



## Experiment 1.2

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**Semester:** 4th

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**Subject Name:**Computer Networking Lab

**Subject Code:** 22E-20CSP-257

### 1) Aim/Overview of the practical:

**To study the basic network command and Network configuration commands like ping, variations of ipconfig/ifconfig, tracert/traceroute, nslookup, netstat, arp, rarp, hostname, pathping etc.**

### 2) Task to be done/ Which logistics used:

**To write the basic network command and Network configuration commands like ping, variations of ipconfig/ifconfig, tracert/traceroute, nslookup, netstat, arp, rarp, hostname, pathping etc. in the cmd/terminal.**

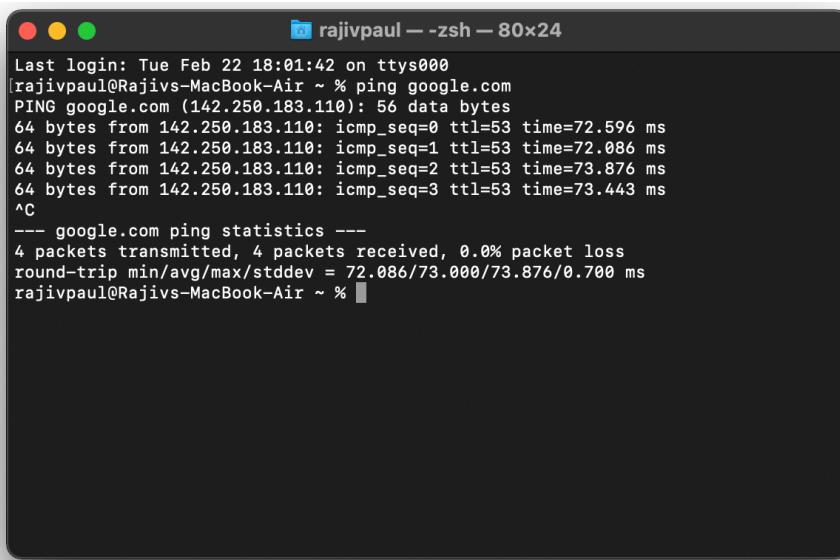


### 3) Steps for experiment/practical/Code:

1. **Ping:** Ping stands for Packet Internet or Packet Internet Groper. It is a basic internet program that allows a user to test and verify if a particular destination IP address. It also show the latency of the isp while using the internet for browsing or other things.
2. **Ipconfig/Iconfig:** It stands for Internet Protocol. It is an application program which displays all current TCP/IP network configuration values like dynamic host configuration protocol (DHCP) and Domain Name System(DNS) settings.
3. **Tracert/Traceroute:** It is used for displaying the time taken to gather information or travel between a local computer and a destination of IP address or domain.
4. **NsLookup:** It stands for Name Server Lookup, it is used to gather information from the DNS server. It is also used for obtaining the mapping between the domain name and IP address.
5. **Netstat:** It stands for Network Statistics , it is a command use to troubleshoot or configure the network. It also serve as a monitoring tools for connection over the network.
6. **ARP:** It stands for Address Resolution Protocol. It stores recently resolved or received MAC address or IP address hosted on the network.
7. **RARP:** It stands for Reserve Address Resolution Protocol. It is used by a clients computer to request its IP address from a computer network(LAN/WAN/MAN).
8. **Hostname:** It is used to display the name of the host/client's computer name.
9. **Pathping:** It is the combination of treacert/traceroute and ping command.

