Introduction to Computer Networks

Flow Control (§6.5.8)
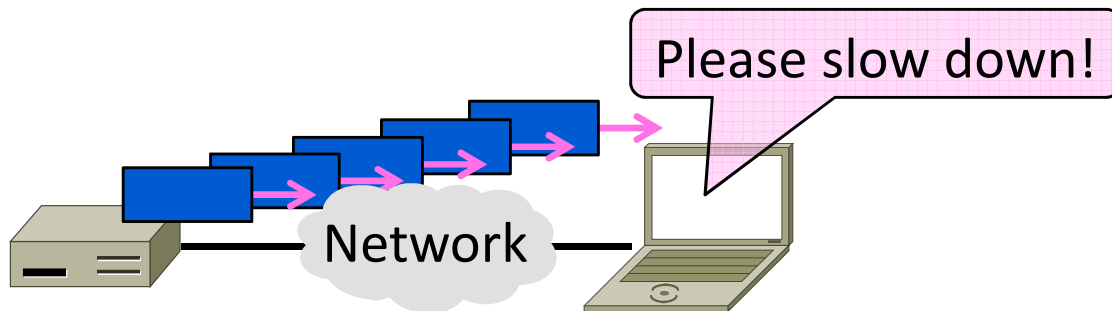
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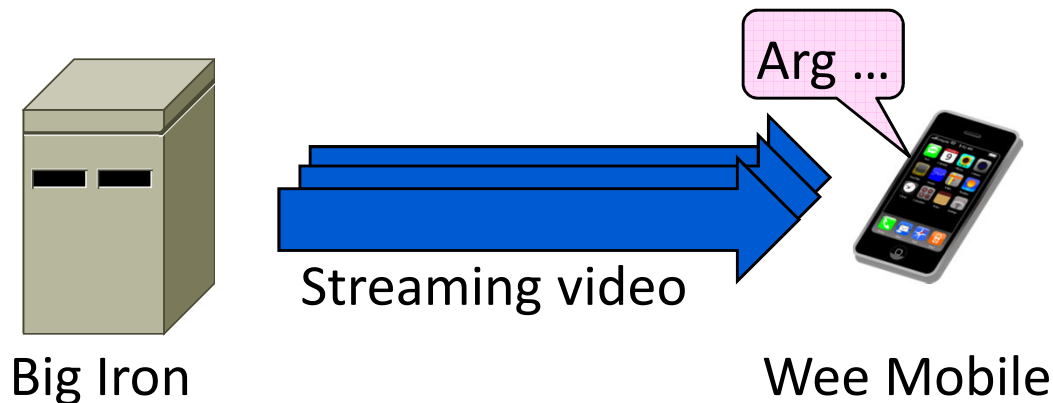
Topic

- Adding flow control to the sliding window algorithm
 - To slow the over-enthusiastic sender

Problem

- Sliding window uses pipelining to keep the network busy
    - What if the receiver is overloaded?

Arg ...

