

Assignment. 1

TCP/IP Utilities & Network Commands

A] Basic Network Commands

1. Ipconfig :

- Displays all current TCP/IP network configuration values and refreshes Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) Settings. It enables users to determine the TCP/IP configuration values that have been assigned by DHCP, Automatic Private IP Addressing (APIPA) or an alternate configuration.

• Syntax :

```
ipconfig [/all] [/renew [Adapter]] [/release  
[Adapter]] [/flushdns] [/displaydns]  
[/registerdns] [showclassid Adapter]  
[set classid Adapter [classid]]
```

2. Ping : (Packet Internet Groper)

- It is used to ensure that a computer can communicate to a specified device over a network. It sends Internet Control Message

Protocol (ICMP) Echo Request Messages in the form of packets to the destination computer and waits in order to get the response back. Once the packets are received by the destined computer, it starts sending the packets back.

- Syntax :

ping [IP Address]

- 3 nslookup :

It queries the DNS to fetch the IP Address or the domain name from DNS records.

- 4. traceroute :

This command is used to get the route of a packet. In other words, traceroute is used to determine the path along which a packet travels. It also returns the number of hops taken by the packet to reach the destination.

- 5. host :

It is used to find the domain name associated with the IP Address or find the IP Address associated with a domain name.

6. netstat :

It is used to display the routing table, connection information, the status of ports, etc. It displays the content of /proc/net file defined in the Linux file system

7. Arp :

It is used to display & modify ARP cache, that contains the mapping of IP address to MAC address

