Source Buffer Management

IETF 122 Bangkok, March 2025

Stuart Cheshire, Apple

Source-Device Bufferbloat

April 2011

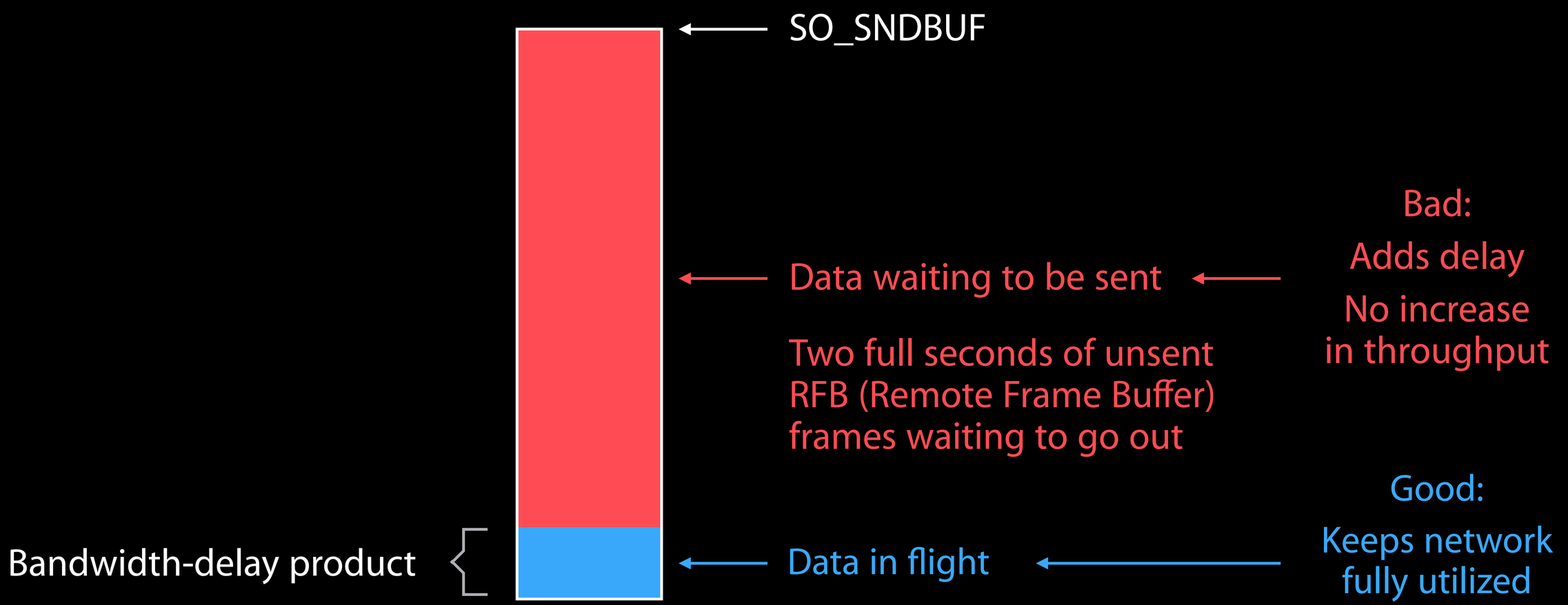
Mac OS Screen Sharing sluggish on slow networks

