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BASIC NETWORKING COMMANDS

1. arp -a :

Short form of Address Resolution Protocol. It will show the IP address of your computer along with MAC address.

Output :

Interface : 192.168.11.1 ---0x7

Internet Address	Physical Address	Type
192.168.11.255	ff-ff-ff-ff-ff-ff	static
224.0.0.2	01-00-5e-00-00-02	static
224.0.0.22	01-00-5e-00-00-16	static
224.0.0.251	01-00-5e-00-00-fb	static
224.0.0.252	01-00-5e-00-00-fc	static
239.255.255.250	01-00-5e-7f-ff-fa	static

2. hostname :

Simplest of all TCP/IP commands. It simply displays the name of your computer.

Output :

DESKTOP-5R3B9BE

3. ipconfig /all :

It displays detailed configuration information about your TCP/IP connection including Router, Gateway, DNS, DHCP and type of ethernet Adapter your system.

Output :

Windows IP configuration

Host Name . . . . . : DESKTOP-SR3B9BE
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled . . . . . : No
WINS Proxy Enabled . . . . . : No

Ethernet adapter Ethernet :

Connection-specific DNS Suffix . :
Description . . . . . : Realtek PCIE GbE Family Controller
Physical Address . . . . . : 50-9A-4C-35-12-2E
DHCP Enabled . . . . . : No
Autoconfiguration Enabled . . . . : Yes
Subnet Mask . . . . . : 255.255.252.0
Default Gateway . . . . . : 172.16.8.1

4. nbtstat -a :

It helps solve problems with NETBIOS name resolution.

Output :

Displays protocol statistics and current TCP/IP connections using NBT (NetBios over TCP/IP)

NBTSTAT [[-a RemoteName] [-A IP address] [-c] [-n] [-r] [-R] [-RR] [-s] [-S]]

5. netstat :

Network statistics. Displays a variety of statistics about a computers active TCP/IP connections.

Output :

Active Connections

Proto	Local Address	Foreign Address	State
TCP	172.16.8.88:7680	172.16.10.110:6116	Established
TCP	172.16.8.88.50039	sc-in-f188:5288	Established
TCP	172.16.8.88.50643	20.209.186.65:https	Close-Wait

6. nslookup :

name server lookup is a tool used to perform DNS lookups. It is used to display DNS details such as the IP address of a particular computer.

Eg : nslookup www.google.com

Output :

Server : Unknown

Address : 172.16.8.1

Non-authoritative answer :

Name : www.google.com

Addresses : 2404 : 6800 : 4007 : 81e :: 2004

142.250.183.228

7. pathping :

Pathping is unique to Windows and is basically a combination of the Ping and Tracert commands. Pathping traces the route to the destination address then launches a 25 second test of each router along the way, gathering statistics.

Output :

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

8. ping :

Packet INternet Groper is to test connectivity between two nodes.

Eg : ping www.facebook.com

Output :

Ping statistics for 157.240.192.35 :

Packets : Sent = 4 , Received = 4 , Lost = 0 (0% loss),

Approximate round trip times in milli-seconds :

Minimum = 3ms , Maximum = 3ms , Average = 3ms

9. Route :

route command is used to show/ manipulate the IP routing table. It is primarily used to setup static routes to specific host or networks via an interface.

Output :

Manipulates network routing tables

ROUTE [-f] [-p] [-4] command [destination]

[MASK netmask] [gateway] [METRIC metric]

[IF interface]

Linux Networking Commands

1. ip

→ ip address show

[root@localhost student] # ip address show

1: LO <Loopback, upplower-up> 65530 no queue state unknown group default qlen 10000

→ ip address add

ip address add 192.168.1.254/24 dev - enp250

→ ip address delete

ip address del 192.168.1.254/24 dev enp250

→ ip link set up

ip link set to up

→ ip link set down

ip link set to down

→ ip link set promise on

ip link set to promise on

→ ip route add default

ip route add default via 192.168.1.254 dev enp250

→ Add default through gateway

ip route add 192.168.1.0124 vi 192.168.1.254

→ Adding route to device

ip route add 192.168.1.01254 dev enp2504

→ Display route for ip

ip route get 10.10.1.4 via 172.16.8.1

2. mtr

→ # mtr google.com

1 172.16.81

Statistics 21.229.47

142.251.227.127

→ mtr -lo

mtr -lo google.com

Localhost .local domain (0.1.0.0)

172.2.16.8

142-250.171.162

142-251.227.217

3. tcp dump -D

1. enp250 [up, running]
2. wlp350 [up, running]
3. any [pseudo device that captures inetfcen]
4. lo [up, running]

→ tcpdump -i

tcp dump -i enp250 src host 0.1.1.1

tcp dump -v for full protocol

decode listening on enp250

link-type ENIOMS capture size 262.144 bytes

4. ping -c

ping -c 10 google.com

64 bytes from xxx.05 510 in-f3 10 ont

(216.58.200.142) icmp seq=2 ttl=dv

Ping is a tool that verifies IP level connectivity to another TCP/IP computer by sending Internet Control Message Protocol (ICMP).

Configuring an Ethernet Connection using nmcli.

Procedure:

1. List NetworkManager connection profiles:

#nmcli connection show

NAME	UUID	TYPE	DEVICE
Wired connection 1	a5eb6490-cc20-3668	ethernet	enp1s0

2. #nmcli connection add con-name <connection-name> ifname <device name> type ethernet
   Skip this step to modify

3. Optional: Rename
   #nmcli connection modify "Wired connection 1"

4. Display current settings of connection profile:
   #nmcli connection show

   connection.interface-name: enp1s0
   connection.autoconnect: yes
   ipv4.method: auto

5. Configure IPv4 settings:
   To use DHCP enter:

   #nmcli connection modify "Wired connection 1" ipv4.method auto

6. Configure the IPv6 settings:

To use stateless address autoconfiguration SLAAC

#nmcli connection modify "Wired connection 1" ipv6.method. auto

7. Activate the profile:

#nmcli connection up Internal-LAN

Verification:

1. Display IP settings of NIC:

#ip address show enp1s0

2. Display the IPv4 default gateway:

#ip route show default

3. Display the IPv6 default gateway:

#ip-6 route show default

4. Display the DNS settings:

#cat /etc/resolv.conf

5. Use the ping to verify that this host can send packets

#ping <hostname -or- IP address>

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