COMP 2322 Homework 3

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1)

a)

TCP Sequence Number Field = 4 bytes = 32 bits

maximum file size = 2^32 = 4.19 Gbytes

b)

MSS = 680 bytes, Total size of header = 56 bytes

Segments data = 2^32 / 680 = 6316128.37647 = 6316128

The link is 150 Mbps

Transitted time = (transmitted data) / (link speed) = ((6316128 x 56 + 2^32) x 8 bits) / (150 x 10^6 bps) = 247.9 seconds

2)

SampleRTT = 105 ms & 115 ms, EstimatedRTT (before the first) = 100 ms

$\alpha = 0.125$, $\beta = 0.25$

EstimatedRTT (at SampleRTT = 105 ms) = 0.125 x 105 + (1 - 0.125) x 100 = 100.625 ms

EstimatedRTT (at SampleRTT = 115 ms & EstimatedRTT = 100.625 ms) = 0.125 x 115 + (1 - 0.125) x 100.625 = 102.421875 ms

DevRTT (at SampleRTT = 105 ms & EstimatedRTT = 100.625 ms) = 0.25 x | 105 - 100.625 | + (1 - 0.25) x 4 = 4.09375 ms

DevRTT (at SampleRTT = 115 ms & EstimatedRTT = 102.421875 ms & DevRTT = 4.09375 ms) = 0.25 x | 115 - 102.421875 | + (1 - 0.25) x 4.09375 = 6.21484375 ms

TimeoutInterval (at EstimatedRTT = 100.625 ms & DevRTT = 4.09375 ms) = 100.625 + 4 x 4.09375 = 117

TimeoutInterval (at EstimatedRTT = 102.421875 ms & DevRTT = 6.21484375 ms) = 102.421875 + 4 x 6.21484375 = 127.28125