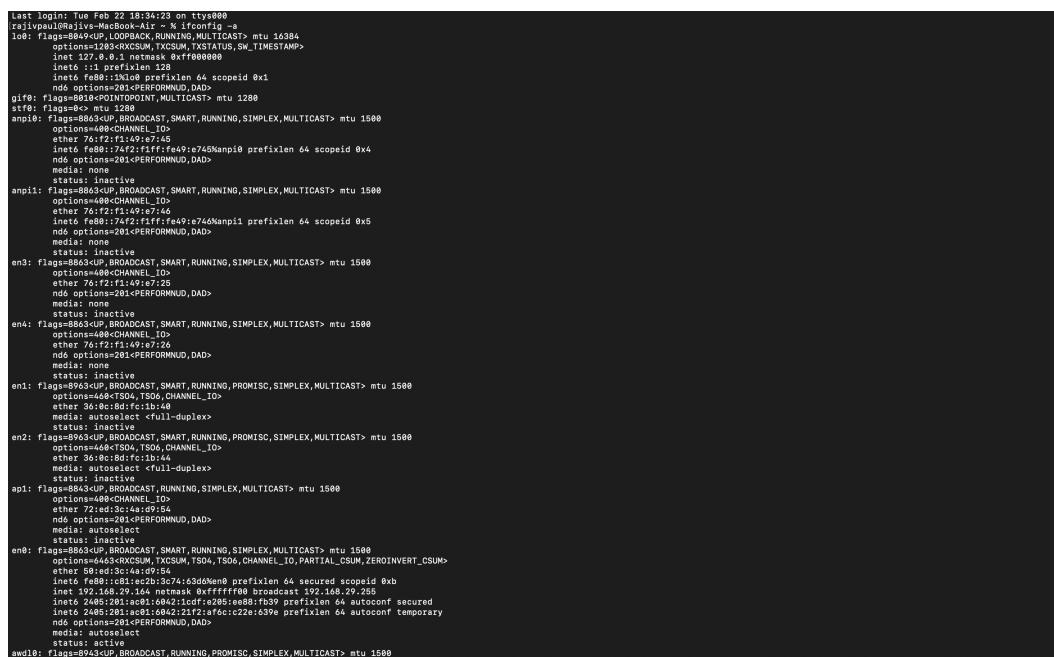
## 4. Result/Output/Writing Summary:

### Ping:



```
rajivpaul ~ zsh - 80x24
Last login: Tue Feb 22 18:01:42 on ttys000
[rajivpaul@Rajivs-MacBook-Air ~ % ping google.com
PING google.com (142.250.183.110): 56 data bytes
64 bytes from 142.250.183.110: icmp_seq=0 ttl=53 time=72.596 ms
64 bytes from 142.250.183.110: icmp_seq=1 ttl=53 time=72.086 ms
64 bytes from 142.250.183.110: icmp_seq=2 ttl=53 time=73.876 ms
64 bytes from 142.250.183.110: icmp_seq=3 ttl=53 time=73.443 ms
^C
--- google.com ping statistics ---
4 packets transmitted, 4 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 72.086/73.000/73.876/0.700 ms
rajivpaul@Rajivs-MacBook-Air ~ %
```

### Ipconfig/Iconfig:



```
last login: Tue Feb 22 18:34:23 on ttys000
rajivpaul ~ zsh - 80x24
[rajivpaul@Rajivs-MacBook-Air ~ % ifconfig -a
lo0: flags=8049<LOOPBACK,NOARP,RUNNING,BROADCAST> mtu 16384
    options=203<RXCSUM,TXCSUM,TXSTATS,SW_TIMESTAMP>
    inet 127.0.0.1 netmask 0xffffffffb3
        ether 7e:6f:ff:ff:ff:ff
        nd6 options=201<PERFORMNUD,DAD>
gif0: flags=8031<POINTOPOINT,MULTICAST> mtu 1280
stf0: flags=0<NOARP>
enp10s0: flags=8031<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_ID>
    ether 7e:f2:f1:49:e7:46
    nd6 options=201<PERFORMNUD,DAD>
    media: none
        status: inactive
    enp11: flags=8031<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_ID>
    ether 7e:f2:f1:49:e7:46
    nd6 options=201<PERFORMNUD,DAD>
    media: none
        status: inactive
en3: flags=8031<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_ID>
    ether 7e:f2:f1:49:e7:25
    nd6 options=201<PERFORMNUD,DAD>
    media: none
        status: inactive
en4: flags=8031<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_ID>
    ether 7e:f2:f1:49:e7:24
    nd6 options=201<PERFORMNUD,DAD>
    media: none
        status: inactive
en5: flags=8031<UP,BROADCAST,SMART,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_ID>
    ether 3d:9c:80:fc:1b:48
    nd6 options=201<PERFORMNUD,DAD>
    media: autoselect <full-duplex>
        status: inactive
en2: flags=8031<UP,BROADCAST,SMART,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_ID>
    ether 3d:9c:80:fc:1b:49
    nd6 options=201<PERFORMNUD,DAD>
    media: autoselect <full-duplex>
        status: inactive
en6: flags=8031<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_ID>
    ether 72:ed:3c:4a:d9:54
    nd6 options=201<PERFORMNUD,DAD>
    media: autoselect <full-duplex>
        status: inactive
en8: flags=8031<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_ID>
    ether 7e:8b:c8:1e:c2:b3
    nd6 options=201<PERFORMNUD,DAD>
    media: autoselect <full-duplex>
        status: inactive
en0: flags=8031<UP,BROADCAST,SMART,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1500
    options=403<RXCSUM,TXCSUM,TSO4,TSO6,CHANNEL_IO,PARTIAL_CSUM,ZEROINVERT_CSUM>
    ether 7e:6f:ff:ff:ff:ff
    nd6 options=201<PERFORMNUD,DAD>
    media: autoselect <full-duplex>
        status: active
swd10: flags=8074<UP,BROADCAST,SMART,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_ID>
```