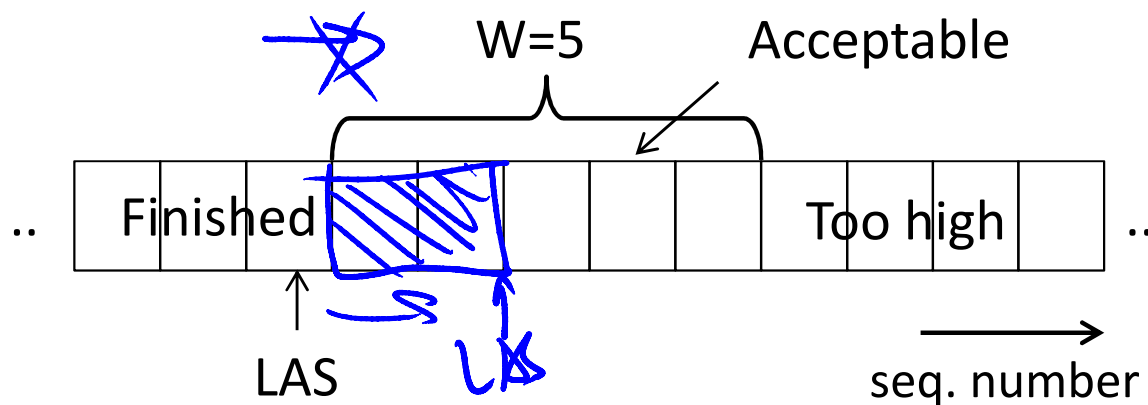Streaming video

Big Iron

Wee Mobile

Sliding Window – Receiver

- Consider receiver with W buffers
  - LAS=LAST ACK SENT, app pulls in-order data from buffer with recv() call

Sliding Window

W=5

.. | Finished | Acceptable | Too high | ..
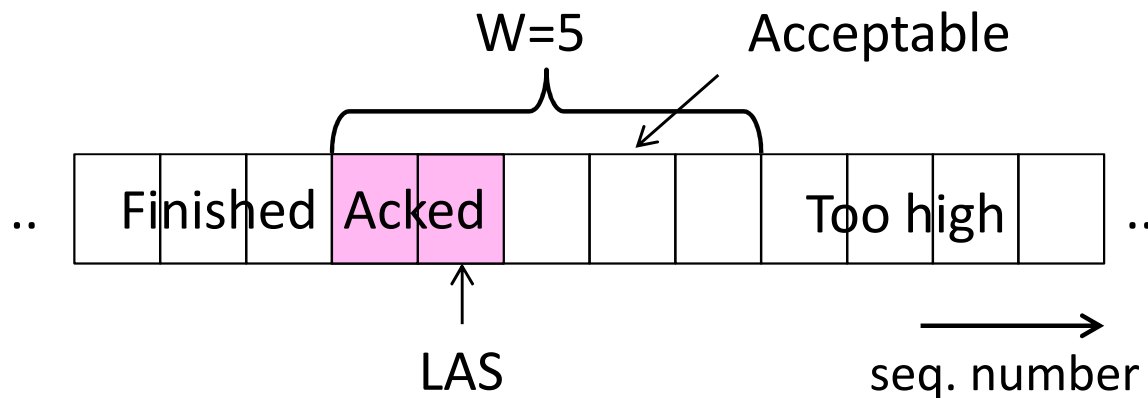
LAS

seq. number
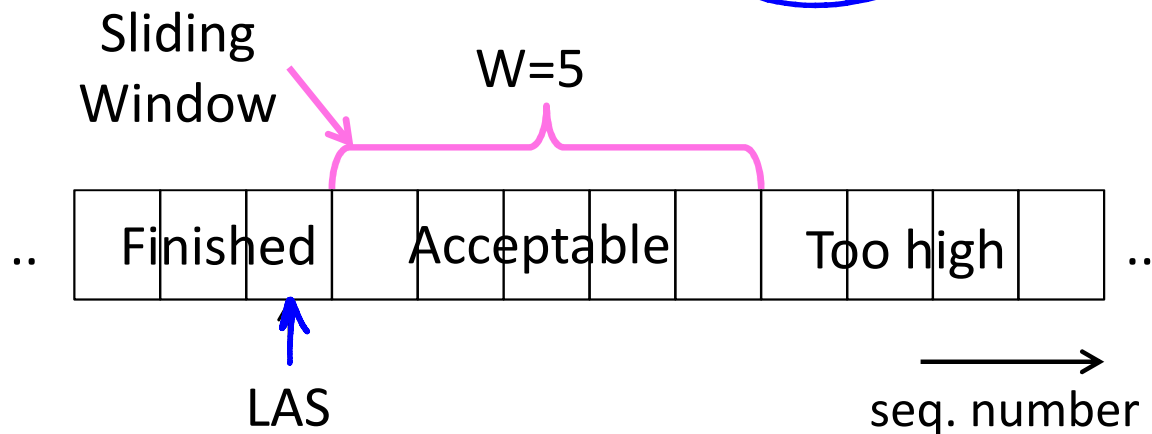
Sliding Window – Receiver (2)

