

Ex no: 01
Date : 16/07/24

Practical - 01

AIM :

Study of various Network commands used in Linux and windows.

Basic Networking Commands in Windows :

arp -a

Interface : 192.168.26.1 -- 0xd

Internet Address	Physical Address	Type
192.168.26.254	00-50-56-F9-8b-27	dynamic
192.168.26.254	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
255.255.255.255	FF-FF-FF-FF-FF-FF	static

1) hostname
Desktop DESKTOP - A71ULD8

2) ipconfig /all
Windows IP configuration

Host Name : DESKTOP - A71ULD8
Primary Dns Suffix
Node Type : Mixed
IP Routing Enabled : No
WINS Proxy Enabled : No

4) nbtstat -a

O/P :
nbtstat -a DESKTOP - A71ULD8

Ethernet 3 :

Node IP Address : [0.0.0.0] Scope Id : []
Host Not Found.

Bluetooth network connection 2 :

Node IP Address : [0.0.0.0] Scope Id : []
Host Not Found.

5) netstat

O/P :

Active connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:49678	DESKTOP-A71ULD8:49679	Established
TCP	127.0.0.1:49679	DESKTOP-A71ULD8:49678	Established
TCP	172.16.75.28:62144	20.42.73.26:Https	close-wait
TCP	172.16.75.28:62150	a23-ii-215-25:Https	close-wait

6) nslookup www.google.com

O/P:

server: unknown

Address: 172.16.72.1

Non-authoritative answer:

Name: www.google.com

Address: 2404:6800:4007:81e:2004

142.250.163.228

7) pathping -g DESKTOP-A71ULD8

O/P:

Tracing route to 172.16.75.28 over maximum of
30 hops:

0 172.16.75.28

1 172.16.75.28

computing statistics for 25 seconds...

source to Here This node / Link

HOP	RTT	Lost/sent = Pct	Lost/sent = Pct	Address
-----	-----	-----------------	-----------------	---------

0

Desktop - A71ULD8

[172.16.75.28]

1

0ms

0/100 = 0%

0/100 = 0%

Desktop - A71ULD8

[172.16.75.28]

Trace complete

8) ping www.rajalakshmi.edu.in

~~pinging~~ www.rajalakshmi.edu.in [162.255.119.253]

with 32 bytes of data:

Reply from 162.255.119.253: bytes = 32 time = 243 ms

TTL = 55

Reply from 162.255.119.253: bytes = 32 time = 317 ms TTL = 55

Reply from 162.255.119.253: bytes = 32 time = 284 ms TTL = 55

ping statistics for 162.255.119.253:
packets: sent = 4, Received = 4, lost = 0 (0% loss),
approximate round trip times in milli-seconds:
minimum = 243 ms, maximum = 317 ms, Average = 269 ms

9) Route point

O/P:

Interface list

18...20 88 10 86 C5 61 ... Intel(R) Ethernet Connection

12... 4e 82 99 79 1F A5 ... microsoft wi-fi Direct
virtual adapter #5

TPV4 Route table

Active Routes:

None

Persistent Routes :

None

IPV6 Route Table :

Action Routes

None

Persistent Routes

1650-2

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Some important Linux networking commands

ip :

ip address show

1: lo : <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
link/loopback brd 00:00:00:00:00:00 brd 00:00:00:00:00:00
inet 127.0.0.1/8 scope host lo

valid_lft forever preferred_lft forever

inet6 :: 1/128 scope host

2: enp2s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq-codel state UP group default qlen 1000

3: wlp3s0: <BROADCAST,MULTICAST> mtu 1500 qdisc adisc
noop state DOWN group default qlen 1000
link/ether d6:ab:54:82:44:79 brd FF:FF:FF:FF:FF:FF

b) ip address add 192.168.1.254/24 dev enp3s0

c) ip address del 192.168.1.254/24 dev enp2s0

d) ip link set enp2s0 up.

e) ip link set enp2s0 down.

f) ip link Add default via 192.168.1.254 dev enp2s0.

g) ip route add 192.168.1.0/24 dev enp2s0

h) ip route add enp2s0 promisc on.

i) ip route add 192.168.1.0/24 dev enp2s0

RTNETLINK : fib exists.

j) ip route delete 192.168.1.0/24 via 192.168.1.254

k) ip route get 10.10.1.4

10.10.1.4 dev enp2s0 src 192.168.1.254

uid 0 cache.

