A Framework for Adaptive Streaming of MPEG-4 Video
Nick Feamster    Deepak Bansal
Advisor: Prof. Hari Balakrishnan

Motivation
- Rising demand for streaming media on the Internet
- Need an open system which supports congestion control and selective reliability
- Losses in interframe compression schemes result in propagation of errors

Approach
Selective Loss Recovery
- Loss of reference frame data dramatically reduces PSNR
- RTP-compatible extensions provide semantics for:
  - Detecting lost portions of bitstream and request for retransmission

Congestion Control
- TCP’s AIMD policy results in large rate oscillation: need smoother congestion control
- Allow the application to make the appropriate congestion control decisions

Results
- Selective retransmission allows for the recovery of most important data and limit propagation of errors.
- Binomial congestion control reduces layer switching and achieves smoother rate than AIMD:
  - Better perceptual quality
  - Lower buffering requirement for more timely delivery
- Results can be applied to both simulcast and hierarchical encodings

Simulcast/AIMD
Simulcast/Binomial
QA/AIMD
QA/Binomial

MPEG Server
RTSP
MPEG Client

RTP/RTCP
loss/RTT
RTSP
loss/RTT
requests

data
loss/RTT
requests

callbacks
CM

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