

# Modeling Video Traffic Source for RMCAT Evaluations

draft-zhu-video-traffic-source

Xiaoqing Zhu, Sergio Mena de la Cruz,  
and Zaheduzzaman Sarker

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# Bridging the Gap in RMCAT Evaluation

## Ideal Synthetic Traffic Model

- Simple & repeatable
- Highlights transport level performance
- *Ignores key interactions between encoder and transport*



## Synthetic Video Traffic Source

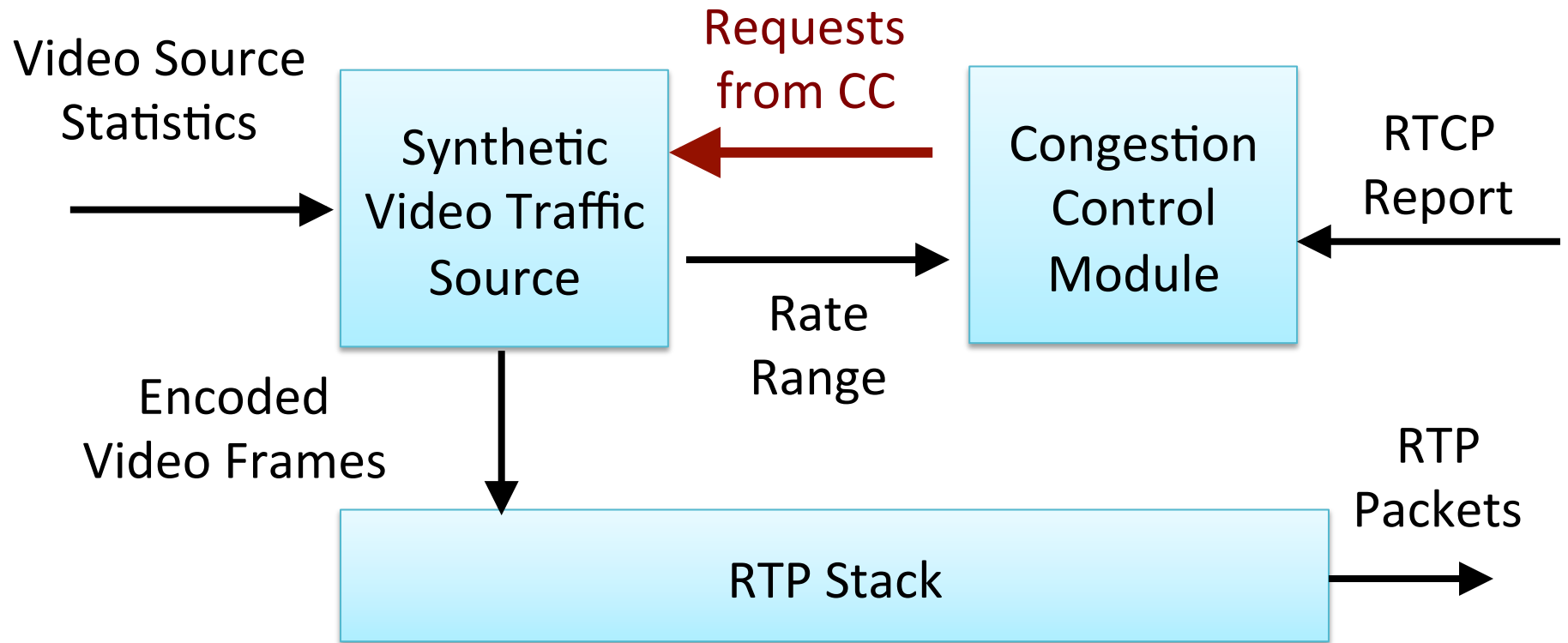
## Live Video Encoder

- Realistic setup
- Results indicate end-to-end performance
- *Performance influenced by individual codec behavior*

# Desired Behaviors of A Synthetic Video Source

- Low computational complexity
- Temporal pattern similarity, e.g.,
  - Fluctuation around target rate
  - Burst in size for Intra-coded frame
  - Delayed response to target rate change
- Statistical accuracy across different time scales
- Wide range of coverage of video codecs/contents

# System Model



# Statistical Approach

- Previously presented at IETF 88, Vancouver  
<http://www.ietf.org/proceedings/88/slides/slides-88-rmcat-2.pptx>
- Parameters characterizing:
  - Time-damped response to target rate change
  - Temporary burst/oscillation during transient
  - Rate fluctuation at steady state
  - Rate range imposed by video content activity
- Parameters should reflect observations and captured data traces from real-world codecs

# Trace-Driven Approach

- Previously presented at IETF 88, Vancouver  
<http://www.ietf.org/proceedings/88/slides/slides-88-rmcat-9.pdf>
- Extended the scaling-based approach with piecewise linear interpolation with traces at multiple rates
- Potential extension to accommodate variable frame rate

# Discussions

- Pros and cons of each approach?

## Statistical Approach

- Decouples codec effects from content effects
- Flexibility to vary individual parameters

## Trace-Driven Approach

- Straightforward and intuitive
- Data correspond to concrete video sequences

- Combine the best of both worlds? E.g.,
  - Model-based transient behavior + trace-based synthetic frame size
  - Derive statistical model parameter from traces