2.1 NETWORK TOOLS: https://ping.eu/

NETWORK TOOL	PARAMETER	FUNCTION
Ping	google.com	Shows how long it takes for packets to reach host
Traceroute	google.com	Traces the route of packets to destination host from our server
DNS lookup	google.com	Look up DNS record
Reverse DNS lookup	8.8.8.8	Gets hostname by IP address

A) What are the tools used for?: **They are resources used to troubleshoot problems in the network through monitoring traffic and finding the average round trip delay.**

B) Under ping function-

My IP address: **159.196.168.107**

How much is packet loss in ping: **0%, received all 4 packets**

Under DNS lookup function-

The IP address of google.com in DNS lookup: **142.250.74.78**

When was the domain, i.e., google.com, updated?: **2019-09-09T15:39:04Z**

The hostname of 8.8.8.8: **dns.google**

C) Try other tools and your own parameters

2.2 MONITORING TRAFFIC

A) Find destination (e.g., nslookup google.com.au) IP address: **142.250.74.163**

Pv6 address 2a00:1450:400f:805::2003

B) Perform "ping" to the IP address to find the average round-trip delay: **28.430 ms**

C) Use Wireshark to find "ping" outgoing packet information.
Protocol: **ICMP**
Packet type (Info): **Type: 8 (Echo (ping) request)**

D) User Wireshark to find "ping" incoming packet information.
Protocol: **ICMP**
Packet type (Info): **Type: 0 (Echo (ping) reply)**

2.3 FINDING THE AVARAGE ROUND-TRIP DELAY

A) Use Wireshark to find "tracert" outgoing packet information.
Protocol: **ICMP**
Packet type (Info): **Type: 8 (Echo (ping) request)**

B) Use Wireshark to find "tracert" incoming packet information.
Protocol: **ICMP**
Packet type (Info): **Type: 0 (Echo (ping) reply)**

C) Try to identify the number of ISP networks that the Traceroute packets pass through from source to destination.: **7 ISP networks**

Routers with similar names and/or similar IP addresses should be considered as part of the same ISP.

In your experiments, do the largest delays occur at the peering interfaces between adjacent ISPs? **No, because adjacent ISPs have less than a second delay, and in comparison to non-adjacent ISPs, there is a massive delay.**

D) Repeat the above for a destination in other countries, e.g., 8.8.8.8. Compare the intra-continent (within continent) and inter-continent (travelling between continents) results.

Intra-continent: from us FASTER

Inter-continent: united states (google database)

RESULTS: our outgoing request is faster than the ingoing reply from the google database