CSE 322 : Computer Networks Sessional

NS3 PROJECT : TCP-AR (Adaptive Reno)

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Background

- TCP Reno’s throughput decreases in networks with
    a. large bandwidth-delay-product
    b. non negligible packet loss
- TCP-Westwood solves this problem
- But lacks friendliness with existing protocols

TCP Adaptive Reno

- Based on TCP-Westwood-BBE
- High throughput than TCP-Reno
- Efficient in high speed networks
- Friendliness to TCP-Reno

Congestion Measurement

- Dynamically adjusts TCP response function
- Congestion level, $c = \min\left(\frac{RTT - RTT_{\min}}{RTT_{cong} - RTT_{\min}}, \quad 1 \right)$
- $RTT_{cong}^{j} = (1-a)RTT_{cong}^{j-1} + aRTT^{j}$

Congestion Window Increase

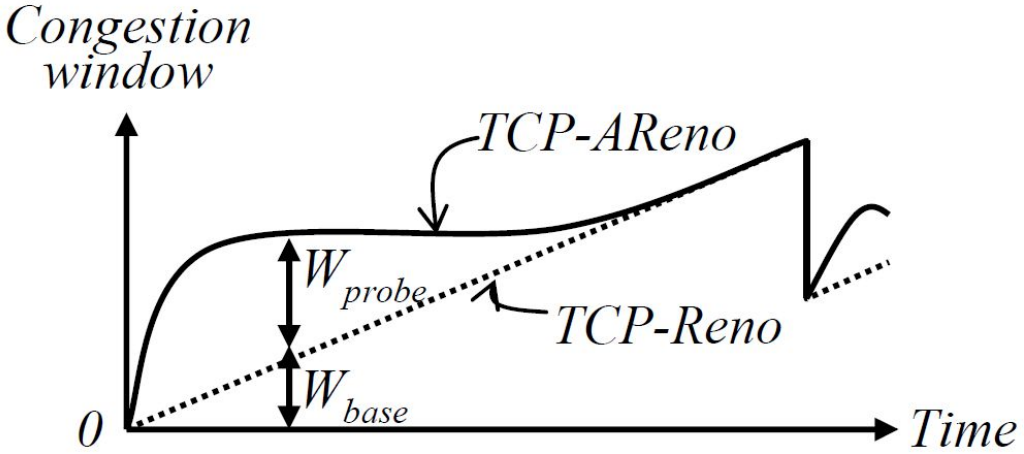
- 

Fig. 1: Congestion window increase of TCP-AReno during congestion avoidance

Congestion Window Increase

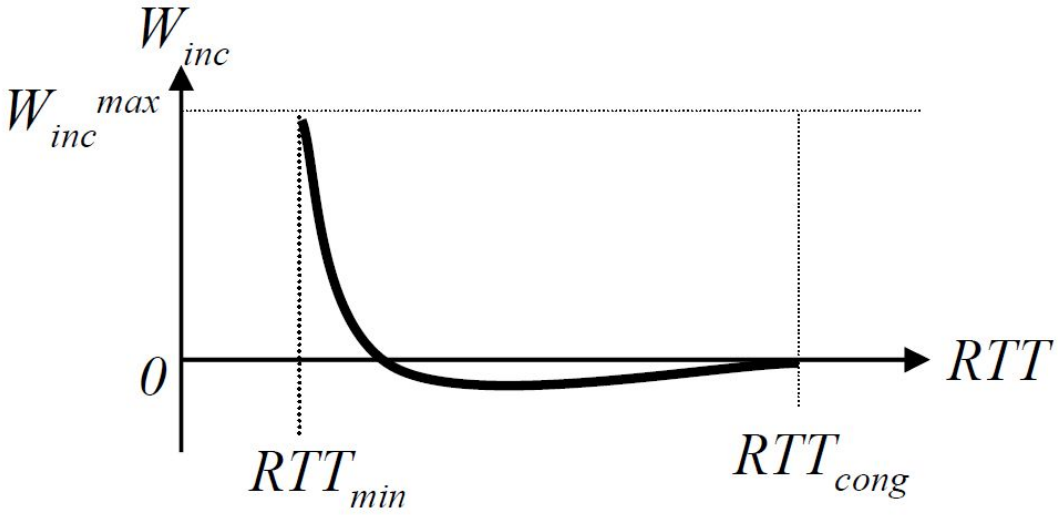
- 

Fig. 2: Congestion window increase per RTT (W_{probe} part)

Congestion Window Decrease

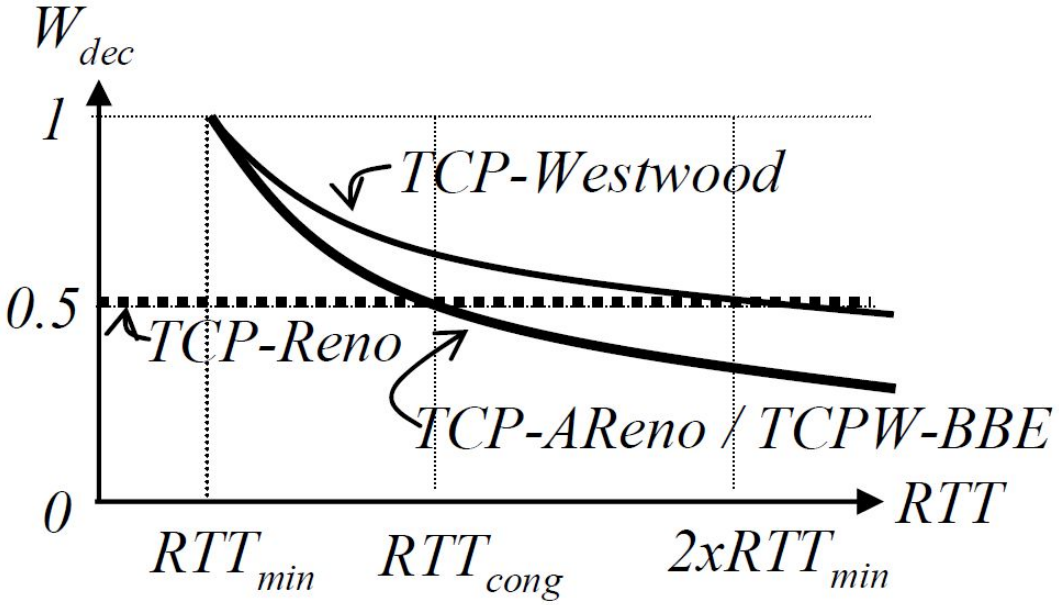
- 

Fig. 3: Congestion window decrease at a packet loss

Reference

- H. Shimonishi and T. Murase, “**Improving efficiency friendliness tradeoffs of TCP congestion control algorithm**,” in *Proc. IEEE GLOBECOM*, 2005.

Paper Link

Thank you

Any Questions?