

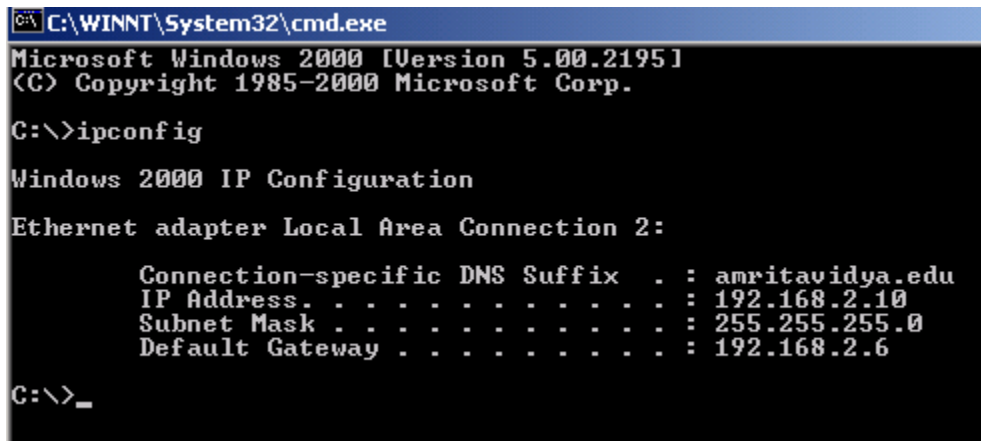
Analyzing the End Device connectivity to the Network

Part1: Gather basic TCP/IP configuration information

Use the Start menu to open the Command Prompt, an MS-DOS-like window. Press **Start**

Programs > Accessories > Command Prompt or **Start > Programs > Command Prompt**.

The following figure shows the Command screen.



```
C:\WINNT\System32\cmd.exe
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\>ipconfig

Windows 2000 IP Configuration

Ethernet adapter Local Area Connection 2:

    Connection-specific DNS Suffix  . : amritavidya.edu
    IP Address. . . . . : 192.168.2.10
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.2.6

C:\>_
```

Type **ipconfig** and press the **Enter** key.

Note: **ifconfig** is the command in **Ubuntu machine**

It is short for IP Configuration. This first screen shows the IP address, subnet mask, and default gateway. The IP address and the default gateway should be in the same network or subnet, otherwise this host would not be able to communicate outside the network

Record the following TCP/IP information for your computer

IP address: fe80::dfc2:1692:af3f:352b%10 10.113.21.90

Subnet Mask: 255.255.0.0

Default Gateway: fe80::1%10 10.113.0.1

Part2- Using ping and tracert to troubleshoot connecting to the Internet

Objective

Learn to use the TCP/IP Packet Internet Groper (**ping**) command from a PC/laptop.

- Learn to use the Traceroute (**tracert**) command from a workstation.
- Observe name resolution occurrences using WINS and/or DNS servers.

Ping the IP address of another computer

1. ping the IP address of the default gateway
2. ping the IP address of a DHCP or DNS server

```
C:\Users\giri0\Girish_s_044>ping 192.168.0.251

Pinging 192.168.0.251 with 32 bytes of data:
Reply from 192.168.0.251: bytes=32 time=13ms TTL=126
Reply from 192.168.0.251: bytes=32 time=6ms TTL=126
Reply from 192.168.0.251: bytes=32 time=6ms TTL=126
Reply from 192.168.0.251: bytes=32 time=12ms TTL=126

Ping statistics for 192.168.0.251:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 6ms, Maximum = 13ms, Average = 9ms
```

3. Find the IP address of any one web server

```
C:\Users\giri0\Girish_s_044>ping google.com

Pinging google.com [142.250.196.174] with 32 bytes of data:
Reply from 142.250.196.174: bytes=32 time=50ms TTL=59
Reply from 142.250.196.174: bytes=32 time=54ms TTL=59
Reply from 142.250.196.174: bytes=32 time=54ms TTL=59
Reply from 142.250.196.174: bytes=32 time=86ms TTL=59

Ping statistics for 142.250.196.174:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 50ms, Maximum = 86ms, Average = 61ms
```

