ASURITE ID: vyaganti
ASU ID: 1223441505

COMPUTER NETWORKS (CN 434)
LAB 01

EXERCISE 01: Changing the IP address of an interface. Use the ifconfig command to modify the IP address of the p2p1 interface of computer D.

Initially the system is connected to computer A, we need to use the switch available to which computers A, B, C and D are connected for switching. For this exercise we need to use computer D, so we will shift from computer A to computer D by just pressing button D on the switch. On computer D, run ifconfig -a and save the output.

1. On computer D, run ifconfig -a and save the output.

Once switched to computer D from computer A, open terminal and run the command "ifconfig -a". It displays the configuration parameters of all network interfaces, including the inactive interfaces. The output can be seen in Fig 1.1.

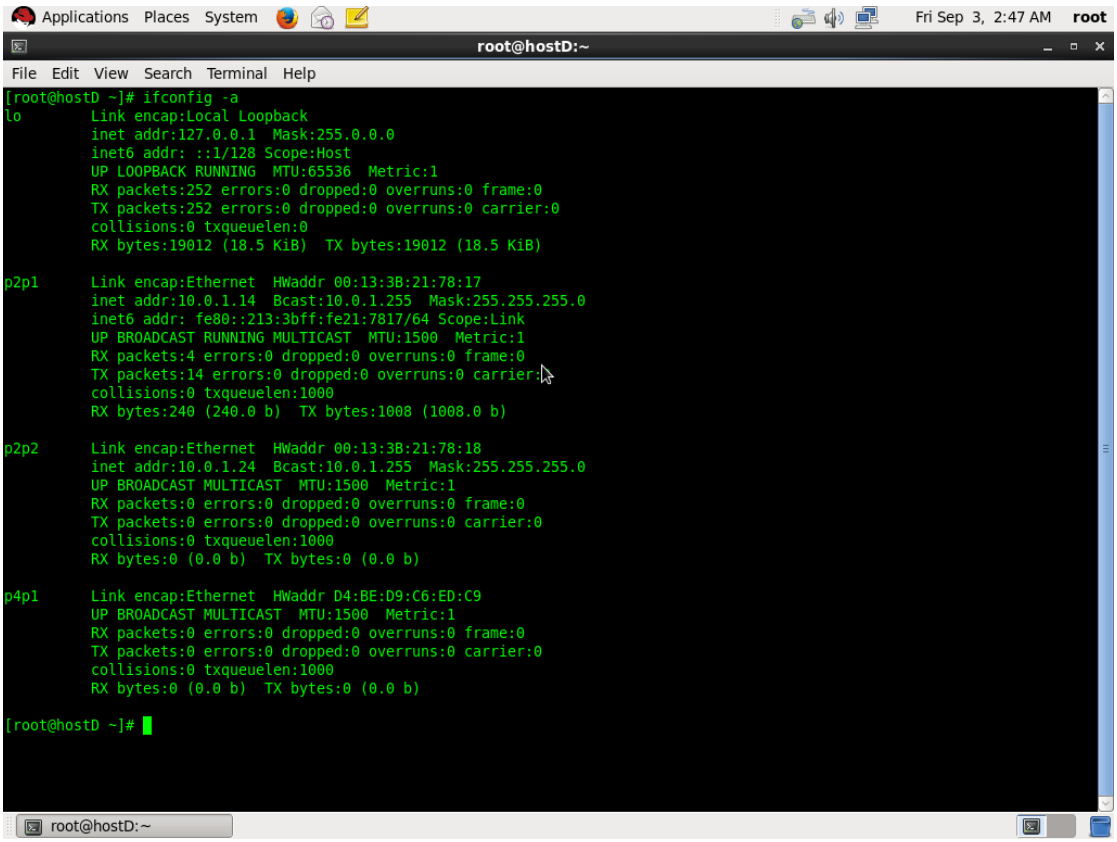

Fig 1.1 Displaying configuration parameters of network interfaces

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We can save the output data from terminal to text document by creating an empty document with desired name and run the command “ifconfig > text_filename”. I created my file name as vyaganti_e1.txt. I runed the command and saved the output. The output text file can be seen below.

lo Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
inet6 addr: ::1/128 Scope:Host
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:276 errors:0 dropped:0 overruns:0 frame:0
TX packets:276 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:20844 (20.3 KiB) TX bytes:20844 (20.3 KiB)

p2p1 Link encap:Ethernet HWaddr 00:13:3B:21:78:17
inet addr:10.0.1.14 Bcast:10.0.1.255 Mask:255.255.255.0
inet6 addr: fe80::213:3bff:fe21:7817/64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:4 errors:0 dropped:0 overruns:0 frame:0
TX packets:14 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:240 (240.0 b) TX bytes:1008 (1008.0 b)

p2p2 Link encap:Ethernet HWaddr 00:13:3B:21:78:18
inet addr:10.0.1.24 Bcast:10.0.1.255 Mask:255.255.255.0
UP BROADCAST MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 b) TX bytes:0 (0.0 b)

p4p1 Link encap:Ethernet HWaddr D4:BE:D9:C6:ED:C9
UP BROADCAST MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 b) TX bytes:0 (0.0 b)

2. Change the IP address of interface p2p1 of computer D to 10.0.1.16/24.

In terminal run the command “ifconfig p2p1 10.0.1.16/24 netmask 255.255.255.0 broadcast 10.0.1.255”. This assigns interface p2p1 the IP address 10.0.1.16/24 and a broadcast address of 10.0.1.255. The output can be seen in Fig 1.2.

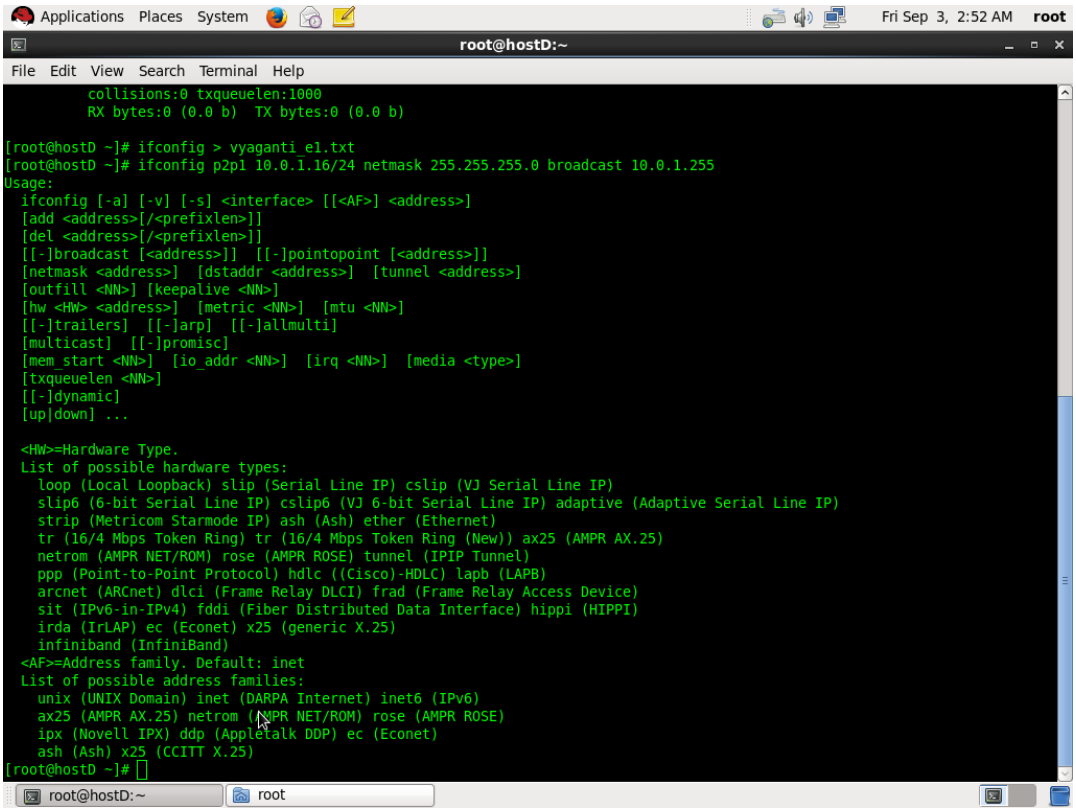


Fig 1.2 Changing IP address of interface p2p1.

lo Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
inet6 addr: ::1/128 Scope:Host
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:300 errors:0 dropped:0 overruns:0 frame:0
TX packets:300 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:22676 (22.1 KiB) TX bytes:22676 (22.1 KiB)

p2p1 Link encap:Ethernet HWaddr 00:13:3B:21:78:17
inet addr:10.0.1.16 Bcast:10.0.1.255 Mask:255.255.255.0
inet6 addr: fe80::213:3bff:fe21:7817/64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:4 errors:0 dropped:0 overruns:0 frame:0
TX packets:14 errors:0 dropped:0 overruns:0 carrier:0
Collisions:0 txqueuelen:1000

RX bytes:240 (240.0 b) TX bytes:1008 (1008.0 b)

p2p2 Link encap:Ethernet HWaddr 00:13:3B:21:78:18
inet addr:10.0.1.24 Bcast:10.0.1.255 Mask:255.255.255.0
UP BROADCAST MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 b) TX bytes:0 (0.0 b)

p4p1 Link encap:Ethernet HWaddr D4:BE:D9:C6:ED:C9
UP BROADCAST MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 b) TX bytes:0 (0.0 b)

3. Run ifconfig -a again and save the output.
Run the command “ifconfig -a” again after changing the interface of p2p1. The output can be seen in the Fig 1.3.

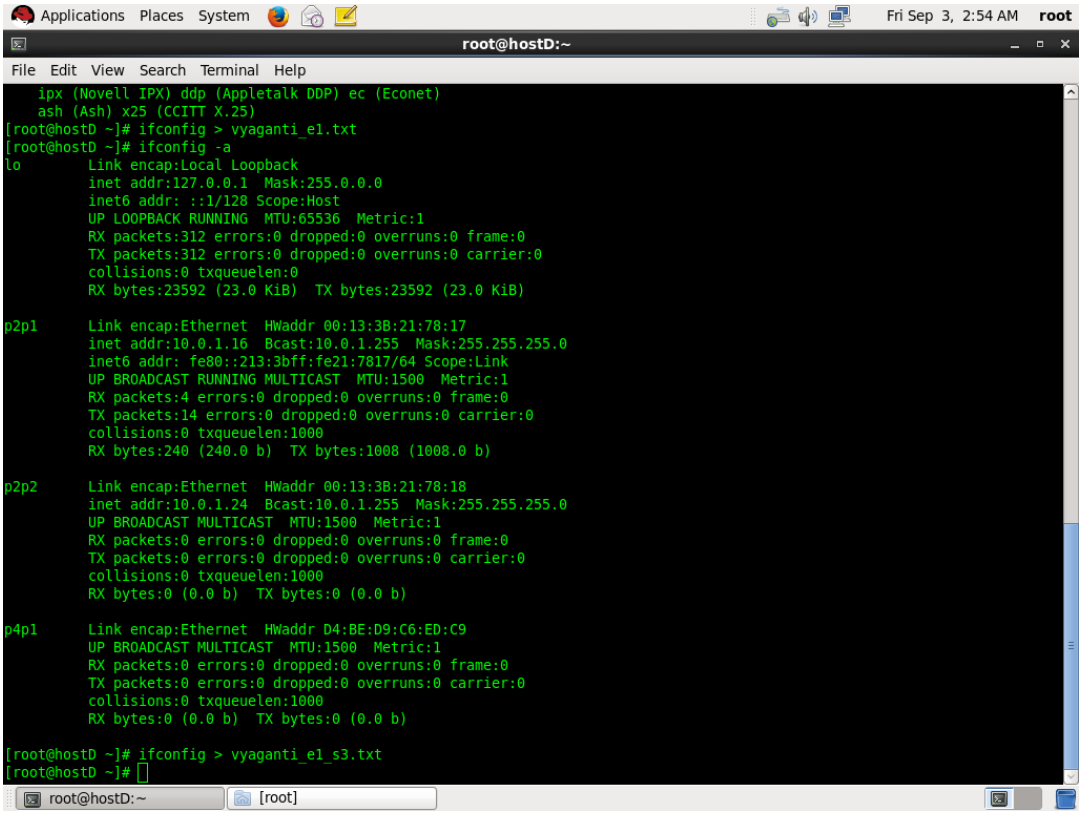


Fig 1.3 Displaying configuration parameters of network interfaces again.

