Khuzaima Mushtaq
CSS432

Homework 3 Documentation

This document contains the Documentation for the implementation of the Stop-and-wait and the sliding window implementation as well as the performance evaluations of the different methods used.

Stop-and-Wait:

For the client, send all the messages from 0 to max sequentially and wait for an ack after every message sent. If there is no ack received after 1500 usec then cause a time out and resent the message. I used while loops to wait until there is a reply and to manage timeouts and resending acks.

For the server, Wait until a message is received once received send and ack and wait until another message is ready to be received. It uses a simple for loop from 0 to max.

Sliding Window:

For the client, send messages sequentially from 0 to max. increase the number of unacked messages every time a message is sent. If there is a message to be received, receive the ack and lower the number of unacked. If no acks are received and the unacked count becomes equal to the windowSize, start a time out and after 1500 usec timeout and resend the last acked message + 1.

For the server, received messages sequentially between 0 and max. keep a vector of size max to record the arriving messages and keep track of and ensure sequential transfer. Slide the window as messages are received until all messages have been received until max.

For Case 4: based on the n% chance to drop messages generate a random number and drop n% of messages causing resends.

Discussion:

The difference in performance between stop-and-wait and sliding window is huge. Sliding window is on the scale of 3526480 usec, where as sliding window is 280843usec that is a difference of 10 times. The influence of window size on performance is huge for the first few increases in window size but after windowSize 5 performance seems to stagger and is very similar for 5-30 windowSize. But for the first few windowSizes the performance gain is on the order of 10 times. The number of messages retransmitted is basically 0 between the both methods unless drops are introduced intentionally into the server. The effect of n% drop rates on windowSize 1 and windowSize 30 seems very similar and the delay and the number of retransmits is very similar as well as shown in the pdf plots.