Output:

```
someshwargaikwad@Someshwars-MacBook-Pro ~ % ping
www.google.com
PING www.google.com (172.217.166.68): 56 data bytes
64 bytes from 172.217.166.68: icmp_seq=0 ttl=117 time=6.844
ms
64 bytes from 172.217.166.68: icmp_seq=1 ttl=117 time=14.281
ms
64 bytes from 172.217.166.68: icmp_seq=2 ttl=117 time=15.636
ms
64 bytes from 172.217.166.68: icmp_seq=3 ttl=117 time=14.019
ms
64 bytes from 172.217.166.68: icmp_seq=4 ttl=117 time=14.366
ms
64 bytes from 172.217.166.68: icmp_seq=5 ttl=117 time=14.785
ms
^C
--- www.google.com ping statistics ---
6 packets transmitted, 6 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 6.844/13.322/15.636/2.943 ms
someshwargaikwad@Someshwars-MacBook-Pro ~ %
someshwargaikwad@Someshwars-MacBook-Pro ~ % nslookup
facebook.com
Server:      192.168.1.1
Address: 192.168.1.1#53

Name:    facebook.com
Address: 31.13.79.35

someshwargaikwad@Someshwars-MacBook-Pro ~ % ifconfig
lo0: flags=8049<UP,LOOPBACK,RUNNING,MULTICAST> mtu 16384
      options=1203<RXCSUM,TXCSUM,TXSTATUS,SW_TIMESTAMP>
      inet 127.0.0.1 netmask 0xff000000
      inet6 ::1 prefixlen 128
      inet6 fe80::1%lo0 prefixlen 64 scopeid 0x1
      nd6 options=201<PERFORMNUD,DAD>
gif0: flags=8010<POINTOPOINT,MULTICAST> mtu 1280
stf0: flags=0<> mtu 1280
en5: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST>
      mtu 1500
      ether ac:de:48:00:11:22
      inet6 fe80::aede:48ff:fe00:1122%en5 prefixlen 64 scopeid
0x4
      nd6 options=201<PERFORMNUD,DAD>
      media: autoselect (100baseTX <full-duplex>)
      status: active
```

```
ap1: flags=8802<Broadcast,Simplex,Multicast> mtu 1500
    options=400<Channel_IO>
    ether 3a:f9:d3:ea:0a:e4
    media: autoselect
    status: inactive
en0: flags=8863<Up,Broadcast,Smart,Running,Simplex,Multicast>
mtu 1500
    options=400<Channel_IO>
    ether 38:f9:d3:ea:0a:e4
    inet6 fe80::1896:30b9:e000:4e75%en0 prefixlen 64 secured
scopeid 0x6
        inet 192.168.1.208 netmask 0xffffffff broadcast
192.168.1.255
        nd6 options=201<PerformNUD,DAD>
        media: autoselect
        status: active
awd10:
flags=8943<Up,Broadcast,Running,Promisc,Simplex,Multicast>
mtu 1500
    options=400<Channel_IO>
    ether a6:02:12:d4:5b:00
    inet6 fe80::a402:12ff:fed4:5b00%awd10 prefixlen 64
scopeid 0x7
    nd6 options=201<PerformNUD,DAD>
    media: autoselect
    status: active
llw0:
flags=8863<Up,Broadcast,Smart,Running,Simplex,Multicast> mtu
1500
    options=400<Channel_IO>
    ether a6:02:12:d4:5b:00
    inet6 fe80::a402:12ff:fed4:5b00%llw0 prefixlen 64 scopeid
0x8
    nd6 options=201<PerformNUD,DAD>
    media: autoselect
    status: active
en3:
flags=8963<Up,Broadcast,Smart,Running,Promisc,Simplex,Multica
st> mtu 1500
    options=460<TS04,TS06,Channel_IO>
    ether 82:99:ee:c1:08:05
    media: autoselect <full-duplex>
    status: inactive
en4:
flags=8963<Up,Broadcast,Smart,Running,Promisc,Simplex,Multica
st> mtu 1500
    options=460<TS04,TS06,Channel_IO>
    ether 82:99:ee:c1:08:04
```

```
    media: autoselect <full-duplex>
    status: inactive
en1:
flags=8963<UP,BROADCAST,SMART,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1500
    options=460<TS04,TS06,CHANNEL_IO>
    ether 82:99:ee:c1:08:01
    media: autoselect <full-duplex>
    status: inactive
en2:
flags=8963<UP,BROADCAST,SMART,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1500
    options=460<TS04,TS06,CHANNEL_IO>
    ether 82:99:ee:c1:08:00
    media: autoselect <full-duplex>
    status: inactive
bridge0:
flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    options=63<RXCSUM,TXCSUM,TS04,TS06>
    ether 82:99:ee:c1:08:01
    Configuration:
        id 0:0:0:0:0:0 priority 0 hellotime 0 fwddelay 0
        maxage 0 holdcnt 0 proto stp maxaddr 100 timeout
1200
        root id 0:0:0:0:0:0 priority 0 ifcost 0 port 0
        ipfilter disabled flags 0x0
    member: en1 flags=3<LEARNING,DISCOVER>
        ifmaxaddr 0 port 11 priority 0 path cost 0
    member: en2 flags=3<LEARNING,DISCOVER>
        ifmaxaddr 0 port 12 priority 0 path cost 0
    member: en3 flags=3<LEARNING,DISCOVER>
        ifmaxaddr 0 port 9 priority 0 path cost 0
    member: en4 flags=3<LEARNING,DISCOVER>
        ifmaxaddr 0 port 10 priority 0 path cost 0
    nd6 options=201<PERFORMNUD,DAD>
    media: <unknown type>
    status: inactive
utun0: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 1380
    inet6 fe80::8178:f941:946e:e8d2%utun0 prefixlen 64
    scopeid 0xe
    nd6 options=201<PERFORMNUD,DAD>
utun1: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 2000
    inet6 fe80::dfa4:ef8e:498b:86b8%utun1 prefixlen 64
    scopeid 0xf
    nd6 options=201<PERFORMNUD,DAD>
someshwargaikwad@Someshwars-MacBook-Pro ~ %
someshwargaikwad@Someshwars-MacBook-Pro ~ % host google.com
```

```
google.com has address 142.250.183.142
google.com has IPv6 address 2404:6800:4009:81c::200e
google.com mail is handled by 50 alt4.aspmx.l.google.com.
google.com mail is handled by 30 alt2.aspmx.l.google.com.
google.com mail is handled by 10 aspmx.l.google.com.
google.com mail is handled by 40 alt3.aspmx.l.google.com.
google.com mail is handled by 20 alt1.aspmx.l.google.com.
someshwargaikwad@Someshwars-MacBook-Pro ~ %
someshwargaikwad@Someshwars-MacBook-Pro ~ % traceroute
google.com
traceroute to google.com (142.250.77.46), 64 hops max, 52
byte packets
 1  192.168.1.1 (192.168.1.1)  2.871 ms  1.716 ms  1.602 ms
 2  103.118.144.1 (103.118.144.1)  3.825 ms  3.877 ms  3.461
ms
 3  103.105.111.17 (103.105.111.17)  3.915 ms  4.296 ms
3.549 ms
^C
someshwargaikwad@Someshwars-MacBook-Pro ~ %
```

→ Conclusion :

Various commands to interact with the network were successfully carried out.