Mawlana Bhashani Science and Technology University

Linux Assignment

Assignment No:02

Course title: Computer Network

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MBSTU.

1)Introduction

If you have a network that ranges from 192.168.1.0 to 192.168.1.255 explain why individual divices in the network can only be assigned IP addresses in the range of 192.168.1.1 to 192.168.1.254(**write down the answers in your written report**)

Ans:

If I have a network that ranges from 192.168.1.0 to 192.168.1.255 ,then we can say that:

1)The network identifier would be 192.168.1.0

An address like 192.168.0.0 becomes unusable for any other purpose after it's established as a network number. If an administrator assigns 192.168.0.0 to any device on the network as a static IP address, the network stops functioning until that device is taken offline.As a network number, this address is used in routing tables and by routers to share network information with each other.

2)The broadcast address would be 192.168.1.255

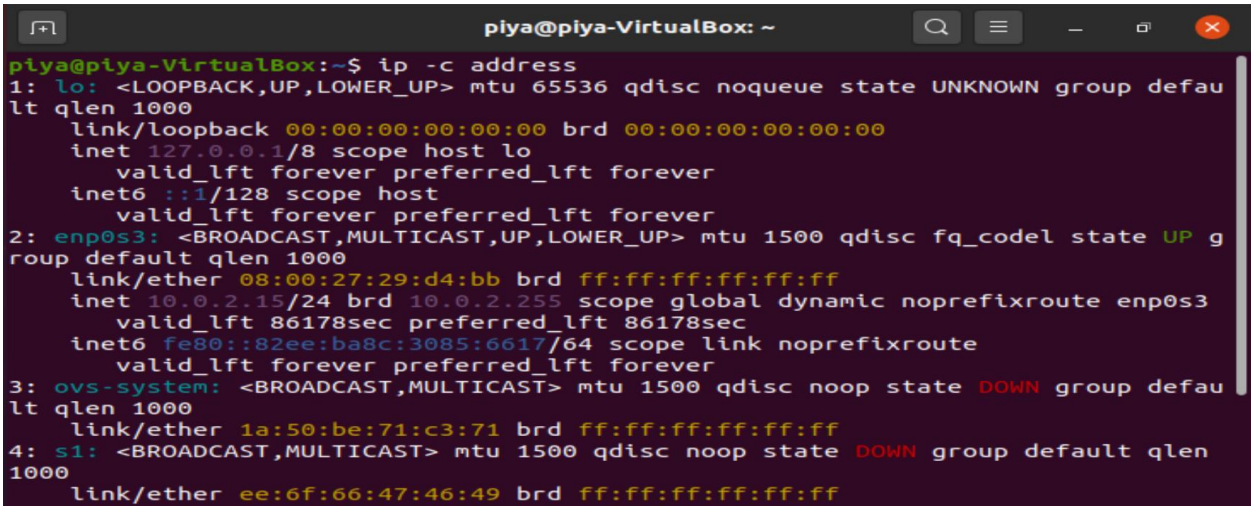
A broadcast is a multipoint connection in a computer network. A data packet is transmitted from one point to all users of a messaging network in this way. This occurs with the use of the broadcast address.

So, valid ip addresses would be 192.168.1.1 to 192.168.1.254.

2)Find IP & MAC

Find out about network and hardware information for the computer you are currently using.(**write down the IP & MAC address of your computer in your written report)**