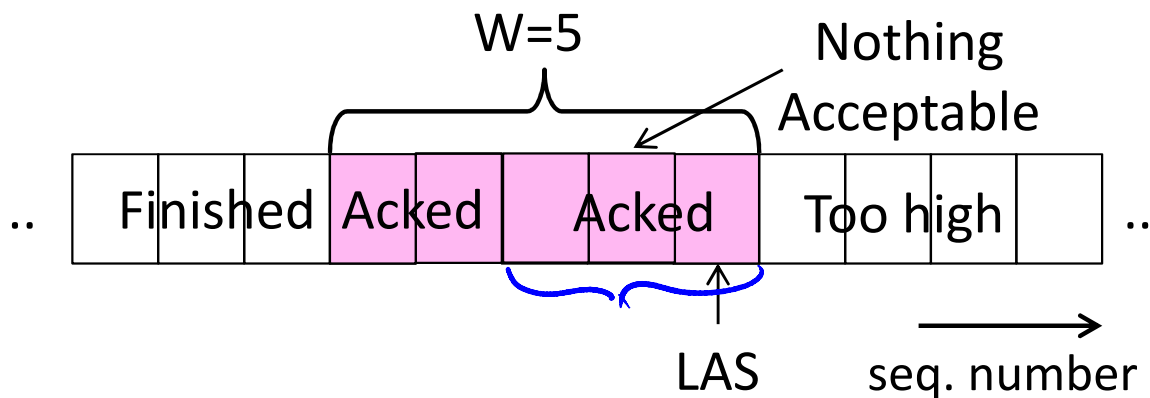- Suppose the next two segments arrive but app does not call recv()

Sliding Window – Receiver (3)

- Suppose the next two segments arrive but app does not call recv()
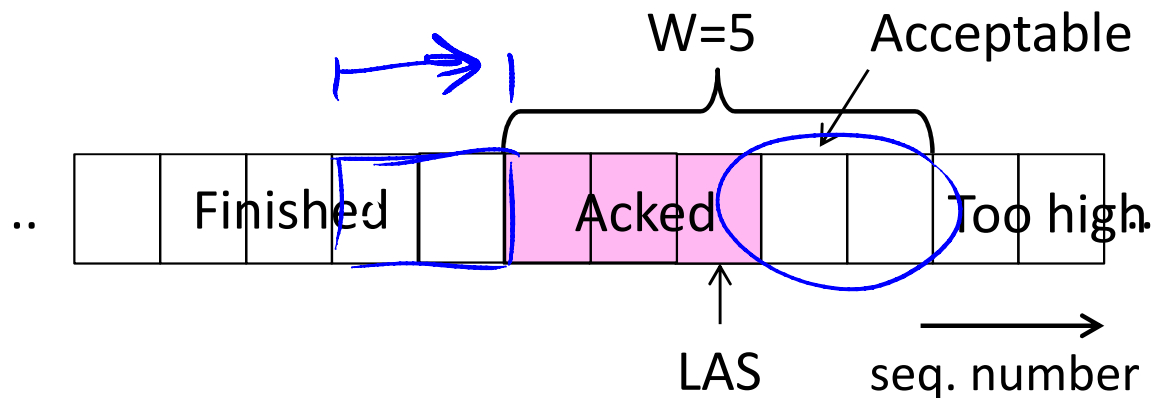 - LAS rises, but we can't slide window!

