7/7/25

Practical - 1

AIM: - Study of various Network commands used in Linux and windows.

arp -a: ARP is short of address resolution protocol, It will show the IP address of your computer along with the IP address and MAC address of your router.

```
Interface: 172.16.10.49 --- 0x3
  Internet Address      Physical Address      Type
  172.16.0.1            7C-5A-1C-CF-BE-45     dynamic
  172.16.0.237          E0-9C-25-1F-65-C0     dynamic
```

hostname: This is the simplest of all TCP/IP commands. It simply displays the name of your computer.

```
HOC02222055.
```

ipconfig/all: This command displays detailed configuration information about your TCP/IP connection including Router, Gateway, DNS, DHCP, and type of Ethernet adapter in your system.

```
Windows IP Configuration
Ethernet adapter Ethernet 2:
    Connection-specific DNS Suffix  .:
    Link-local IPv6 Address . . . . : fe80::4a03:5b3:16f3:8ebb%5
    IPv4 Address . . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . .
```

nbtstat -a: This command helps solve problems with NetBIOS name resolution
Displays protocol statistics and current TCP/IP connections using NBT

```
NBTSTAT [[-a Remote Name] [-A IP address] [-c] [-n] [-r]
        [-R] [-RR] [-s] [-S] [interval]],
```

-a (adapter status) lists the remote machines name table given its name
-A (Adapter status) lists the remote machines name table given its IP address
-c (cache) lists NBT's cache of remote [machine] name

& their IP address
-n (names) lists local NetBIOS names

netstat: netstat displays a variety of statistics about a computers active TCP/IP connections. It is a command line tool for monitoring network connections both incoming & outgoing as well as viewing routing tables, interface statistics etc.

eg: netstat -r

Active connections

Proto	Local Address	Foreign Address	State
TCP	172.16.10.49:7600	172-16-9-60:60541	TIME_WAIT
TCP	172-16-10-49:7680	DESKTOP-P5D5D15:500 OS	TIME_WAIT
TCP	172.16.10-49:7680	172.16.10.8:50518	TIME_WAIT

nslookup: is a tool used to perform DNS lookups in Linux. It is used to display DNS details, such as the IP address of a particular computer, the MX records for a domain or the NS servers of a domain. nslookup can operate in two modes: interactive and non-interactive.

eg: nslookup www.google.com
Server: unknown
Address: 172.16.8.1
Non-authoritative answer:
Name: www.google.com
Address: 2404:6800:4007:8321::2004
142.251.222.132.

Pathping: Pathping is unique to windows & is basically a combination of the ping & Tracert commands.

Usage: pathping [-g host-list] [-h maximum_hops] [-i address] [-n] [-p period] [-q num_queries] [-w timeout] [-4] [-6] target_name

Options:
-g host_list Loose source route along host list
-h maximum_hops - Maximum number of hops to search for target
-i address use the specified source address

-n Do not resolve address to hostname
-p Period wait period milliseconds between pings
-q num_queries Number of queries per hop

Ping: (Packet INternet Groper) Command is the best way to test connectivity b/w two nodes. Ping use ICMP to communicate to other devices

Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL]
[-v TOS] [-r count] [-s count] [[-j host-list] |
[-k host list]]

Route: Route command is used to show/manipulate the IP routing table.

ROUTE [-f] [-p] [-4|-6] command [destination] [MASK netmask]
[gateway] [METRIC metric]

Command one of these

PRINT	Prints a route
ADD	Adds a route
DELETE	Delete a route

> route DELETE 3ffe::132

Result:

The commands are executed successfully