Evaluating Congestion Control for Interactive Real-time Media

draft-singh-rmcat-cc-eval-00

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Current Status

• Draft-01 makes some changes based on the list discussion

• Main Open Issue: **Quality Metric**
  – To analyse the trade-off between *loss*, *throughput* and *delay*.
  – List discussion indicates against having it
Metrics

• Bandwidth Utilization = sending rate/capacity
  – Under utilization
  – Overuse
  – Steady-state

• Packet loss and discard rate

• Fair share with similar flows
  – Should be equal?

• Fair share [open issue]
  – Long TCP flows
  – Short TCP flows
  – Many and few competing flows

Measure: min, max, average for the call duration?
Summary of Evaluation Guidelines

1. Avoiding Congestion Collapse
   – Does it require any changes to circuit breakers?
2. Stability
   – For stable link conditions does the sending rate oscillate, which may reduce the Quality of Experience
3. Media Traffic
   – Variable motion, series of variable talk spurts
4-6. Diverse Environments
   – Wired and wireless (802.11x, HSPA, GPRS)
   – Varying Path Characteristics
   – Reacting to Transient Events or Interruptions
7. Fairness With Similar Cross-Traffic
8. Impact on Cross-Traffic

Do we need a minimum set of guidelines?
Evaluation Scenarios (1/4)

• RTP on a fixed link

For convenience we show only 3 hops and unidirectional flows
Evaluation Scenarios (2/4)

• RTP flow on a variable capacity link
Evaluation Scenarios (3/4)

• Self-fairness

These links can have same or different path properties
Evaluation Scenarios (4/4)

- Competing with TCP
  - Short and long flows
  - Small and large number of flows
Open Issues

• Other metrics?

• Clarify Topology: Dumbbell and Bus-stop

• Clarify TCP and UDP flow parameters

• Define simulation/emulation parameters
  – Requirement document?