Update on NADA Draft

draft-ietf-rmcat-nada-05

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Outline

- Algorithm update for loss-based behavior

- Status update of open source codes: *syncodecs* and *ns3-rmcat*

- Highlights of updated evaluation results

- Summary of draft changes

Algorithm Update on Loss-based Behavior

- *Goal: more robust performance when competing with loss-based flows**

- Changes in algorithm:

  - Self-adaptive thresholding for loss/delay mode switching:

  - More smooth transition of warped congestion signal

  - Revised form of loss penalty function: linear => quadratic

* Motivated by issues reported by Julius Flohr from his OMNeT++ implementation

Self-Adapting Threshold for Expected Loss Intervals

- Draft -04: fixed threshold TEXP as expiration time for previously observed losses
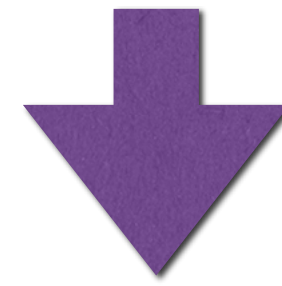
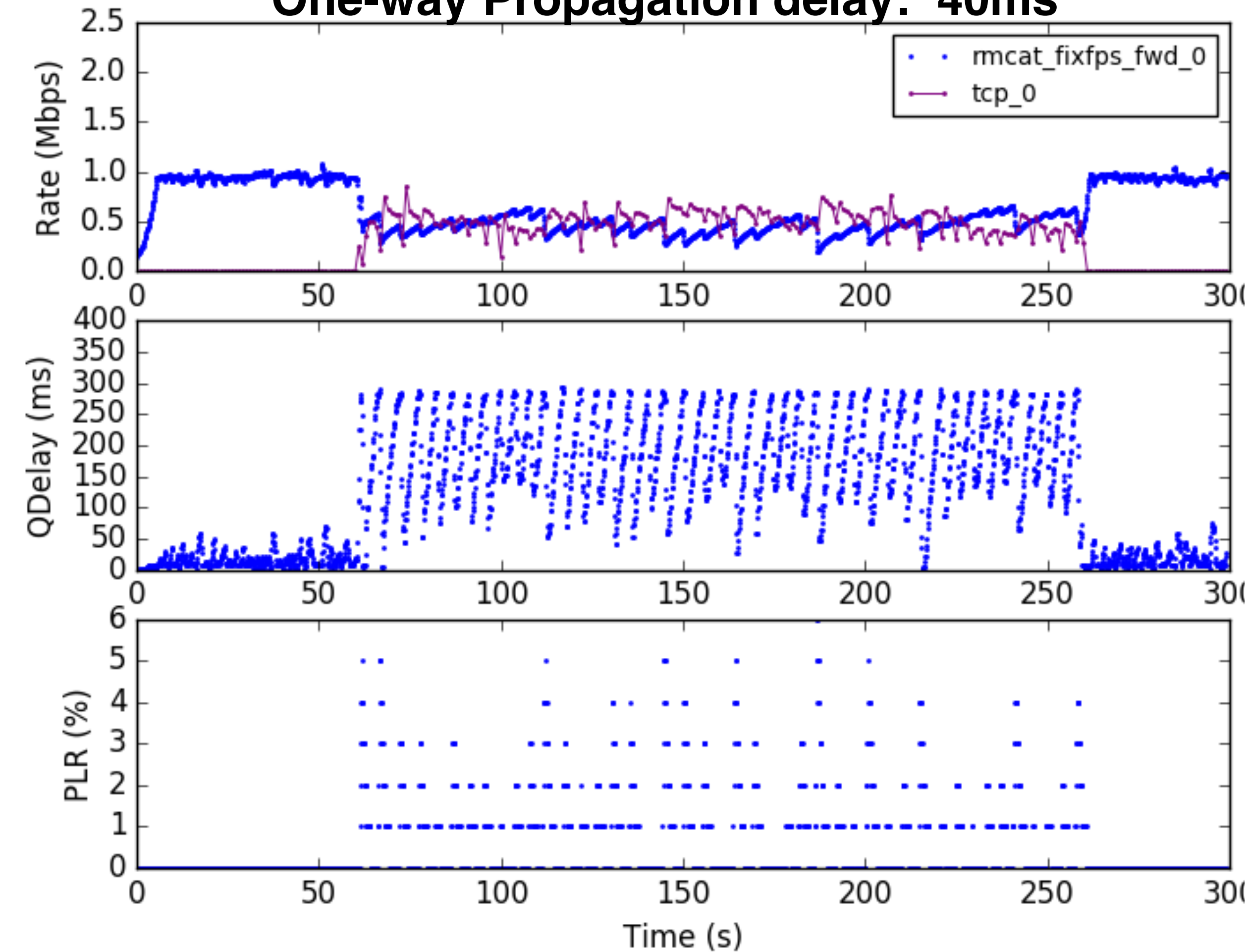- Draft -05: self-scaling the threshold as multiples of *measured* average loss interval