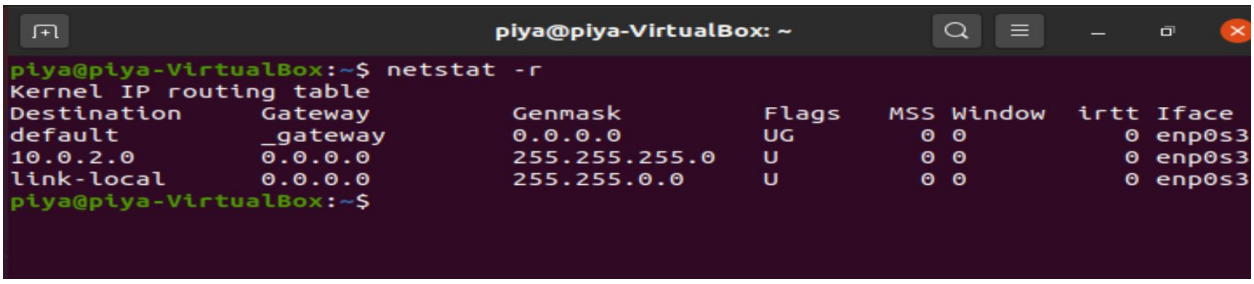
My IP address is 192.168.0.102 MAC address is 70-60-55-08-0C-05



3)Routing Table basics

Now enter the command**:"&netstat -r"**to print your computers routing table.Explain(very briefly)the different columns:**Destination,Gateway,Genmask,Flags,MSS,Window,irtt and Iface(write the ans in your written report in table form)**

Ans:



- **Destination** : The destination network or destination host.
- **Gateway** : The gateway address or '*' if none set.
- **Genmask** : The netmask for the destination net; 255.255.255.255 for a host destination and 0.0.0.0 for the default route.
- **Flags** : The U output in this columns means that the route is up. The G output indicates that specified gateway should be used for this route. D stands for dynamically installed, M stands for modified, and R means reinstated.
- **MSS :** Default maximum segment size for TCP connections over
- **Window :** Default window size for TCP connections over this route.
- **irtt :** Initial RTT (Round Trip Time). The kernel uses this to guess about the best TCP protocol parameters without waiting on (possibly slow) answers.
- **Iface :** Interface to which packets for this route will be sent.

4)Virtual Interfaces

Linux offers the possibility to set up interfaces according to your networking needs.For instance,if needed,you can configure an interface for multiple IP addresses by creating new virtual interfaces with another IP address

a)Create a new virtual interface with following IP addresses,192.168.2.32 and netmask 255.255.255.0 then check to see if the interface was created successfully?(**save a printscreen of your interface table to display in your written report document)**

