

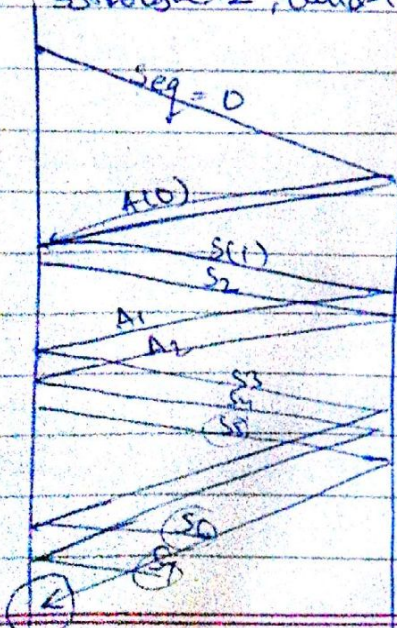
## Tutorial 63

1. After 1RTT,  $cwnd = 2 \cdot MSS = 3KB$   
 After 2RTT,  $6KB$   
 $\rightarrow$  After 4RTT  $\Rightarrow$  24KB  
 Thus, at 4RTT,  $cwnd$  must cross 20 if  
 "ack transfer" is ignored, but in practice it  
 would be true only at 5RTT  $\Rightarrow$  100ms

2. We have  $ssthresh = 12KB$  &  $cwnd = 1$ .  
 Tr 1  $\rightarrow$   $cwnd = 1$ ; returns to give  $cwnd = 2$ .  
 Tr 2,3  $\rightarrow$   $cwnd = 2$ ; returns to give  $cwnd = 3$ .  
 Tr 4,5  $\rightarrow$   $cwnd = 3$ .  
 Thus at end of 5 trans,  $cwnd = 3KB$

$ssthresh = 2$ ;  $cwnd = 1$ .

3.



After Timeout has occurred

Doesn't transmit as ~~not~~ 3 outstanding pkts.



