NDN-RTC Congestion Control Design

NDN Hackathon

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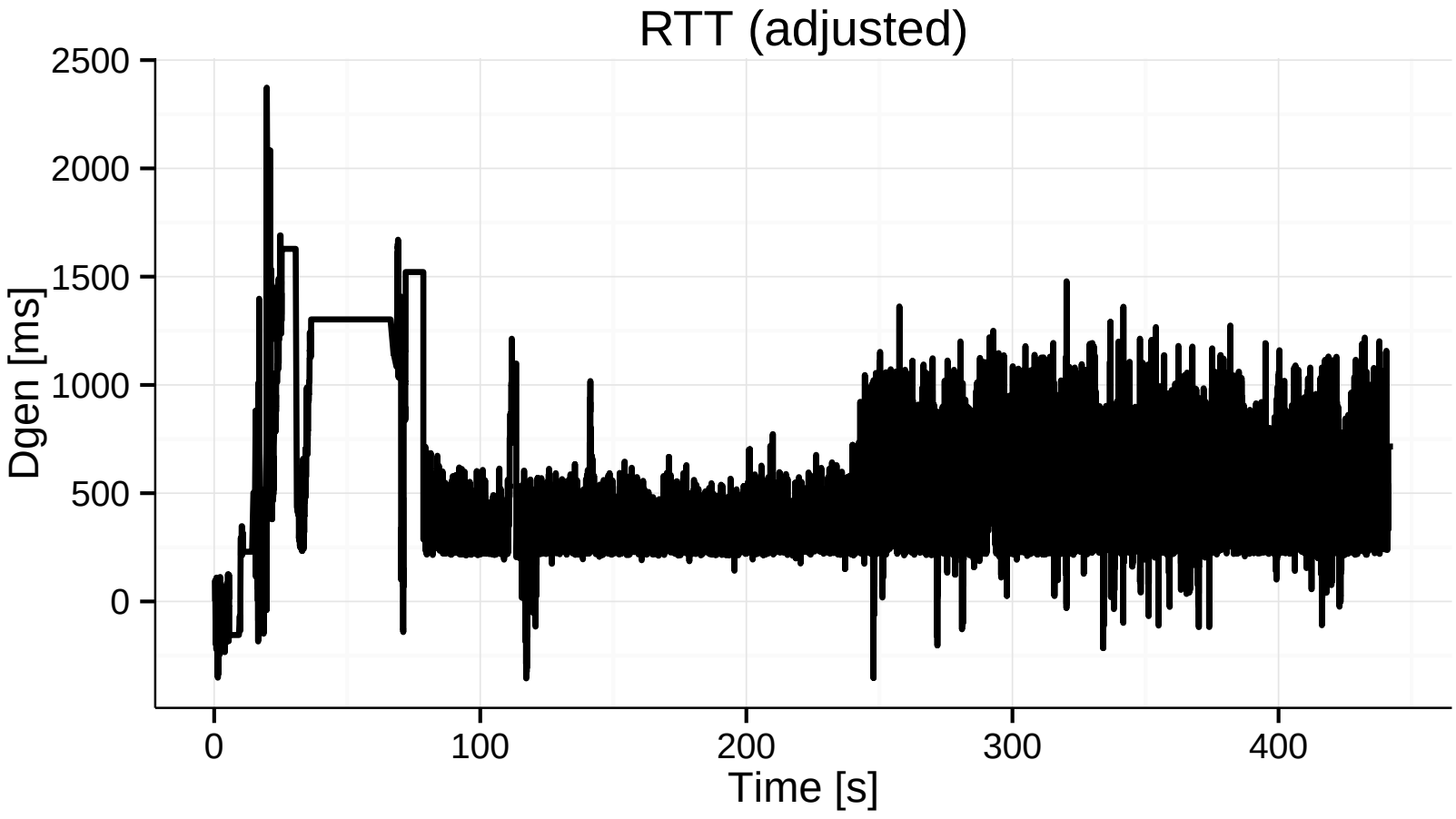
Outline

