Evaluating Congestion Control for Interactive Real-time Media

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Changes since -02

- Cleanup of metrics
  - There are still *many* OPEN ISSUES

- Added RTP log format
  - Use RTPDUMP or already IETF-defined RTP log format?

- Added a new guidelines: Startup behaviour

- Example Evaluation Scenarios section replaced by Evaluation Parameters
  - Components to build new scenarios

- Added Michael Ramalho's self-fairness scenario as an appendix
  - Scenario discussed in the design team meetings
  - Acknowledged Michael in the Contributors Section.

Unfairness Metric

The criteria are:

1. Do not trigger the circuit breaker.

2. Over 3 times or less than 1/3 times the throughput for an RMCAT media stream compared to identical RMCAT streams competing on a bottleneck, for a case when the competing streams have similar RTTs.

3. Over 3 times delay compared to RTT measurements performed before starting the RMCAT flow or for the case when competing with identical RMCAT streams having similar RTTs.

• Does the criteria capture Unfairness adequately?

Metrics: Open Issues

- Agree on Unfairness definition

- Define convergence time
  - Related to Startup behaviour

- Remove Bandwidth Utilization?

- Remove Application trade-off?
  - How to measure Throughput vs. Delay vs. Loss
  - Or delegate this to the description of each scenario?

- Is the quality metric entirely off the table?

Evaluation parameters

A suite of parameters to **create** new scenarios:

- List of Traffic Flows

- List of Access Links

- List of Link parameters
  - Link losses and link latency

- List of Router queue lengths
  - Only Droptail queues

- List of Media flow parameters

- **Missing**: TCP Cross-traffic parameters

List of Traffic Flows

1. A single RMCAT flow by itself.

2. Competing with similar RMCAT flows. These competing flows may use the same algorithm or another candidate RMCAT algorithm.

3. Compete with long-lived TCP.

4. Compete with bursty TCP.

5. Compete with LEDBAT flows.

6. Compete with unresponsive interactive media flows (i.e., not only CBR).

Parameters: Open Issues

- Map wireless access links to link properties?
  - Different for 3G/LTE and WLAN?

- Link losses
  - Traces?
  - Gilbert-elliot model?

- Latency parameter guideline for a scenario:
  - Hop-by-hop, or
  - End-to-end

Next Steps

- How to handle new scenarios?

- Adopt as WG item