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Department of Electronics and Telecommunication Engineering

Semester	T.E. Semester VI – EXTC Engineering
Subject	Computer Communication Network (CCN)
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Experiment Number	05	
Experiment Title	Networking Commands	
Aim	To Study and Analyze various networking Commands such as ipconfig, ipconfig/all,ping,tracert,nslookup	
Resources / Apparatus Required	Hardware: Internet Connected PC with cmd	Software: cmd.exe
Theory:		

- **Ping**

It is a computer network administration utility used to test the reachability of a host on an Internet Protocol (IP) network and to measure the round-trip time for messages sent from the originating host to a destination computer. The name comes from active sonar terminology which sends a pulse of sound and listens for the echo to detect objects underwater. Ping operates by sending Internet Control Message Protocol (ICMP) echo request packets to the target host and waiting for an ICMP response. In the process it measures the time from transmission to reception (round-trip time)] and records any packet loss. The results of the test are printed in the form of a statistical summary of the response packets received, including the minimum, maximum, and the mean round-trip times, and sometimes the standard deviation of the mean.

- **Ipconfig**

The command Ipconfig will display basic details about the device's IP address configuration. Just type IP config in the Windows prompt and the IP, subnet mask and default gateway that the current device will be presented. If you have to see full information, then type on command prompt config-all and then you will see full information. There are also choices to assist you in resolving DNS and DHCP issues.

- **Ipconfig/all**

It shows the detailed information of the device's IP address configuration

- **Tracert**

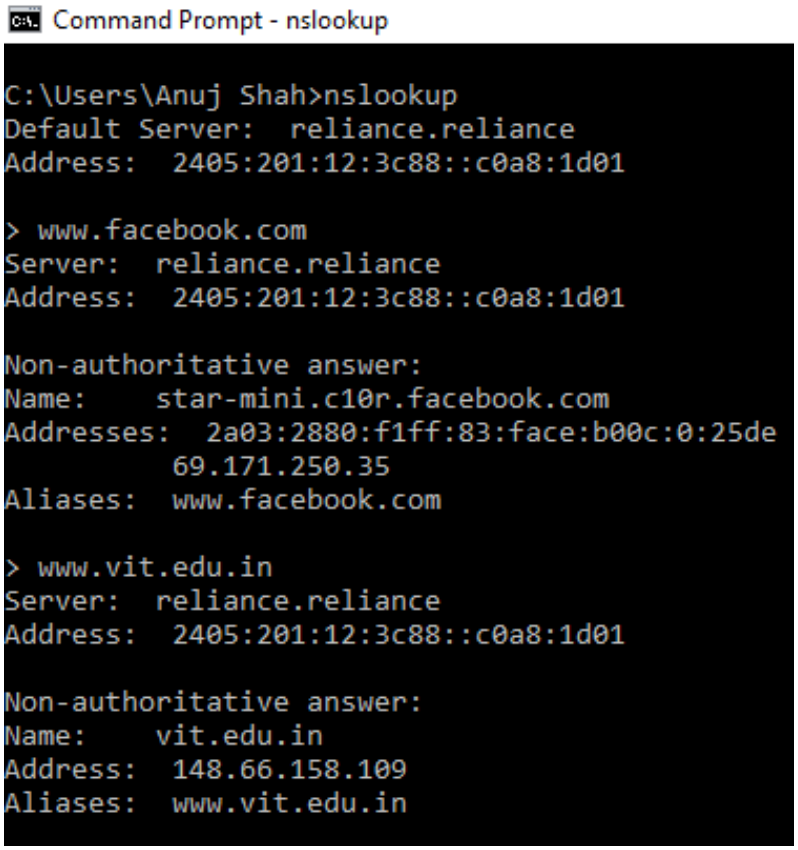
In computing, traceroute is a computer networkdiagnostic tool for displaying the