The output text file can be seen below.

lo Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
inet6 addr: ::1/128 Scope:Host
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:312 errors:0 dropped:0 overruns:0 frame:0
TX packets:312 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:23592 (23.0 KiB) TX bytes:23592 (23.0 KiB)

p2p1 Link encap:Ethernet HWaddr 00:13:3B:21:78:17
inet addr:10.0.1.16 Bcast:10.0.1.255 Mask:255.255.255.0
inet6 addr: fe80::213:3bff:fe21:7817/64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:4 errors:0 dropped:0 overruns:0 frame:0
TX packets:14 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:240 (240.0 b) TX bytes:1008 (1008.0 b)

```
p2p2      Link encap:Ethernet  HWaddr 00:13:3B:21:78:18
          inet addr:10.0.1.24  Bcast:10.0.1.255  Mask:255.255.255.0
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)

p4p1      Link encap:Ethernet  HWaddr D4:BE:D9:C6:ED:C9
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
```

EXPLANATION:

Where the 10.0.1.16/24 number pertains to the IP address of your machine. A private IP address. 255.255.255.0 denotes the network mask which decides the potential size of our network and the number 10.0.1.255 denotes the broadcast address. We've configured the interface IP from 10.0.1.14 to 10.0.1.16 with same broadcast address.

EXERCISE 2: Changing netmasks.

Configure the interfaces of the hosts as shown in Table 2.
For this task we need to use the command “ifconfig p2p1 < IP Address of Ethernet Interface p2p1 > netmask <network mask>” for configuring the interfaces of each computer.

For computer A by using the table 2: IP addresses for exercise 2, get the IP Address of Ethernet Interface p2p1 and Network mask address. Run the command
Ifconfig p2p1 128.143.71.201 netmask 255.255.0.0. The output can be seen in below Fig 2.1.1.

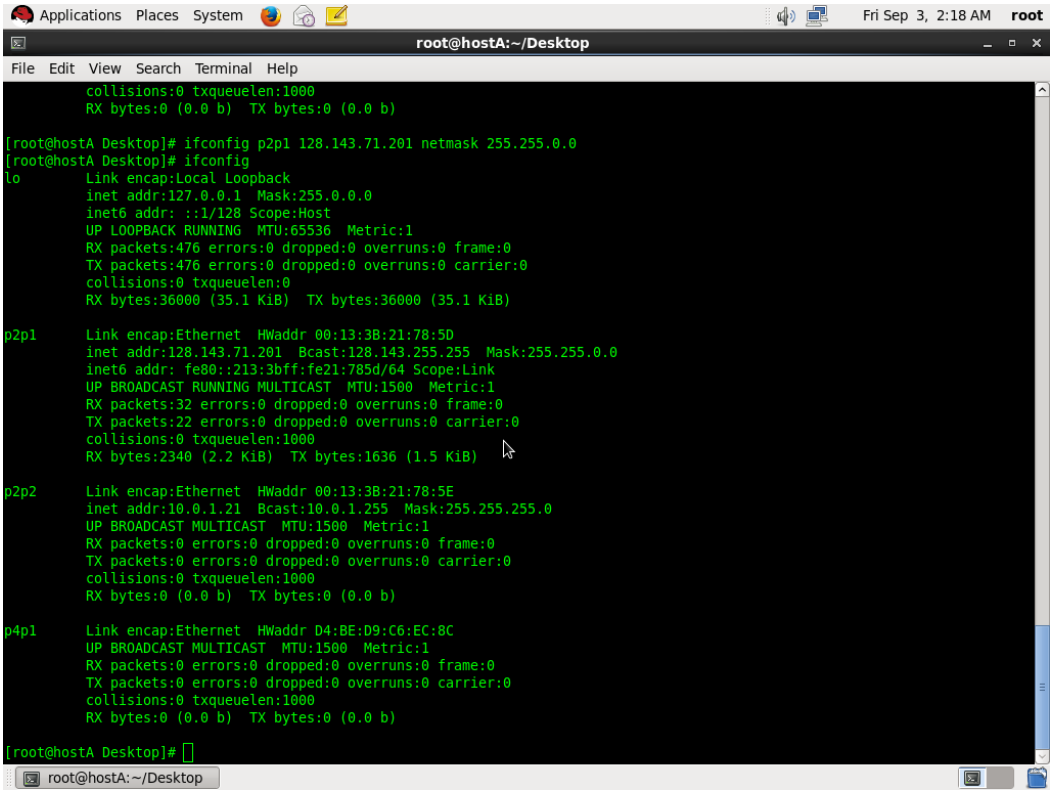


Fig 2.1.1 Interface configuration for computer A

For computer B by using the table 2: IP addresses for exercise 2, get the IP Address of Ethernet Interface p2p1 and Network mask address. Run the command
Ifconfig p2p1 128.143.71.21 netmask 255.255.255.0. The output can be seen in below Fig 2.1.2.

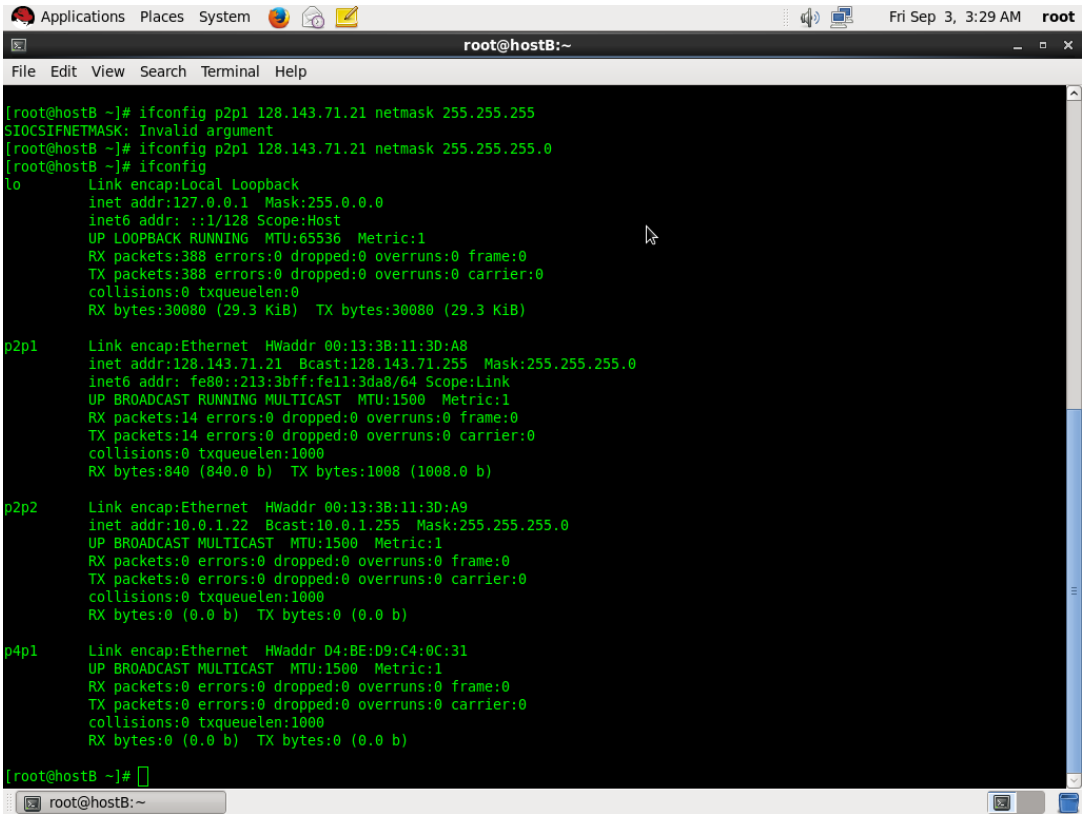


Fig 2.1.2 Interface configuration for computer B

For computer C by using the table 2: IP addresses for exercise 2, get the IP Address of Ethernet Interface p2p1 and Network mask address. Run the command
Ifconfig p2p1 128.143.137.144 netmask 255.255.255.192. The output can be seen in below Fig 2.1.3.

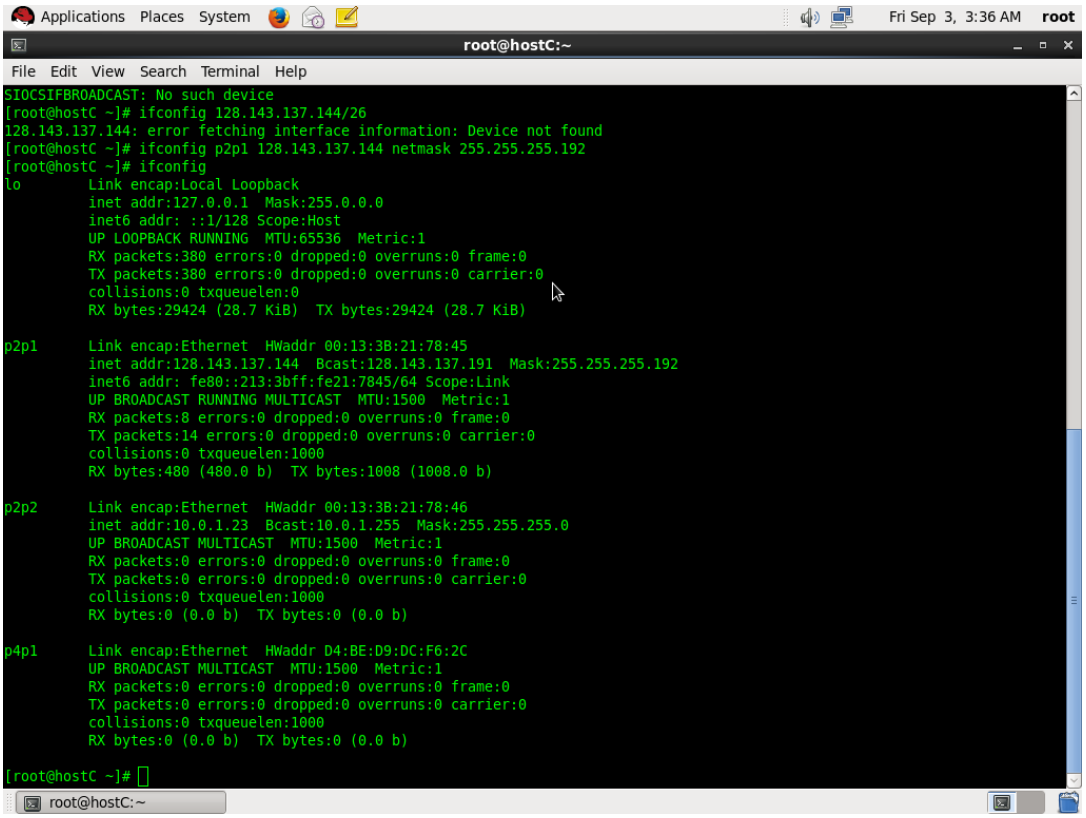


Fig 2.1.3 Interface configuration for computer C

For computer D by using the table 2: IP addresses for exercise 2, get the IP Address of Ethernet Interface p2p1 and Network mask address. Run the command
Ifconfig p2p1 128.143.137.32 netmask 255.255.255.192. The output can be seen in below Fig 2.1.4.