Motivation: Figure out what is wrong with NDN-RTC

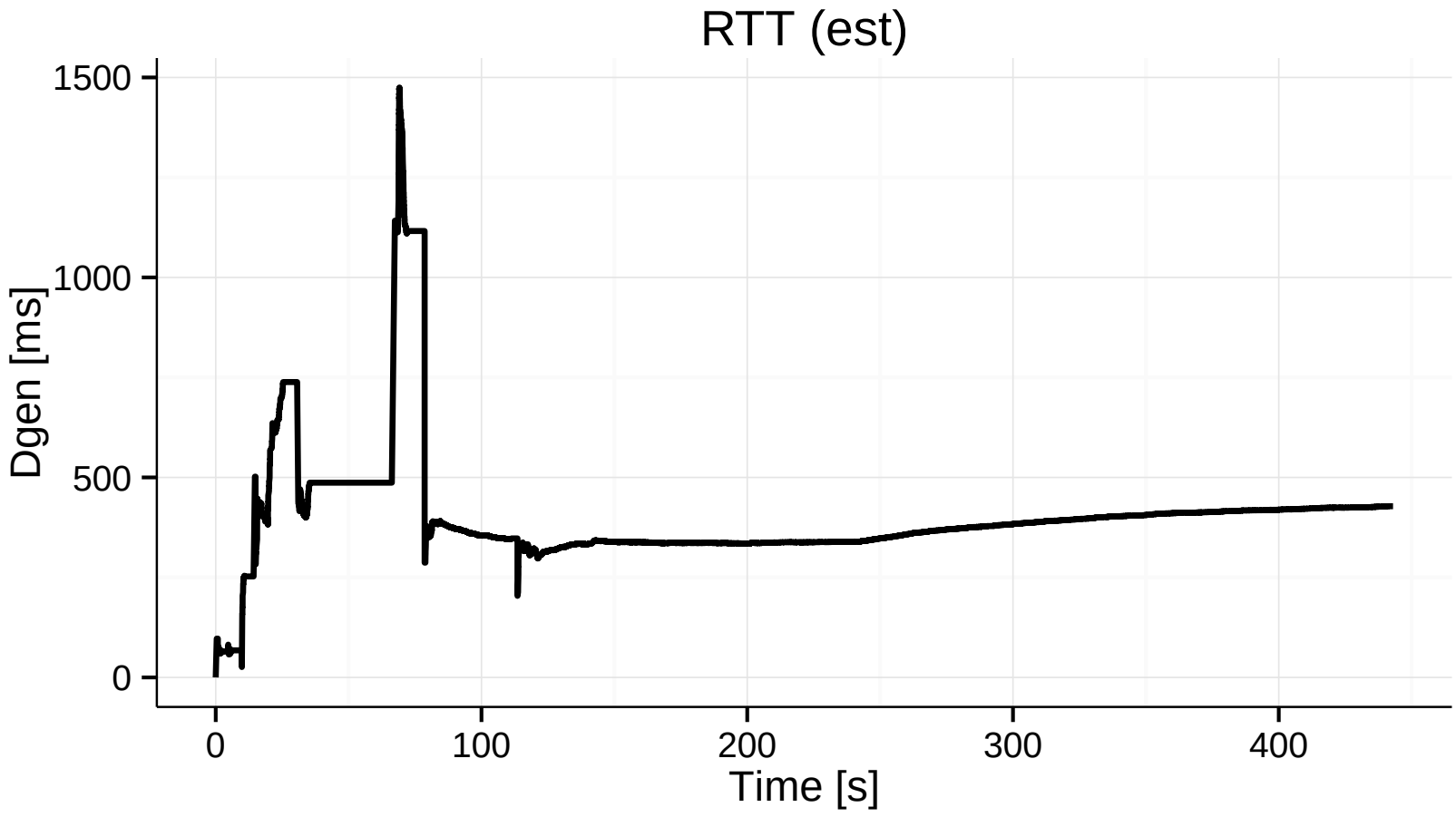
1. RTT Estimation
2. Fixed rate thresholds ($\lambda_{min}, \lambda_{max}$)
3. Effect of NFD Access Strategy

