

Exercise No. 5
Algorithms and Methods for Distributed Storage
Winter 2008/2009

Exercise 9 *TCP Congestion Avoidance*

Consider the TCP congestion avoidance mechanism for 2 participants A and B. Assume that the additive increase is $x = x + 1$ and the multiplicative decrease is $x = x/2$.

1. Draw vector diagrams (as shown in the lecture) for the following situations:
 - (a) A uses AIMD and starts at 50% of the available bandwidth.
B uses AIAD and starts at 25%.
 - (b) A uses AIMD and starts again at 50%.
B uses Slow Start, i.e. starting at $x = 1$ with an initial threshold of ∞ .
2. Assume both A and B use AIMD, but with different parameters:
 - (a) A uses $x = x + 1$ and B $x = x + c$ with $c > 1$ for the additive increase. The multiplicative decrease remains $x = x/2$.
 - (b) A uses $x = 0.5x$ and B $x = 0.75x$ for the multiplicative decrease. The additive increase remains $x = x + c$.

How does this affect the efficiency and the fairness?