4. Find the IP address of any one search engine

```

C:\Users\giri0\Girish_s_044>ping youtube.com

Pinging youtube.com [142.250.193.142] with 32 bytes of data:
Reply from 142.250.193.142: bytes=32 time=68ms TTL=59
Reply from 142.250.193.142: bytes=32 time=61ms TTL=59
Reply from 142.250.193.142: bytes=32 time=67ms TTL=59
Reply from 142.250.193.142: bytes=32 time=57ms TTL=59

Ping statistics for 142.250.193.142:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 57ms, Maximum = 68ms, Average = 63ms

```

5. Trace a local host name or IP address

```

C:\Users\giri0\Girish_s_044>tracert amrita.edu

Tracing route to amrita.edu [15.197.141.123]
over a maximum of 30 hops:

  0  1 ms    6 ms    1 ms   10.113.0.1
  1  30 ms   1 ms    1 ms   123.63.2.1
  2  14 ms   15 ms   13 ms   122.15.45.170
  3  31 ms   50 ms   28 ms   182.19.108.198
  4  *        *        *      Request timed out.
  5  *        *        *      Request timed out.
  6  *        *        *      Request timed out.
  7  *        *        *      Request timed out.
  8  35 ms   37 ms   33 ms   52.93.19.141
  9  51 ms   38 ms   31 ms   52.93.19.76
 10  31 ms   26 ms   28 ms   a572ab1d134af1b1e.awsglobalaccelerator.com [15.197.141.123]

Trace complete.

```

6. Trace other IP addresses or domain names

```

C:\Users\giri0\Girish_s_044>tracert google.com

Tracing route to google.com [142.250.196.174]
over a maximum of 30 hops:

  0  2 ms    1 ms    1 ms   10.113.0.1
  1  5 ms    2 ms    1 ms   123.63.2.1
  2  8 ms    8 ms    8 ms   122.15.45.170
  3  39 ms   23 ms   28 ms   182.19.108.193
  4  52 ms   49 ms   49 ms   74.125.119.172
  5  70 ms   54 ms   61 ms   216.239.43.135
  6  47 ms   57 ms   49 ms   108.170.231.129
  7  52 ms   51 ms   52 ms   maa03s47-in-f14.1e100.net [142.250.196.174]

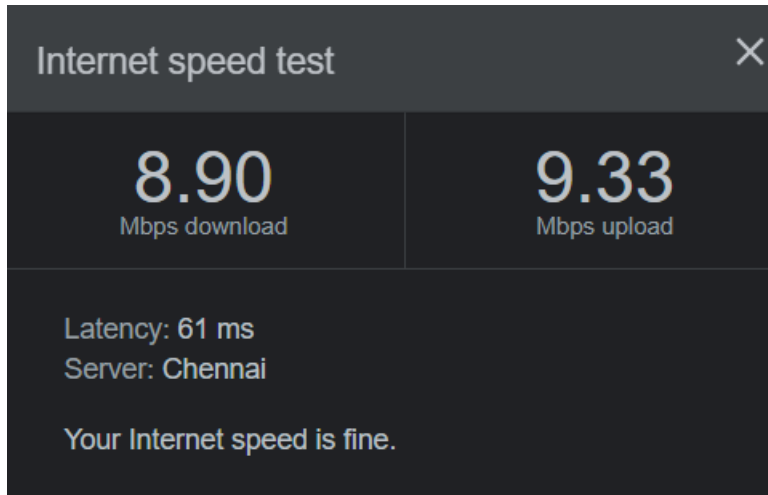
Trace complete.

```

Part-3: What is the speed of your Internet Access?

Upload speed : 9.33Mbps

Download speed : 8.90Mbps



Part-4: How do you access the Internet in your home?

Mobile network, The process typically begins when the end user, located within their home network, initiates a request for data or access to a particular service. The request is forwarded to the ISP's infrastructure. The ISP serves as the gateway between the end user's network and the broader internet. The request is transmitted from the end user's modem to the Tier 3 local ISP's network through wired or wireless connections. It is forwarded to the tier 2 ISP's network like spectra and datacom limited. Tier 2 ISPs operate at a regional level and serve as intermediaries between tier 3 ISPs and tier 1 ISPs. The request further travels to the tier 1 ISP like Airtel, Jio, VI, BSNL, etc., which operates a high-capacity network infrastructure known as the internet backbone. Tier 1 ISPs have extensive network coverage and peer directly with other tier 1 ISPs to exchange traffic. Within the tier 1 ISP's network, the request is routed through the internet backbone, which consists of high-speed, long-distance fiber-optic cables and network nodes. The request eventually reaches its destination, which could be a server hosting a website, an email server, a cloud service provider, or any other online service.