Future work: Don't put Generation Delay into Cache

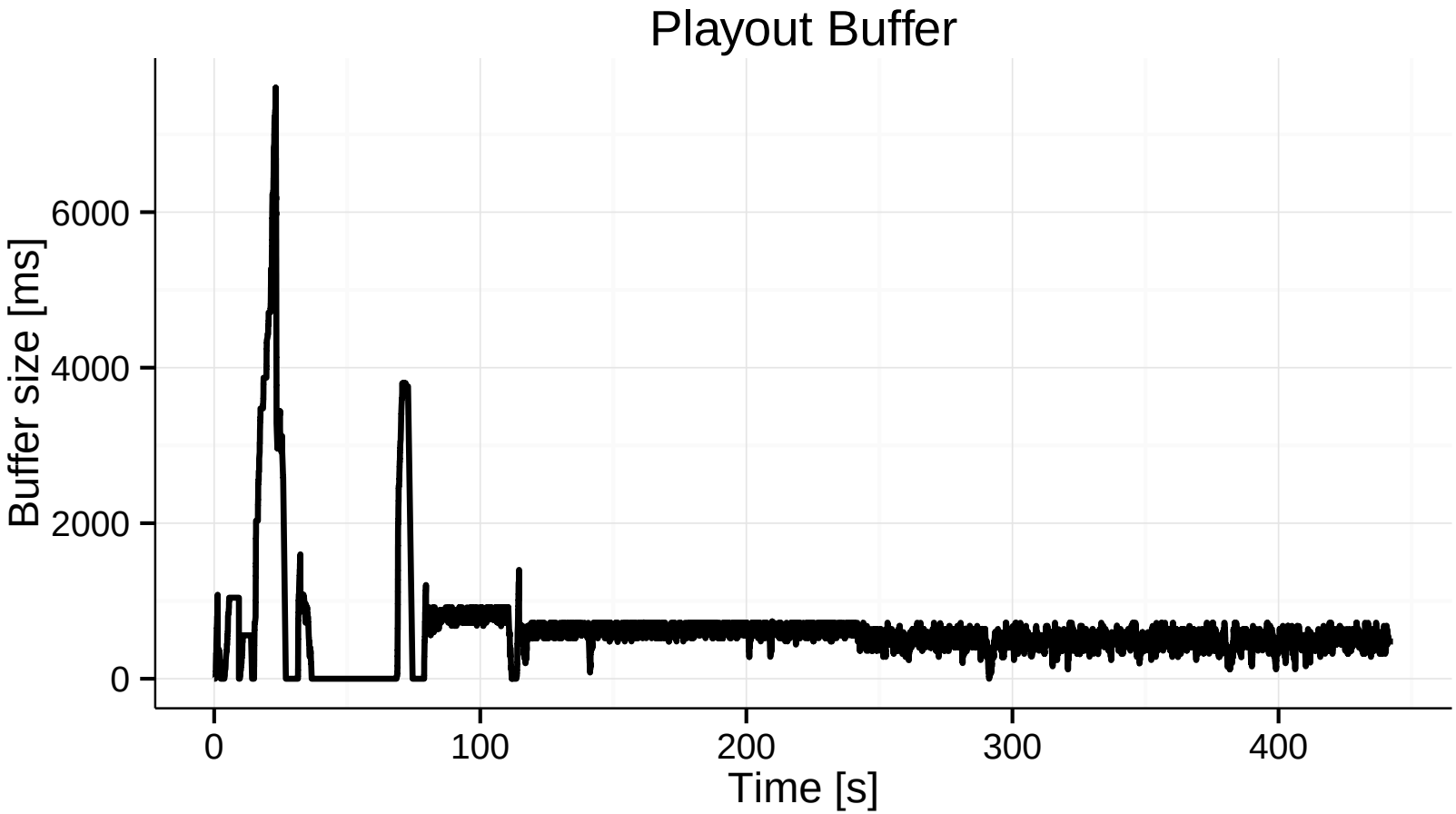
RTT Averaging is too slow



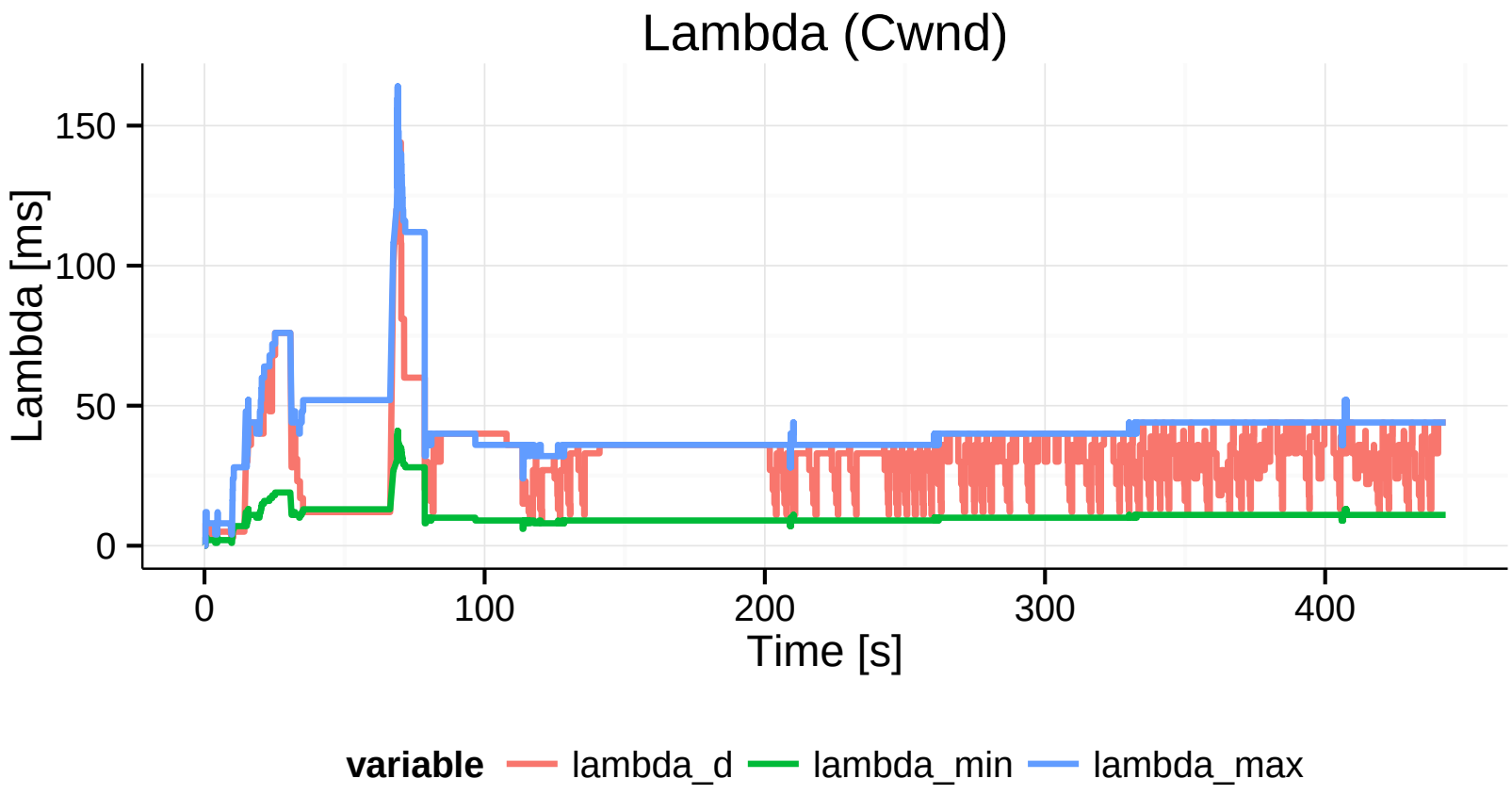
