

Problem 1:

#Questions: How did you resolve the domain name?

Resolved domain name by using socket.gethostbyname() function. Additionally, IP should handle both domain names and IP addresses.

What function did you call?

socket.gethostbyname()

What does it do?

It resolves a hostname to its corresponding IPv4 address.

Compare your solution with the built-in Ping command available from the command line.

####The built-in ping command sends ICMP echo requests and waits for replies, measuring round-trip time and packet loss. My Scapy-based solution does the same but allows for more customization, such as payload size and timeout settings.

What differences do you notice? Why are they different?

####The built in ping header uses a randomized ID, while my ping header used 0xBEEF, which is a custom magic word.

####They are different because the Windows Kernel uses process-specific identifier (random on Windows).

####Also, with the command line ping, Sequence numbers that increment per request.

How could you make your code run faster?

####Code the ping in C/C++ rather than using Scapy

Problem 2:

#Questions: What could happen to cause an inconsistency in the route you discover? How likely is that to happen while your program runs?

####Network congestion, routing changes, or packet loss could cause inconsistencies in the route discovered. These events can happen frequently in dynamic networks, especially over longer periods or during peak usage times.

####However, during a short run of the program, the likelihood of significant route changes is relatively low, but not impossible.