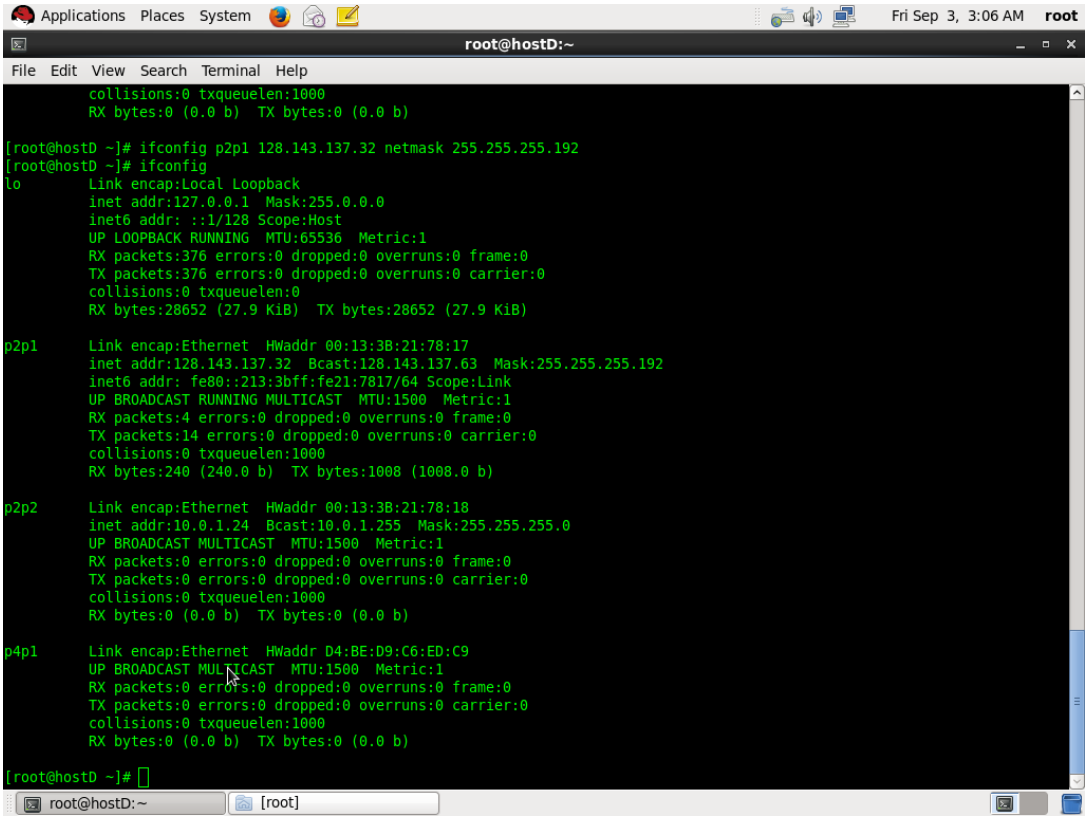


Fig 2.1.4 Interface configuration for computer D

Run Wireshark on computer A and capture the packets for the following ping commands (running each on the "from" computer). Save the Wireshark output to a text file (clearing the Packet details option), and save the output of the ping commands, including any error messages.

i. From A to C: ping -c 3 128.143.137.144

PING 128.143.137.144 (128.143.137.14) 56(84) bytes of data.
64 bytes from 128.143.137.14: icmp_seq=1 ttl=64 time=0.714 ms
64 bytes from 128.143.137.14: icmp_seq=1 ttl=64 time=0.237 ms
64 bytes from 128.143.137.14: icmp_seq=1 ttl=64 time=0.225 ms

--- 128.143.137.14 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2000ms
rtt min/avg/max.mdev = 0.225/0.392/0.714/0.227 ms

And got lost.

ii. From A to B: ping -c 3 128.143.71.21

PING 128.143.137.144 (128.143.137.14) 56(84) bytes of data.
64 bytes from 128.143.137.14: icmp_seq=1 ttl=64 time=0.714 ms
64 bytes from 128.143.137.14: icmp_seq=1 ttl=64 time=0.237 ms
64 bytes from 128.143.137.14: icmp_seq=1 ttl=64 time=0.225 ms

--- 128.143.137.14 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2000ms
rtt min/avg/max.mdev = 0.225/0.392/0.714/0.227 ms

iii. From A to D: ping -c 3 128.143.137.32

Time	Source	Destination	Protocol	Length	Info
1 0.000000000	00:13:3b:11:3d:9c	ff:ff:ff:ff:ff:ff	ARP	42	Who has 128.143.137.32? Tell 128.143.71.201
2 1.000020644	00:13:3b:11:3d:9c	ff:ff:ff:ff:ff:ff	ARP	42	Who has 128.143.137.32? Tell 128.143.71.201
3 2.000006769	00:13:3b:11:3d:9c	ff:ff:ff:ff:ff:ff	ARP	42	Who has 128.143.137.32? Tell 128.143.71.201

iv. From D to A: ping -c 3 128.143.71.201 : Network Unreachable
v. From B to D: ping -c 3 128.143.137.32 : Network Unreachable
vi. From B to C: ping -c 3 128.143.137.144 : Network Unreachable

ASURITE ID: vyaganti
ASU ID: 1223441505

WIRESHARK OUTPUT FOR FIRST THREE PINGS:

No. Time Source Destination Protocol Length Info
1 0.000000000 00:13:3b:21:78:5d ff:ff:ff:ff:ff:ff ARP 42 Who has 128.143.137.144? Tell 128.143.71.201

Frame 1: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0
Ethernet II, Src: 00:13:3b:21:78:5d (00:13:3b:21:78:5d), Dst: ff:ff:ff:ff:ff:ff (ff:ff:ff:ff:ff:ff)
Address Resolution Protocol (request)
Hardware type: Ethernet (1)
Protocol type: IP (0x0800)
Hardware size: 6
Protocol size: 4
Opcode: request (1)
Sender MAC address: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Sender IP address: 128.143.71.201 (128.143.71.201)
Target MAC address: 00:00:00:00:00:00 (00:00:00:00:00:00)
Target IP address: 128.143.137.144 (128.143.137.144)

No. Time Source Destination Protocol Length Info
2 1.000018220 00:13:3b:21:78:5d ff:ff:ff:ff:ff:ff ARP 42 Who has 128.143.137.144? Tell 128.143.71.201

Frame 2: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0
Ethernet II, Src: 00:13:3b:21:78:5d (00:13:3b:21:78:5d), Dst: ff:ff:ff:ff:ff:ff (ff:ff:ff:ff:ff:ff)
Address Resolution Protocol (request)
Hardware type: Ethernet (1)
Protocol type: IP (0x0800)
Hardware size: 6
Protocol size: 4
Opcode: request (1)
Sender MAC address: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Sender IP address: 128.143.71.201 (128.143.71.201)
Target MAC address: 00:00:00:00:00:00 (00:00:00:00:00:00)
Target IP address: 128.143.137.144 (128.143.137.144)

No. Time Source Destination Protocol Length Info
3 2.000017194 00:13:3b:21:78:5d ff:ff:ff:ff:ff:ff ARP 42 Who has 128.143.137.144? Tell 128.143.71.201

Frame 3: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0
Ethernet II, Src: 00:13:3b:21:78:5d (00:13:3b:21:78:5d), Dst: ff:ff:ff:ff:ff:ff (ff:ff:ff:ff:ff:ff)
Address Resolution Protocol (request)
Hardware type: Ethernet (1)
Protocol type: IP (0x0800)
Hardware size: 6

Protocol size: 4
Opcode: request (1)
Sender MAC address: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Sender IP address: 128.143.71.201 (128.143.71.201)
Target MAC address: 00:00:00:00:00:00 (00:00:00:00:00:00)
Target IP address: 128.143.137.144 (128.143.137.144)

No. Time Source Destination Protocol Length Info
4 140.869002282 00:13:3b:21:78:5d ff:ff:ff:ff:ff:ff ARP 42 Who has 128.143.71.21? Tell 128.143.71.201

Frame 4: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0
Ethernet II, Src: 00:13:3b:21:78:5d (00:13:3b:21:78:5d), Dst: ff:ff:ff:ff:ff:ff (ff:ff:ff:ff:ff:ff)
Address Resolution Protocol (request)
Hardware type: Ethernet (1)
Protocol type: IP (0x0800)
Hardware size: 6
Protocol size: 4
Opcode: request (1)
Sender MAC address: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Sender IP address: 128.143.71.201 (128.143.71.201)
Target MAC address: 00:00:00:00:00:00 (00:00:00:00:00:00)
Target IP address: 128.143.71.21 (128.143.71.21)

No. Time Source Destination Protocol Length Info
5 140.869235185 00:13:3b:11:3d:a8 00:13:3b:21:78:5d ARP 60 128.143.71.21 is at 00:13:3b:11:3d:a8

Frame 5: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0
Ethernet II, Src: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8), Dst: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Address Resolution Protocol (reply)
Hardware type: Ethernet (1)
Protocol type: IP (0x0800)
Hardware size: 6
Protocol size: 4
Opcode: reply (2)
Sender MAC address: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8)
Sender IP address: 128.143.71.21 (128.143.71.21)
Target MAC address: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Target IP address: 128.143.71.201 (128.143.71.201)

No. Time Source Destination Protocol Length Info
6 140.869245941 128.143.71.201 128.143.71.21 ICMP 98 Echo (ping) request id=0x7d10, seq=1/256, ttl=64

Frame 6: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
Ethernet II, Src: 00:13:3b:21:78:5d (00:13:3b:21:78:5d), Dst: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8)
Internet Protocol Version 4, Src: 128.143.71.201 (128.143.71.201), Dst: 128.143.71.21 (128.143.71.21)
Internet Control Message Protocol

No. Time Source Destination Protocol Length Info
7 140.869383700 128.143.71.21 128.143.71.201 ICMP 98 Echo (ping) reply id=0x7d10, seq=1/256, ttl=64

Frame 7: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
Ethernet II, Src: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8), Dst: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Internet Protocol Version 4, Src: 128.143.71.21 (128.143.71.21), Dst: 128.143.71.201 (128.143.71.201)
Internet Control Message Protocol

No. Time Source Destination Protocol Length Info
8 141.869532178 128.143.71.201 128.143.71.21 ICMP 98 Echo (ping) request id=0x7d10, seq=2/512, ttl=64

Frame 8: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
Ethernet II, Src: 00:13:3b:21:78:5d (00:13:3b:21:78:5d), Dst: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8)
Internet Protocol Version 4, Src: 128.143.71.201 (128.143.71.201), Dst: 128.143.71.21 (128.143.71.21)
Internet Control Message Protocol

No. Time Source Destination Protocol Length Info
9 141.869746938 128.143.71.21 128.143.71.201 ICMP 98 Echo (ping) reply id=0x7d10, seq=2/512, ttl=64

Frame 9: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
Ethernet II, Src: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8), Dst: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Internet Protocol Version 4, Src: 128.143.71.21 (128.143.71.21), Dst: 128.143.71.201 (128.143.71.201)
Internet Control Message Protocol

No. Time Source Destination Protocol Length Info
10 142.869043315 128.143.71.201 128.143.71.21 ICMP 98 Echo (ping) request id=0x7d10, seq=3/768, ttl=64

Frame 10: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0

Ethernet II, Src: 00:13:3b:21:78:5d (00:13:3b:21:78:5d), Dst: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8)
Internet Protocol Version 4, Src: 128.143.71.201 (128.143.71.201), Dst: 128.143.71.21 (128.143.71.21)
Internet Control Message Protocol

No. Time Source Destination Protocol Length Info
11 142.869259313 128.143.71.21 128.143.71.201 ICMP 98 Echo (ping) reply id=0x7d10, seq=3/768, ttl=64

Frame 11: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
Ethernet II, Src: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8), Dst: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Internet Protocol Version 4, Src: 128.143.71.21 (128.143.71.21), Dst: 128.143.71.201 (128.143.71.201)
Internet Control Message Protocol

No. Time Source Destination Protocol Length Info
12 145.869046684 00:13:3b:11:3d:a8 00:13:3b:21:78:5d ARP 60 Who has 128.143.71.201? Tell 128.143.71.21

