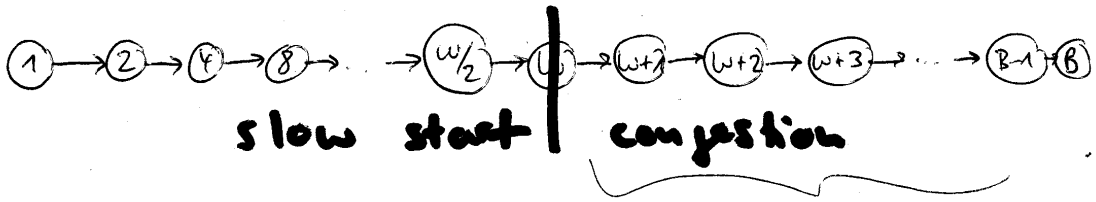
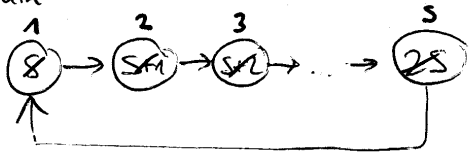
TCP with lossy channel

Segment loss probability $q = 1 - p$
Through put T
Threshold W, Bandwidth B



usually in congestion mode

Equilibrium



2) # succ. transmissions $\hat{8} + (\hat{S+1}) + (\hat{S+2}) + \dots + 2S = S \cdot \frac{3}{2}S$ ($S^2/2$)
⚠ careful explanation.

4) # succ transmissions $\sum_{i=0}^{\infty} i \cdot p^i (1-p) = \frac{p}{1-p} = p/q. =: E$

$\frac{1}{4} S_{/2}^2 = E \Leftrightarrow S = \sqrt{2E}$

$T = \frac{1}{2} \cdot S = \sqrt{\frac{1}{2} E} = \sqrt{\frac{1}{2} p/q}$

We are interested in $p \to 1$ $(q < 0,1)$

$\Rightarrow T(p) = \Theta(1/\sqrt{q})$

⚠ $T(p) \leq B \Rightarrow T(p) = \min\left(B, \sqrt{\frac{1}{2}\frac{p}{q}}\right)$