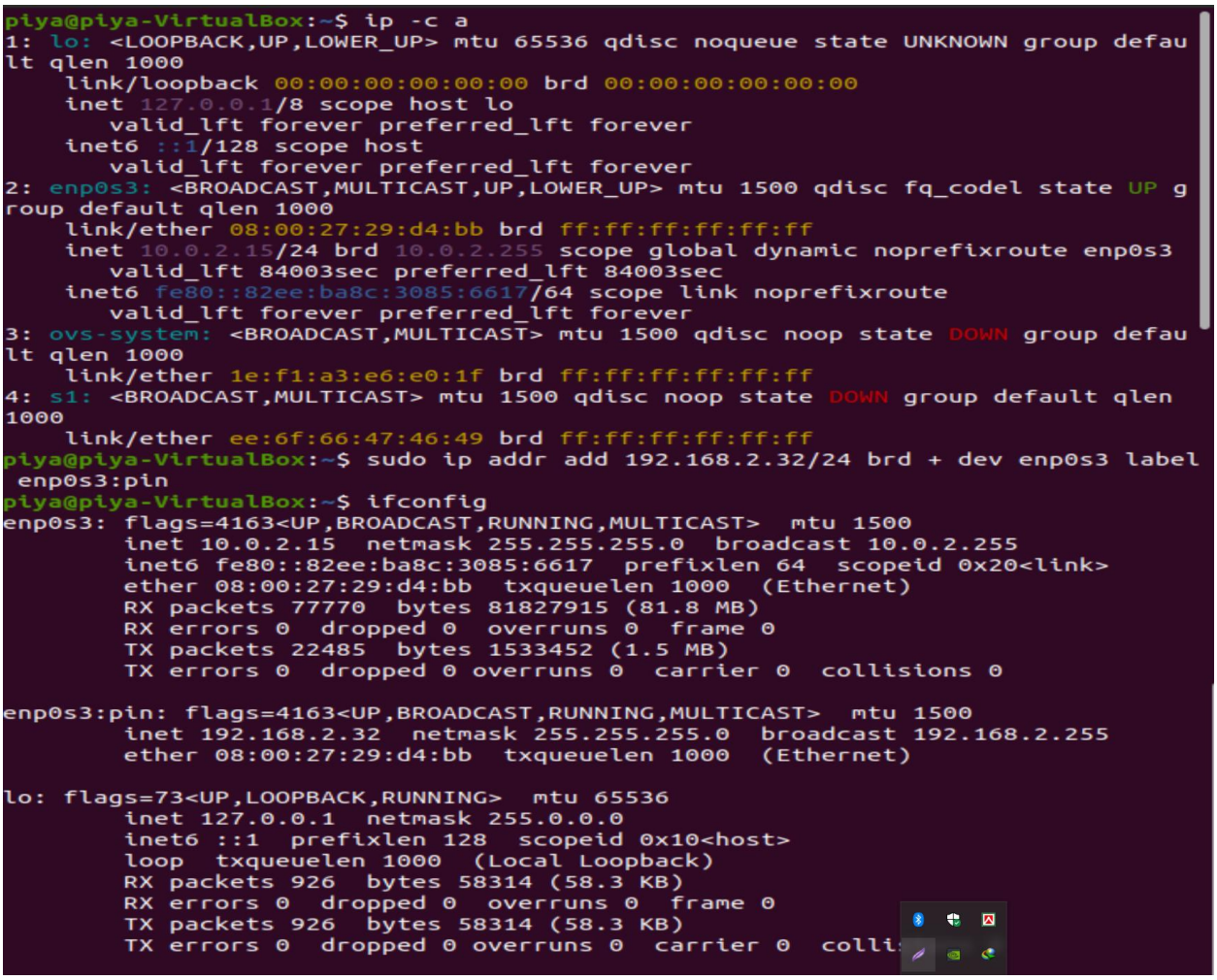
b)Now,you need to set up a route for this Interface so that your computer can see it.Otherwise,everyone else on the network will be able to reach the new interface except you.Issue the needed command,then issue the"$netstat -r"command and check if the route to your added interface is visible(**save a print screen of your routing table to display in your written report document together with the command(s)you used to set up the interface**)

c)Next remove the route for this interface(**write down the command(s)in your written report**)
d)Then remove the interface completely(**write down the command(s)in your written report)**

Ans:

a)Creating virtual interface:

sudo ip addr add 192.168.2.32/24 brd + dev enp0s3 label enp0s3:pin



b)Inserting Interface in the routing table:

sudo route add default gw 192.168.2.32

```
piya@piya-VirtualBox:~$ netstat -r
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
default         _gateway        0.0.0.0         UG        0 0          0 enp0s3
10.0.2.0        0.0.0.0         255.255.255.0   U         0 0          0 enp0s3
link-local      0.0.0.0         255.255.0.0     U         0 0          0 enp0s3
192.168.2.0     0.0.0.0         255.255.255.0   U         0 0          0 enp0s3
piya@piya-VirtualBox:~$ sudo route add default gw 192.168.2.32
piya@piya-VirtualBox:~$ netstat -r
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
default         192.168.2.32    0.0.0.0         UG        0 0          0 enp0s3
default         10.0.2.2        0.0.0.0         UG        0 0          0 enp0s3
10.0.2.0        0.0.0.0         255.255.255.0   U         0 0          0 enp0s3
link-local      0.0.0.0         255.255.0.0     U         0 0          0 enp0s3
192.168.2.0     0.0.0.0         255.255.255.0   U         0 0          0 enp0s3
piya@piya-VirtualBox:~$ netstat -rn
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
0.0.0.0         192.168.2.32    0.0.0.0         UG        0 0          0 enp0s3
0.0.0.0         10.0.2.2        0.0.0.0         UG        0 0          0 enp0s3
10.0.2.0        0.0.0.0         255.255.255.0   U         0 0          0 enp0s3
169.254.0.0     0.0.0.0         255.255.0.0     U         0 0          0 enp0s3
192.168.2.0     0.0.0.0         255.255.255.0   U         0 0          0 enp0s3
piya@piya-VirtualBox:~$
```

