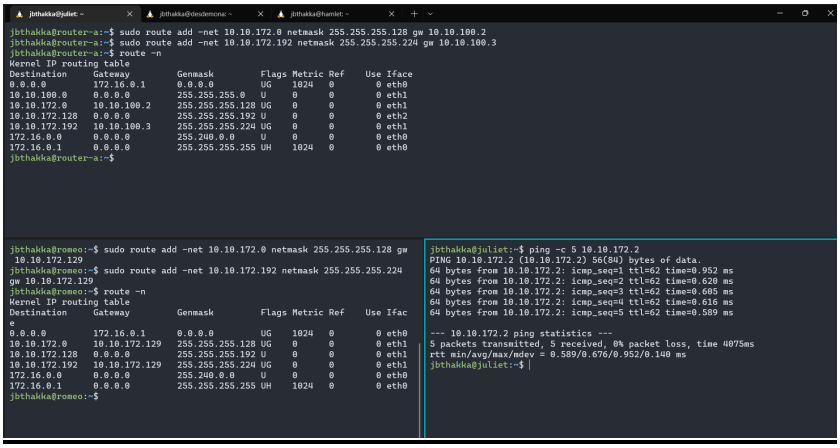
Step 1 LAN B Routing Table:



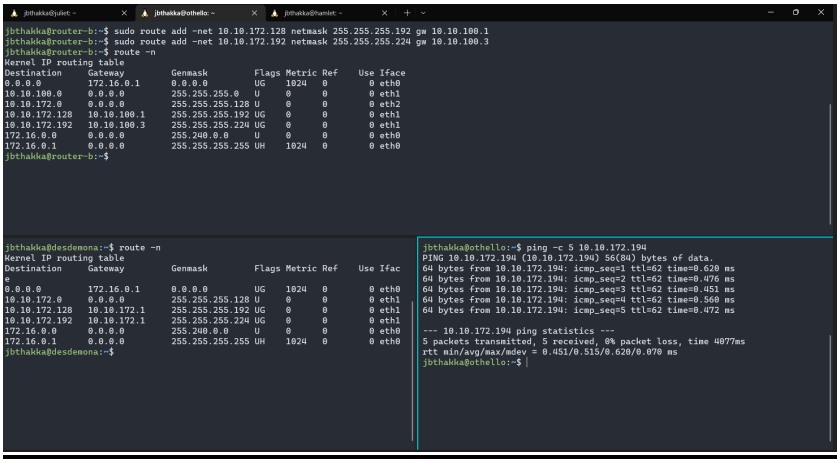
Step 1 LAN C Routing Table:



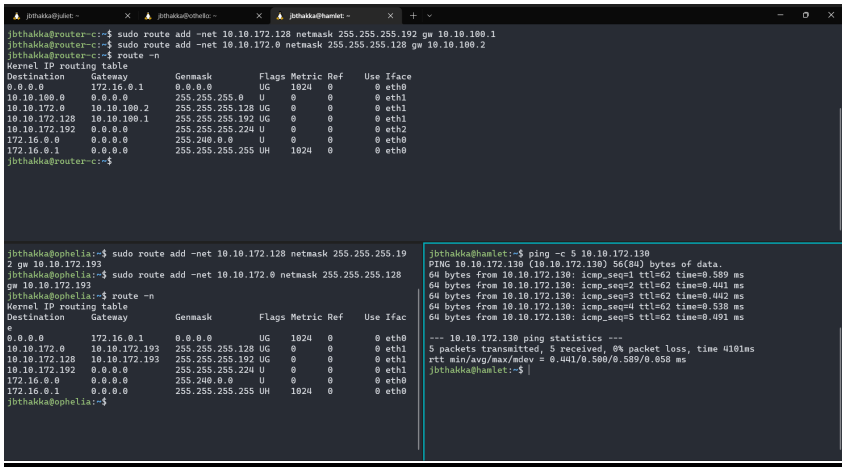
Step 2 LAN A (Ping from Host from LAN A to Host on LAN B):



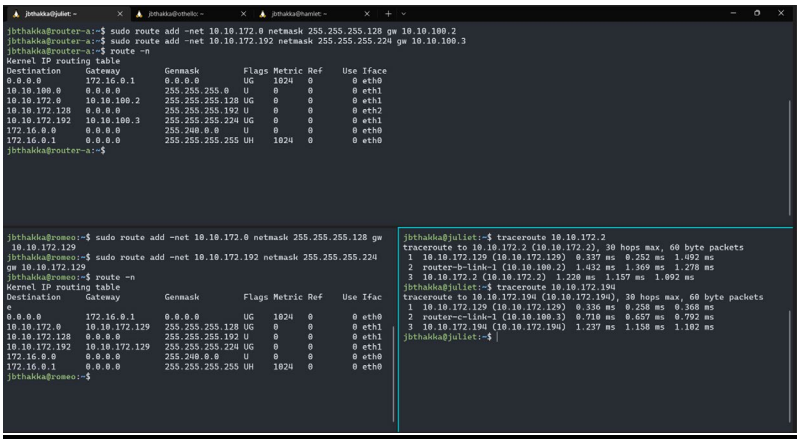
Step 2 LAN B (Ping from Host from LAN B to Host on LAN C):



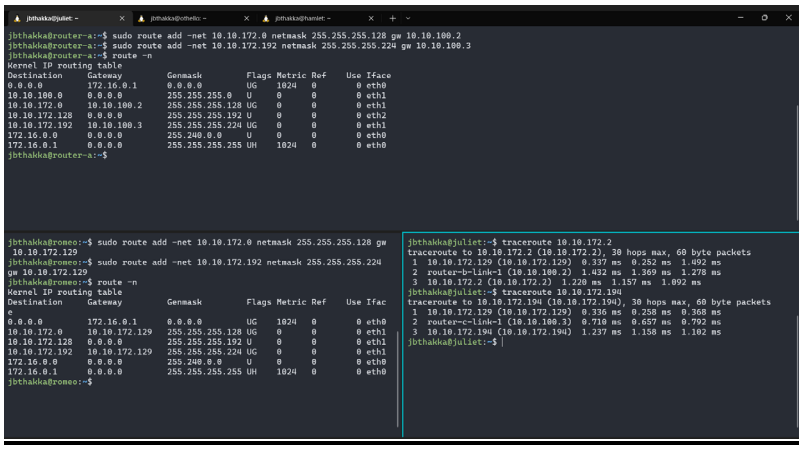
Step 2 LAN C (Ping from Host from LAN C to Host on LAN A):



Step 3 LAN A:



Step 3 LAN B:



Step 3 LAN C: