Ex No: 1
16:7:24

Practical-2

Various network commands in Linux & windows

Aim

Study of various Network commands used in Linux and windows

Basic Networking commands:

(i) arp -a:

Displays and modifies the IP-to-Physical address translation tables used by address resolution Protocol (ARP)

ARP -s inet_addr eth_addr [if_addr]
ARP -d inet_addr [if_addr]
ARP -a [inet_addr] [-N if_addr] [-v]

-a Display current ARP entries by interrogating the current Protocol data.

(ii) hostname:

LAPTOP-09KGSSTC

(iii) ipconfig/all:

Windows IP configuration

Host name . . . . . : LAPTOP-09KGSSTC
Primary DNS Suffix . . . . . :
Node Type . . . . . : Mixed

IP Routing Enabled . . . . . : No

WINS Proxy Enabled . . . . . : No

Ethernet adapter Ethernet 2:

Connection-Specific DNS Suffix :

Description . . . . . : VirtualBox Host-O

Physical Address . . . . . : 0A-00-27-00-00-

Autoconfiguration Enabled . . . . . : Yes

Link-local IPv6 Address . . . . . : fe80::f2da:7cb3:
93c:597c%41(
Preferred).

(iv) nbtstat -a:

Display Protocol statistics and current
TCP/IP connections using NBT
(NetBIOS over TCP/IP).

-a (adapter status) Lists the remote
machine's name table given its name

-A (Adapter Status) Lists the remote
machine's name table given its
IP address.

(v) netstat:

Active connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:1042	LAPTOP-09KGSSTC: 59410	ESTABLISHED
TCP	127.0.0.1:9012	LAPTOP-09KGSSTC: 59414	ESTABLISHED
TCP	127.0.0.1:13030	LAPTOP-09KGSSTC: 49670	ESTABLISHED

(vi) nslookup

DNS request timed out.

timeout was 2 seconds.

Default server: Unknown

Address: 2401:4900:50:9:7280

(vii) PathPing:

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_holes Maximum number of hops to search for target.

-i address Use the specified source address.

(viii) 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;

To stop - type control-C.

-a Resolve address to hostname

(ix) Route:

Manipulates network routing tables.

ROUTE [-f] [-P] [-4|-6] command [destination]
[MASK netmask] [gateway] [METRIC metric]
[IF- interface]

-f clears the routing table of all gateway entries. If this is used in conjuction with one of the commands, the table are cleared

-P when used with the ADD command, makes a route persistent across.

-4 Fource using IPv4.

-6 Fource using IPv6.

Some important Linux networking Command

1- ip:

a. ip address show:

lo: <LOOPBACK, UP, LOWER_UP> mtu 65536 qdisc
noqueue state UNKNOWN group default qlen
1000 link/loopback 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 noprefixroute
valid_lft forever preferred_lft forever

2 if config:

enp0s3: flags=4163<UP, BROADCAST, RUNNING,
MULTICAST> mtu 1500
inet 10.0.2.15 netmask 255.255.255.0
broadcast 10.0.2.255 inet6 fe80::4dba:c4d
7ae:dooa prefixlen 64 scopeid 0x20<link>
ether 08:00:27:b7:f5:5c txqueuelen 1000
(Ethernet) RX packets 272 bytes 4197

Rx error 0 dropped 0 overruns 0 frame 0

Tx Packets 365 bytes 33629 (32.8 KiB)

Tx error 0 dropped 0 overruns 0 carried 0

Collisions 0.

3. Mtr

Mtr google.com.

~~Host. file~~

local Host_live (10.0.2.15) → google.com (216.58.200.142)

(17.217.166 2024-07-18 T 23:33:40 -0400

Host	Packet			Pings	
1. Gateway	Loss%	Snt	Last	Avg	Best
2. (waiting for reply)	0.0%	167	0.6	1.0	0.4
3. (waiting for reply)	0.0%	176	14.0	51.8	7.5
4. (waiting for reply)	Wrst	StDev			
5. (waiting for reply)	28.7	2.3			
6. (waiting for reply)	453.7	113.7			
7. Maa05 s09-in-f14.1e100.net					

4. TCP dump:

dnf install -y tcpdump.

Last metadata expiration check: 0:43:06 ago

on Fri 19 Jul 2024 09:24:46 AM EDT

Package tcpdump-14:4.99.4-2.fc39.x86_64 is

already installed
Dependencies resolved.
Nothing to do.
Complete!

tcpdump -D

1. enp0s3 [UP, Running, connected]
2. any (Pseudo-device that captures on all interfaces) [UP, Running]
3. lo [UP, Running, Loopback]
4. bluetooth-monitor (Bluetooth Linux monitor) [wireless]
5. usbmon2 (Raw USB traffic, bus number 2)

tcpdump -i enp0s3

dropped privs to tcpdump
tcpdump: verbose output suppressed, use -v[v]... for full protocol decode.
listening on enp0s3, link-type EN10MB (Ethernet), snapshot length 262144 bytes.
:32:16.579123 IP 192.168.1.6.mdns > dns.MCast.net.mdns: 0 [39] PTR (QU)? Companion-link._tcp.local. PTR (QU)? -rdlink._tcp.local. PTR (QU)? -Sleep-Proxy._udp.local.(82

tcpdump -enpos3 -c3

tcpdump: invalid option -- 'o'

tcpdump version 4.99.4

libpcap version 1.10.4 (with TPACKET_V3)

openSSL 3.1.1 30 May 2023

usage: tcpdump [-AbdDefhHIJKlLnNOpqStuUvvvvxX#]

[-B size] [-C count] [--count

5. Ping:

Ping.google.com

PING google.com (142.250.182.14) 56 (84) bytes of data.

64 bytes from maa05s18-in-f14.1e.100.net

(142.250.182.14): icmp_seq = 1 ttl=119 time=91.5 ms

64 bytes from maa05s18-in-f14.1e100.net

(142.250.182.14): icmp_seq = 1 ttl=119 time=42.3 ms

64 bytes from maa05s18-in-f14.1e100.net

(142.250.182.14): icmp_seq = 1 ttl=119 time=69.3 ms

--google.com Ping statistics---

188 Packets transmitted, 144 received, 23.4043% Packetsloss, time 190350ms

rtt min/avg/max/mdev = 7.815/44.726/318.819/58.866 ms

Ping -c10 google.com.

PING google.com (142.250.182.14) 56(84) bytes of data.

64 bytes from maa05s18-in-f14.1e100.net (142.250.182.14): icmp_seq=1 ttl=119 time=32.9 ms

64 bytes from maa05s18-in-f14.1e100.net (142.250.182.14): icmp_seq=2 ttl=119 time=18.9 ms

64 bytes from maa05s18-in-f14.1e100.net (142.250.182.14): icmp_seq=3 ttl=119 time=22.8 ms

--- google.com ping statistics ---

10 packets transmitted, 10 received, 0% packet loss, time 13431ms

rtt min/avg/max/mdev = 11.556/28.621/56.385/11.823 ms

Configuring an Ethernet Connection by using

(i) nmcli connection show:

NAME	UUID	TYPE	DEVICE
wired connection1	95eb6490-cc20-3b68-81f8-0314a27f3f15	ethernet	enP0S3

(ii) nmcli connection modify "wired connection 1"

wired connection1

(iii) nmcli connection show For Display the Current setting.

connection.interface-name: enP0S3

connection.autoconnect: Yes

ipv4.method: auto

ipv6.method: auto

nmcli connection up Internal-LAN

(i) # ip address show enP0S3

enP0S3: <BROADCAST, MULTICAST, UP, LOWER_UP>

mtu 1500 qdisc fq_codel state UP group default qlen 1000 link/ether

52:54:00:17:68:bb brd ff:ff:ff:ff:ff:ff

(ii) # ip route show default

default via 10.0.2.2 dev enP0S3 proto dhcp src 10.0.2.15 metric 20100

(iii) # iP-6 route show default

default via 2010o : db : 8 : 1 : ff dev enP0S3 proto static metric 102 pref metric.

(iv) # cat /etc/ resolv.conf

name server 10.0.2.200

name server 2010 : db : 8 : 1 : ff

Result:

thus the basic linux & windows command have been studied & execute.

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