C)Deleting Interface from routing table:

Sudo route delete default gw 192.168.2.32

```
piya@piya-VirtualBox:~$ sudo route delete default gw 192.168.2.32
piya@piya-VirtualBox:~$ netstat -rn
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
0.0.0.0         10.0.2.2        0.0.0.0         UG        0 0          0 enp0s3
10.0.2.0        0.0.0.0         255.255.255.0   U         0 0          0 enp0s3
169.254.0.0     0.0.0.0         255.255.0.0     U         0 0          0 enp0s3
192.168.2.0     0.0.0.0         255.255.255.0   U         0 0          0 enp0s3
piya@piya-VirtualBox:~$
```

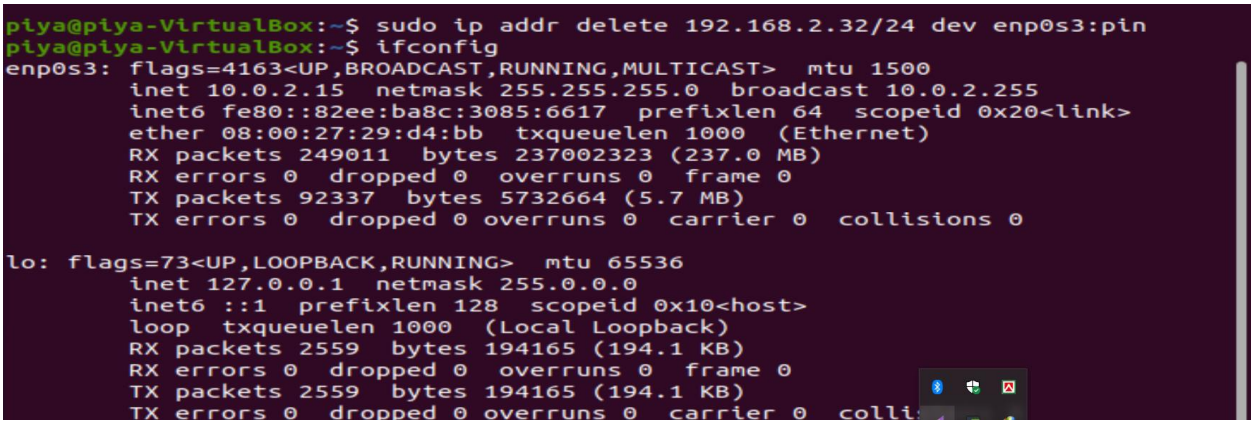
d)Deleting virtual Interface:

sudo ip addr delete 192.168.2.32/24 dev enp0s3:pin

```
piya@piya-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.2.15  netmask 255.255.255.0  broadcast 10.0.2.255
        inet6 fe80::82ee:ba8c:3085:6617  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:29:d4:bb  txqueuelen 1000  (Ethernet)
        RX packets 249011  bytes 237002323 (237.0 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 92299  bytes 5730314 (5.7 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

enp0s3:pin: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.2.32  netmask 255.255.255.0  broadcast 192.168.2.255
        ether 08:00:27:29:d4:bb  txqueuelen 1000  (Ethernet)

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 2493  bytes 189329 (189.3 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 2493  bytes 189329 (189.3 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```


piya@piya-VirtualBox:~$ sudo ip addr delete 192.168.2.32/24 dev enp0s3:pin
piya@piya-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
inet6 fe80::82ee:ba8c:3085:6617 prefixlen 64 scopeid 0x20<link>
ether 08:00:27:29:d4:bb txqueuelen 1000 (Ethernet)
RX packets 249011 bytes 237002323 (237.0 MB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 92337 bytes 5732664 (5.7 MB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 2559 bytes 194165 (194.1 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 2559 bytes 194165 (194.1 KB)