Experiment No : 02

Aim : To execute and analyze basic networking commands.

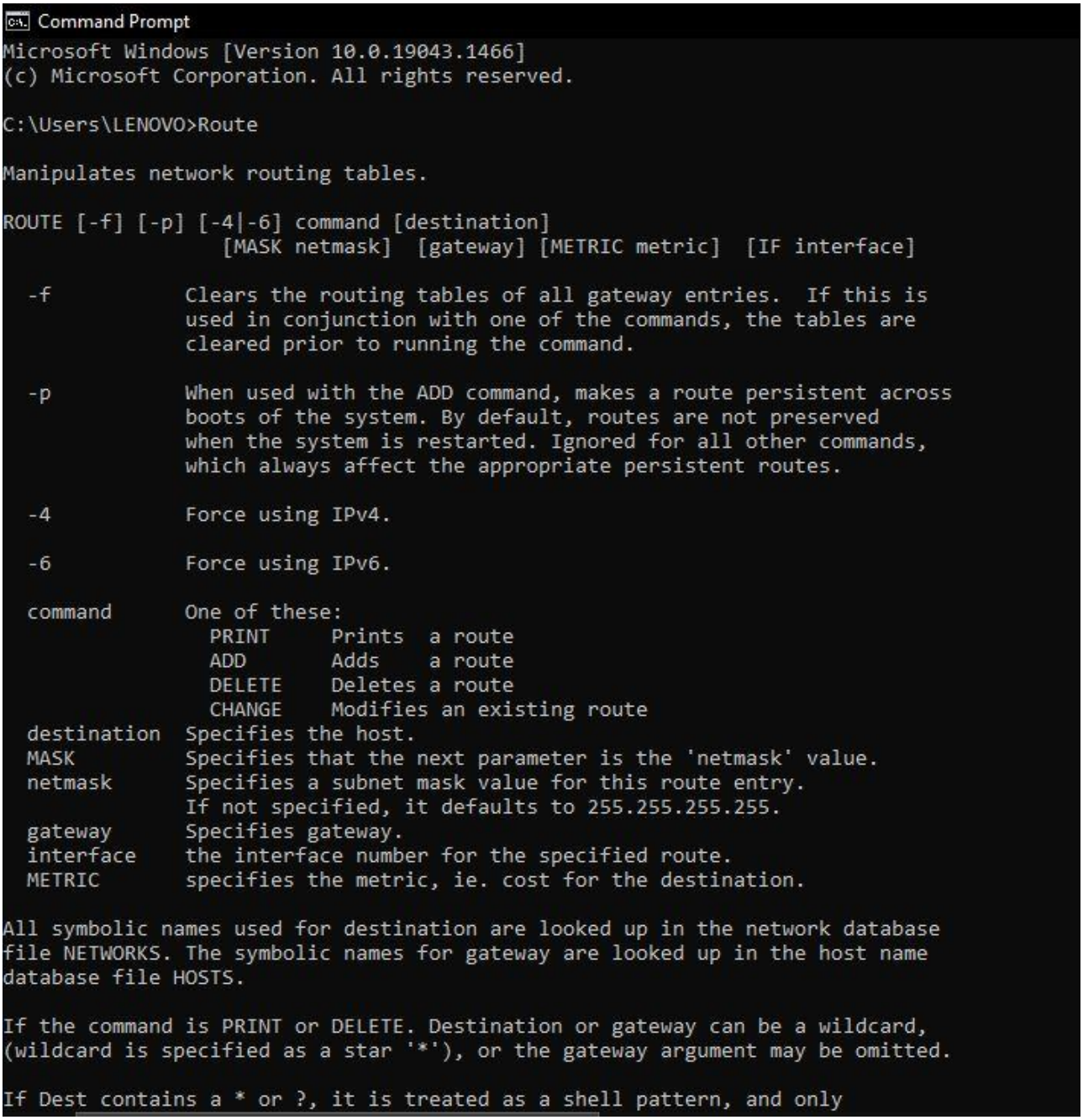
1. **Route**

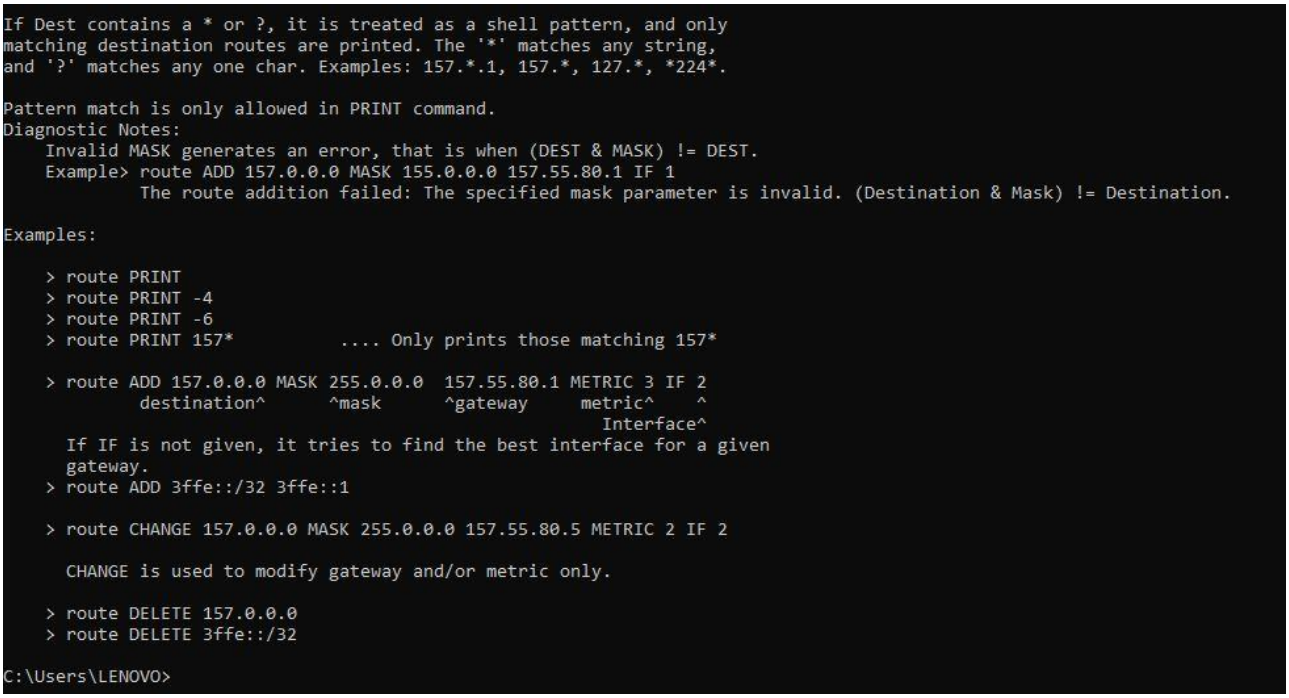
   The route command allows you to make manual entries into the network routing tables. The route command distinguishes between routes to hosts and routes to networks by interpreting the network address of the Destination variable, which can be specified either by symbolic name or numeric address. The route command resolves all

symbolic names into addresses, using either the /etc/hosts file or the network name server.

Routes to a particular host are distinguished from those to a network by interpreting the Internet address associated with the destination. The optional phs -net and -host force the destination to be interpreted as a network or a host, respectively. If the destination has a local address part of INADDR_ANY or if the destination is the symbolic name of a network, then the route is assumed to be to a network; otherwise, it is presumed to be a route to a host.

For example, 128.32 is interpreted as -host 128.0.0.32; 128.32.130 is interpreted as -host 128.32.0.130; -net 128.32 is interpreted as 128.32.0.0; and -net 128.32.130 is interpreted as 128.32.130.0.