Frame 12: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0
Ethernet II, Src: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8), Dst: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Address Resolution Protocol (request)
Hardware type: Ethernet (1)
Protocol type: IP (0x0800)
Hardware size: 6
Protocol size: 4
Opcode: request (1)
Sender MAC address: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8)
Sender IP address: 128.143.71.21 (128.143.71.21)
Target MAC address: 00:00:00:00:00:00 (00:00:00:00:00:00)
Target IP address: 128.143.71.201 (128.143.71.201)

No. Time Source Destination Protocol Length Info
13 145.869059214 00:13:3b:21:78:5d 00:13:3b:11:3d:a8 ARP 42 128.143.71.201 is at 00:13:3b:21:78:5d

Frame 13: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0
Ethernet II, Src: 00:13:3b:21:78:5d (00:13:3b:21:78:5d), Dst: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8)
Address Resolution Protocol (reply)
Hardware type: Ethernet (1)
Protocol type: IP (0x0800)
Hardware size: 6

Protocol size: 4
Opcode: reply (2)
Sender MAC address: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Sender IP address: 128.143.71.201 (128.143.71.201)
Target MAC address: 00:13:3b:11:3d:a8 (00:13:3b:11:3d:a8)
Target IP address: 128.143.71.21 (128.143.71.21)

No. Time Source Destination Protocol Length Info
14 797.889032979 00:13:3b:21:78:5d ff:ff:ff:ff:ff:ff ARP 42 Who has 128.143.137.32? Tell 128.143.71.201

Frame 14: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0
Ethernet II, Src: 00:13:3b:21:78:5d (00:13:3b:21:78:5d), Dst: ff:ff:ff:ff:ff:ff (ff:ff:ff:ff:ff:ff)
Address Resolution Protocol (request)
Hardware type: Ethernet (1)
Protocol type: IP (0x0800)
Hardware size: 6
Protocol size: 4
Opcode: request (1)
Sender MAC address: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Sender IP address: 128.143.71.201 (128.143.71.201)
Target MAC address: 00:00:00:00:00:00 (00:00:00:00:00:00)
Target IP address: 128.143.137.32 (128.143.137.32)

No. Time Source Destination Protocol Length Info
15 798.889061181 00:13:3b:21:78:5d ff:ff:ff:ff:ff:ff ARP 42 Who has 128.143.137.32? Tell 128.143.71.201

Frame 15: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0
Ethernet II, Src: 00:13:3b:21:78:5d (00:13:3b:21:78:5d), Dst: ff:ff:ff:ff:ff:ff (ff:ff:ff:ff:ff:ff)
Address Resolution Protocol (request)
Hardware type: Ethernet (1)
Protocol type: IP (0x0800)
Hardware size: 6
Protocol size: 4
Opcode: request (1)
Sender MAC address: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Sender IP address: 128.143.71.201 (128.143.71.201)
Target MAC address: 00:00:00:00:00:00 (00:00:00:00:00:00)
Target IP address: 128.143.137.32 (128.143.137.32)

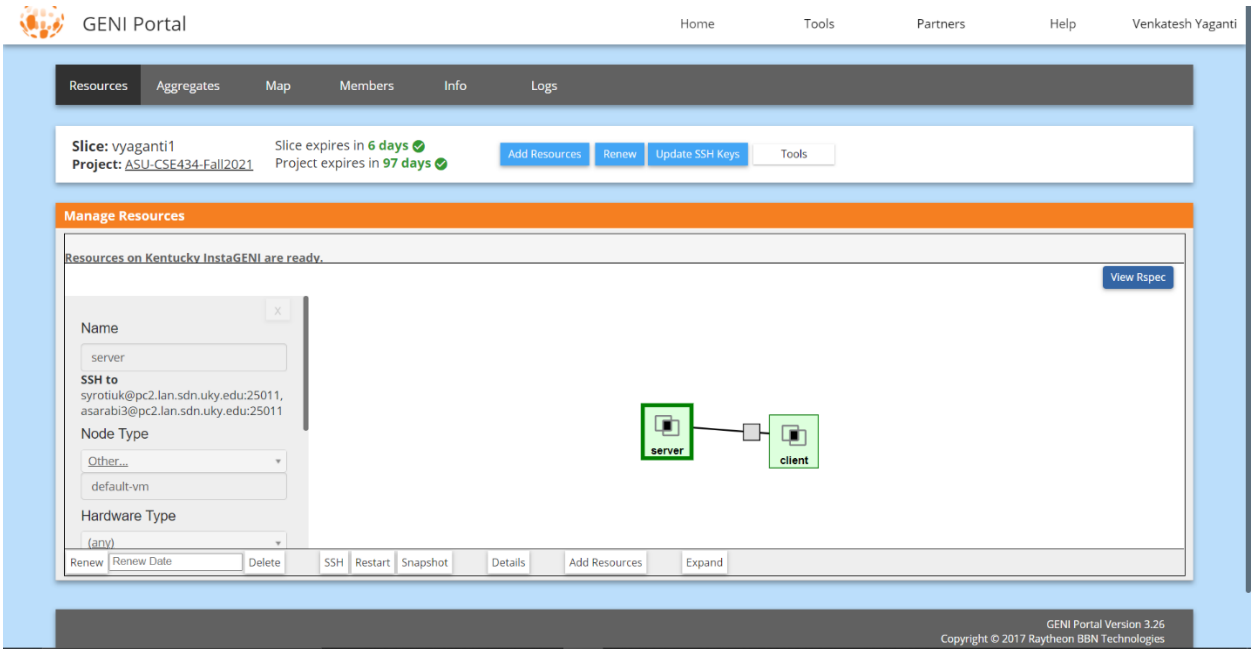
No. Time Source Destination Protocol Length Info
16 799.889058029 00:13:3b:21:78:5d ff:ff:ff:ff:ff:ff ARP 42 Who has 128.143.137.32? Tell 128.143.71.201

Frame 16: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0

Ethernet II, Src: 00:13:3b:21:78:5d (00:13:3b:21:78:5d), Dst: ff:ff:ff:ff:ff:ff (ff:ff:ff:ff:ff:ff)
Address Resolution Protocol (request)
Hardware type: Ethernet (1)
Protocol type: IP (0x0800)
Hardware size: 6
Protocol size: 4
Opcode: request (1)
Sender MAC address: 00:13:3b:21:78:5d (00:13:3b:21:78:5d)
Sender IP address: 128.143.71.201 (128.143.71.201)
Target MAC address: 00:00:00:00:00:00 (00:00:00:00:00:00)
Target IP address: 128.143.137.32 (128.143.137.32)

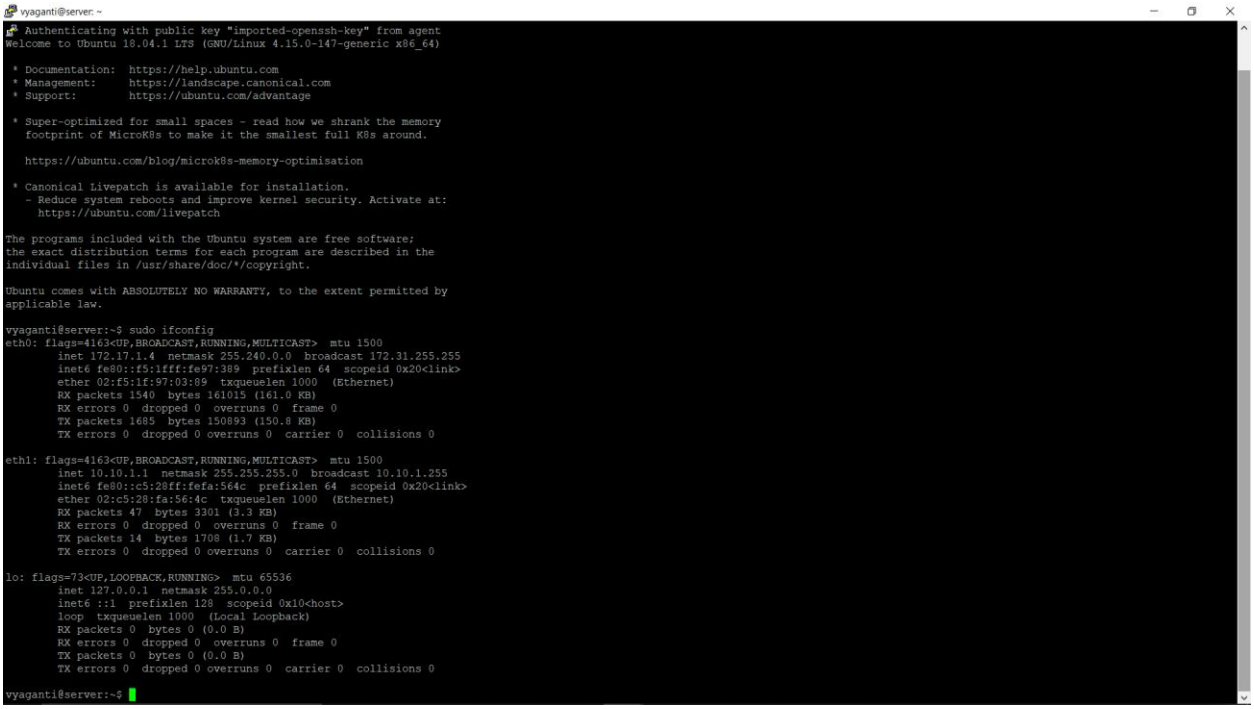
EXERCISE 3: Testing ssh keys. Be sure that all screen shots include the ASUrite id of a group member. This should be in the login prompt when you ssh into a VM.

i. Take a screen shot of your topology once it is ready (it should resemble Figure 3-9) and include it in your report.

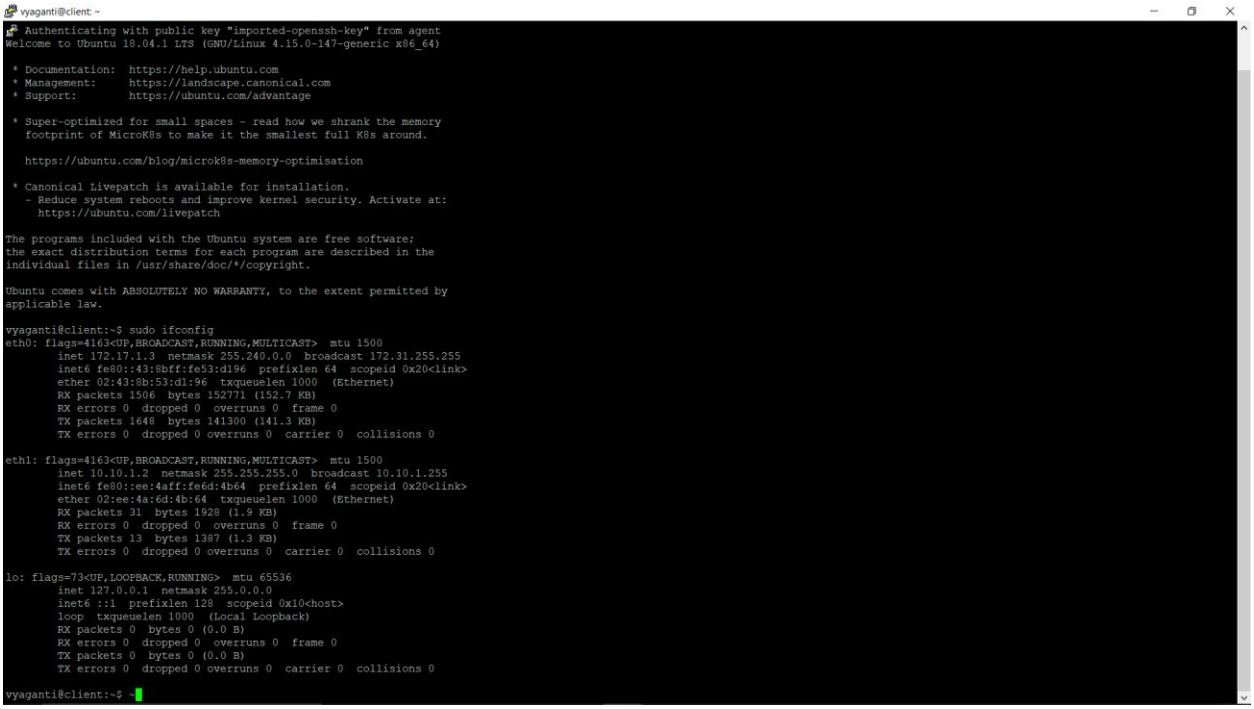


ii. Give the interface names and IPv4 addresses of the client and server assigned to the data plane and the control plane and include them in your report. (The data plane interfaces have IPv4 addresses of the form 10.1.x.y.)

