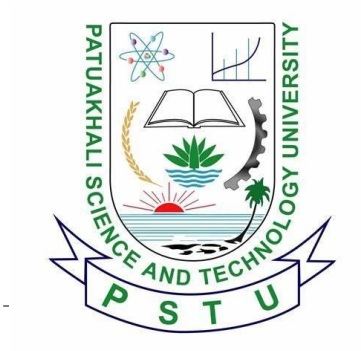

PATUAKHALI SCIENCE AND TECHNOLOGY UNIVERSITY

COURSE CODE CCE 314
Computer Networks Sessional

SUBMITTED TO:

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Lab 21
Assignment title: **Test Network Latency with Ping and Traceroute**
Date of submission: **Tue 09, Sep 2025**

Ping

```
❯ ping -c 5 www.afrinic.net
PING www.afrinic.net (196.216.3.4) 56(84) bytes of data.
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=1 ttl=41
time=433 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=2 ttl=41
time=402 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=4 ttl=41
time=396 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=5 ttl=41
time=396 ms

--- www.afrinic.net ping statistics ---
5 packets transmitted, 4 received, 20% packet loss, time 4055ms
rtt min/avg/max/mdev = 396.191/406.959/433.239/15.365 ms
❯ ping -c 5 www.lacnic.net
PING www.lacnic.net (200.3.14.145) 56(84) bytes of data.
64 bytes from www.lacnic.net (200.3.14.145): icmp_seq=1 ttl=51
time=383 ms
64 bytes from www.lacnic.net (200.3.14.145): icmp_seq=3 ttl=51
time=328 ms
64 bytes from www.lacnic.net (200.3.14.145): icmp_seq=4 ttl=51
time=323 ms
64 bytes from www.lacnic.net (200.3.14.145): icmp_seq=5 ttl=51
time=322 ms

--- www.lacnic.net ping statistics ---
5 packets transmitted, 4 received, 20% packet loss, time 4049ms
rtt min/avg/max/mdev = 322.285/338.862/382.602/25.337 ms
❯ ping -c 5 www.apnic.net
PING www.apnic.net.cdn.cloudflare.net (104.18.235.68) 56(84) bytes of
data.
64 bytes from 104.18.235.68: icmp_seq=2 ttl=49 time=65.0 ms
```

```
--- www.apnic.net.cdn.cloudflare.net ping statistics ---
5 packets transmitted, 1 received, 80% packet loss, time 4096ms
rtt min/avg/max/mdev = 65.025/65.025/65.025/0.000 ms
❯ ping -h

Usage
 ping [options] <destination>

Options:
 <destination>      DNS name or IP address
 -3                 RTT precision (do not round up the result time)
 -a                 use audible ping
 -A                 use adaptive ping
 -B                 sticky source address
 -c <count>         stop after <count> replies
 -C                 call connect() syscall on socket creation
 -D                 print timestamps
 -d                 use SO_DEBUG socket option
 -e <identifier>    define identifier for ping session, default is
random for
                    SOCK_RAW and kernel defined for SOCK_DGRAM
                    Imply using SOCK_RAW (for IPv4 only for
identifier 0)
 -f                 flood ping
 -h                 print help and exit
 -H                 force reverse DNS name resolution (useful for
numeric
                    destinations or for -f), override -n
 -I <interface>     either interface name or address
 -i <interval>      seconds between sending each packet
 -L                 suppress loopback of multicast packets
 -l <preload>       send <preload> number of packages while waiting
replies
 -m <mark>          tag the packets going out
 -M <pmtud opt>     define path MTU discovery, can be one of <do|
```

```
dont|want|probe>
 -n                  no reverse DNS name resolution, override -H
 -O                  report outstanding replies
 -p <pattern>        contents of padding byte
 -q                  quiet output
 -Q <tclass>         use quality of service <tclass> bits
 -s <size>           use <size> as number of data bytes to be sent
 -S <size>           use <size> as SO_SNDBUF socket option value
 -t <ttl>            define time to live
 -U                  print user-to-user latency
 -v                  verbose output
 -V                  print version and exit
 -w <deadline>       reply wait <deadline> in seconds
 -W <timeout>        time to wait for response

IPv4 options:
 -4                  use IPv4
 -b                  allow pinging broadcast
 -R                  record route
 -T <timestamp>      define timestamp, can be one of <tsonly|
tsandaddr|tsprespec>

IPv6 options:
 -6                  use IPv6
 -F <flowlabel>      define flow label, default is random
 -N <nodeinfo opt>   use IPv6 node info query, try <help> as argument

For more details see ping(8).
```

```
❯ ping -c 25 www.lacnic.net > lacnic.txt
same for rest 2 *
❯ ls --file-type *.txt
afrinic.txt  apnic.txt  lacnic.txt
```

```
❯ more afrinic.txt
PING www.afrinic.net (196.216.3.4) 56(84) bytes of data.
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=1 ttl=41
time=469 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=2 ttl=41
time=398 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=3 ttl=41
time=391 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=5 ttl=41
time=439 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=6 ttl=41
time=461 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=7 ttl=41
time=484 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=8 ttl=41
time=395 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=9 ttl=41
time=428 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=10 ttl=41
time=399 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=12 ttl=41
time=450 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=14 ttl=41
time=396 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=15 ttl=41
time=397 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=16 ttl=41
time=393 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=17 ttl=41
time=400 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=18 ttl=41
time=396 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=19 ttl=41
time=477 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=20 ttl=41
time=500 ms
```

```
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=21 ttl=41
time=392 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=22 ttl=41
time=444 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=23 ttl=41
time=466 ms
64 bytes from lb.iso.afrinic.net (196.216.3.4): icmp_seq=25 ttl=41
time=394 ms

--- www.afrinic.net ping statistics ---
25 packets transmitted, 21 received, 16% packet loss, time 24204ms
rtt min/avg/max/mdev = 390.657/427.146/500.292/36.279 ms
```