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## NsLookup:

```
rajivpaul -- zsh -- 80x24
Last login: Tue Feb 22 17:47:34 on ttys000
[rajivpaul@Rajivs-MacBook-Air ~ % nslookup google.com
Server:      2405:201:ac01:6042::c0a8:1d01
Address:     2405:201:ac01:6042::c0a8:1d01#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.183.174

rajivpaul@Rajivs-MacBook-Air ~ %
```

## Netstat:

```
Last login: Tue Feb 22 18:15:29 on ttys000
rajivpaul@Rajivs-MacBook-Air ~ % netstat
Active Internet connections
Proto Recv-Q Send-Q Local Address          Foreign Address        (state)
tcp6    0      0 2405:201:ac01:60.51218 whatsapp-cdn6-sh.https ESTABLISHED
tcp6    0      0 2405:201:ac01:60.51215 whatsapp-cdn6-sh.https ESTABLISHED
tcp6    0      0 2405:201:ac01:60.59541 bom07s35-in-x0e..443 ESTABLISHED
tcp6    0      0 2405:201:ac01:60.59535 2606:4700::6812:.443 ESTABLISHED
tcp6    0      0 2405:201:ac01:60.59520 2600:1901:1:c36:.443 TIME_WAIT
tcp6    0      0 2405:201:ac01:60.59519 2600:1901:1:916:.443 TIME_WAIT
tcp6    0      0 2405:201:ac01:60.59516 2600:1901:1:c36:.443 TIME_WAIT
tcp6    0      0 2405:201:ac01:60.59515 2600:1901:1:b05:.443 ESTABLISHED
tcp4    0      0 192.168.29.164.49227  17.57.145.116.5223 ESTABLISHED
udp4    0      0 *.52606             *.*
udp4    0      0 *.*                *.*
udp4    0      0 *.*                *.*
udp4    0      0 *.*               *.*
```



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## ARP:

```
 rajivpaul ~ zsh - 98x26
Last login: Tue Feb 22 18:12:16 on ttys000
[rajivpaul@Rajivs-MacBook-Air ~ % arp
usage: arp [-n] [-i interface] hostname
           arp [-n] [-i interface] [-l] -a
           arp -d hostname [pub] [ifscope interface]
           arp -d [-i interface] -a
           arp -s hostname ether_addr [temp] [reject] [blackhole] [pub [only]] [ifscope interface]
           arp -S hostname ether_addr [temp] [reject] [blackhole] [pub [only]] [ifscope interface]
           arp -f filename
[rajivpaul@Rajivs-MacBook-Air ~ % arp -a
reliance.reliance (192.168.29.1) at 14:ae:85:e5:58:34 on en0 ifscope [ethernet]
? (224.0.0.251) at 1:0:5e:0:0:fb on en0 ifscope permanent [ethernet]
rajivpaul@Rajivs-MacBook-Air ~ % ]
```