For Server:
The control interface: 172.17.1.4
The data interface: 10.10.1.1



For Client:
The control interface: 172.17.1.3
The data interface: 10.10.1.2



iii. Take a screen shot of ping output on the client in 5.1(c) of the instructions.

iv. Delete the resources from this slice when you are finished. This results in an empty slice that can be reused, i.e., other resources can be added to into it.

Deleted the resources using the “Delete” button under the slice in GENI portal.

EXERCISE 4: Design Subnets. Solve the subnet design problem posed in the section Challenge: Design Subnets that meets the requirements.

For LAN-A:
1. The subnet mask: 255.255.255.192
2. The network address: 10.10.172.128
3. The smallest IPv4 address that may be assigned to a host in the subnet: 10.10.172.129
4. The broadcast address for the subnet: 10.10.172.191
5. The highest IPv4 address that may be assigned to a host in the subnet: 10.10.172.190

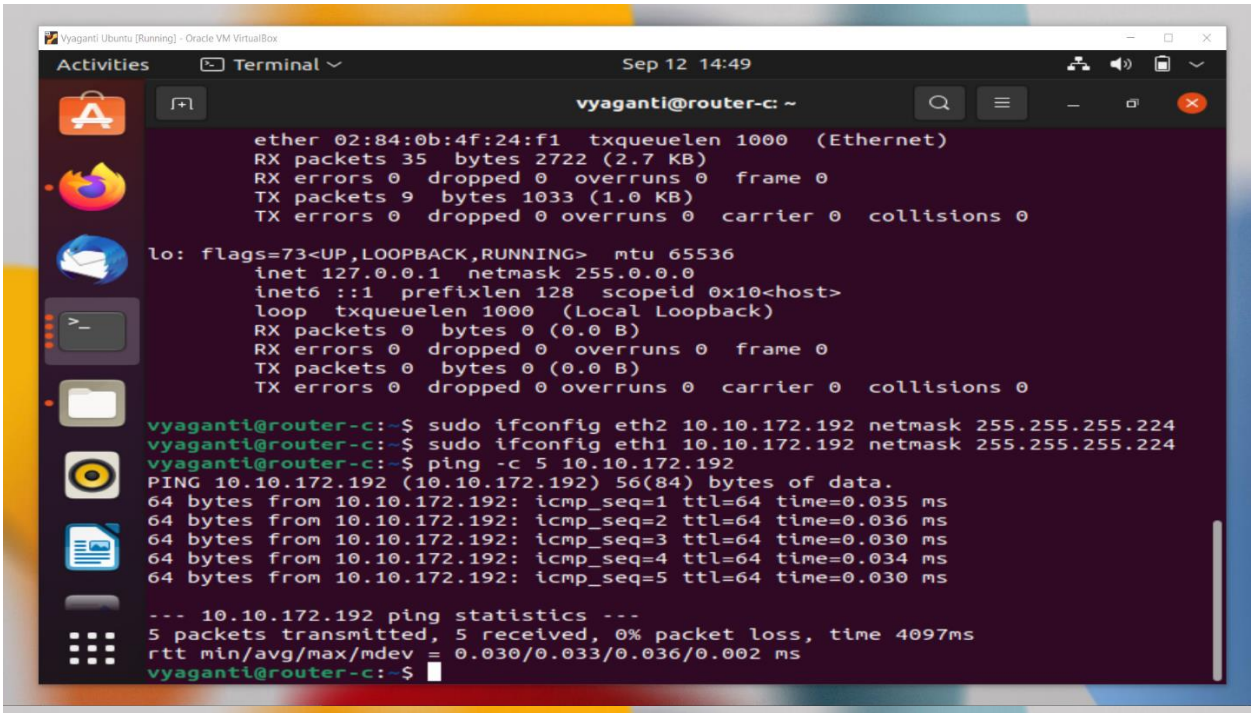
For LAN-B:
1. The subnet mask: 255.255.255.128
2. The network address: 10.10.172.0
3. The smallest IPv4 address that may be assigned to a host in the subnet: 10.10.172.1
4. The broadcast address for the subnet: 10.10.172.127
5. The highest IPv4 address that may be assigned to a host in the subnet: 10.10.172.126

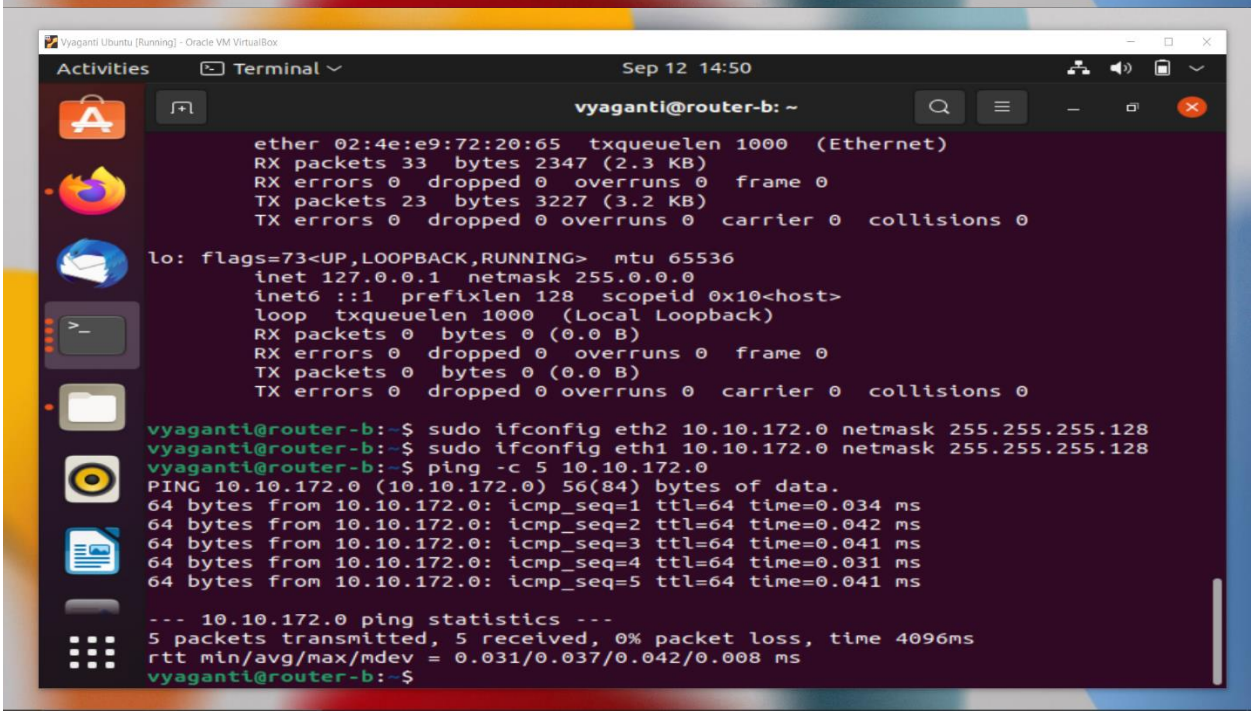
For LAN-C:
1. The subnet mask: 255.255.255.224
2. The network address: 10.10.172.192
3. The smallest IPv4 address that may be assigned to a host in the subnet: 10.10.172.193
4. The broadcast address for the subnet: 10.10.172.223
5. The highest IPv4 address that may be assigned to a host in the subnet: 10.10.172.222

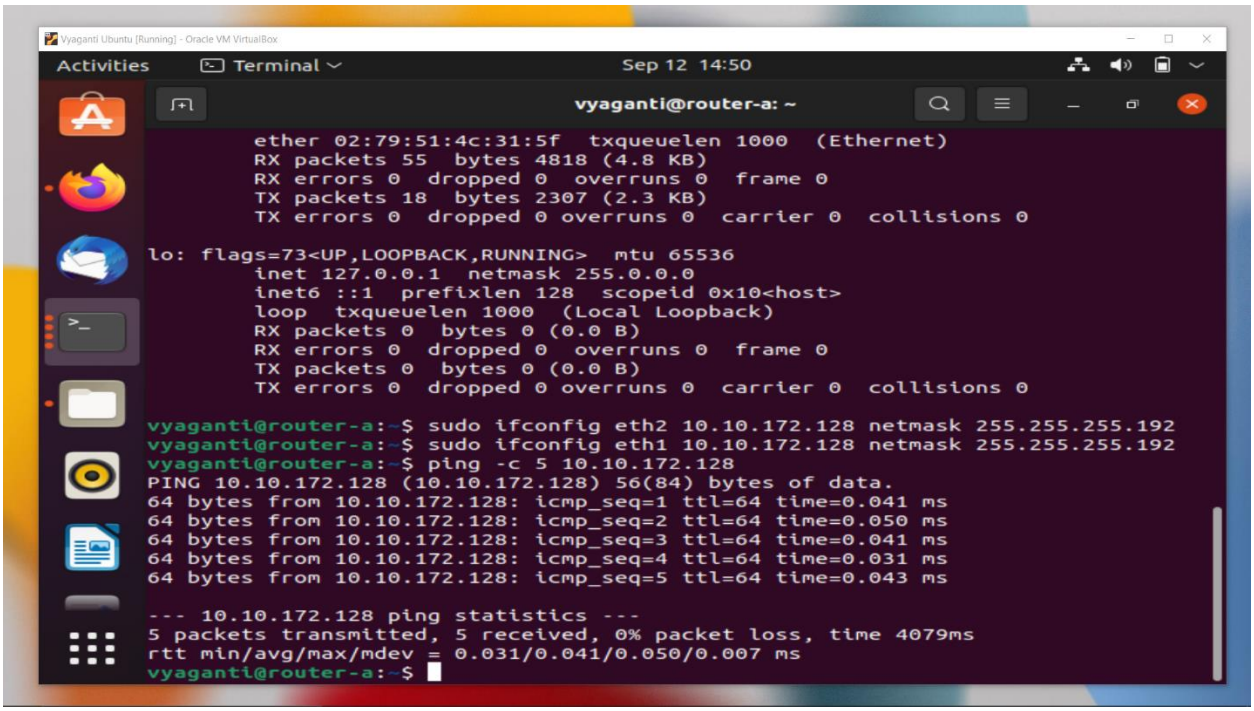
ASURITE ID: vyaganti
ASU ID: 1223441505

EXERCISE 5: Implement your Design. Configure the IPv4 address and subnet mask of each host in each LAN using your solution to Exercise 4.

