

ABSTRACT

The TCP control mechanisms originally designed for high bandwidth, short delays, and congestion-limited networks are in fact not suitable for wireless systems. The main source of packet loss in Wireless systems for example HSDPA system are the link errors generated by unperfect transmission adaptation to the short term channel variations. The use of HARQ to retransmit erroneous packets is mandatory to achieve error free radio transmission. Introducing HARQ incurs however additional delays in packet delivery due to retransmissions. These delays conflict with TCP control mechanisms that interpret delays in packet delivery over the wireless link as congestion in the fixed and Internet segments. Useless retransmissions are experienced and much time is wasted during the slow start and the congestion avoidance phases.

In this thesis, we propose TCP LogSack-Westwood, a hybrid approach that uses TCP Westwood's congestion window modification algorithm, and TCP SACK's efficient method for recovering from heavy continuous packet loss. To be more aggressive we change mechanism on congestion avoidance phase where window increase using logarithmic function and then continue to increase window linearly. Simulation results show TCP LogSack-Westwood obtains a significant improvement in goodput improvement over NewReno, Westwood+ and SACK over HSDPA system

Keywords: *HSDPA, TCP LogSack-Westwood, Westwood+, Newreno.*