CS348 Computer Networks
Lab Excercises 6
Indian Institute of Technology, Patna
March 14, 2017

Instructions: You have to show the demo to the TA and submit the codes in a tgz file with name labAssign6.tgz. The submission date is 21.03.2017. Reuse your previous codes to save coding efforts.

The objective of this assignment is to understand the congestion control mechanism in the TCP protocol. Assume hosts are connected to each other through a single router that has a buffer of size S_r. A pair of host communicates with each other using a TCP protocol. Every host also has a buffer of size Q_{in} each to store incoming TCP packets before being processed and multiple buffers of size Q_{out} to store outgoing packets for delivery. The buffer size Q_{in} determines the pipeline size that the sender will have to maintain. Further assume that there is a predefined maximum segment size (MSS). In the earlier assignment you have already implemented the pipelining, acknowledgement and retransmission protocol. You will now have to implement the AIMD congestion control mechanism **without** the slow start (Use TCP Reno protocol). Using the above stated setup, simulate the following scenario:

1. Two different hosts are trying to download a large file from a single source.

2. The bandwidth of the links connecting the hosts to the routers are different and are given as B_1 and B_2 respectively.

Draw the following plots based on the simulation results:

1. The actual link throughput for any one host with time for a given bandwidth

2. The throughput ratio with respect to the bandwidth ratio of the two hosts

3. The throughput ratio with respect to increasing increasing MSS size when the bandwidth ratio of the hosts is fixed