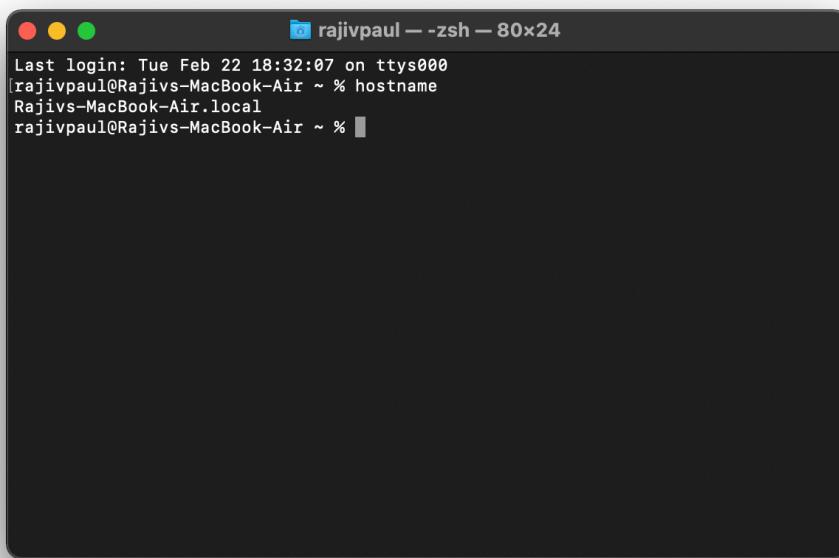


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## Hostname:



```
rajivpaul ~ % hostname
Rajivs-MacBook-Air.local
rajivpaul ~ %
```

## Pathping:

```
last login: Tue Feb 22 18:31:00 on ttys000
rajivpaul@Rajivs-MacBook-Air: ~ % traceroute google.com
traceroute to google.com (64.250.183.118), 30 hops max, 62 byte packets
 1  192.168.1.1 (192.168.1.1)  11.752 ms  11.617 ms  2.976 ms
 2  10.11.216.1 (10.11.216.1)  5.972 ms  6.192 ms  7.015 ms
 3  172.16.19.9 (172.16.19.9)  48.884 ms  36.929 ms
 4  192.168.13.229 (192.168.13.229)  34.934 ms  36.628 ms
 5  192.168.13.232 (192.168.13.232)  36.795 ms
 6  172.26.182.84 (172.26.182.84)  29.259 ms  33.177 ms  31.965 ms
 7  172.26.182.230 (172.26.182.230)  34.642 ms  31.071 ms
 8  192.168.20.231 (192.168.20.231)  39.536 ms
 9  192.168.20.238 (192.168.20.238)  43.873 ms
10  192.168.20.238 (192.168.20.238)  37.876 ms
11  192.168.20.238 (192.168.20.238)  37.876 ms
12  192.168.20.231 (192.168.20.231)  36.647 ms  39.388 ms
13  172.16.19.29 (172.16.19.29)  36.046 ms  35.489 ms
14  172.16.19.112 (172.16.19.112)  39.381 ms
15  172.16.19.10 (172.16.19.10)  35.809 ms  32.386 ms
16  172.16.19.10 (172.16.19.10)  35.828 ms
17  172.16.8.82 (172.16.8.82)  56.334 ms
18  108.178.253.161 (108.178.253.161)  82.164 ms
19  108.178.253.139 (72.14.233.139)  63.624 ms
20  74.125.243.99 (74.125.243.99)  61.658 ms
21  108.178.238.148 (108.178.238.148)  88.234 ms
22  142.258.234.126 (142.258.234.126)  74.813 ms
23  74.125.244.194 (74.125.244.194)  62.023 ms
24  142.251.51.141 (142.251.51.141)  76.382 ms
25  108.178.243.161 (108.178.243.161)  82.164 ms
26  72.14.233.197 (72.14.233.197)  61.376 ms
27  108.178.248.161 (108.178.248.161)  82.164 ms
28  108.178.232.94 (142.258.183.118)  79.422 ms
29  142.258.183.118 (142.258.183.118)  79.379 ms
30  bon1215-in-f14.1e100.net (142.258.183.118)  79.422 ms
31  72.14.233.69 (72.14.233.69)  77.158 ms
32  bon1215-in-f14.1e100.net (142.258.183.118)  72.442 ms
rajivpaul@Rajivs-MacBook-Air: ~ %
```

## Learning outcomes (What I have learnt):

1. Learnt about different types of commands related to network configuration.
- 2.
- 3.
- 4.
- 5.



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## Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			