Sliding Window – Receiver (4)

- If further segments arrive (even in order) we can fill the buffer
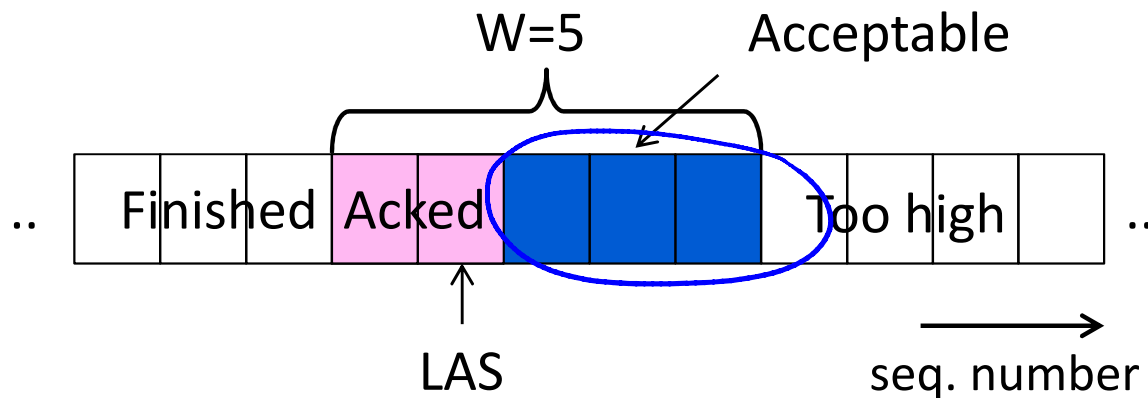 - Must drop segments until app recvs!

Sliding Window – Receiver (5)

- App recv() takes two segments
  - Window slides (phew)
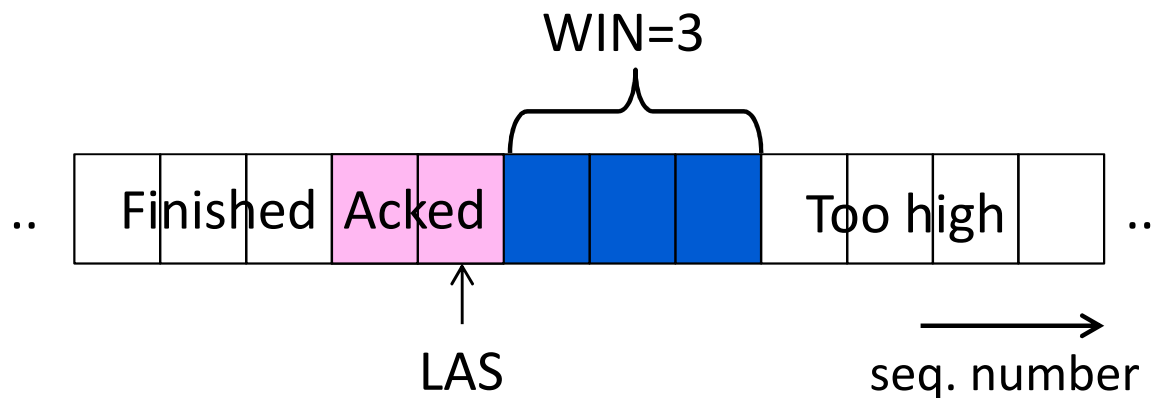
Flow Control