Command Prompt
Microsoft Windows [Version 10.0.19043.1466]
(c) Microsoft Corporation. All rights reserved.
C:\Users\LENOVO>Route
Manipulates network routing tables.
ROUTE [-f] [-p] [-4|-6] command [destination]
[MASK netmask] [gateway] [METRIC metric] [IF interface]
-f Clears the routing tables of all gateway entries. If this is
used in conjunction with one of the commands, the tables are
cleared prior to running the command.
-p When used with the ADD command, makes a route persistent across
boots of the system. By default, routes are not preserved
when the system is restarted. Ignored for all other commands,
which always affect the appropriate persistent routes.
-4 Force using IPv4.
-6 Force using IPv6.
command One of these:
PRINT Prints a route
ADD Adds a route
DELETE Deletes a route
CHANGE Modifies an existing route
destination Specifies the host.
MASK Specifies that the next parameter is the 'netmask' value.
netmask Specifies a subnet mask value for this route entry.
If not specified, it defaults to 255.255.255.255.
gateway Specifies gateway.
interface the interface number for the specified route.
METRIC specifies the metric, ie. cost for the destination.
All symbolic names used for destination are looked up in the network database
file NETWORKS. The symbolic names for gateway are looked up in the host name
database file HOSTS.
If the command is PRINT or DELETE. Destination or gateway can be a wildcard,
(wildcard is specified as a star '*'), or the gateway argument may be omitted.
If Dest contains a * or ?, it is treated as a shell pattern, and only

