

CSC 249 Homework 1

Due Friday February 3 at start of class or before

Include the information at the top of the [HW Cover Sheet](#), and make your own corrections in a different color than your original work.

Chapter 1 problems:

- 1) How long does it take a packet of length 1,000 bytes to propagate over a link of distance 2,500 km, propagation speed 2.5×10^8 m/s, and transmission rate 2 Mbps?
- 2) More generally, given a packet of length L bits, a link of distance d km, propagation speed s m/s and transmission rate R bps, what do you think are the quantities that are most important in determining delay... and why? (there is no single correct answer, the intent is to have you think about the “why” part)
- 3) Consider a packet of length L which begins at end system **A** and travels over three links to a destination end system. These 3 links are connected by 2 packet switches. Let d_i , S_i , and R_i denote the length, propagation speed, and the transmission rate of link i , for $i= 1, 2, 3$. The packet switch delays each packet by D_{proc} .
 - a. Assuming no queuing delay, and writing your answer in terms of d_i , S_i , R_i and L , what is the total end to end delay for the packet (qualitatively, or symbolically)?
 - b. Suppose now the packet is 1,500 bytes, the propagation speed on all 3 links is 2.5×10^8 m/s, the transmission rates on all 3 links are 2 Mbps, the packet switch delay is 3 msec, the length of the first link is 5,000 km, the length of the second link is 4,000 km and the length of the last link is 1,000 km. For these values, what is the end-to-end delay?

Wireshark Lab → hand in the “Wireshark Lab Cover Sheet” with your lab

- Obtain the “Getting Started” wireshark lab, link posted on the webpage.
- DO NOT step through and answer all the questions if you simply want to play with Wireshark instead.
 - Just be certain to truly play with it,
 - Play with the elements discussed in the lab, and
 - Hand something into me that is neat, follows the posted “Wireshark Lab Guidelines” with respect to including a title, objective and concluding comments. → Be neat and professional.