Mawlana Bhashani Science And Technology University

Lab-Report

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Network Configuration, Routing Table and Virtual Interfaces

1. Introduction:
Solution:
Each device connected to a computer network that uses the Internet Protocol for communication is assigned a numerical label, an Internet Protocol address, or IP address for short. An IP address identifies the device an establishes a path to it.
But not all IP addresses can be reached through the public internet, and **192.168.1.1** is among them. This default IP address of most Linksys routers is one of 65,536 IP addresses in the 16-bit block of the private IPv4 address space, which includes addresses from **192.168.0.0** to **192.168.255.255**.Private IP addresses are used for local area networks (LANs), and they were defined in an effort to delay IPv4 address exhaustion. Because private IP addresses can be used without approval from a regional Internet registry, they allow anyone from individual home users to organizations to readily deploy internet-connected devices using Network Address Translation (NAT), a method of assigning a public address to a computer inside a private network.Manufacturers of home routers use private IP addresses, including **192.168.1.1**, as the default gateway, allowing users to type http://192.168.1.1 into a web browser to access the router admin panel and change router settings.

2.Find IP and MAC:
Write down the IP and MAC address of your computer?

Solution:

```
                    shariful@shariful-Aspire-E5-473: ~

File  Edit  View  Search  Terminal  Help
shariful@shariful-Aspire-E5-473:~$ ifconfig
enp2s0f1: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        ether f0:76:1c:c7:98:0e  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        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 2450  bytes 175659 (175.6 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 2450  bytes 175659 (175.6 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wlp3s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.43.225  netmask 255.255.255.0  broadcast 192.168.43.255
        inet6 fe80::648c:31fc:2723:eaf5  prefixlen 64  scopeid 0x20<link>
        ether 40:b8:9a:4a:85:f5  txqueuelen 1000  (Ethernet)
        RX packets 52  bytes 5210 (5.2 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 74  bytes 9274 (9.2 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

shariful@shariful-Aspire-E5-473:~$
```

3. Routing Table basics:
Solution:
Enter the command: "$ netstat -r" to print your computers routing table.

```
                    shariful@shariful-Aspire-E5-473: ~

File  Edit  View  Search  Terminal  Help
shariful@shariful-Aspire-E5-473:~$ netstat  -r
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
default         _gateway        0.0.0.0         UG        0 0          0 wlp3s0
link-local      0.0.0.0         255.255.0.0     U         0 0          0 wlp3s0
192.168.43.0    0.0.0.0         255.255.255.0   U         0 0          0 wlp3s0
shariful@shariful-Aspire-E5-473:~$
```

Enter the command: "$ netstat -nr" to print your computers routing table.

```
                    shariful@shariful-Aspire-E5-473: ~

File  Edit  View  Search  Terminal  Help
shariful@shariful-Aspire-E5-473:~$ netstat  -nr
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
0.0.0.0         192.168.43.1    0.0.0.0         UG        0 0         0 wlp3s0
169.254.0.0     0.0.0.0         255.255.0.0     U         0 0         0 wlp3s0
192.168.43.0    0.0.0.0         255.255.255.0   U         0 0         0 wlp3s0
shariful@shariful-Aspire-E5-473:~$ █
```

The −n option makes **netstat** print addresses as dotted quad IP numbers rather than the symbolic host and network names. This option is especially useful when you want to avoid address lookups over the network (e.g., to a DNS or NIS server).

The second column of **netstat** 's output shows the gateway to which the routing entry points. If no gateway is used, an asterisk is printed instead. The third column shows the "generality" of the route.

4) Virtual Interfaces:
a) Create a new virtual interface with following IP address, 192.168.2.32 and netmask 255.255.255.0 then check to see if the interface was created successfully?

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.


```
                    shariful@shariful-Aspire-E5-473: ~

File  Edit  View  Search  Terminal  Help
shariful@shariful-Aspire-E5-473:~$ netstat  -r
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
default         _gateway        0.0.0.0         UG        0 0         0 wlp3s0
link-local      0.0.0.0         255.255.0.0     U         0 0         0 wlp3s0
192.168.43.0    0.0.0.0         255.255.255.0   U         0 0         0 wlp3s0
shariful@shariful-Aspire-E5-473:~$ █
```

c) Next remove the route for this interface.

5) Add a New Network:

a) Enter the command needed to add another network with the same values as your primary network meaning:

b) Assign the default gateway for your newly added network(tip the same default gateway as your primary network), (Your default gateway address).

c) Look for your newly added network in your routing table by issuing the "$ netstar -r" command. You should now have a double setup of your primary network in the table.

d) Now, remove your changes meaning the double routing table setup for your primary network. First issue the command needed to delete your newly added route then issue the command to delete your newly added default gateway.