

The “steady-state model” of TCP:

- The model: Fixed packet size B in bytes.
 - Fixed roundtrip time R in seconds, no queue.
 - A packet is dropped each time the window reaches W packets.
 - TCP’s congestion window: $W, \frac{W}{2}, \frac{W}{2} + 1, \dots, W - 1, W, \frac{W}{2}, \dots$
- The maximum sending rate in bytes per second: WB/R
 - The average sending rate T : $T = (3/4)WB/R$
- The packet drop rate p : $p = \frac{1}{(3/8)W^2}$
- The result: $T = \frac{\sqrt{6B}}{2R\sqrt{p}} = \frac{1.22B}{R\sqrt{p}}$