



PATUAHALI SCIENCE AND TECHNOLOGY UNIVERSITY

COURSE CODE CCE 314
Computer Networks Sessional

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Assignment title: Test Network Latency with Ping and Traceroute

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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
 Implies 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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