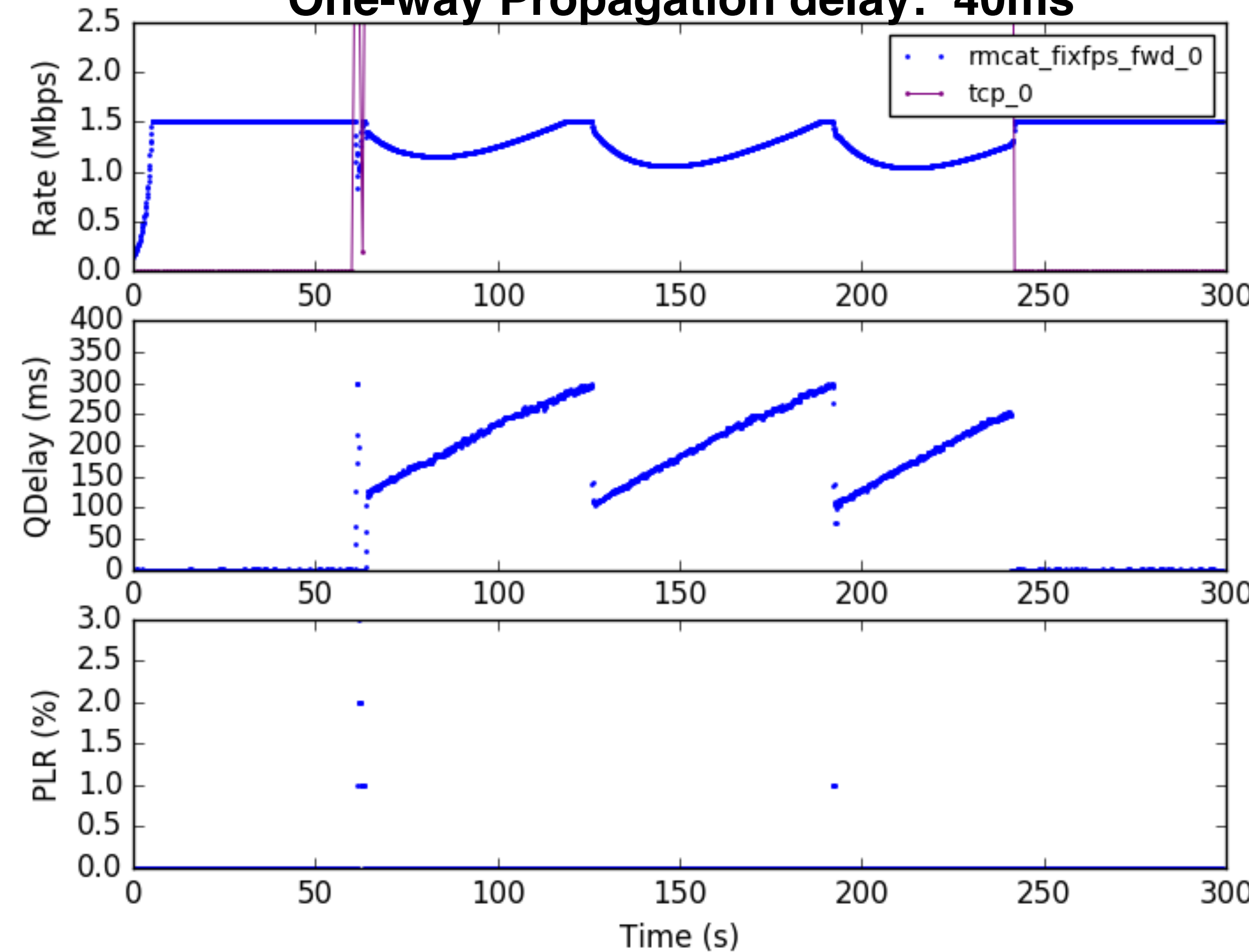Constant multiplier

$$tloss\_exp = MULTILOSS * tloss\_int$$

Average loss event interval as calculated by TFRC (RFC5348)
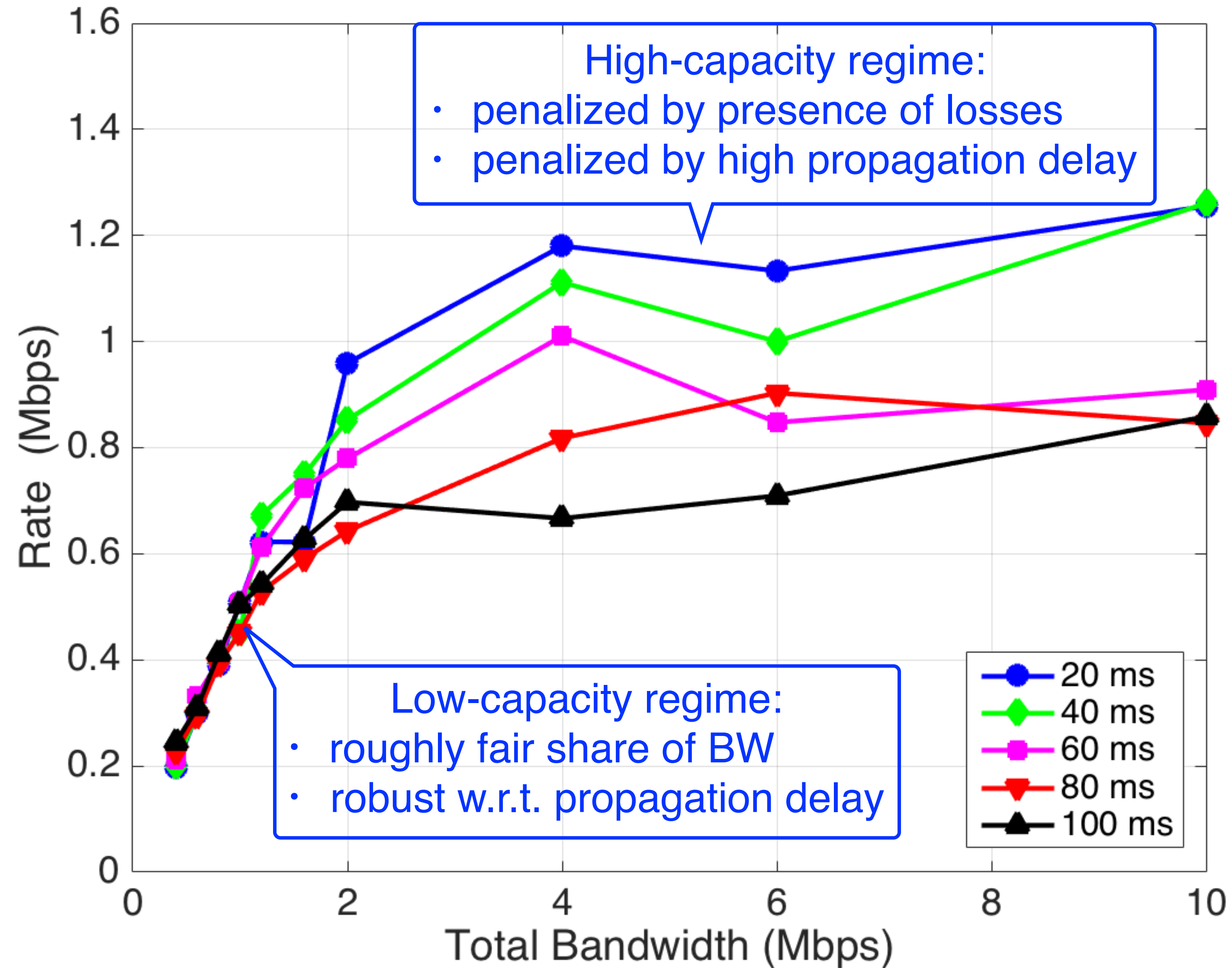
Benefit of Self-Scaling Expected Loss Interval

Bottleneck Capacity: 1Mbps
One-way Propagation delay: 40ms

Bottleneck Capacity: 10Mbps
One-way Propagation delay: 40ms

Varying Bottleneck Capacity and Propagation Delay
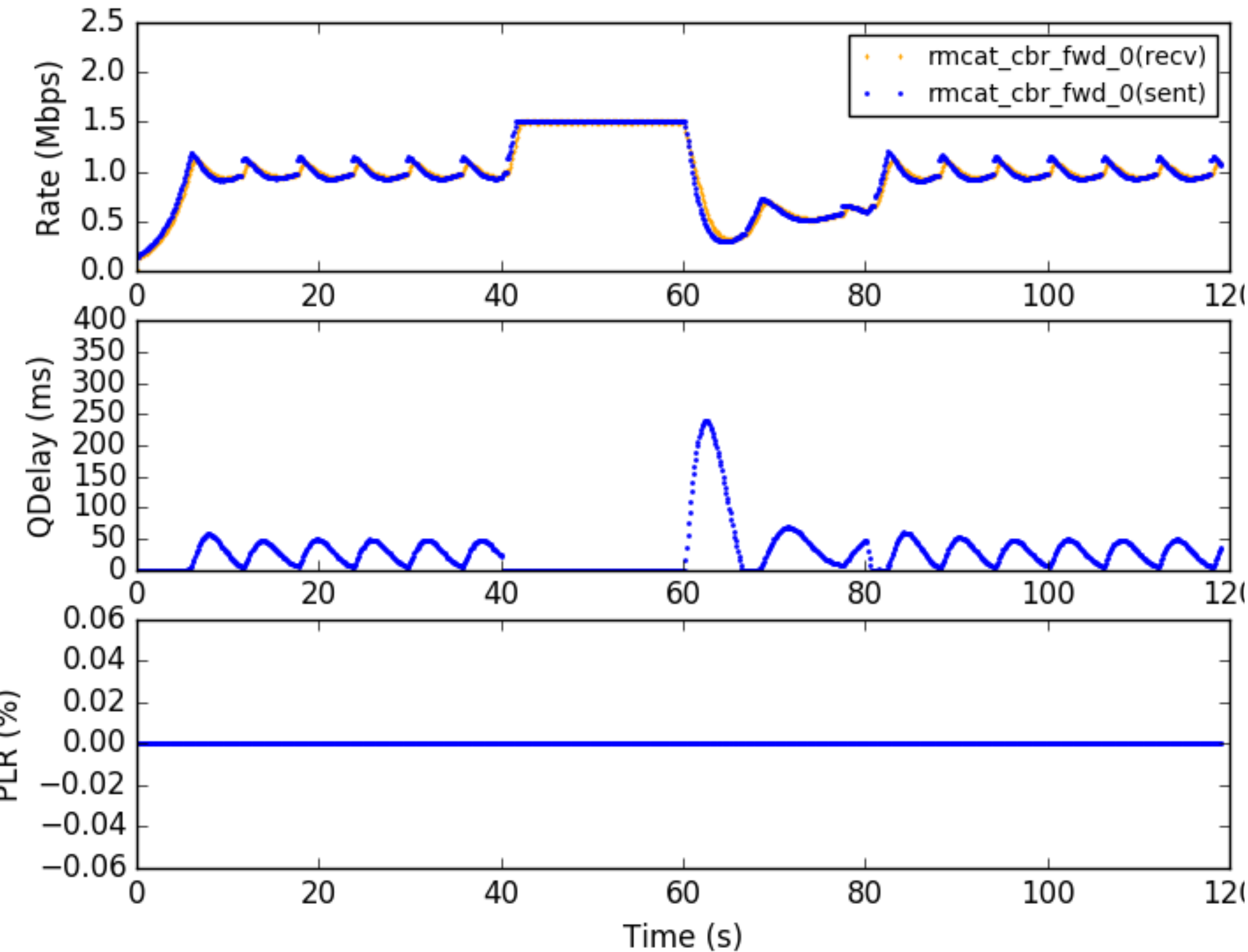
syncodecs: Added New Traffic Source Models

- Added support for new type of codecs:

  - CBR-like (SYNCODEC_TYPE_PERFECT)

  - Fixed-FPS (SYNCODEC_TYPE_FIXFPS)

  - Based on statistical model (SYNCODEC_TYPE_STATS)

  - Trace-driven (SYNCODEC_TYPE_TRACE) => Hybrid (SYNCODEC_TYPE_HYBRID)

  - Content sharing (SYNCODEC_TYPE_SHARING)

- Code now in sync with descriptions in draft-ietf-rmcat-video-traffic-model-03

- Available online at: https://github.com/cisco/syncodecs

ns3-rmcat: Ready for Public Release
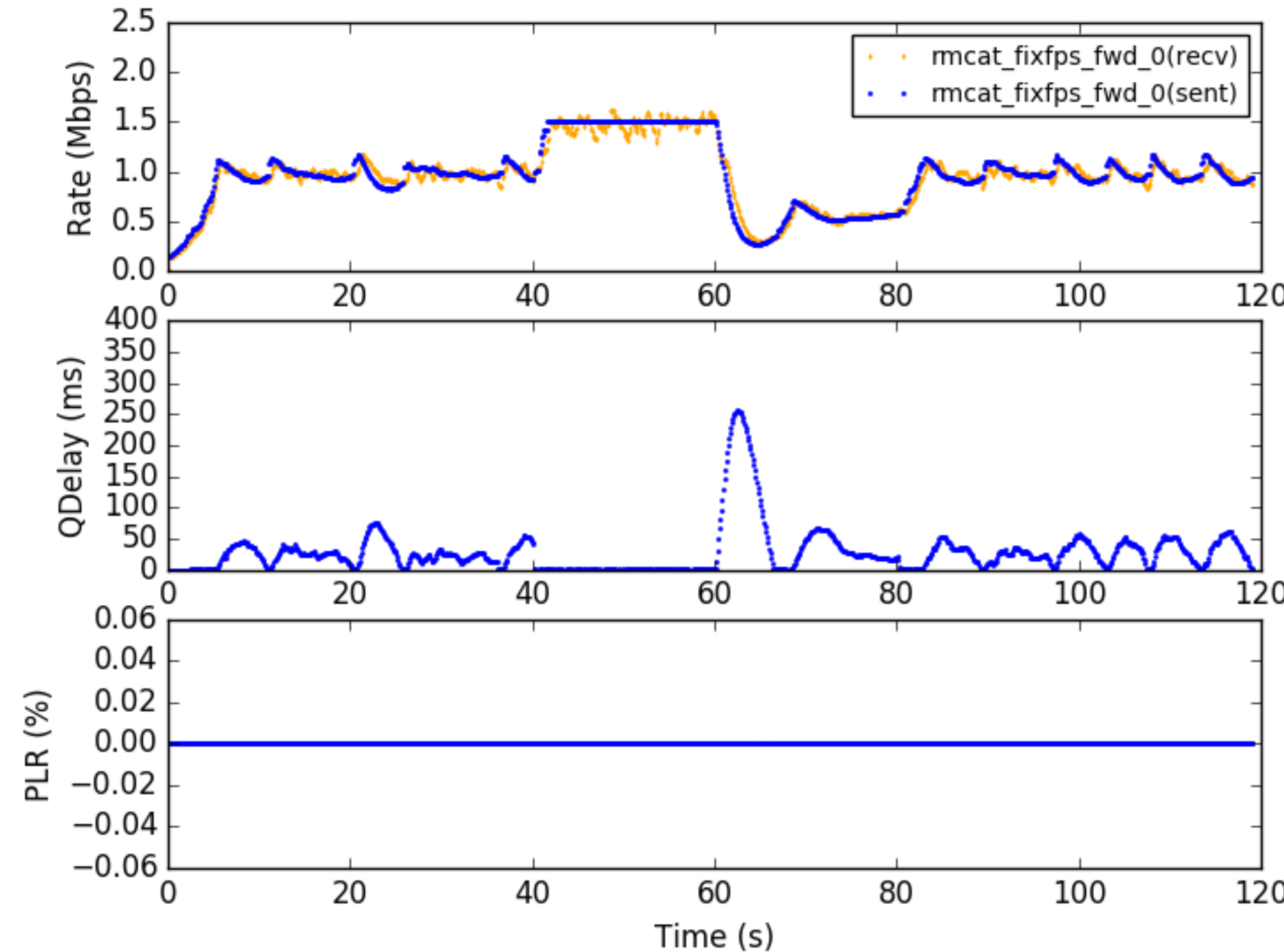
- Online available (soon!) at: https://github.com/cisco/ns3-rmcat