Network Bufferbloat suspected

Real cause was excessive buffering by the sender

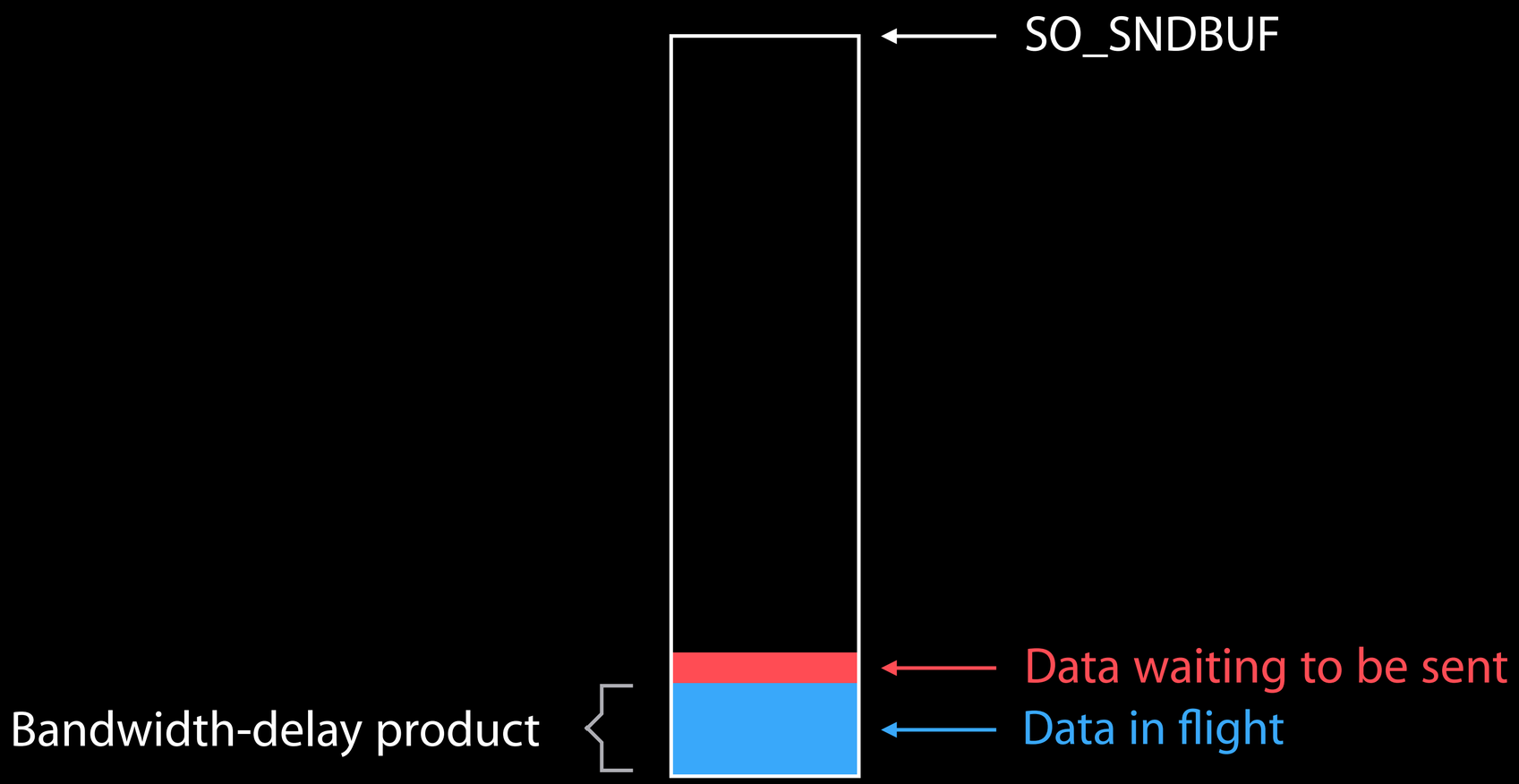
Sluggish Screen Sharing

Source-Device Bufferbloat



Snappy Screen Sharing

Using TCP_NOTSENT_LOWAT (TCP Not-Sent Low-Water Mark)



Demo Video

Apple WWDC 2015
“Your App and Next Generation Networks”

Beyond Mac OS TCP_NOTSENT_LOWAT

Side Meeting at IETF 121 in Dublin

Low-water mark specified in milliseconds, not bytes

Other platforms: Microsoft Windows, FreeBSD, Linux, Android, etc.

Other protocols: QUIC, MoQ, etc.

We have made tremendous progress
reducing network bufferbloat
using FQ-CoDel, L4S, etc.

but…

applications will never get
consistently low network delay
until we fix source-device bufferbloat

How to Learn More
Source Buffer Management

Read draft-cheshire-sbm

Find me to chat here at IETF 122 in Bangkok

Join mailing list sbm@ietf.org

Send feedback!

Prepare for next steps at IETF 123 in Madrid, July 2025