
The University of Queensland
School of Information Technology and Electrical Engineering
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COMS3200/7201 – Tutorial 3

Questions

1. Why does UDP exist? Would it not have been enough to just let user processes send raw IP packets?
2. (PD 5.5) When closing a TCP connection, why is the two-segment-lifetime timeout not necessary on the transition from `LAST_ACK` to `CLOSED`?
3. (variant of PD5.9) You are hired to design a reliable byte-stream protocol that uses a sliding window (like TCP). This protocol will run over a 100Mbps network. The round-trip-time (RTT) of the network is 100ms, and the maximum segment lifetime (MSL) is 60 seconds.
 - (a) How many bits would you include in the `AdvertisedWindow` and `SequenceNumber` fields of your protocol header?
 - (b) How would you determine the MSL and RTT given above and how certain could you be of those values?
4. (variant of PD5.12) If host A receives two SYN packets from the same port from remote host B, how do you determine whether the second is a retransmission or an entirely new connection request?
5. *Initial* TCP sequence numbers specified during connection are often generated according to a 32 bit clock incremented every 4 microseconds. How often do these sequence numbers wrap around?
6. TCP Maximum segment lifetime (MSL) – the maximum time a segment exists out on the network is taken to be 120 seconds. When starting or recovering from a crash, TCP entities must wait 120 seconds before sending any segments. Why? How might this restriction be overcome?