RTT Averaging is too slow



Result: Playout buffer doesn't adjust correctly



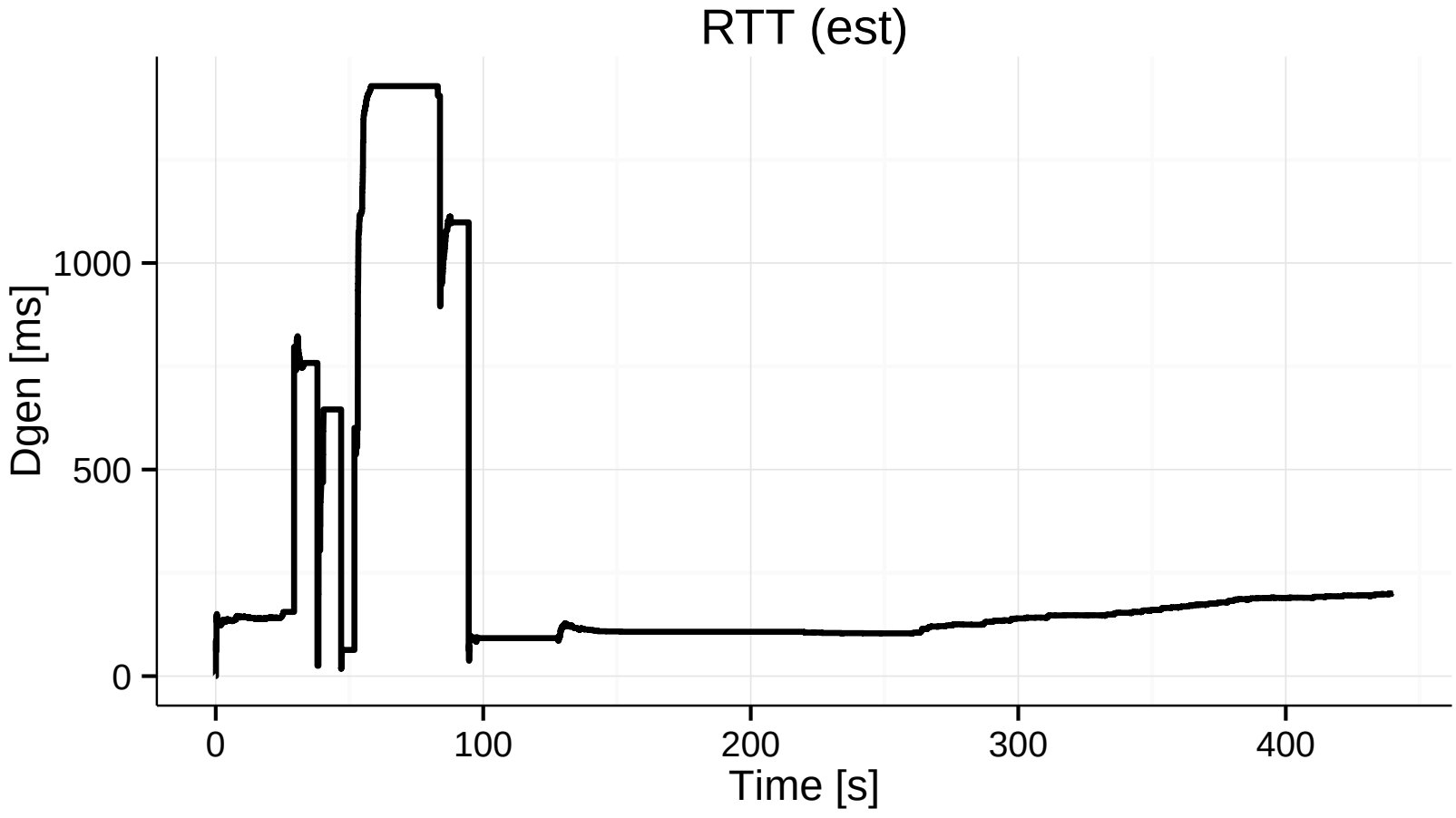
Problem: Fixed Rate Thresholds ("Lambda")



