

CS447-003 – Networks and Data Communications Spring 2024

Exercise Question on February 14th

Although TCP slow-start is an effective technique for dynamically adjusting the window size under various situations, it can result in long recovery times in high-speed networks.

Assume a round trip-time of 50ms and a link with an available bandwidth of 10 Gbps ($1\text{G} = 10^9$) and a packet size of 420 octets (1 octet = 1 byte = 8 bits). How long will it take to reach the window size that is just large enough for full (= 100%) utilization of this link?

Assume that no error will happen during the packet transmissions.

Show all your work (most of the credit is for showing a correct procedure to find the solution, instead of the solution itself).