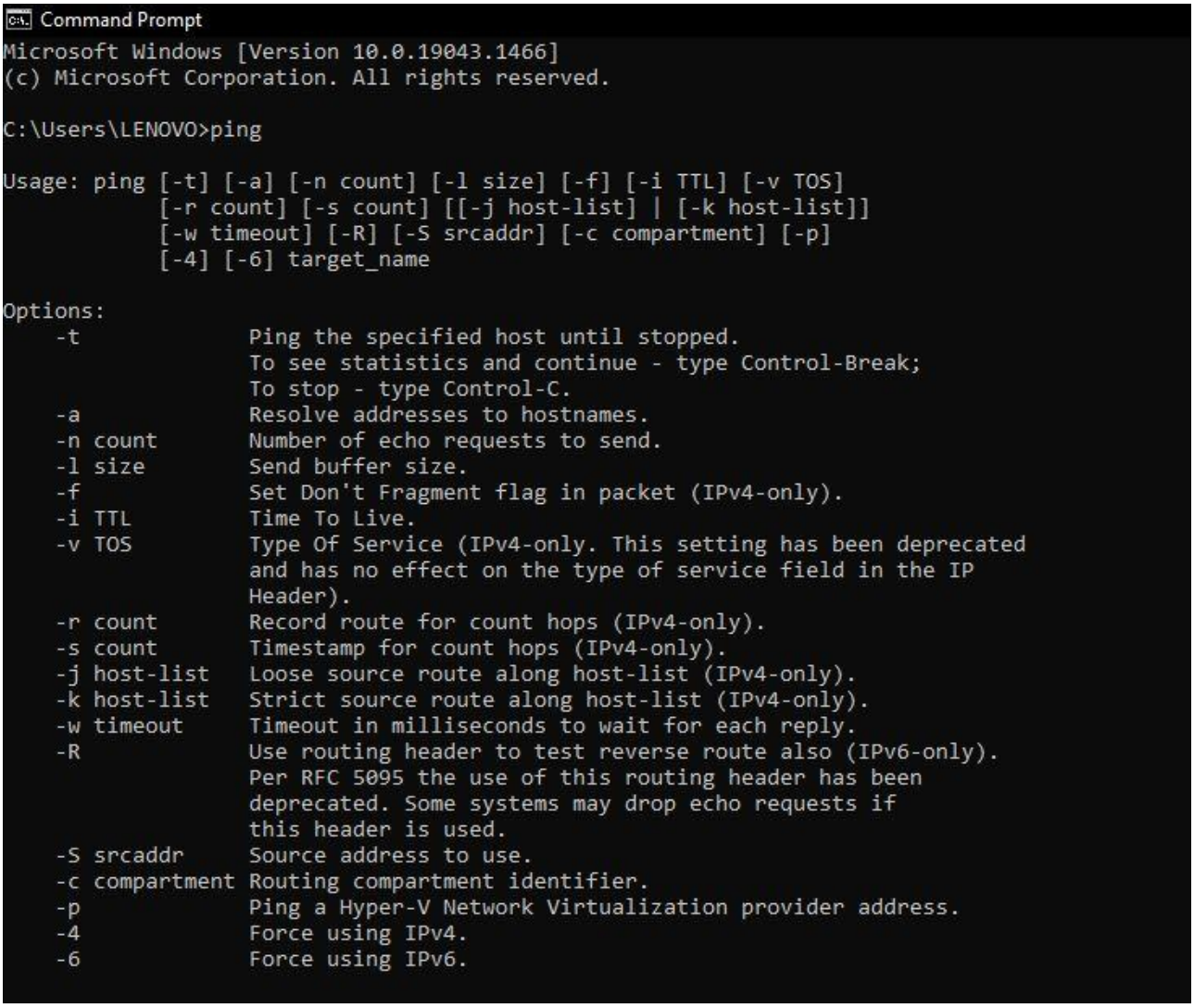


2. Ping

Ping is used to testing a network host capacity to interact with another host. Just enter the command Ping, followed by the target host's name or IP address.

The ping utilities seem to be the most common network tool. This is performed by using the Internet Control Message Protocol, which allows the echo packet to be sent to the destination host and a listening mechanism.

If the destination host reply to the requesting host, that means the host is reachable. This utility usually gives a basic image of where there may be a specific networking issue,


Command Prompt
Microsoft Windows [Version 10.0.19043.1466]
(c) Microsoft Corporation. All rights reserved.
C:\Users\LENOVO>ping
Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS]
[-r count] [-s count] [[-j host-list] | [-k host-list]]
[-w timeout] [-R] [-S srcaddr] [-c compartment] [-p]
[-4] [-6] target_name
Options:
-t Ping the specified host until stopped.
To see statistics and continue - type Control-Break;
To stop - type Control-C.
-a Resolve addresses to hostnames.
-n count Number of echo requests to send.
-l size Send buffer size.
-f Set Don't Fragment flag in packet (IPv4-only).
-i TTL Time To Live.
-v TOS Type Of Service (IPv4-only. This setting has been deprecated
and has no effect on the type of service field in the IP
Header).
-r count Record route for count hops (IPv4-only).
-s count Timestamp for count hops (IPv4-only).
-j host-list Loose source route along host-list (IPv4-only).
-k host-list Strict source route along host-list (IPv4-only).
-w timeout Timeout in milliseconds to wait for each reply.
-R Use routing header to test reverse route also (IPv6-only).
Per RFC 5095 the use of this routing header has been
deprecated. Some systems may drop echo requests if
this header is used.
-S srcaddr Source address to use.
-c compartment Routing compartment identifier.
-p Ping a Hyper-V Network Virtualization provider address.
-4 Force using IPv4.
-6 Force using IPv6.