	route (path) and measuring transit delays of packets across anInternet Protocol (IP) network. The history of the route is recorded as the round-trip times of the packets received from each successive host (remote node) in the route (path); the sum of the mean times in each hop indicates the total time spent to establish the connection. Traceroute proceeds unless all (three) sent packets are lost more than twice, then the connection is lost and the route cannot be evaluated.ping, on the other hand, only computes the final round-trip times from the destination point. The traceroute command is available on a number of modern operating systems. On Apple Mac OS, it is available by opening 'Network Utilities' then selecting 'Traceroute' tab, as well as by typing the "traceroute" command in the terminal. On other Unix systems, such as FreeBSD or Linux, it is available as a command in a terminal. OnMicrosoft Windows, it is named tracert • **Nslookup** The Nslookup, which stands for name server lookup command, is a network utility command used to obtain information about internet servers. It provides name server information for the DNS (Domain Name System), i.e. the default DNS server's name and IP Address.
Procedure :	1. Open the cmd in your PC/Laptop 2. Analyze each command in detail after typing them in Command window
Screenshots of the Output(Response)	**Screenshot of ipconfig** Command Prompt Microsoft Windows [Version 10.0.18363.1440] (c) 2019 Microsoft Corporation. All rights reserved. C:\Users\Anuj Shah>ipconfig Windows IP Configuration Ethernet adapter Ethernet: Media State . . . . . : Media disconnected Connection-specific DNS Suffix . : Wireless LAN adapter Local Area Connection* 2: Media State . . . . . : Media disconnected Connection-specific DNS Suffix . : Wireless LAN adapter Local Area Connection* 3: Media State . . . . . : Media disconnected Connection-specific DNS Suffix . : Wireless LAN adapter Wi-Fi: Connection-specific DNS Suffix . : IPv6 Address. . . . . : 2405:201:12:3c88:b996:b62f:b9e2:59cb Temporary IPv6 Address. . . . . : 2405:201:12:3c88:4985:1e48:29bd:5fc5 Link-local IPv6 Address . . . . . : fe80::b996:b62f:b9e2:59cb%10 IPv4 Address. . . . . : 192.168.29.92 Subnet Mask . . . . . : 255.255.255.0 Default Gateway . . . . . : fe80::1a82:8cff:fefc:22fd%10 192.168.29.1 **Screenshot of ipconfig/all**

Command Prompt

```
   IPv4 Address. . . . . . . . . . . : 192.168.29.92
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : fe80::1a82:8cff:fefc:22fd%10
                                       192.168.29.1

C:\Users\Anuj Shah>ipconfig/all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : DESKTOP-VRJV98G
   Primary Dns Suffix  . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No

Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Intel(R) 82579LM Gigabit Network Connection
   Physical Address. . . . . . . . . : D8-9D-67-95-57-A9
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 2:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
   Physical Address. . . . . . . . . : 8C-70-5A-4F-4F-BD
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 3:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
   Physical Address. . . . . . . . . : 8E-70-5A-4F-4F-BC
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Intel(R) Centrino(R) Advanced-N 6205
   Physical Address. . . . . . . . . : 8C-70-5A-4F-4F-BC
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   IPv6 Address. . . . . . . . . . . : 2405:201:12:3c88:b996:b62f:b9e2:59cb(Preferred)
   Temporary IPv6 Address. . . . . . : 2405:201:12:3c88:4985:1e48:29bd:5fc5(Preferred)
   Link-local IPv6 Address . . . . . : fe80::b996:b62f:b9e2:59cb%10(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.29.92(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Lease Obtained. . . . . . . . . . : Tuesday, March 30, 2021 5:34:06 PM
   Lease Expires . . . . . . . . . . : Wednesday, March 31, 2021 12:14:25 AM
   Default Gateway . . . . . . . . . : fe80::1a82:8cff:fefc:22fd%10
                                       192.168.29.1
   DHCP Server . . . . . . . . . . . : 192.168.29.1
   DHCPv6 IAID . . . . . . . . . . . : 59535450
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-27-23-C2-6F-D8-9D-67-95-57-A9
   DNS Servers . . . . . . . . . . . : 2405:201:12:3c88::c0a8:1d01
                                       192.168.29.1
   NetBIOS over Tcpip. . . . . . . . : Enabled
```