- Adopts syncodecs as the traffic source via submodule import

- Reference congestion controller implementations:

  - dummy-controller: fixed configurable sending rate

  - nada-controller: as specified by draft-ietf-rmcat-nada-05

  - *diy-controller: should be easy to add and try out your own*

- Reference test case implementations:

  - RMCAT wired test cases as specified by draft-ietf-rmcat-eval-test-05

  - RMCAT wifi test cases as specified by draft-ietf-rmcat-wireless-tests-04 (Sec. 4)

  - *Pending: LTE/Celluar test cases (Sec. 3 in draft-ietf-rmcat-wireless-tests-04) — need further input/help on this*

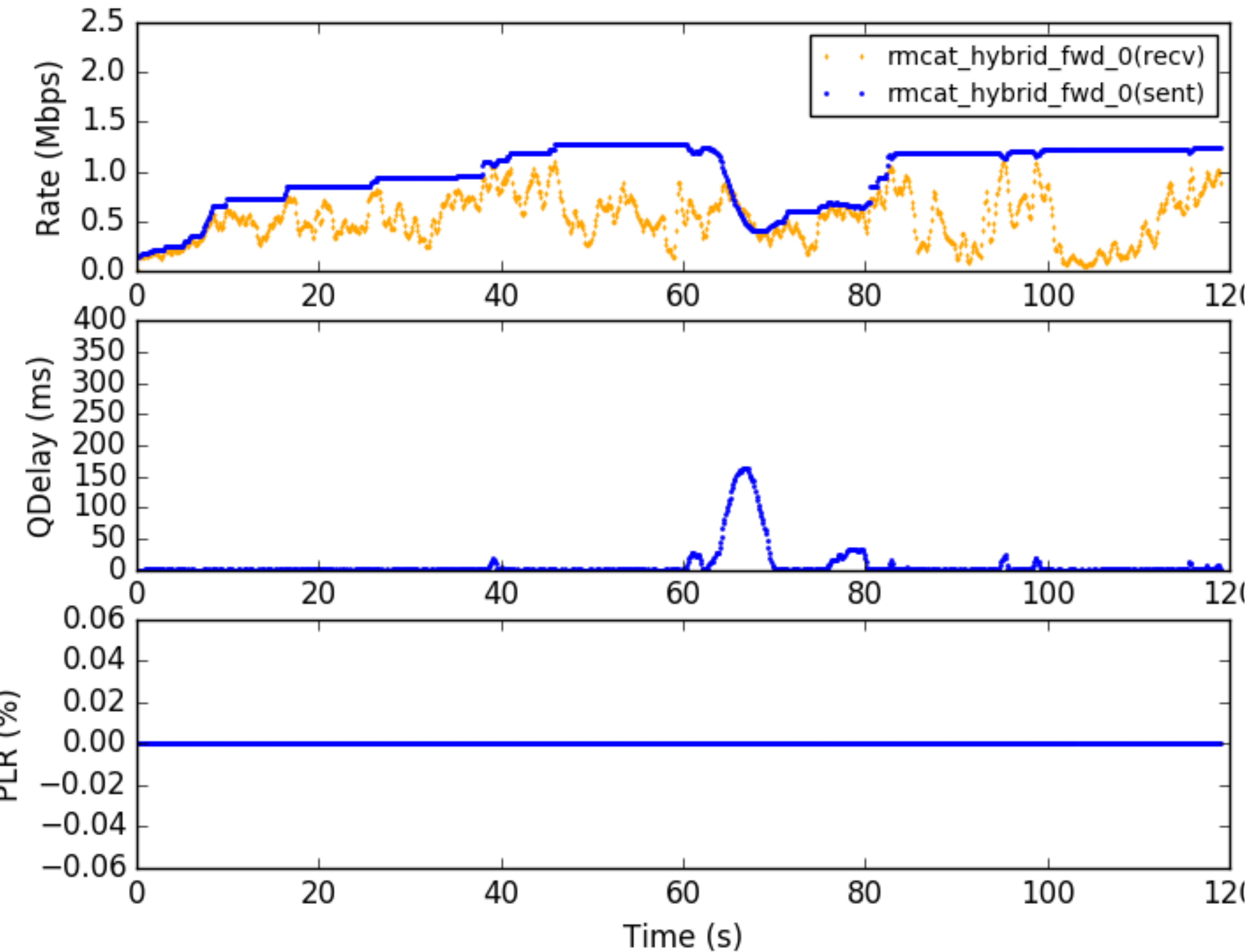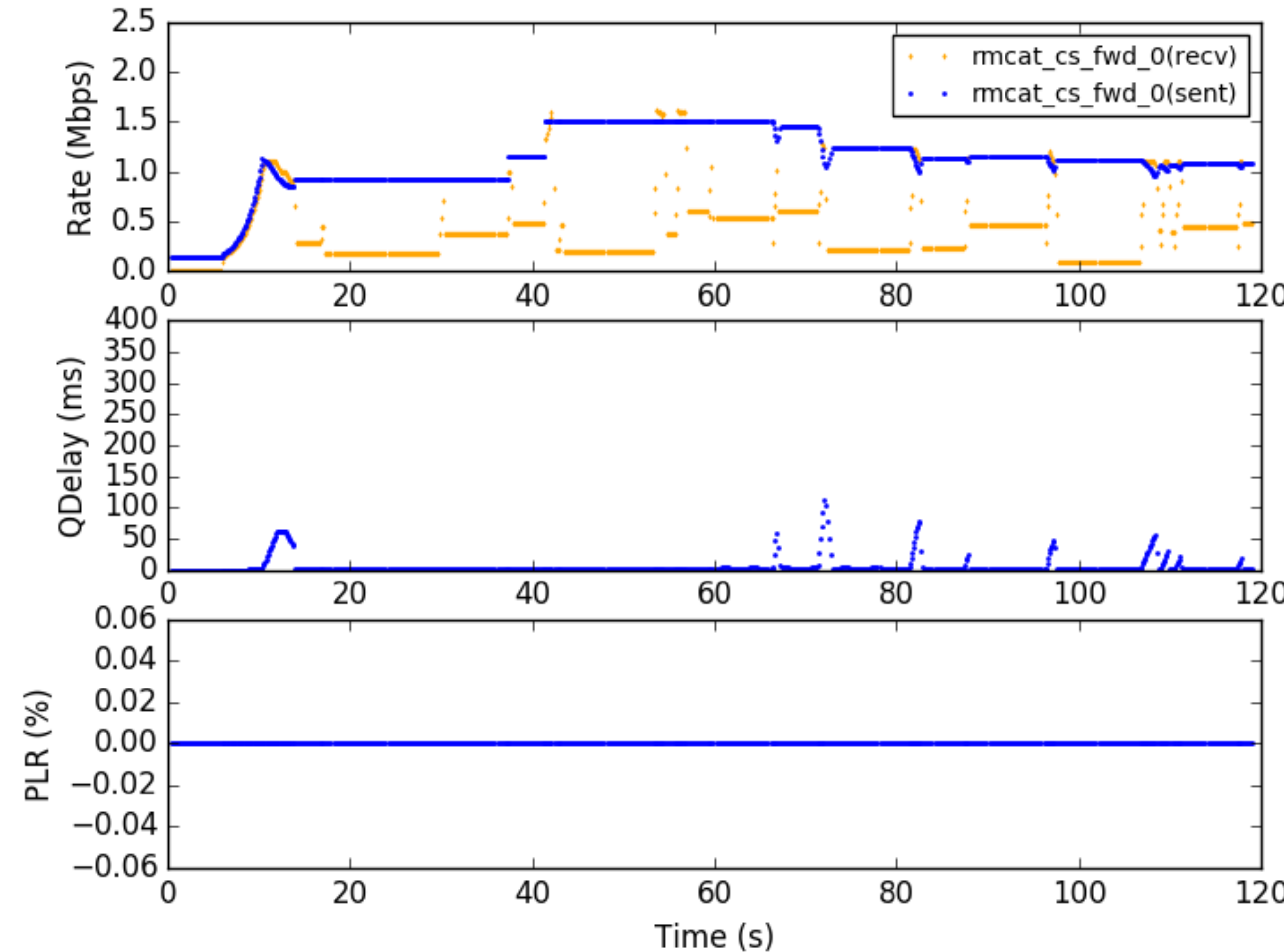# 5.1: Variable Available Capacity with a Single Flow

