EXP. NO: 1 Study of various Network commands used in Linux & windows.
17/7/25

AIM: Study of various network commands used in Linux & windows

BASIC NETWORKING COMMANDS:

1) arp - a : Displays the IP & Mac addresses of devices on the local network.

O/P

172.16.50.1 7C-5a-1C-Cf be-3e dynamic
255.255.255 ff-ff-ff-ff-ff Static

2) hostname: shows the name of current computer

O/P DG02-HDC07190 30

3) ipconfig/all: Displays detailed TCP/IP config

O/P Windows IP configuration
Hostname : DG02-HDC07190 30
Primary Dns Suffix :
Node Type : Hybrid

4) nbtstat - a : shows NetBIOS name table of remote computer

O/P UDP 0.0.0.0:61664 142.250.67.42:443
TCP 172.16.50.113:49727 sb-in-f138-
Established

5) nslookup: Queries DNS to get domain name on IP address information

O/P Default server: Unknown
address : 172.16.50.1

6) Pathping: Combines ping and tracert to analyze packet loss at each hop

O/P [-n] [-p period].

1) ping: Tests connectivity to another network host by sending ICMP echo requests.

O/P ping [-t] [-a] [-n count] [-l size] [-f]

2) route: Views or modifies the IP routing table

## LINUX NETWORKING COMMANDS

1) IP: Displays & manages network interfaces, addresses & routes.

2) ifconfig: Configures network interfaces (deprecated, replaced by ip)

3) mtr: Combines ping and traceroute to diagnose network paths & latency.

O/P:

mtr google.com

Host: Servers

| Loss % | Snt | Last | Avg | Best |
|---|---|---|---|---|
| 0.0% | 10 | 1.2 | 1.1 | 0.9 |

⇒ mtr -4 google.com = shows IP's only
⇒ mtr -b google.com = shows IP's & hostname
⇒ mtr -c 10 google.com = Limit to 10 ping

4) tcpdump: Captures & analyzes network packets on an interface.

O/P:

Capture on interface eth0 : ~ tcpdump -i eth0
Capture 10 packets : tcpdump -i eth0 -c 10
tcpdump -i eth0 -c 10 host 8.8.88.
tcpdump -i eth0 src host 8.88.8
Capture traffic on a network
port 53

5) Ping: sends ICMP echo requests to test network connectivity.

O/P ping google.com

64 bytes from sof08s27.in-f14.1e100
net(216.58.206.174): icmp-seq=1
ttl=56, time=10.7 ms

## CONFIGURING ETHERNET WITH NMCLI

1) List connection profiles:
   - nmcli connection show
   - NAME UUID TYPE DEVICE
     wired as... ethernet
     connection1 3668-81f8-0

2) Add a new Ethernet connection:
   - nmcli connection add con-name <name>
     if name <device> type ethernet.

3) Modify connection (rename or setting):
   - nmcli connection modify "wired connection 1" <option>

4) Show current connection settings:
   - nmcli "wired connection"

5) Configure IPV4:
   i) DHCP (auto)
   "wired connection1" ipv4.method auto

   ii) static IP:
   "wired connection1"
   ipv4.method manual \
   ipv4.addresses 192.0.21/24 ipv4
   gateway 192.0.2.254 ipv4.dns

6) Configure IPV6:

i) Auto (SLAAC): nmcli connection modify "wired connection 1" ipv6.method auto.

ii) For static IPV6:

nmcli connection modify "wired connection 1", ipv6.method manual

O/P

ipv6. ... ffff/64\

ipv6.gateway ... ffff\.

7) Activate Profile:

nmcli connection up Internal-LAN

O/P

connection 'Internal-LAN' successfully activated

CD-Bus active path: /org/freedesktop/NetworkManager.

## VERIFICATION:

1) Check IP:

ip address show enp1s0

O/P

inet 192.0.2.1/24 ... scope/enp1s0

inet 2001:db8:1 /64 scope global

2) IPV4 Gateway:

ip route show default

O/P default via 192.0.2.254 dev enp1s0

3) IPV6 Gateway: ip-6 route Show default

O/P default via 2001:db8.. dev enp1s0

5) DNS settings: cat/etc/resolv.conf

O/P search example.com

name server 192.0.2.200

name server 2001:db8:11:ffbb

6) Ping Test ping -c 3 2001:db8:1:ffe

O/P 64 bytes = 1 ttl = 64 time = 0.123ms

RESULT: Hence the output is verified successfully.