

# Experiment

1. Get the following details of your own system:

- IP Address
- MAC Address
- Subnet address
- Gateway address

```
:\Users\student>ipconfig /all

Windows IP Configuration

Host Name . . . . . : SW2-C005
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . :
Description . . . . . : Intel(R) Ethernet Connection I217-LM
Physical Address. . . . . : 88-CA-3A-B1-87-3B
Dhcp Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::c8db:4f26:242b:55fa%12(Preferred)
IPv4 Address. . . . . : 192.168.43.116(Preferred)
Subnet Mask . . . . . : 255.255.252.0
Lease Obtained. . . . . : 01 August 2019 13:24:35
Lease Expires . . . . . : 02 August 2019 01:24:35
Default Gateway . . . . . : 192.168.40.1
Dhcp Server . . . . . : 192.168.1.27
Dhcpv6 IAID . . . . . : 112773690
Dhcpv6 Client DUID. . . . . : 00-01-00-01-24-0A-56-10-B8-CA-3A-B1-87-3B
DNS Servers . . . . . : 192.168.1.250
                        8.8.4.4
                        8.8.8.8
NetBIOS over Tcpip. . . . . : Enabled
```

2. Change your IP address at its 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> subfields (once at a time) and note down your observation.

- Changing the 4<sup>th</sup> subfield of the IP address still grants access to the LAN but access to the WAN is also disabled. (The IP address is Preferred)
- Changing the 3<sup>rd</sup> subfield of the IP address causes the LAN to appear as unidentified. (The IP address is Preferred)
- Changing the 2<sup>nd</sup> subfield of the IP address causes the LAN to appear as unidentified. (The IP address is Preferred)
- Changing the 1<sup>st</sup> subfield of the IP address causes the LAN to appear as unidentified. (The IP address is displayed as Tentative).

3. Change the MAC address.

It is not possible to change the MAC address as it is hardcoded by the manufacture of the network interface card.

#### 4. Ping to your gateway and note down the response.

```
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . : 
   Description . . . . . : Intel(R) Ethernet Connection I217-LM
   Physical Address. . . . . : B8-CA-3A-B1-87-3B
   DHCP Enabled. . . . . : No
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::c8db:4f26:242b:55fa%12(Preferred)
   IPv4 Address. . . . . : 192.168.43.116(Preferred)
   Subnet Mask . . . . . : 255.255.252.0
   Default Gateway . . . . . : 192.168.40.1
   DHCPv6 IAID . . . . . : 112773690
   DHCPv6 Client DUID. . . . . : 00-01-00-01-24-0A-56-19-B8-CA-3A-B1-87-3B
   DNS Servers . . . . . : fec0:0:0:ffff::1%1
                           fec0:0:0:ffff::2%1
                           fec0:0:0:ffff::3%1
   NetBIOS over Tcpip. . . . . : Enabled

C:\Users\student>ping 192.168.40.1

Pinging 192.168.40.1 with 32 bytes of data:
Reply from 192.168.40.1: bytes=32 time<1ms TTL=64
Reply from 192.168.40.1: bytes=32 time<1ms TTL=64
Reply from 192.168.40.1: bytes=32 time<1ms TTL=64
Reply from 192.168.40.1: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.40.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\student>
```

#### 5. Design a client server program and analyse its operation and performance. Study the port addresses used and the socket programming too.

A client server program was created in simplex and duplex configuration using python sockets.