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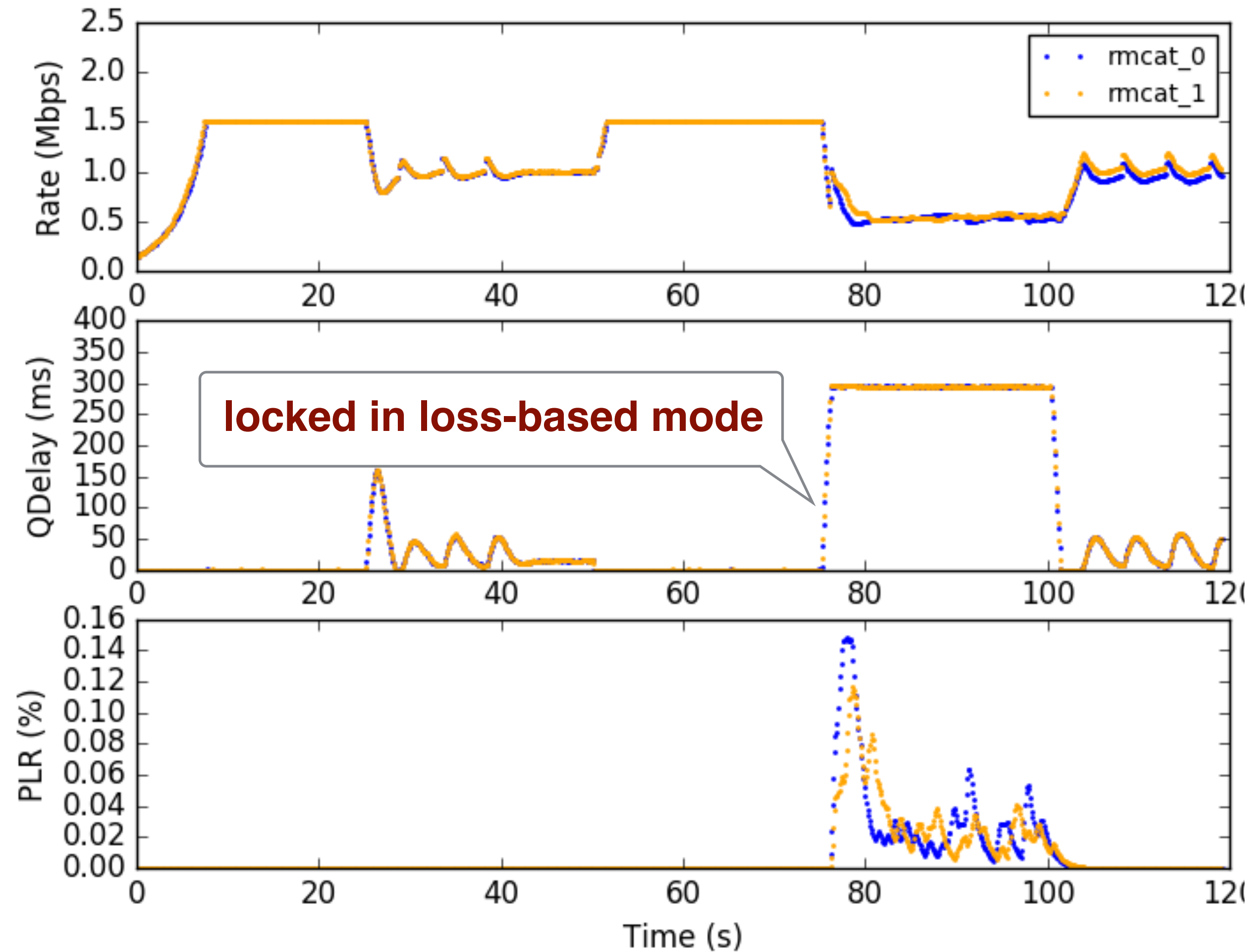
Traffic Source: Hybrid

Traffic Source: Content Sharing

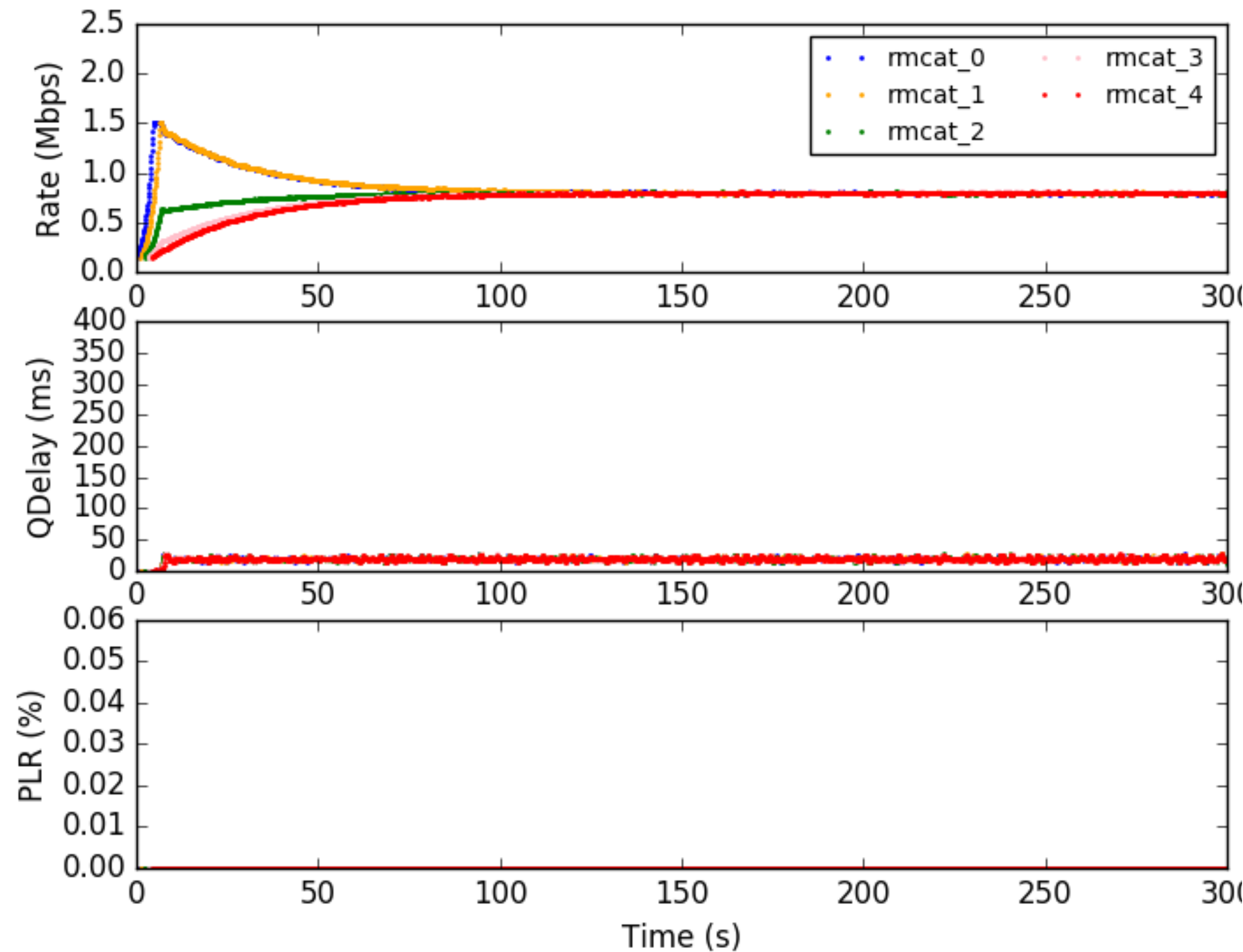# 5.2: Variable Available Capacity with Multiple Flows
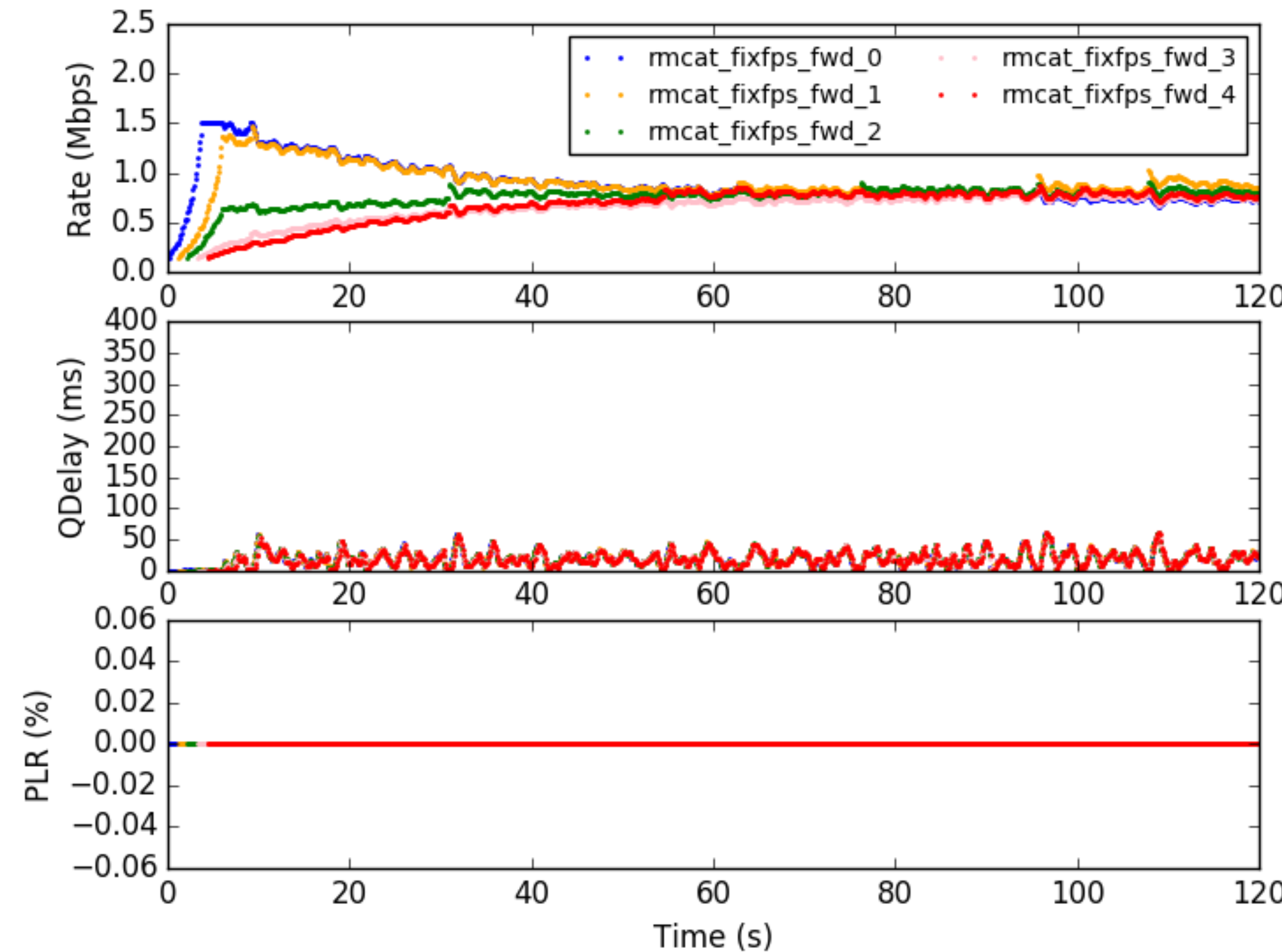
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locked in loss-based mode
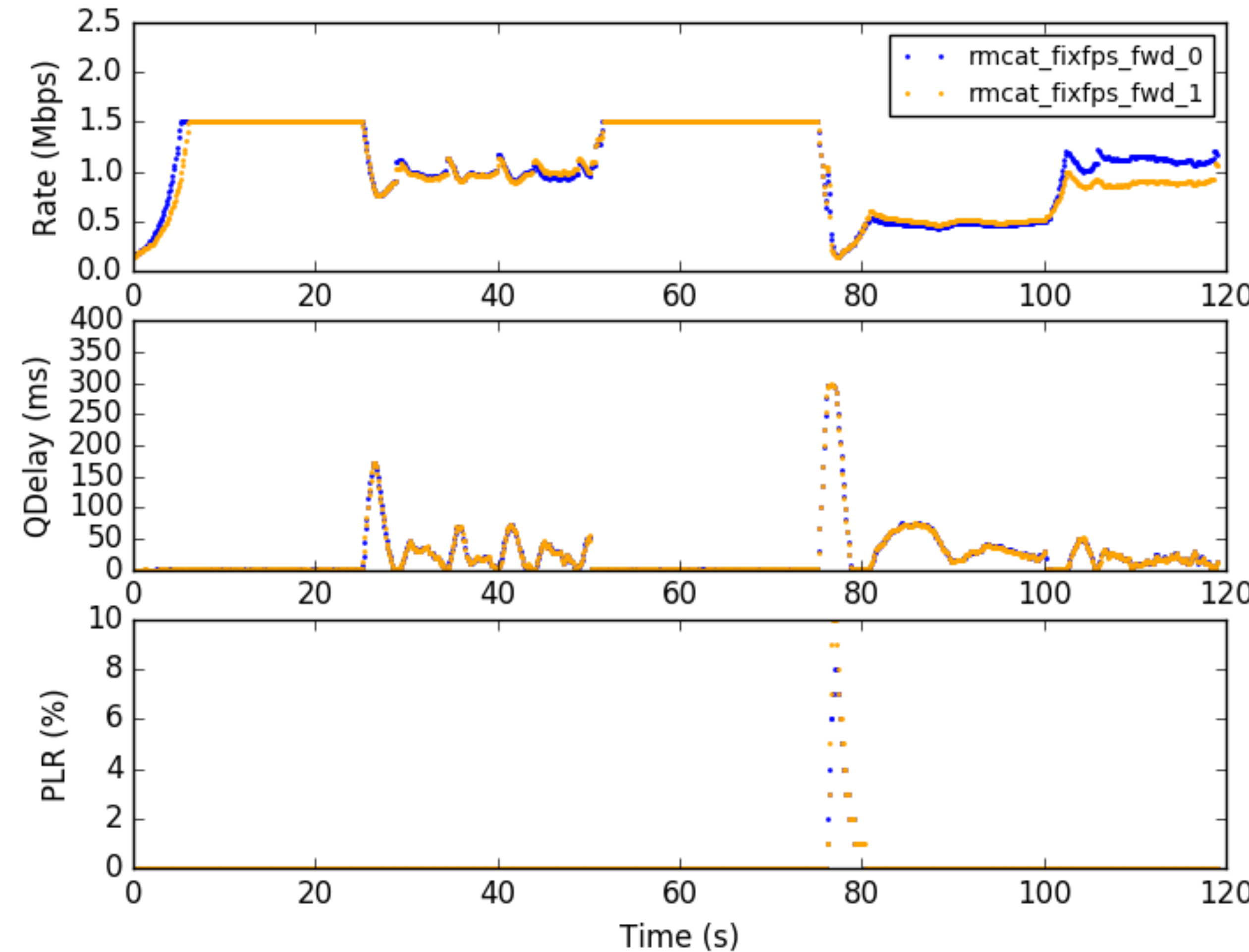
5.5: Round Trip Time Fairness

