Ex : 1
Date : 20.7.24.

Basic Networking Commands.

Aim :

Study of various network commands used in Linux and windows.

In windows

1. arp -a :

Interface : 192.168.140.1 — 0x5

Internet Address	Physical Address	Type
192.168.140.255	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.

2. hostname :

DESKTOP-8SJ6K5B.

3. ipconfig

Windows IP configuration.

Ethernet Adapter ethernet

Connection-specific DNS suffix . :
Link Local IPv6 Address . . . . . : fe80::6265:5ce8:226a:49f2%15
IPv4 Address . . . . . : 172.16.8.74.
Subnet Mask . . . . . : 255.255.0.0
Default Gateway . . . . . : 172.16.8.1.

Ethernet Adapter ethernet 2 :

Connection-specific DNS suffix . : etc..

Wireless LAN adapter Wi-fi :

Wireless LAN adapter Local Area Connection* 1 : etc..

4. nbtstat -a

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

NBTSTAT [[-a Remote Name] [-A IP Address] [-c] [-n] [-r] [-R] [-RR] [-s] [-S] [interval]].

For example,

⇒ nbtstat -r

NetBIOS Names Resolution and Registration Statistics

Resolved By broadcast = 0
Resolved by Name Server = 0
Registered By Broadcast = 18
Registered by Name Server = 0.

5. Netstat.

Active Connections

Proto	Local Address	Foreign Address	State
TCP	172.16.8.94:7680	HDC1017088:61859	Established
TCP	172.16.8.94:49700	13.107.253.254:https	Close-wait
TCP	172.16.8.94:49727	sd-in-f188:5228	Established

6. nslookup.

Default server : Unknown
Address : 172.16.8.1.

7. pathping

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

For example :

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 addresses to hostnames
-p period - wait period milliseconds between pings.
-q num_queries - Number of queries per hop.
-w timeout - wait timeout milliseconds for each reply.
-4 Force using IPV4
-6 Force Using IPV6.

8. 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 :

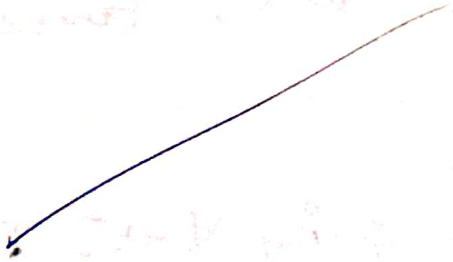
- t ping the specified host until stopped. To see statistics and continue - type control - Break
- a Resolve addresses to hostnames.
- n count Number of echo requests to send.

9. 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.
- p when used with the ADD command, makes a route persistent across boots of the system.
- 4 Force using IPv4
- 6 Force using IPv6.



Linux Networking Commands.

1. ip

Usage : ip [OPTIONS] OBJECT { command | help }
ip [-force] -batch filename.

where OBJECT := { link | address | addrlabel |
route | rule | neigh | ntable |
tunnel | tuntap | M address | M route |
M rule | M monitor | xfrm | netns | l2tp |
fou | macsec | tcp_metrics | token |
netconf | ila | vrf }.

OPTIONS := { -V [ersion] | -s [tastics] |
-d [etails] | -r [esolve] |
-h [uman-readable | -iec |
}.

2. ifconfig

enp2s0 : flags = 4163 < UP, BROADCAST, RUNNING, MULTICAST > mtu 1500
inet 172.16.8.94 netmask 255.255.252.0
broadcast 172.16.11.255

lo : flags = 73 < UP, LOOPBACK, RUNNING > mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10 <host>

wlp3s0 : flags = 4099 < UP, Broadcast, Multicast > mtu 1500.
ether 2a:cd:c4:2f:48:cb.

3. mtr.

My traceroute [v0.94] Sat Jul 20 11:36:
202

Localhost.local admin (::)

Keys: Help Display mode Restart statistics
Order of fields quit

Host

1. ::1

O/P:

	Packets			Pings		
Loss %	Snt	Last	Avg	Best	Wrst	StDev
0.0%.	157	0.1	0.1	0.0	0.1	0.0.

4. tcpdump.

tcpdump: enp2s0: You don't have permission to capture on that device.
(socket: Operation not permitted).

tcpdump -D.

1. enp2s0 [Up, Running]
2. any (Pseudo-device that captures on all interfaces) [Up, Running]
3. Lo [Up, Running, Loopback]
4. wlp3s0 [Up]
5. bluetooth0 (Bluetooth adapter number 0).

etc-.

5. Ping

Usage: ping [-aAbBdDfhLnOqrRUvV64] [-c count]
[-i interval] [-I interface] [-m mark]
[-M pmtudisc-option] [-l preload]
[-p pattern] [-Q tos] [-w deadline]
[-W timeout] [hop1 ...] destination

Student observation:

1. Which command is used to find the reachabability of a host machine from your device?

Ping command.

2. Which command will give the details of hops taken by a pocket to reach its destination?

mtr (Matt's traceroute).

3. Which commands displays the ip configuration of your machine.

IP < options > < object > < command >.

4. Which command displays the TCP port status in your machine

Netstat.

5. write the modify ip configuration in a Linux machine?

i.) Assigning IP address to interface ip address add 192.168.1.254/24 dev enp503

ii.) deleting ip address:

ip address del 192.168.1.254/24 dev enp503.

Result:

Thus networking Commands of both Linux & Windows are studied and executed successfully.