A CROSS-LAYER APPROACH FOR MINIMUM DELAY CONTENT
ADAPTIVE VIDEO STREAMING OVER VARIABLE BITRATE
CHANNELS (WedAmPO4)

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Abstract:
A novel cross-layer scheduling and stream switching algorithm for content and channel adaptive video streaming over 1xEV-DO (CDMA-HDR), where stream switching is done according to the receiver buffer level is presented. The instantaneous transmission rate to each user is determined by a multi-objective optimized scheduler, maximizing network throughput and individual receiver buffer levels simultaneously, while the instantaneous coding rate for each user is determined according to buffer status feedback. The transmitter always switches to the most suitable pre-optimized bitstream with minimum delay and visual distortion calculated for various channel capacity values and under constant bitrate assumption. The main target of the proposed framework is to guarantee continuous playout of the transmitted content at all user devices while providing maximum system throughput, minimum overall distortion and minimum pre-roll delay. Experimental results show that decoder buffer overflows and underflows that cause pauses in the playout are prevented as opposed to the case without stream switching.