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Summary of Draft Changes

- Changes from -04 to -05: algorithm changes (Sec. 4.2) on loss-based behavior

- Planned changes from -05 to -06:

  - Address review comments from Roland Bless

  - Fix Normative vs. Informative References as pointed out by MichaelW

  - Update Section 7 on Implementation Status

- Draft status: do we need to go through WGLC again or not?

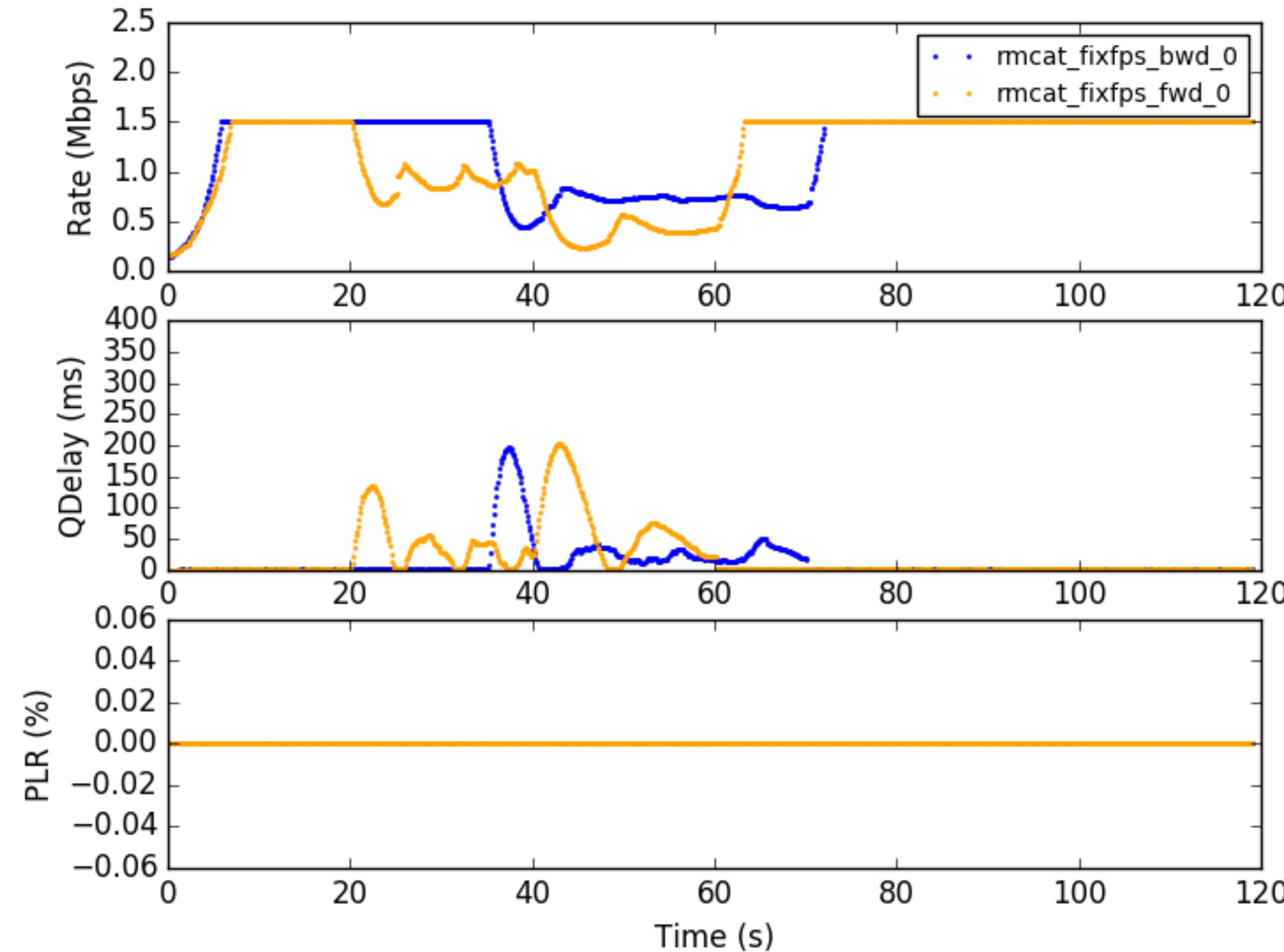- Next step: experiment with embedding NADA in Mozilla browsers