2) mtr :

a) mtr www.rajalakshmi.in
 O/P: my traceroute [v0.87]

localhost.localdomain (0.0.0.0)
 Keys: Help Quit

Host	Packets			Pings			
	Loss %.	cnt	Last	Avg	Best	Worst	StDev
1. 118.185.187.140	0.0%	208	0.3	0.2	0.2	0.3	0.0

b) mtr -g twitter.com

No MTU support. Sorry.

c) mtr -b google.com

same output as a.

3) ping :

ping www.google.com

OUTPUT:

64 bytes from maa05512-in-f14.1e.100.net
 $i = \text{emp} - 8 \text{eq} = 1$ $\text{Rttime} = 120$ $\text{time} = 8.26 \text{ ms}$

64 bytes from maa05512-in-f14.1e.100.net
 $(142 \cdot 250.67 \cdot 46) \text{ iemp-seq} = 3$
 $\text{Rttime} = 120$ $\text{time} = 2.38 \text{ ms}$

4) tcpdump :

dnf install -y tcpdump

package tcpdump-14:4.9-0-2.fc22 is already installed, completed

tcpdump -D

1) ens250 [up, running]

2) lo [up, running, loopback]

3) wlp3s0 [up].

tcpdump -i enp2s0

10:38:21.937811 ARP, Request who has 172.16.11.28
tell 172.16.9.182, length 46

10:38:21.959532 IP localhost.localdomain.
39740> gateway.domain: q2aa+ PTR? 28.11.16.172.
.in addr. arpa

tcpdump -i eth0 -c 10.

10:43:22.861515 ARP, Request who-has 172.16.11.200
tell 172.16.11.188, length 46

10:43:22.869014 IP gateway.domain > local.host.
local.domain. 58925:50925 NXDomain * 01010(44).

#tcpdump -i eth0 -c 10 host 8.8.8.8

listening on enp2s0, link-type EN10MB capture
size 262144 bytes

#tcpdump -i eth0 src host 8.8.8.8

#tcpdump -i eth0 des host 8.8.8.8

capture network to and from a network

#tcpdump -i enp2s0 net 10.1.0.0 mask 255.255.
255.0

#tcpdump -i enp2s0 net 10.1.0.0/24

capture traffic to and from port number

#tcpdump -i eth0 port 53

~~10.58:46.855849 IP localhost.localdomain
49564> gateway.domain: 18237+A? Chat.
google.com.~~

#tcpdump -i enp2s0 host 8.8.8.8 and port 53

#tcpdump -i enp2s0 -E 10 host www.google.
com and port 443.

#tcpdump -i enp2s0 port not 53 and not 25

11:03:21.310.111 IP 172.11.9.18.1.55/72>239.255.

configuring an Ethernet connection by using nmcli.

procedure

1) # nmcli connection show:

Device	001F Tcce64 a4-cf4c-4962-a0bb- ofbb0c2d058d
Type	802 - 3 - ethernet

2) #nmcli connection modify "wired connection"
 to rename the connection

3) # nmcli connection show

4) configure IPV4 settings

```
#nmcli connection modify "wired connection" ipv4  
method auto.
```

```
# nmtui connection modify "wired connection on  
1" ipv4.method manual ipv4.addresses
```

192.0.2.1124 ipv4 gateway 192.0.0.254 ipv4 dns

192.0.2.1124 ipv4 gateway 192.0.0.254 dns-search

To set a static IPv4 address, ~~network~~ mask,

default gateway | DNS servers and search domain

5) Configure IPv6 settings:

```
#nmcli connection modify "wired connection" ...
```

verification:

i) ip address show enp250

END250: BROADCAST, MULTICAST, UP, LOWER UP>

mtu 1500 qdisc fq-codel state UP group

default gw 1000 link / eth0 brd ff:ff:ff:ff:ff:ff

2) ip route show default

- default via 172.16.8.1 dev enp2s0 proto static metric 100.
- 172.16.8.0/22 dev enp2s0 proto kernel scope link src 172.16.8.86 metric 100.

3) ip -6 route show default.

4) ping www.google.com

5) Display DNS settings.

cat /etc/resolv.conf

generated by a network manager

nameserver 172.16.8.1

Configuring an Ethernet connection by using
nmcli:

① nmcli connection show

NAME	UUID	TYPE	DEVICE
New 802.3-ethernet connection	d9497903-3a15-4730-8cca-37ed21928c59	802-3 ethernet	enp2s0

② ip route show default

O/P:

default via 172.16.8.1 dev enp2s0 proto static metric 100

172.16.8.0/22 dev enp2s0 proto kernel scope link
src 172.16.8.109 metric 100.

③ cat /etc/Network.conf

O/P:

generated by NetworkManager

nameserver 172.16.8.1

RESULT:

Thus the basic commands are executed and observed in windows and Linux.

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