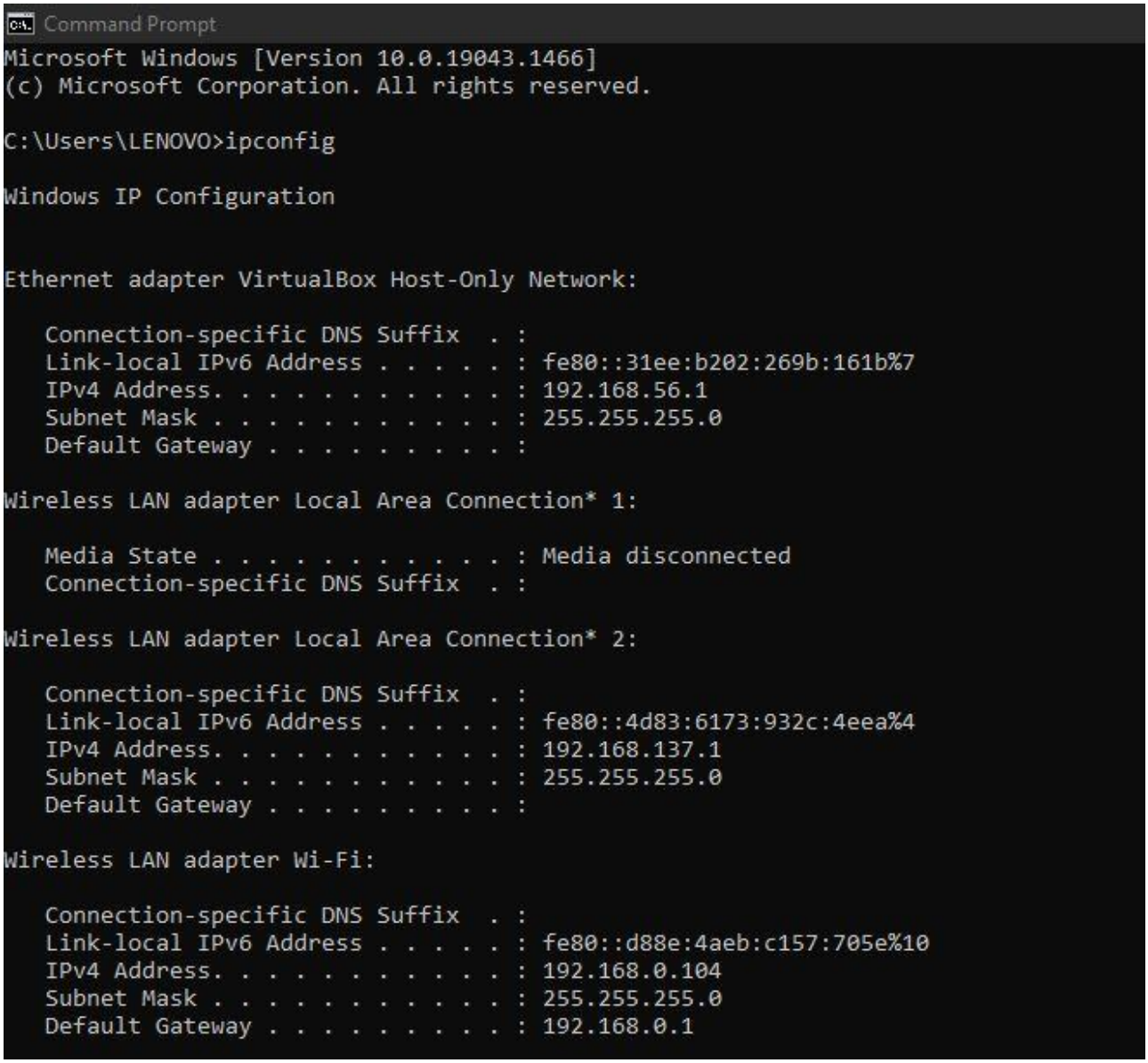
3. IP config

The command IP config 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.