Backup:
Additional Results

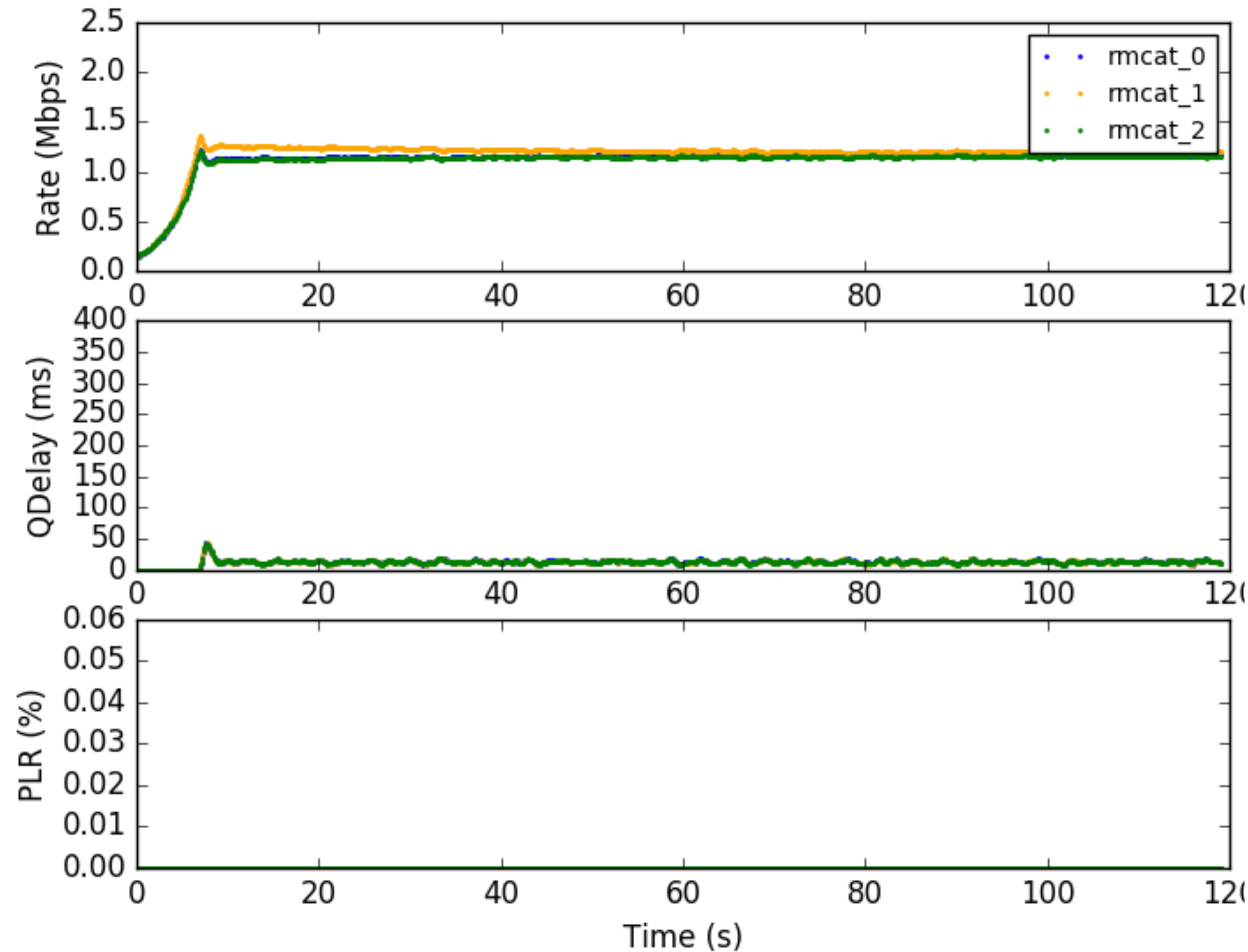# 5.3: Congested Feedback Link with Bi-directional Flows
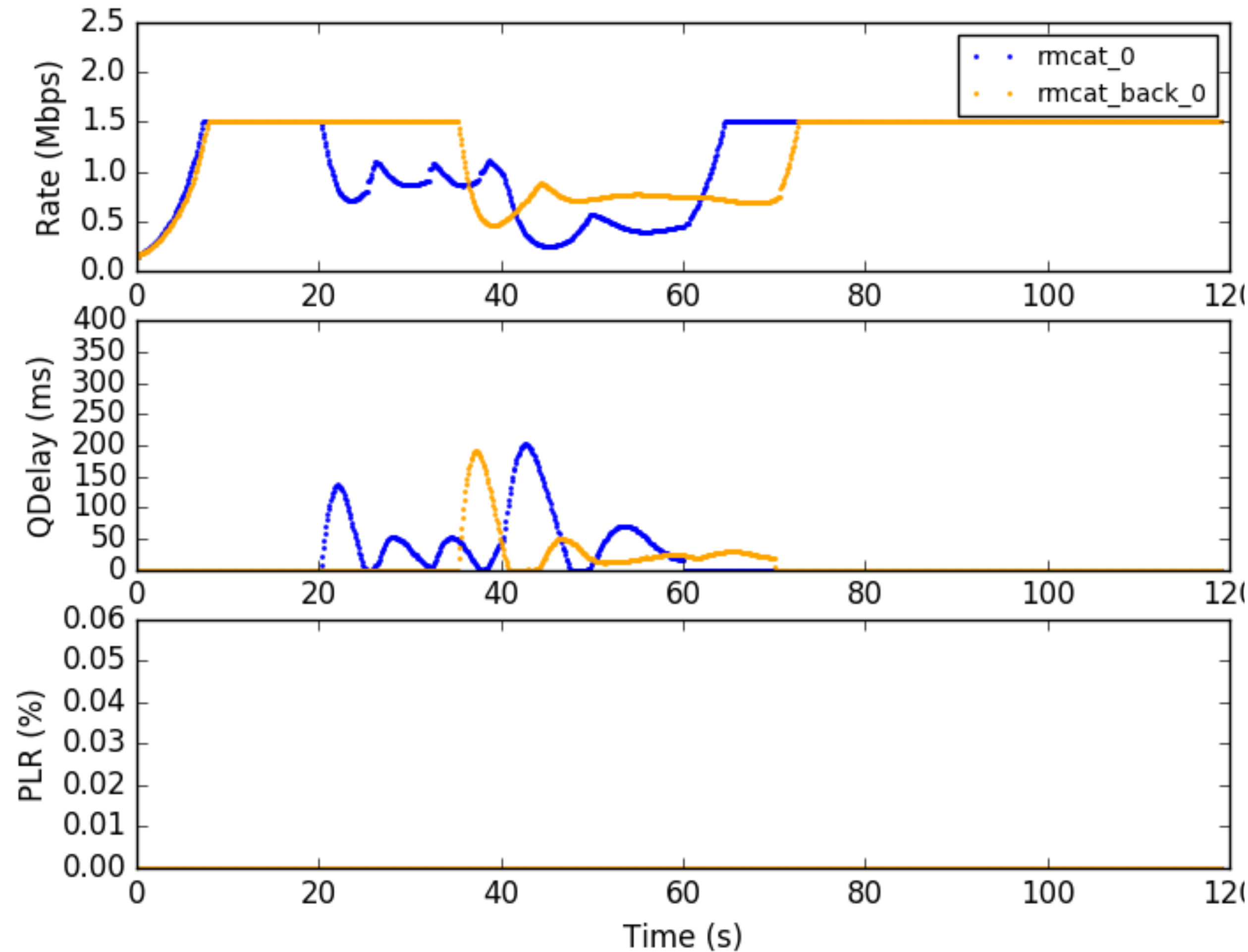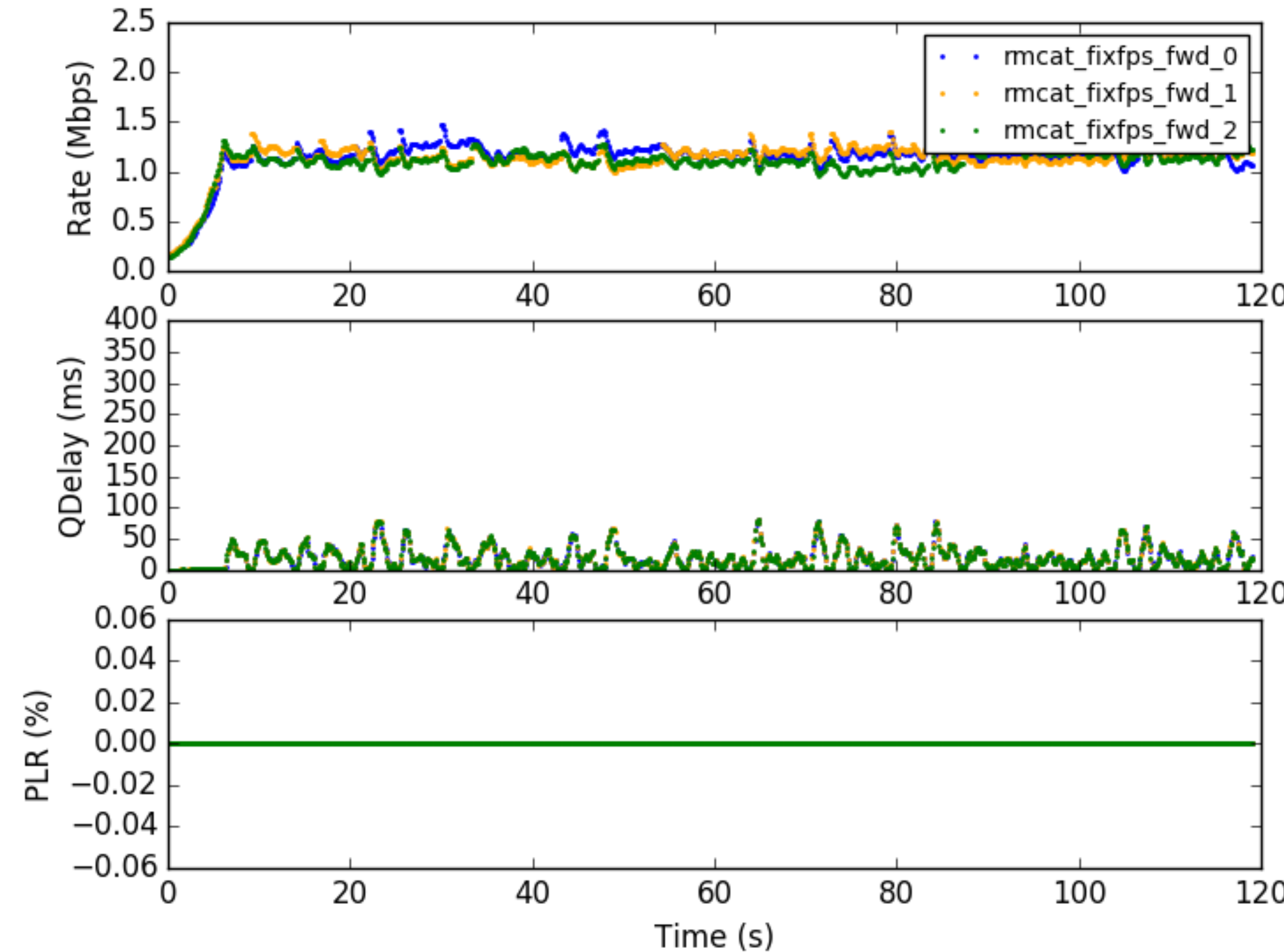
5.4: Multiple Competing RMCAT Flows
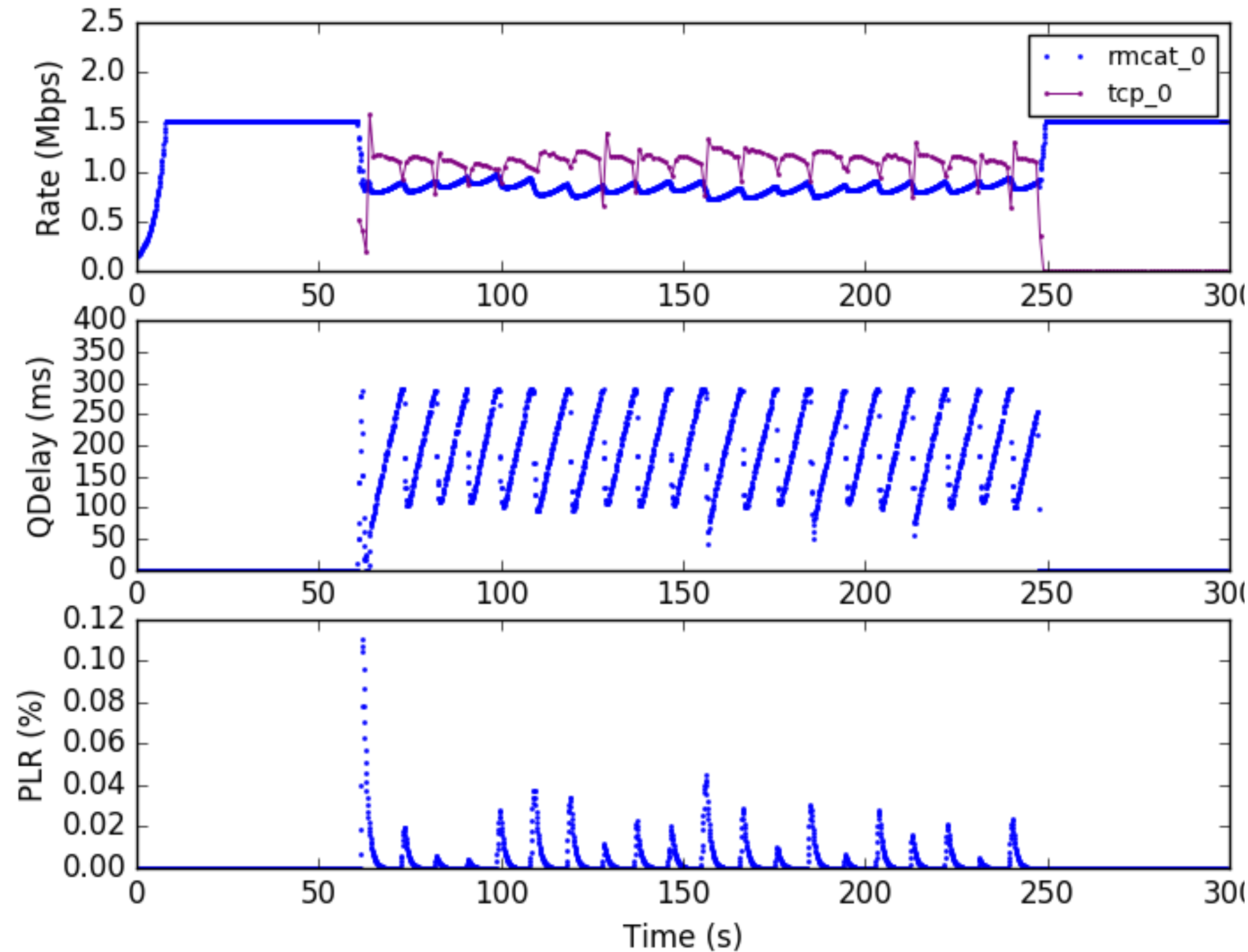
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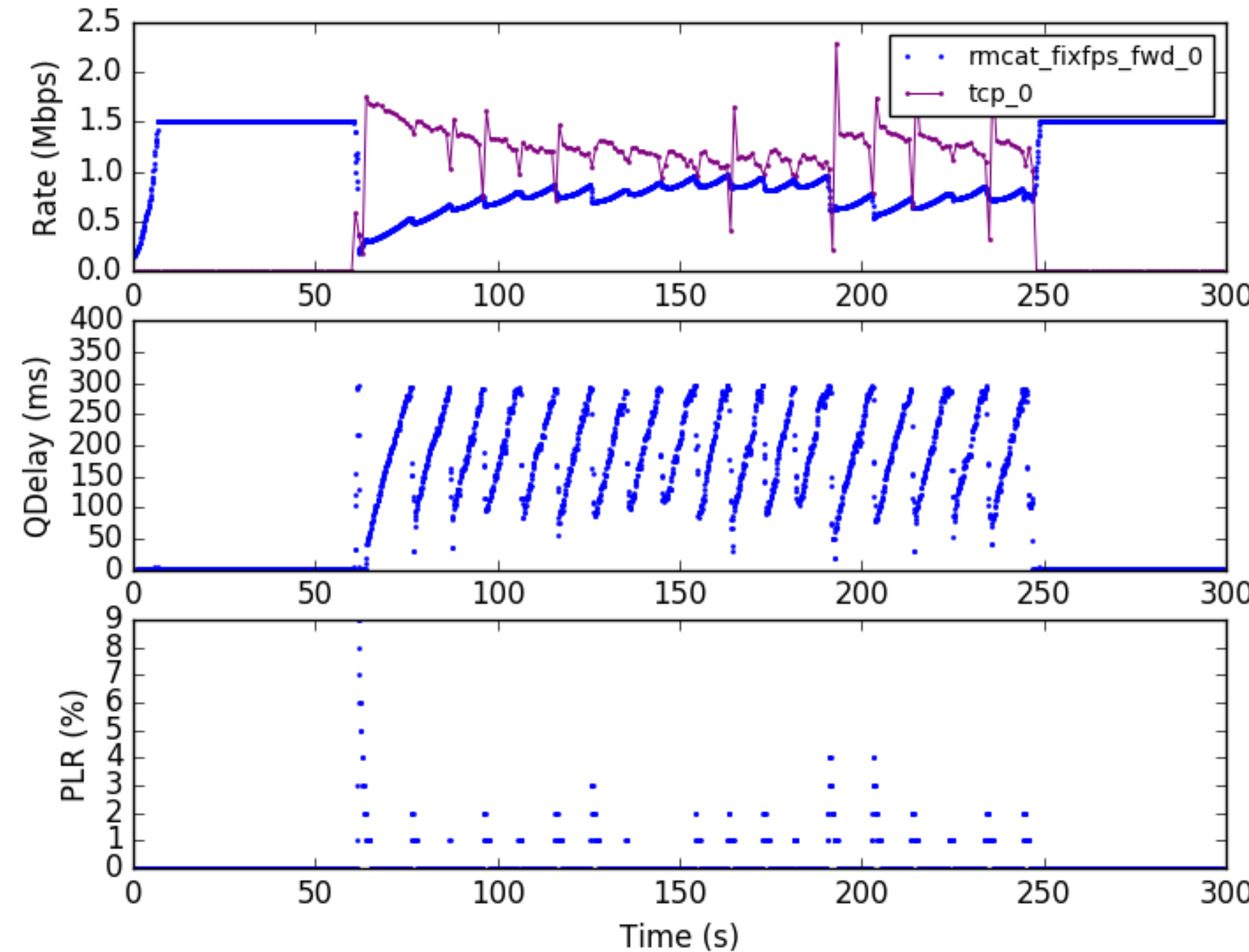
draft-ietf-rmcat-nada-05