Trade-Off: Reaching fresh data $\Leftrightarrow$ Causing Congestion

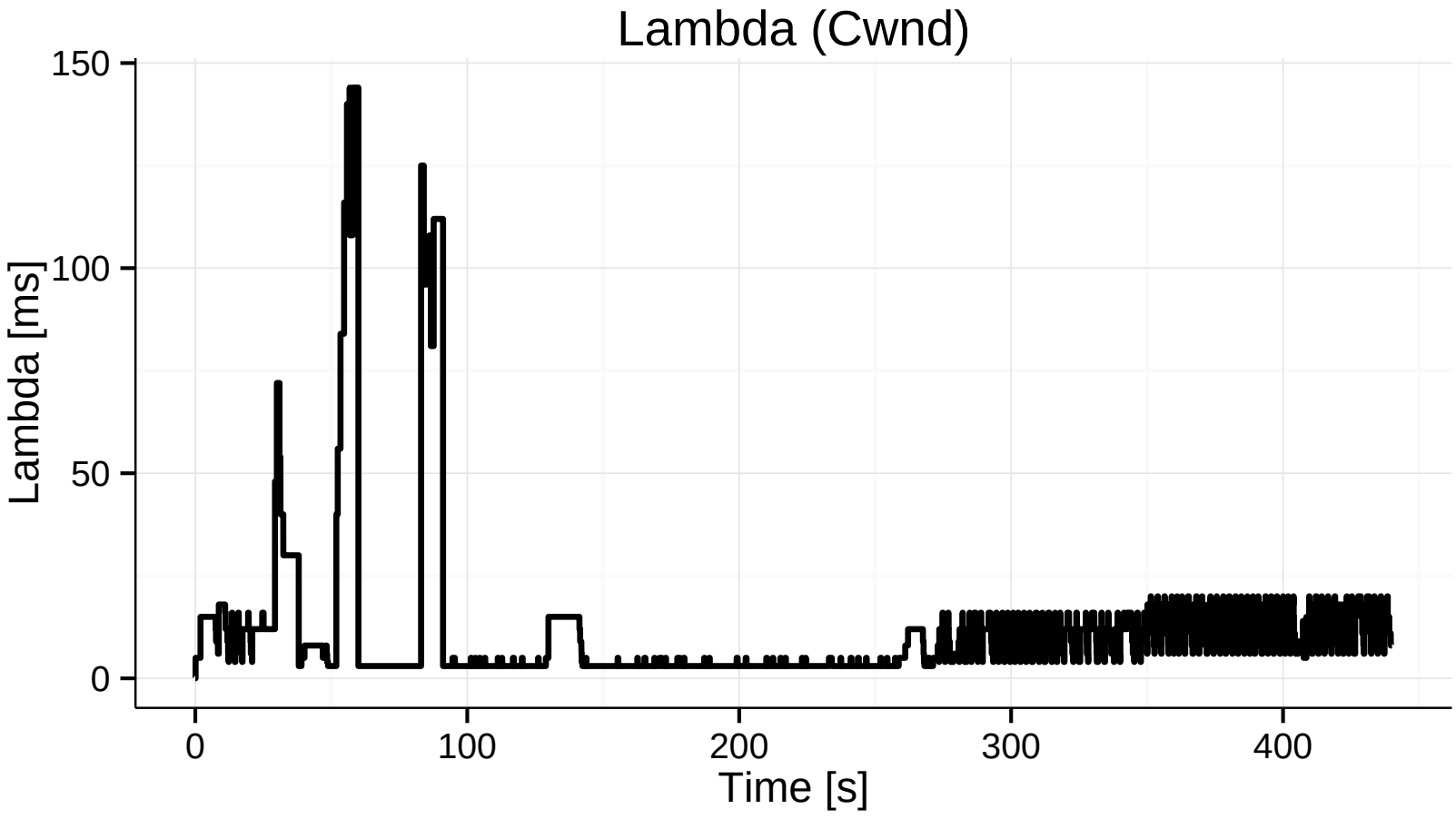
$\Rightarrow$ More adaptive congestion window + consider buffer size