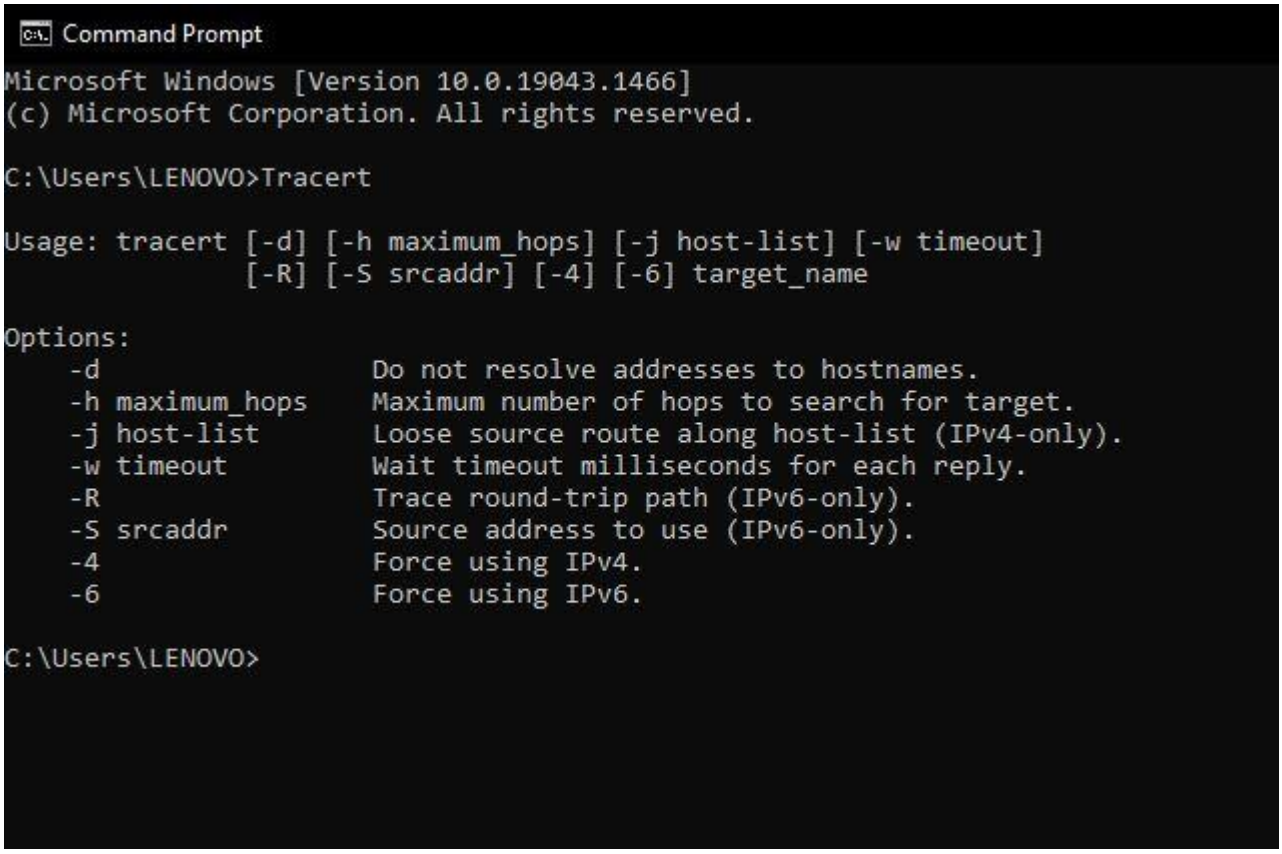
There are also choices to assist you in resolving DNS and DHCP issues.



4. Tracert

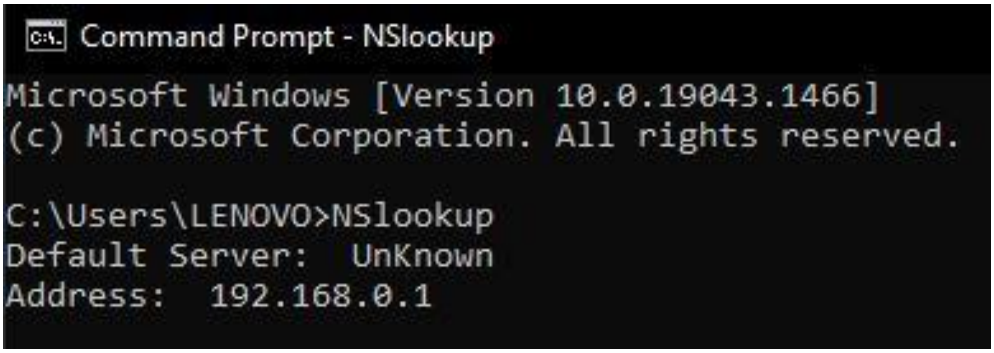
The *tracert* command (spelled *traceroute* in Unix/Linux implementations) is one of the key diagnostic tools for TCP/IP. It displays a list of all the routers that a packet must go through to get from the computer where *tracert* is run to any other computer on the Internet. Each one of these routers is called a *hop*, presumably because the original designers of the IP protocol played a lot of hopscotch when they were young. If you can't connect to another computer, you can use *tracert* to find out exactly where the problem is occurring.

tracert makes three attempts to contact the router at each hop and displays the response time for each of these attempts. Then, it displays the DNS name of the router (if available) and the router's IP address.