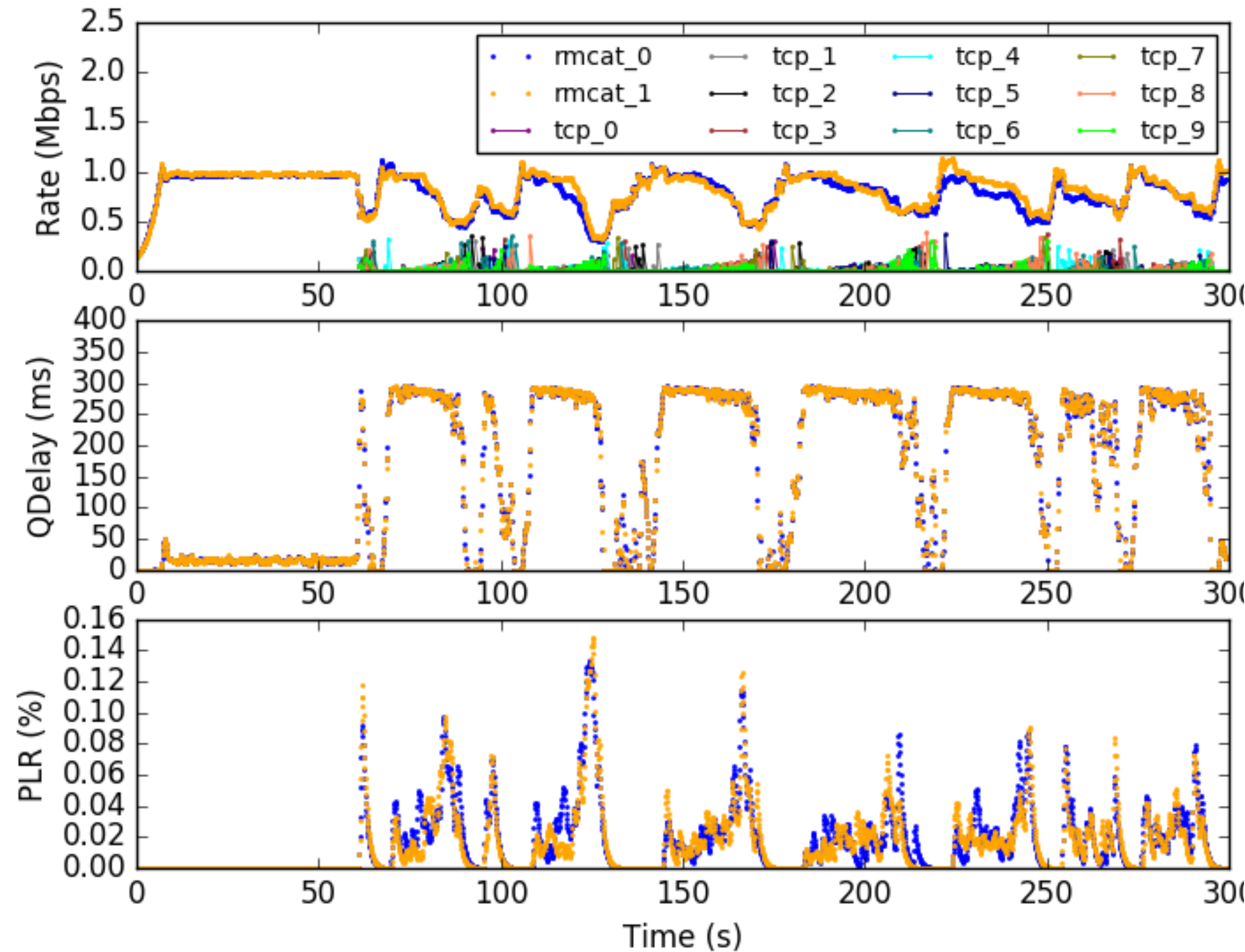# 5.6: RMCAT Flow Competing with a Long TCP Flow