Screenshot of nslookup



Screenshot of ping

Command Prompt

```
C:\Users\Anuj Shah>ping www.google.com

Pinging www.google.com [2404:6800:4009:80d::2004] with 32 bytes of data:
Reply from 2404:6800:4009:80d::2004: time=8ms
Reply from 2404:6800:4009:80d::2004: time=10ms
Reply from 2404:6800:4009:80d::2004: time=11ms
Reply from 2404:6800:4009:80d::2004: time=6ms

Ping statistics for 2404:6800:4009:80d::2004:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 6ms, Maximum = 11ms, Average = 8ms

C:\Users\Anuj Shah>ping 148.66.158.109

Pinging 148.66.158.109 with 32 bytes of data:
Reply from 148.66.158.109: bytes=32 time=62ms TTL=42
Reply from 148.66.158.109: bytes=32 time=59ms TTL=42
Reply from 148.66.158.109: bytes=32 time=61ms TTL=42
Reply from 148.66.158.109: bytes=32 time=60ms TTL=42

Ping statistics for 148.66.158.109:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 59ms, Maximum = 62ms, Average = 60ms

C:\Users\Anuj Shah>ping 122.66.77.14

Pinging 122.66.77.14 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 122.66.77.14:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Screenshot of tracert

Command Prompt

```
C:\Users\Anuj Shah>tracert

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
               [-R] [-S srcaddr] [-4] [-6] target_name

Options:
    -d                  Do not resolve addresses to hostnames.
    -h maximum_hops     Maximum number of hops to search for target.
    -j host-list        Loose source route along host-list (IPv4-only).
    -w timeout          Wait timeout milliseconds for each reply.
    -R                  Trace round-trip path (IPv6-only).
    -S srcaddr          Source address to use (IPv6-only).
    -4                  Force using IPv4.
    -6                  Force using IPv6.

C:\Users\Anuj Shah>tracert www.facebook.com

Tracing route to star-mini.c10r.facebook.com [2a03:2880:f1ff:83:face:b00c:0:25de]
over a maximum of 30 hops:

  1     1 ms     1 ms     1 ms  2405:201:12:3c88:1a82:8cff:fefc:22fd
  2     *        *        *     Request timed out.
  3     *        7 ms    10 ms  2405:203:400:100:172:31:2:24
  4     *        *        *     Request timed out.
  5    45 ms    80 ms    30 ms  ae22.pr04.bom1.tfbnw.net [2620:0:1cff:dead:beee::9be]
  6     5 ms     7 ms     8 ms  po104.psw02.bom1.tfbnw.net [2620:0:1cff:dead:bef0::111]
  7    10 ms     8 ms     6 ms  po2.msw1am.01.bom1.tfbnw.net [2a03:2880:f02f:ffff::4d]
  8     5 ms     7 ms     9 ms  edge-star-mini6-shv-01-any2.facebook.com [2a03:2880:f1ff:83:face:b00c:0:25de]

Trace complete.
```

Conclusion:	In this practical, we learned how to use CMD (command prompt) to run various networking commands, such as ipconfig, nslookup, ping and tracert. We also

	learned how to change the color of the CMD background and text.
Post Lab Questions:	1.What is the command used to change the colour of alphabets to red in cmd? 2.What is the IP address and default gateway of your system and which command did you use to get it? 3. What is the IP address of www.facebook.com and which command is used to find it? 4.Give the significance of ping Command. **Changing colors** To change the color of the letters to red, use the command "color 4" **My system** • IPv4 address: 192.168.29.92 • Default gateway: 192.168.29.1 I used the command "ipconfig" to get this information. **Facebook** • Addresses: 69.171.250.35 I used the command "nslookup www.facebook.com" to get this information. **Ping command** • Ping is used to test the reachability of a host on an IP network. • Ping measures the round-trip time for messags sent from the originating host to a destination computer that are echoed back to the source. • The program reports errors, packet loss, and a statistical summary of the results, typically including the minimum, maximum, and the mean round-trip times; and also the standard deviation of the mean.