- Avoid loss at receiver by telling sender the available buffer space
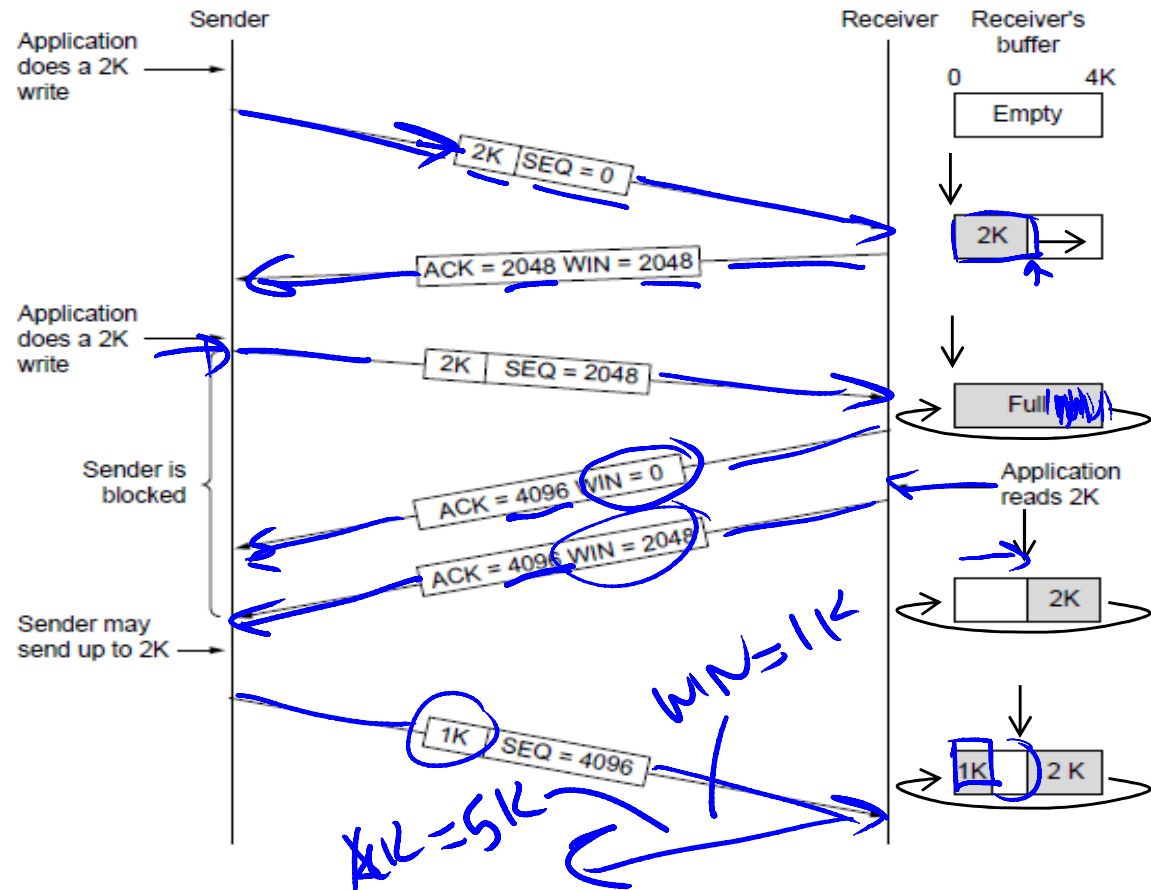 - WIN=#Acceptable, not W (from LAS)

W=5   Acceptable

.. | Finished | Acked | | | | Too high | | .. |

LAS

seq. number

Flow Control (2)

- Sender uses the lower of the sliding window and <u>flow control window</u> (WIN) as the effective window size
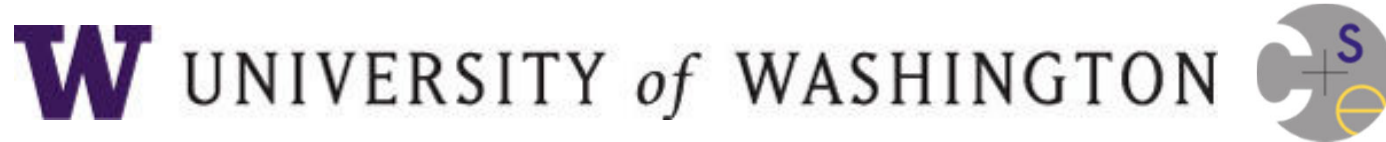
Flow Control (3)

- ## TCP-style example
  - SEQ/ACK sliding window
  - Flow control with WIN
  - SEQ + length < ACK+WIN
  - 4KB buffer at receiver
  - Circular buffer of bytes

END

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