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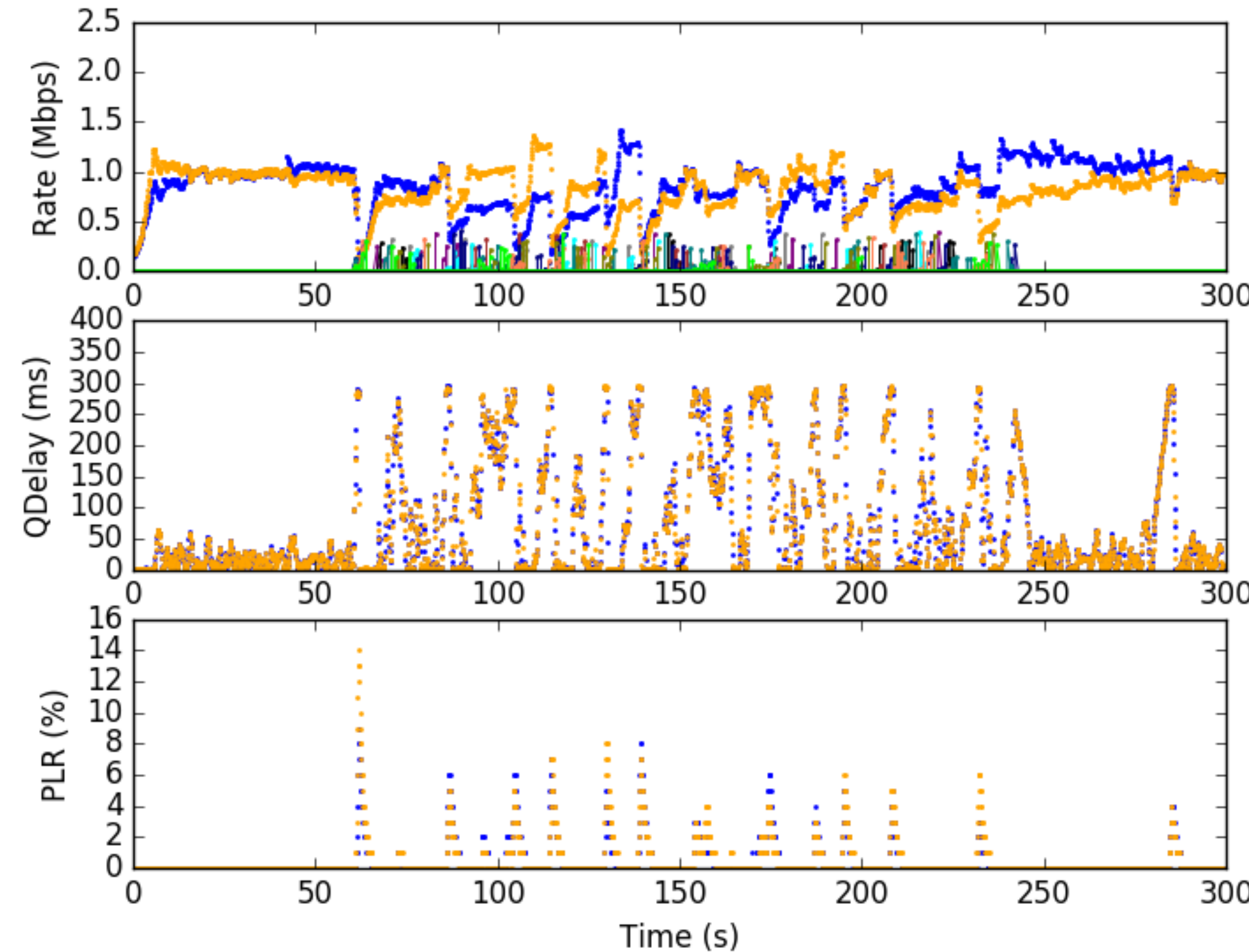**draft-ietf-rmcat-nada-05**

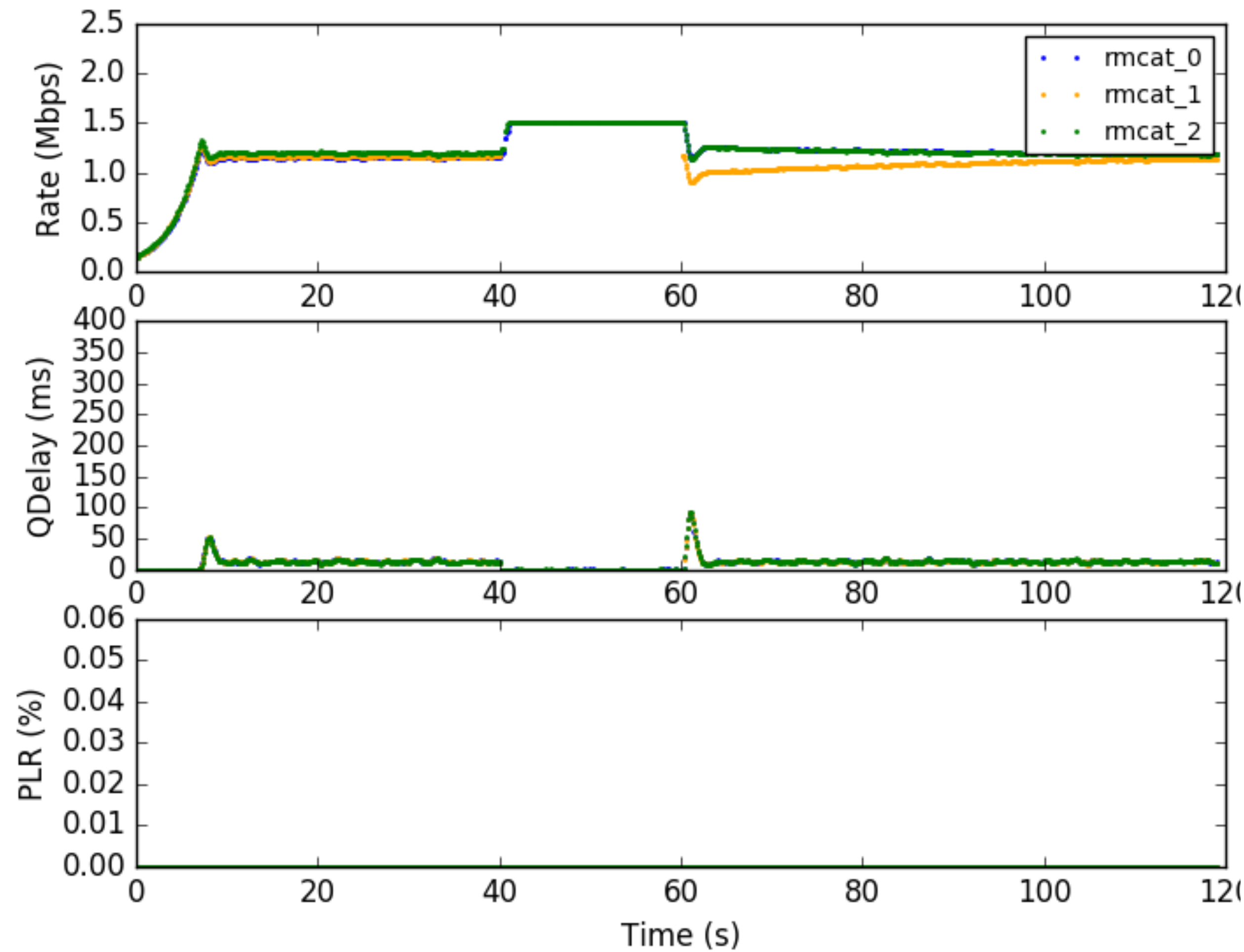# 5.7: RMCAT Flow Competing with Short TCP Flows

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5.8: Media Pause and Resume

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