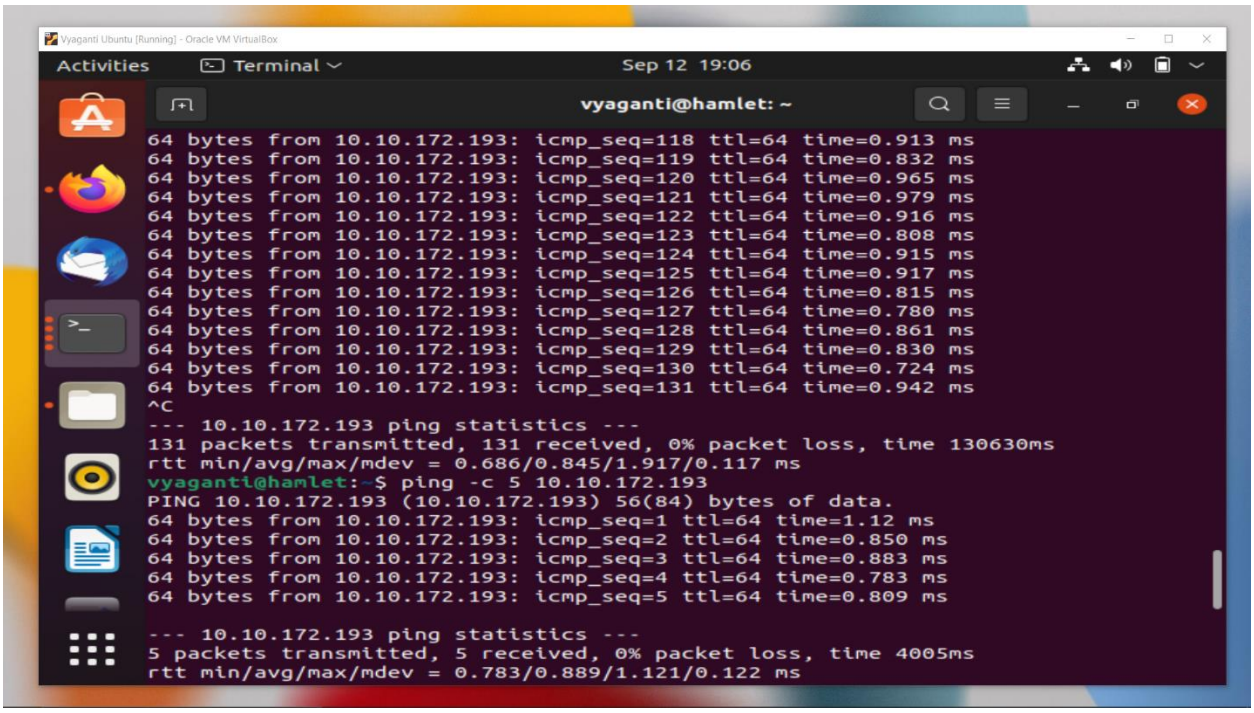
i. Take a screen shot showing the output of the ping -c 5 IP command between the two hosts in the same LAN and include each one in your report.







ii. Take a screen shot showing the output of the ping -c 5 IP between a host in LAN A and a host in LAN B, between a host in LAN B and a host in LAN C, and between a host in LAN C and a host in LAN A, and include them in your report.



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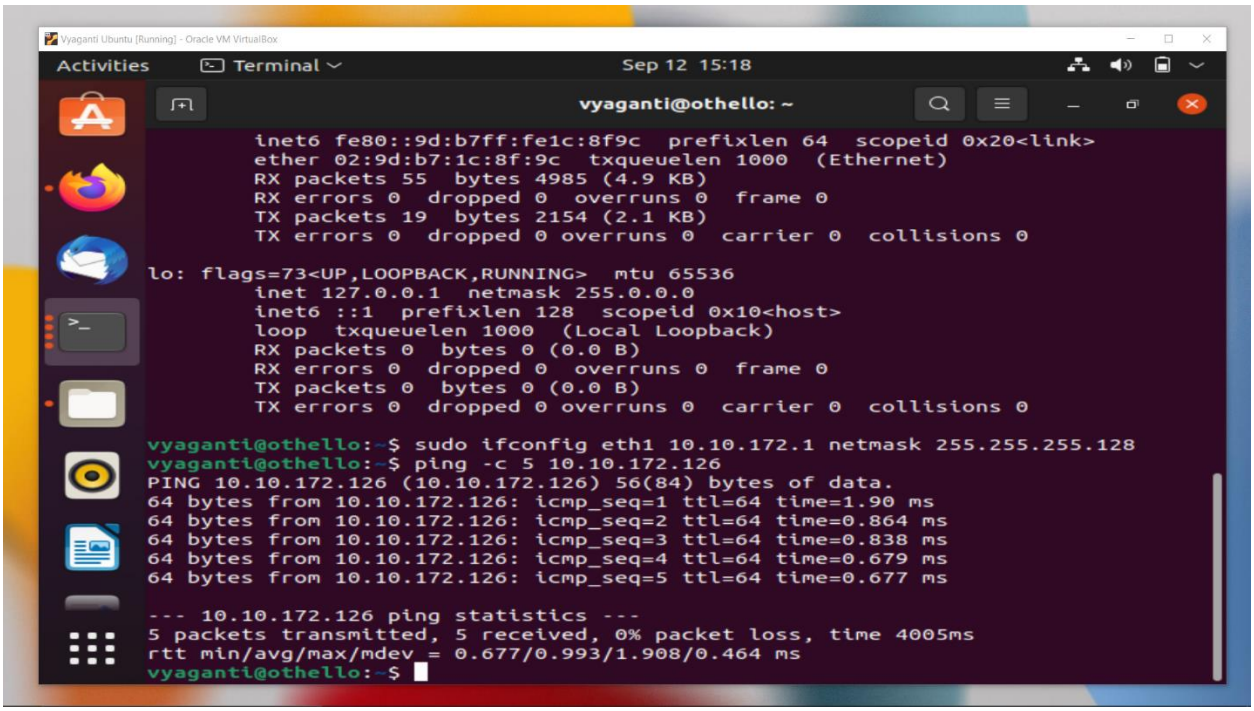
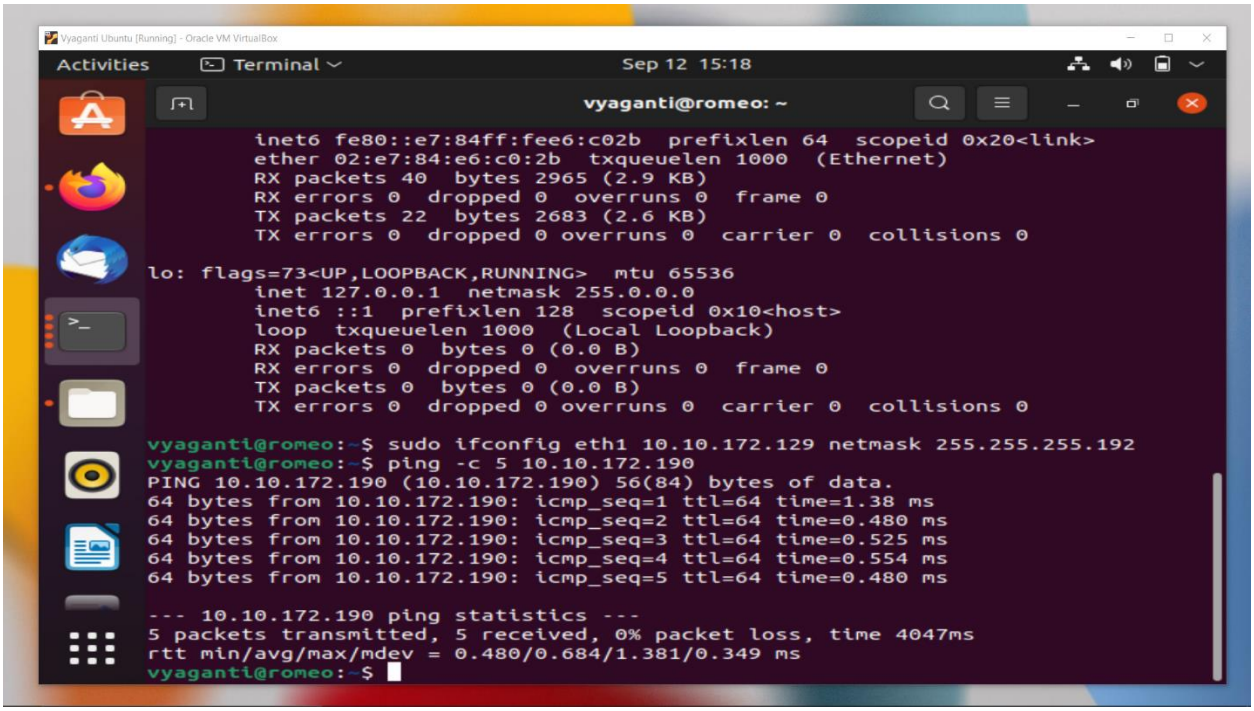
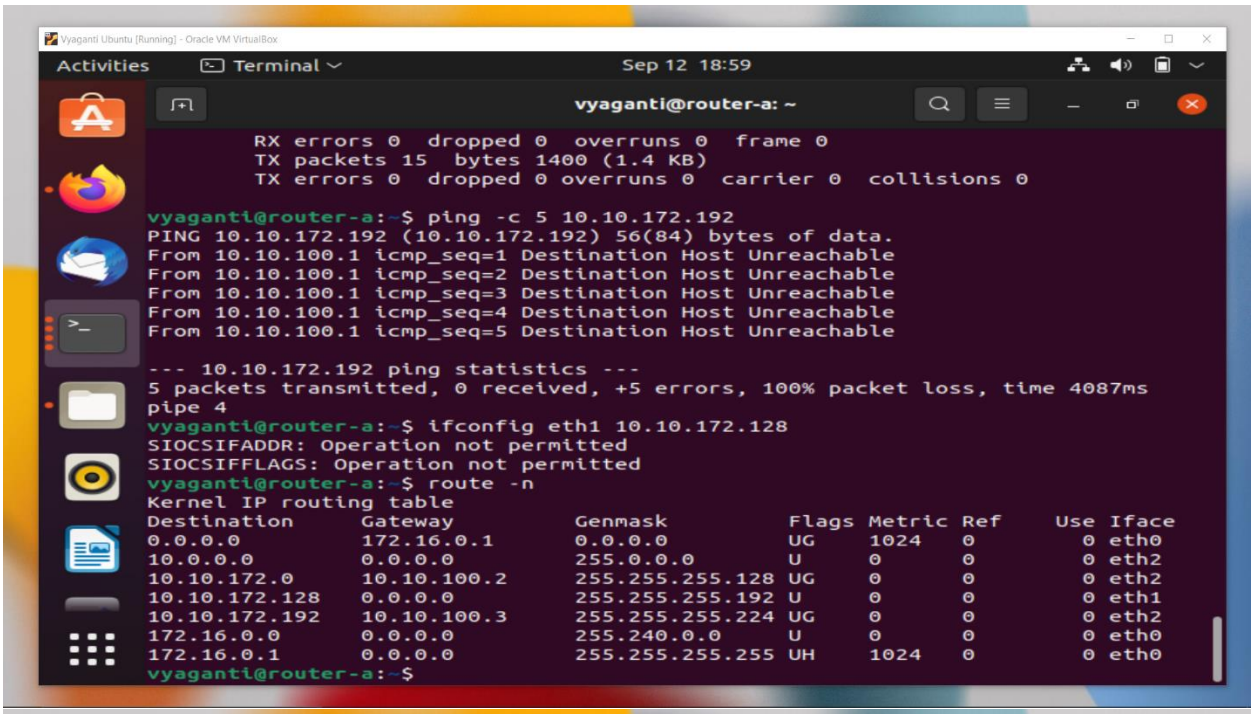