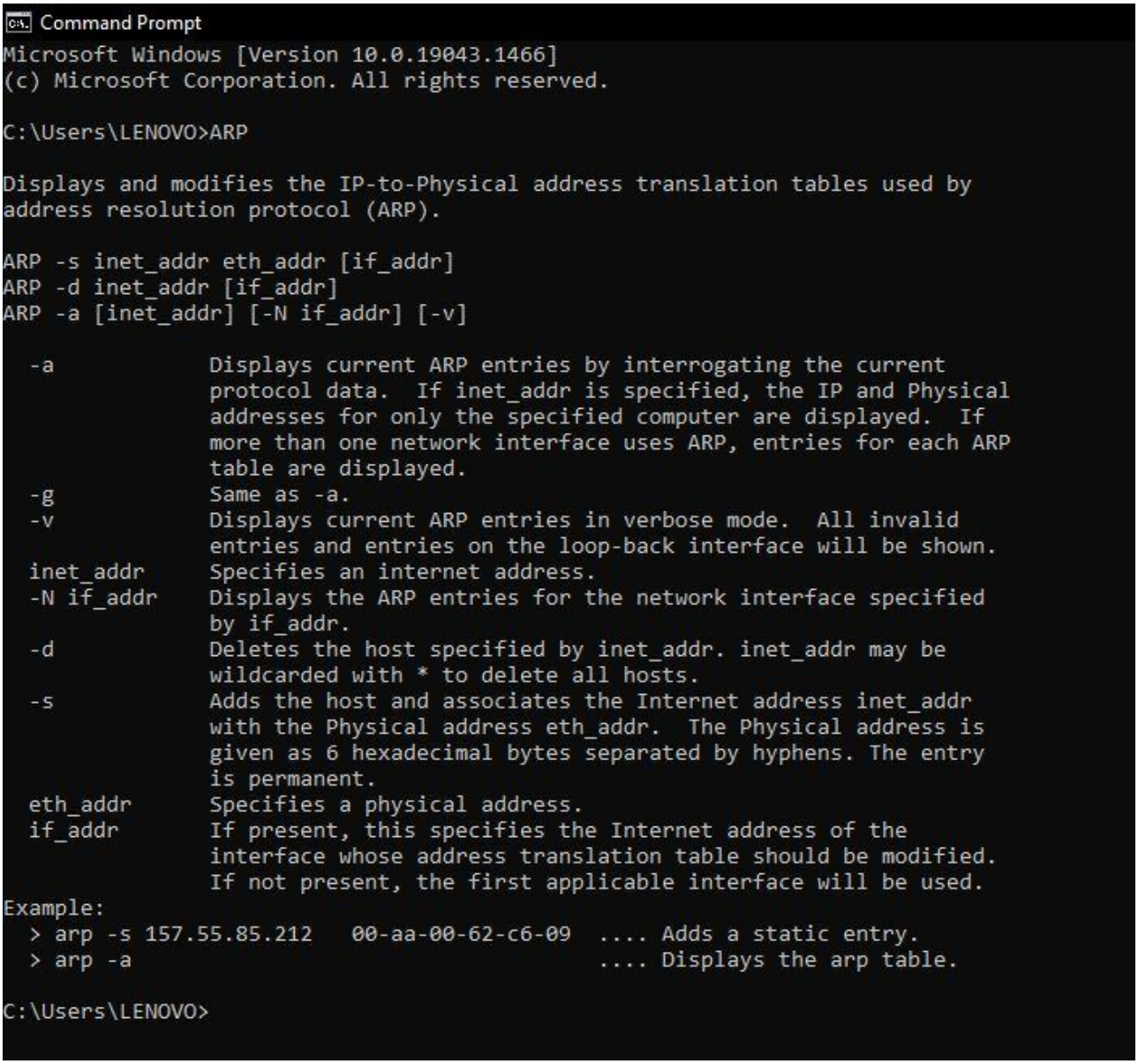
5. NSLOOKUP

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.



6. ARP

ARP stands for Address Resolution Protocol. Although network communications can readily be thought of as an IP address, the packet delivery depends ultimately on the media access control (MAC).
This is where the protocol for address resolution comes into effect. You can add the remote host IP address, which is an arp -a command, in case you have issues to communicate with a given host.