Access Strategy causes huge problems

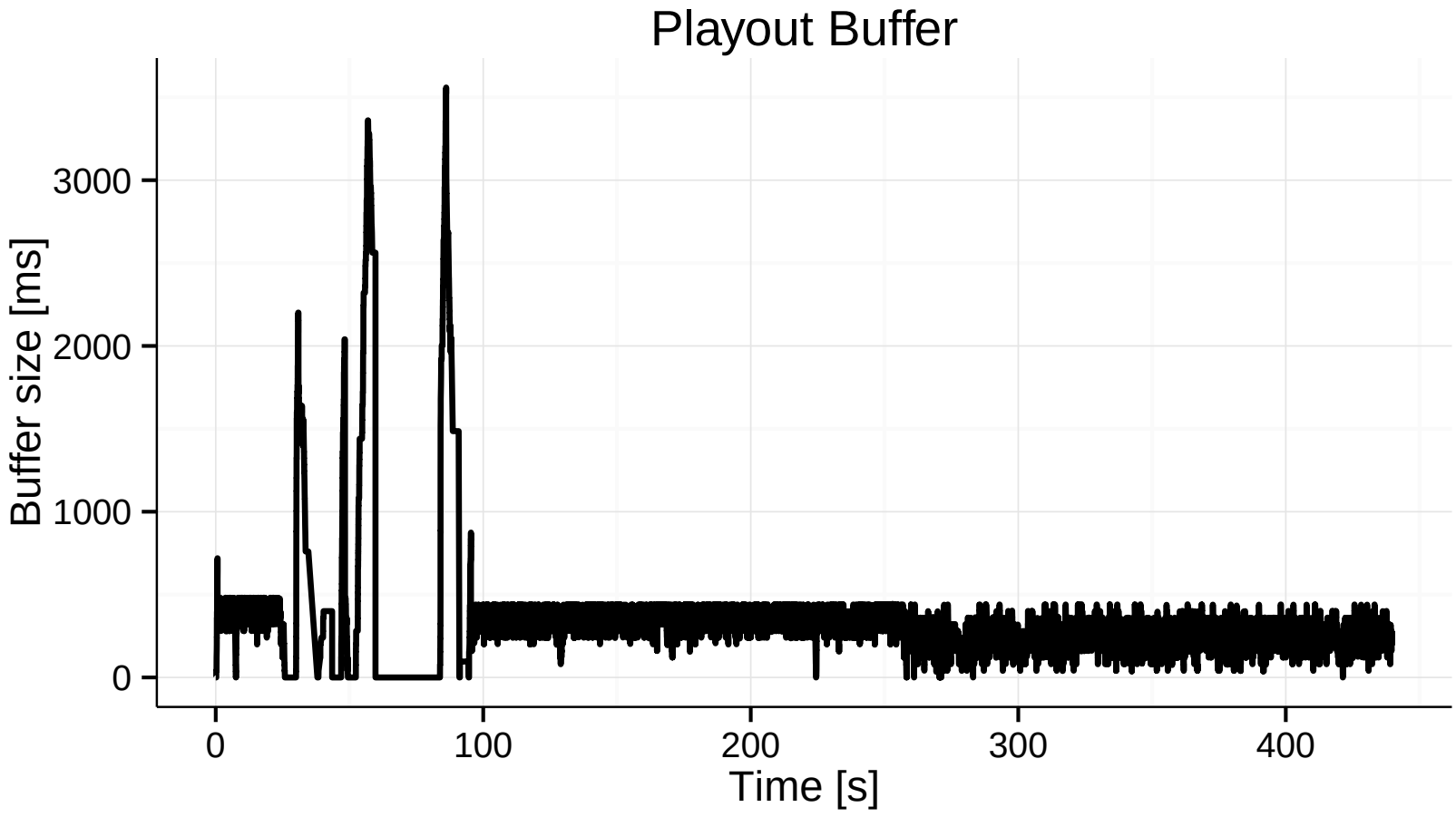


Access Strategy suppresses Retx for 100 ms!