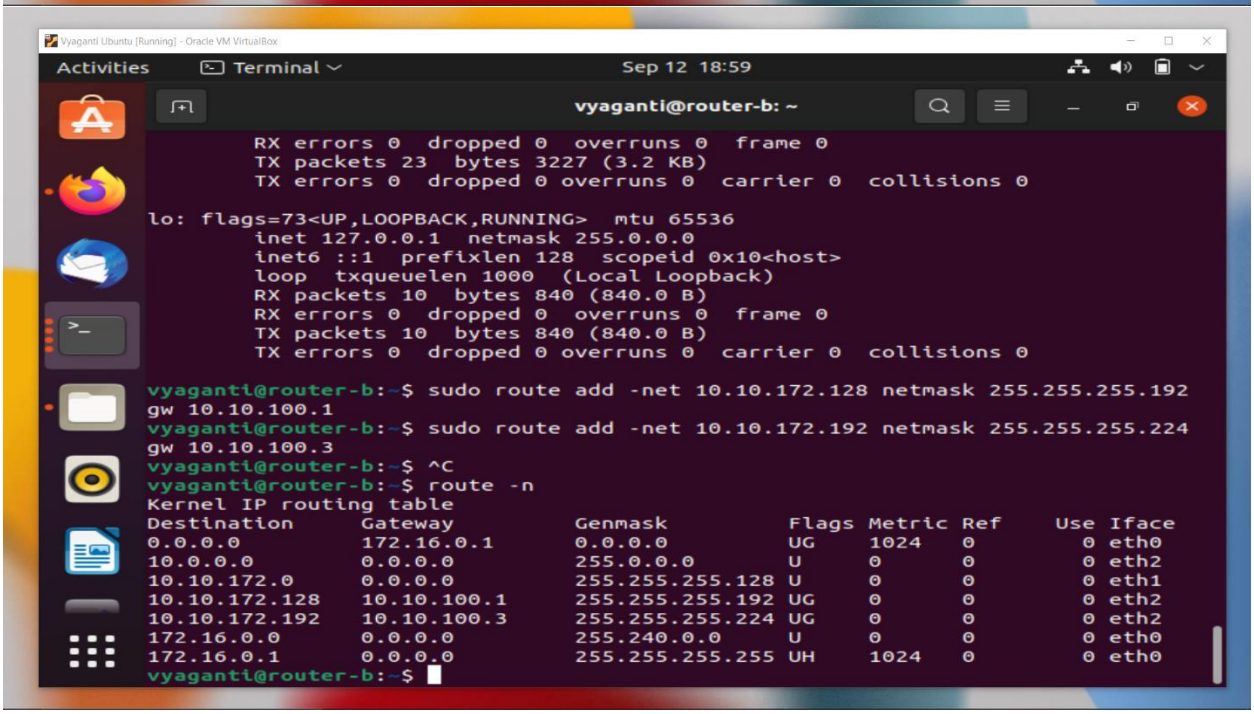


ASURITE ID: vyaganti
ASU ID: 1223441505

EXERCISE 6: Add Routing Rules. Configure the route on each host in each LAN, and also on each router.

i. Take a screen shot of the output of the route -n command on each node and on each router and include it in your report





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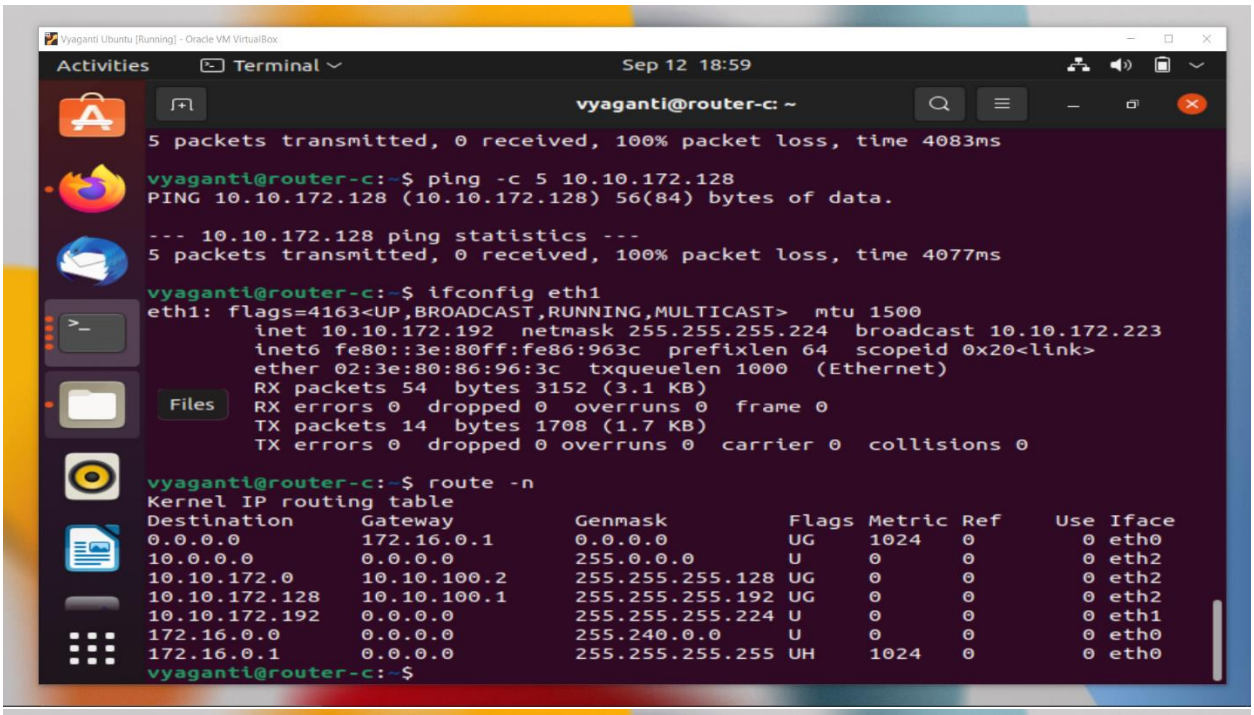
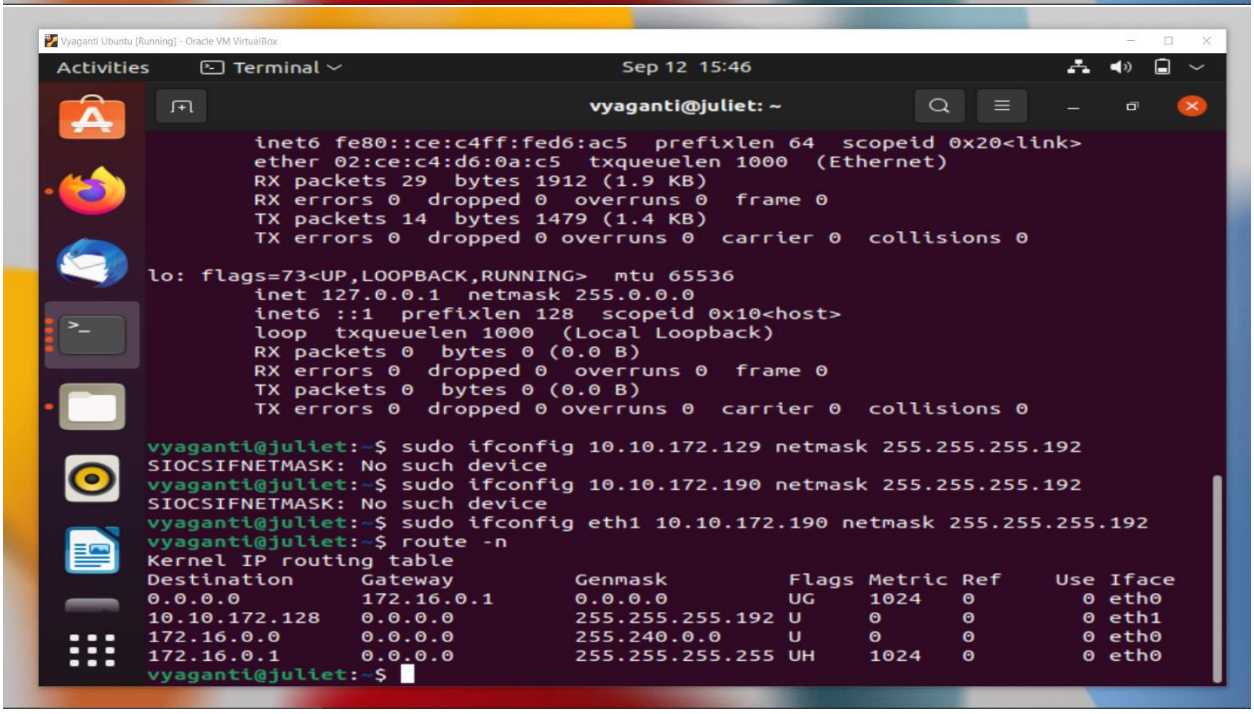
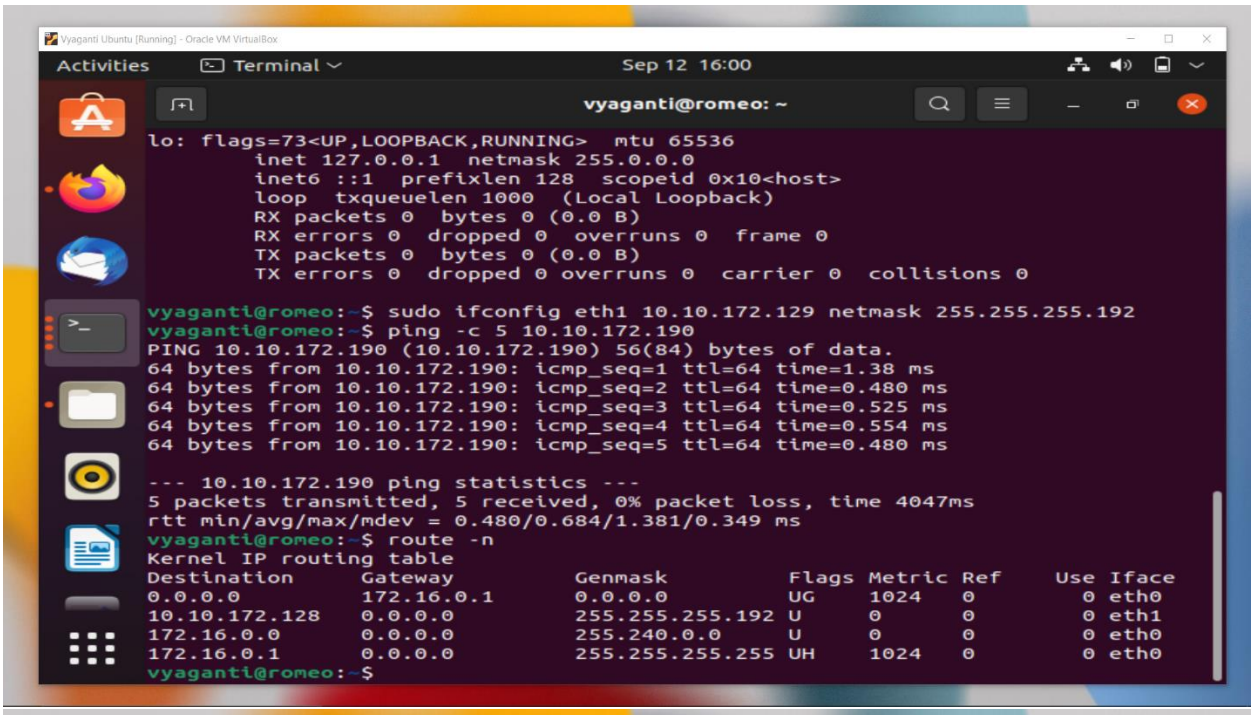
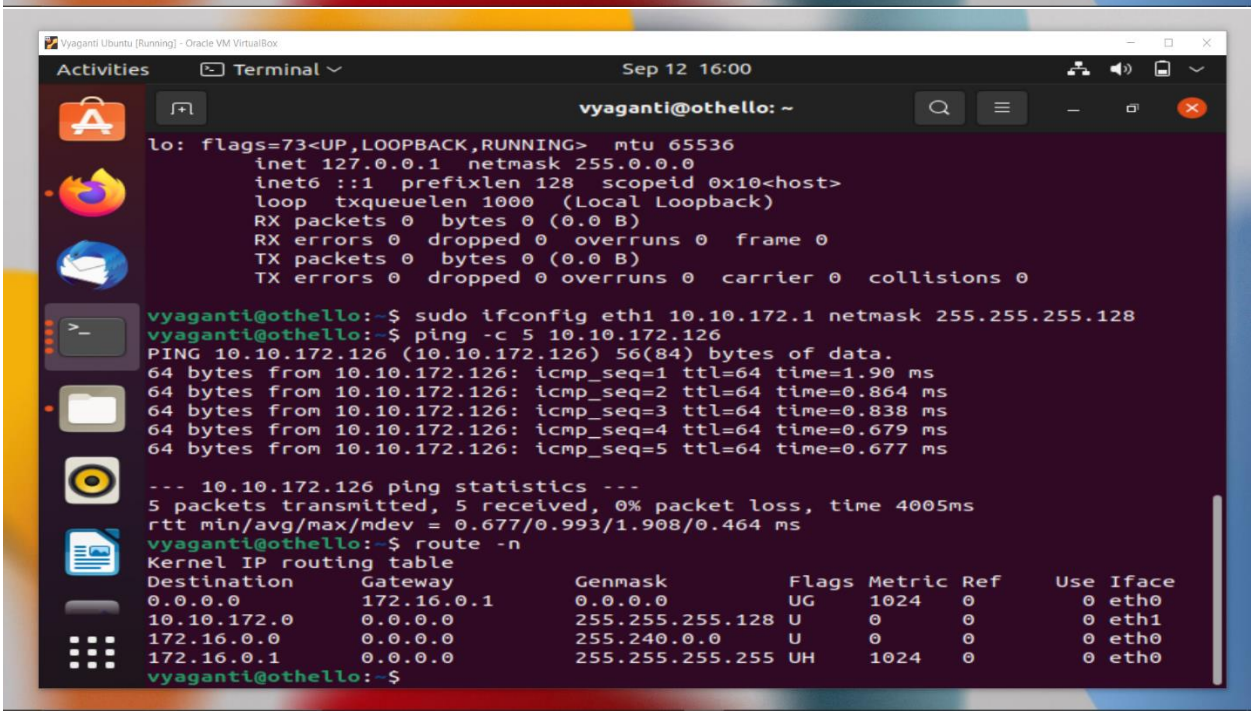
ASU ID: 1223441505