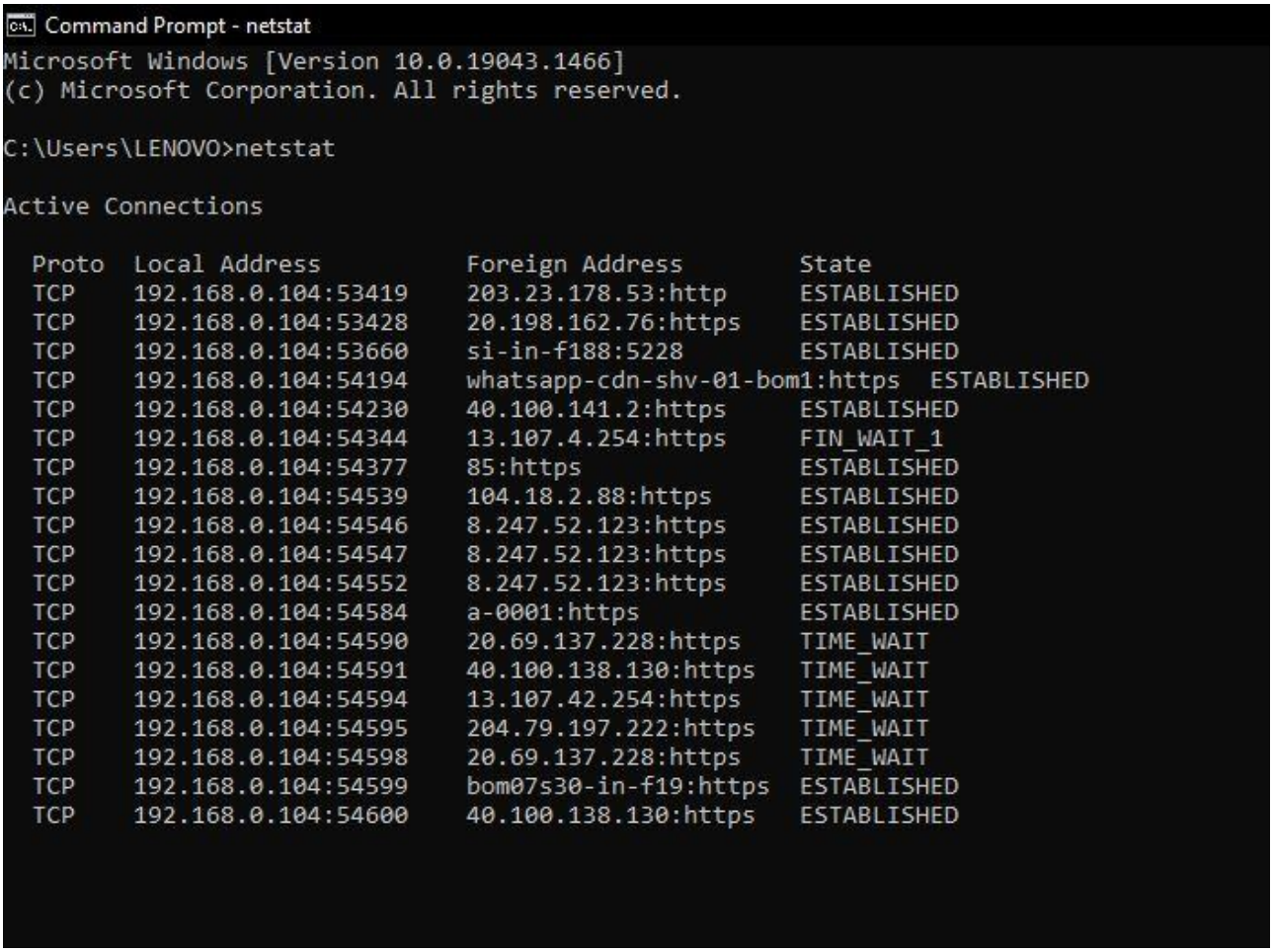


7. Host Name

Hostname command in Linux is used to obtain the DNS(Domain Name System) name and set the system's hostname or NIS(Network Information System) domain name. A hostname is a name which is given to a computer and it attached to the network. Its main purpose is to uniquely identify over a network.

8. Netstat

Netstat is a Common TCP – IP networking command-line method present in most Windows, Linux, UNIX, and other operating systems. The netstat provides the statistics and information in the use of the current TCP-IP Connection network about the protocol.



Conclusion : Therefor we have successfully implemented and analysed the networking commands