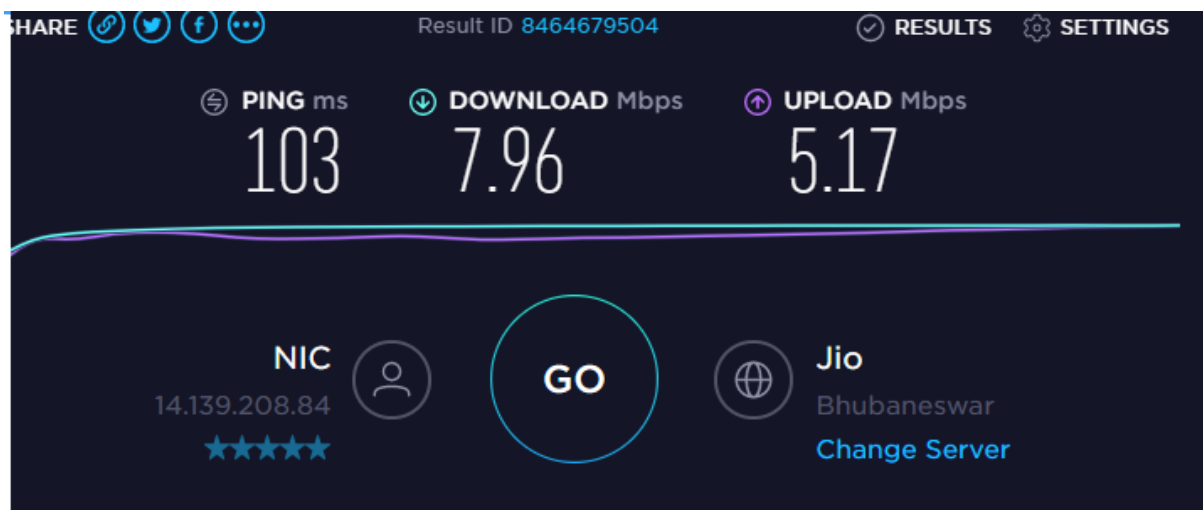
#### 6. Change the port address and note down the result.

If the port address of the server/client is only changed then they will not be able to communicate with each other. If both the port of client/server is changed to the same port they are able to communicate effectively.

#### 7. Test the network connectivity of your system by the loop back address.

Proto	Local Address	Foreign Address	State
TCP	0.0.0.0:135	SW2-C005:0	LISTENING
TCP	0.0.0.0:445	SW2-C005:0	LISTENING
TCP	0.0.0.0:1521	SW2-C005:0	LISTENING
TCP	0.0.0.0:5040	SW2-C005:0	LISTENING
TCP	0.0.0.0:7680	SW2-C005:0	LISTENING
TCP	0.0.0.0:8080	SW2-C005:0	LISTENING
TCP	0.0.0.0:49664	SW2-C005:0	LISTENING
TCP	0.0.0.0:49665	SW2-C005:0	LISTENING
TCP	0.0.0.0:49666	SW2-C005:0	LISTENING
TCP	0.0.0.0:49667	SW2-C005:0	LISTENING
TCP	0.0.0.0:49669	SW2-C005:0	LISTENING
TCP	0.0.0.0:49672	SW2-C005:0	LISTENING
TCP	0.0.0.0:49673	SW2-C005:0	LISTENING
TCP	0.0.0.0:49677	SW2-C005:0	LISTENING
TCP	127.0.0.1:49670	SW2-C005:0	LISTENING
TCP	169.254.92.19:139	SW2-C005:0	LISTENING
TCP	192.168.43.116:139	SW2-C005:0	LISTENING
TCP	192.168.43.116:49692	a23-58-48-69:https	CLOSE_WAIT
TCP	192.168.43.116:49693	a23-58-48-69:https	CLOSE_WAIT
TCP	192.168.43.116:49720	40.90.189.152:https	ESTABLISHED
TCP	192.168.43.116:49805	117.18.232.200:https	LAST_ACK
TCP	192.168.43.116:49850	104.25.218.21:https	ESTABLISHED
TCP	192.168.43.116:49851	52.229.172.155:https	TIME_WAIT
TCP	192.168.43.116:49857	a-0001:https	ESTABLISHED
TCP	192.168.43.116:49858	bingforbusiness:https	ESTABLISHED
TCP	192.168.43.116:49860	a-0001:https	ESTABLISHED
TCP	192.168.43.116:49861	bingforbusiness:https	ESTABLISHED
TCP	192.168.43.116:49862	13.107.19.254:https	ESTABLISHED
TCP	192.168.43.116:49863	204.79.197.254:https	ESTABLISHED
TCP	192.168.43.116:49864	117.18.232.200:https	ESTABLISHED
TCP	192.168.43.116:49865	204.79.197.222:https	ESTABLISHED
TCP	[::]:135	SW2-C005:0	LISTENING
TCP	[::]:445	SW2-C005:0	LISTENING

8. Find the BW of your network



Submitted by,

Soham Bhattacharya

116cs0171