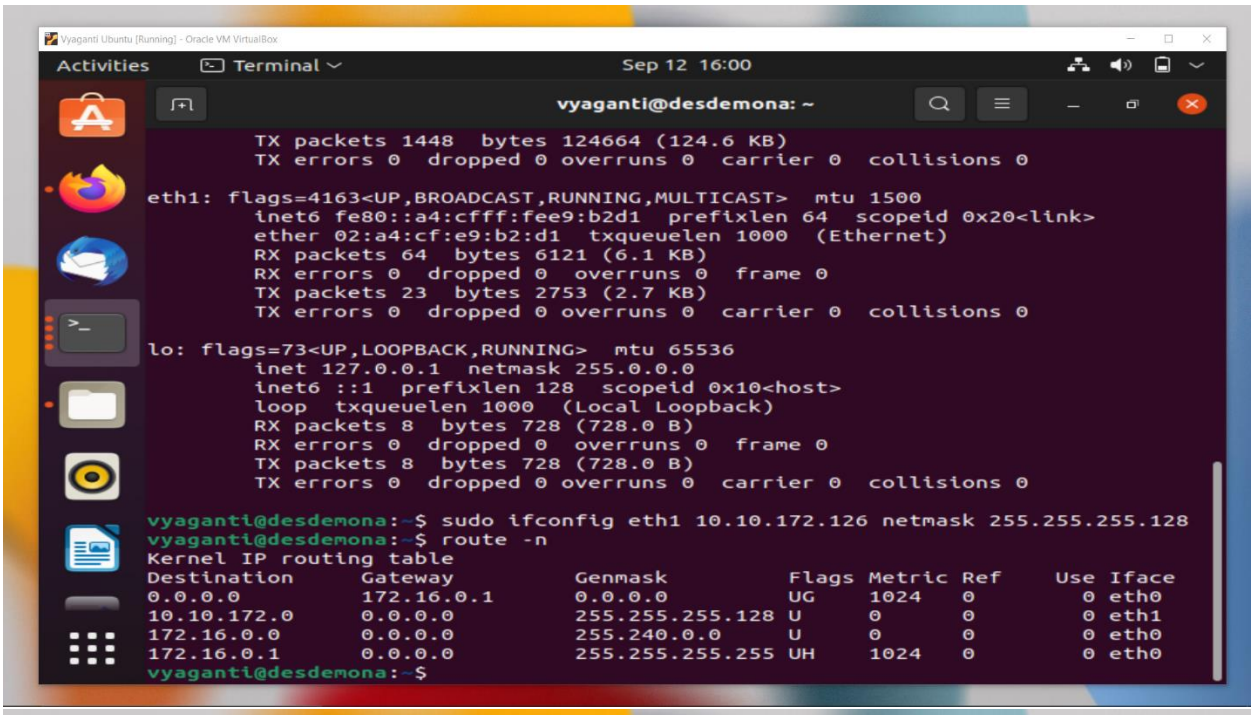


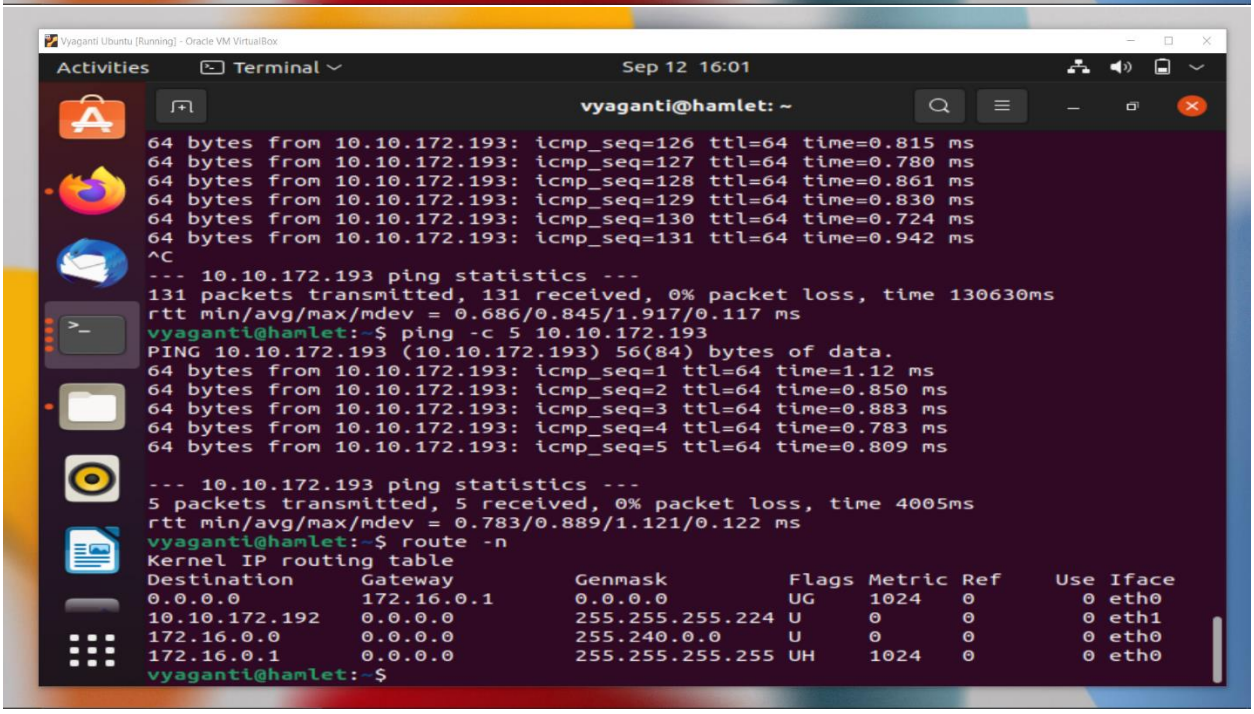


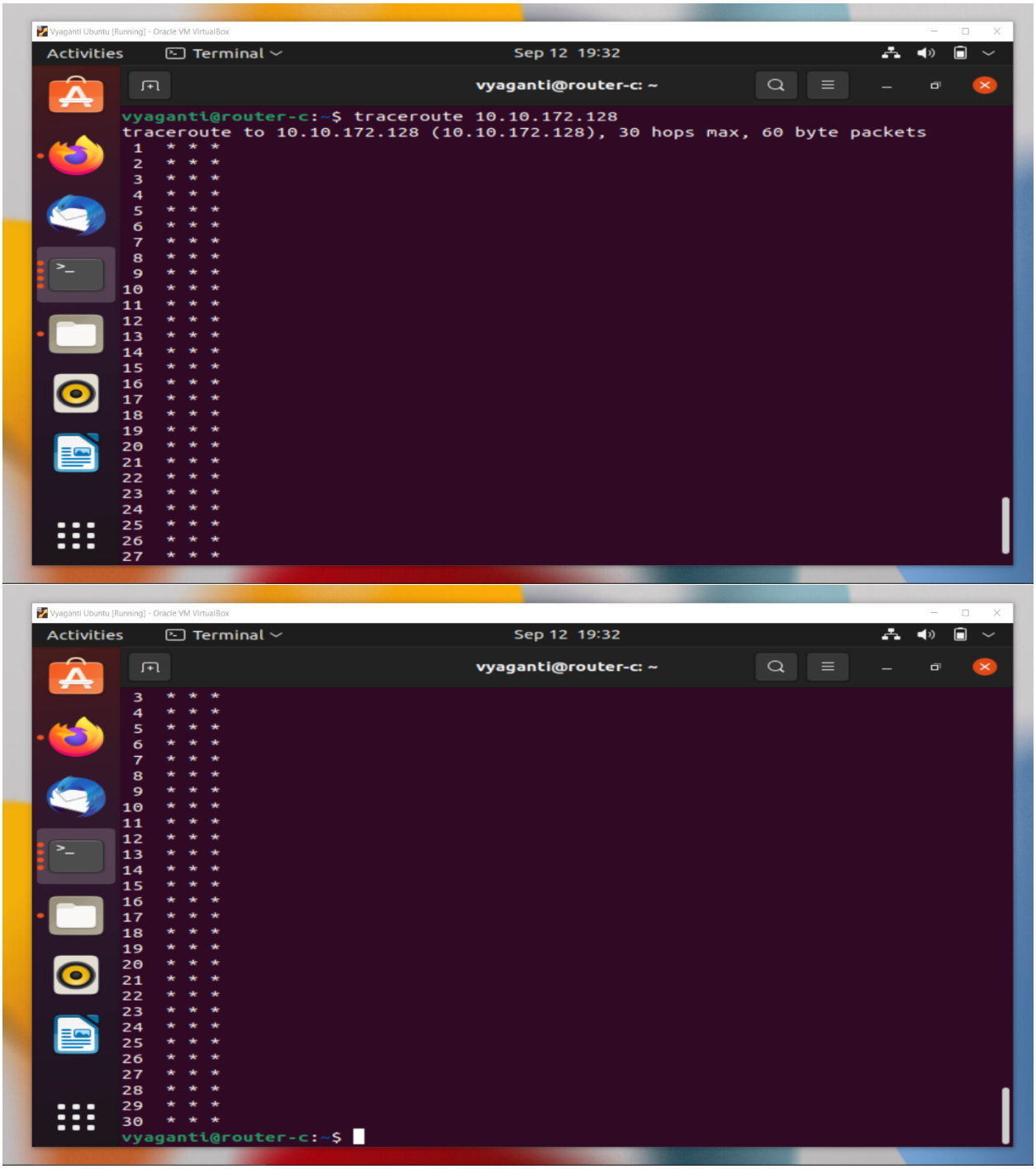
ASURITE ID: vyaganti
ASU ID: 1223441505









ii. Take a screen shot of the output of the ping -c 5 IP command from node-11 to node-4, from node-5 to node-6, and from node-10 to node-7 and include them in your report.

iii. Follow the instructions to configure the routing rules for the 10.10.100.0/24 network. Now, take a screen shot of the output of the traceroute IP command from node-11 to node-4 and include it in your report.