

Week 6. Tutorial Problems

P25. We have said that an application may choose UDP for a transport protocol because UDP offers finer application control (than TCP) of what data is sent in a segment and when.

- a. Why does an application have more control of what data is sent in a segment?
- b. Why does an application have more control on when the segment is sent?

P27. Host A and B are communicating over a TCP connection. Host B has already received from Host A all bytes up through byte 96. Suppose Host A then sends two segments to Host B back-to-back. The first and the second segments contain 40 and 80 bytes of data, respectively. In the first segment, the sequence number is 97, the source port number is 302, and the destination port number is 80.

Host B sends an acknowledgment whenever it receives a segment from Host A.

- a. In the second segment sent from Host A to B, what are the sequence number, source port number, and destination port number?
- b. If the first segment arrives before the second segment, in the acknowledgment of the first arriving segment, what is the acknowledgment number, the source port number, and the destination port number?
- c. If the second segment arrives before the first segment, in the acknowledgment of the first arriving segment, what is the acknowledgment number?
- d. Suppose the two segments sent by A arrive in order at B. The first acknowledgment arrives after the first timeout interval. What is the sequence number of the next segment that A will transmit?

P28. Host A and B are directly connected with a 10 Gbps link. There is one TCP connection between the two hosts, and Host A is sending to Host B an enormous file over this connection. Host A can send its application data into its TCP socket at a rate as high as 1 Gbps, but Host B can read out of its TCP receive buffer at a maximum rate of 600 Mbps. Describe the effect of TCP flow control.