Analysis Chart

	Min	Max	Avg
afrinic	391 ms	500 ms	427 ms
apnic	64	71	66
lacnic	322	433	371

TraceRoute

```
❯ traceroute www.apnic.net
traceroute to www.apnic.net (104.18.235.68), 30 hops max, 60 byte
packets
1  _gateway (192.168.10.1)  1.029 ms  2.908 ms  2.890 ms
2  10.140.52.1 (10.140.52.1)  3.658 ms  3.638 ms  3.619 ms
3  10.192.1.1 (10.192.1.1)  4.214 ms  4.197 ms  4.178 ms
4  10.80.19.13 (10.80.19.13)  5.359 ms  5.879 ms  5.978 ms
5  172.16.21.201 (172.16.21.201)  8.632 ms  8.827 ms  8.883 ms
6  103.83.135-244.gmaxbd.com (103.83.135.244)  4.899 ms  4.507 ms
5.994 ms
7  104.18.235.68 (104.18.235.68)  5.351 ms  2.627 ms  3.401 ms
❯ traceroute www.apnic.net > apnic_trace.txt
❯ more apnic_trace.txt
traceroute to www.apnic.net (104.18.236.68), 30 hops max, 60 byte
packets
1  _gateway (192.168.10.1)  1.514 ms  1.788 ms  1.781 ms
2  10.140.52.1 (10.140.52.1)  6.170 ms  6.163 ms  6.253 ms
3  10.192.1.1 (10.192.1.1)  6.532 ms  6.525 ms  6.746 ms
4  10.80.19.13 (10.80.19.13)  7.578 ms  8.468 ms  8.564 ms
5  172.16.21.201 (172.16.21.201)  10.664 ms  10.658 ms  10.747 ms
6  103.83.135-244.gmaxbd.com (103.83.135.244)  34.237 ms  32.546 ms
32.682 ms
7  104.18.236.68 (104.18.236.68)  7.133 ms  5.642 ms  5.612 ms
```

Instead of -d, I am using -n in linux.

```
❯ traceroute -n www.apnic.net
traceroute to www.apnic.net (104.18.235.68), 30 hops max, 60 byte
packets
1  192.168.10.1  1.475 ms  1.446 ms  1.435 ms
2  10.140.52.1  3.256 ms  3.245 ms  3.235 ms
3  10.192.1.1  3.224 ms  3.210 ms  4.098 ms
```

```
4  10.80.19.13  6.841 ms  7.753 ms  7.858 ms
5  172.16.21.201  6.776 ms  6.766 ms  6.757 ms
6  103.83.135.244  5.020 ms  5.231 ms  5.195 ms
7  104.18.235.68  4.194 ms  3.726 ms  3.694 ms
```

Extra

1. The tracert and ping results can provide important network latency information. What do you need to do if you want an accurate baseline picture regarding network latency for your network?

We will need to perform careful delay analysis over successive days and during different periods of the day.

2. How can you use the baseline information?

We can compare baseline data against current data to determine if there has been a change in network response times. This analysis may assist with troubleshooting network issues and scheduling of routine data transfer during off-peak hours.

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