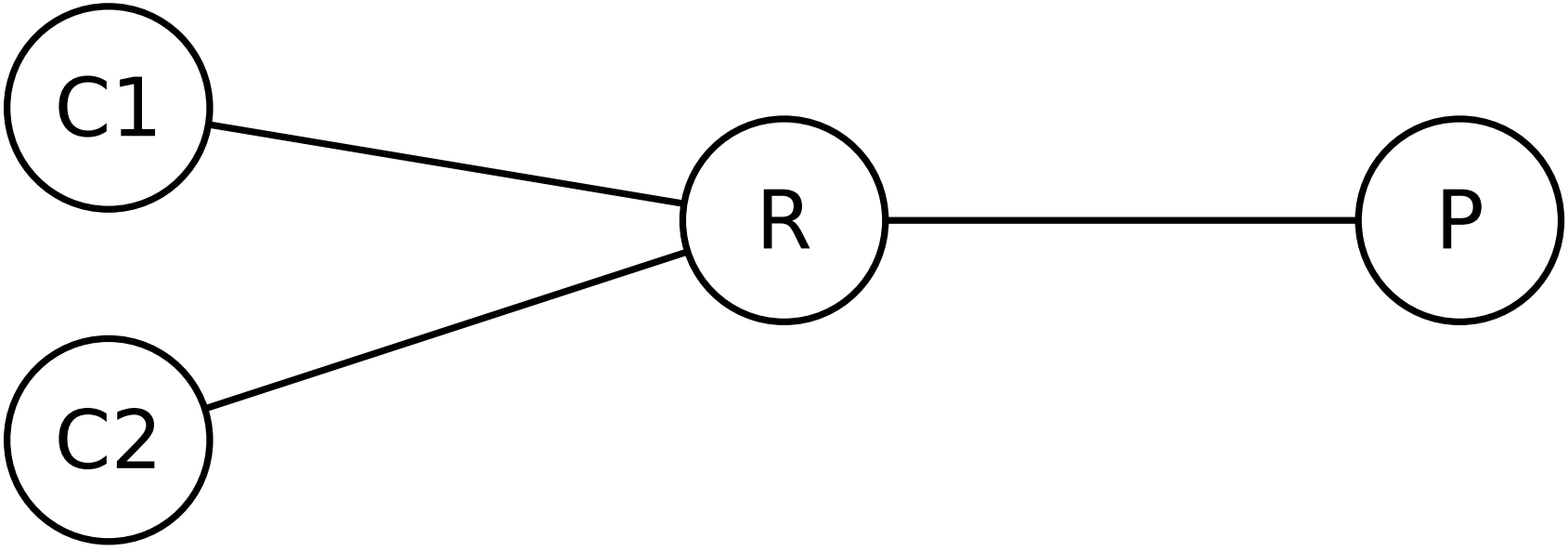
Access Strategy causes huge problems



Access Strategy causes huge problems



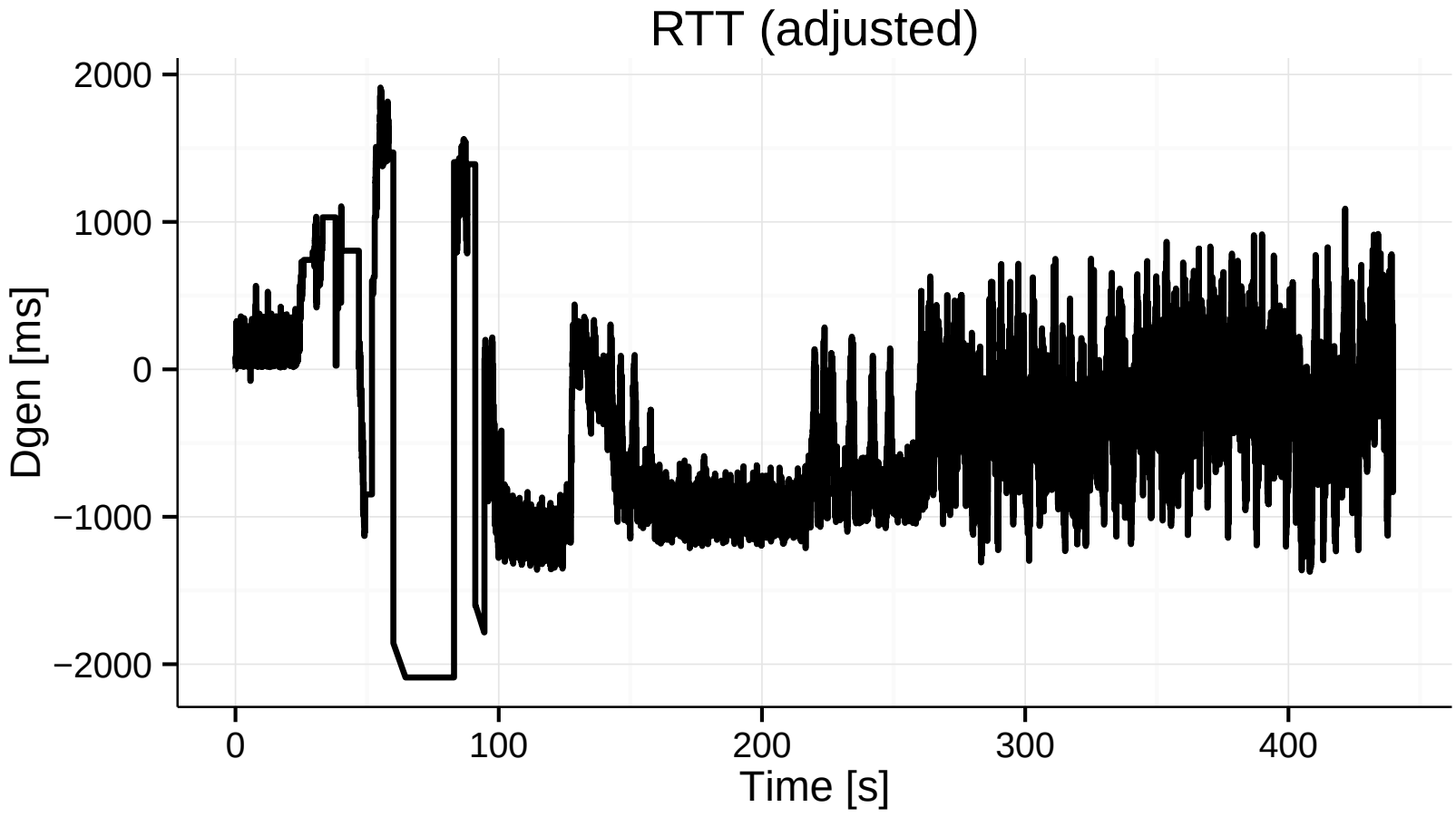
Future Work: Data Gen Delay



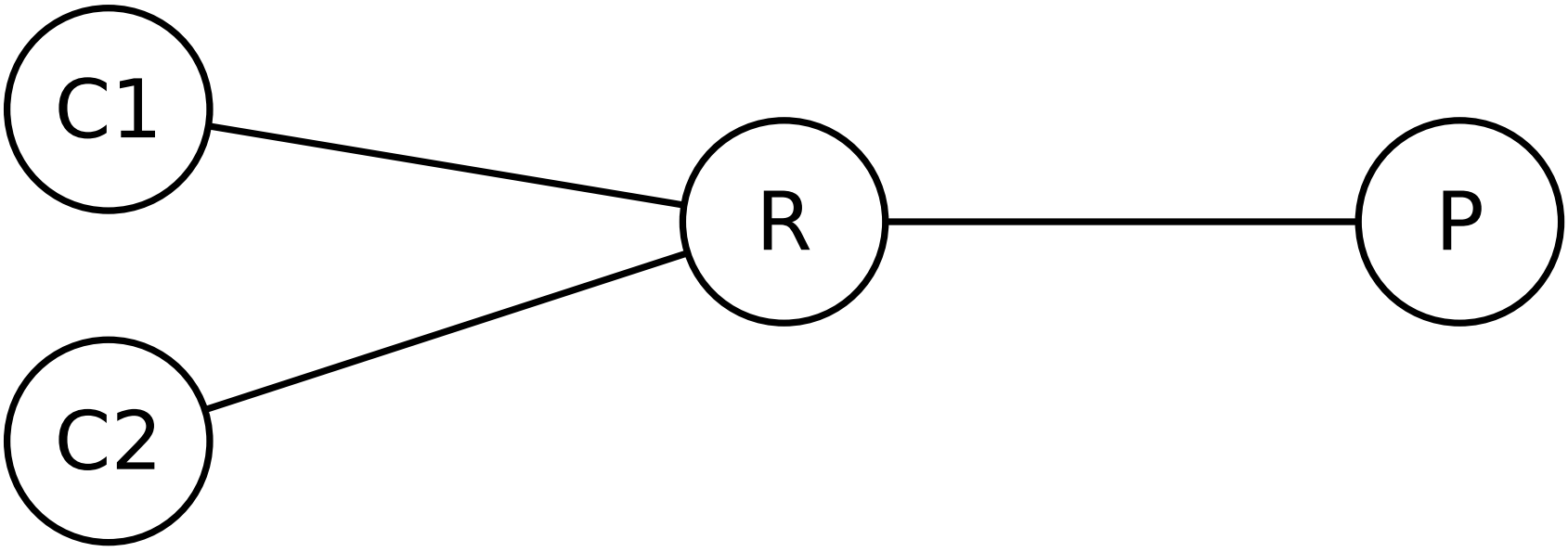
Data Generation Delay is used for RTT Estimation!

$$RTT_{est} = RTT_{raw} - D_{gen}$$

Result: Adjusted RTT becomes Negative!



Workaround: NDNLP Tags



- Can't manipulate data packet

$\Rightarrow$ Add NDNLP Header

Done

Thanks a lot!