Evaluating Congestion Control for Interactive Real-time Media

draft-singh-rmcat-cc-eval-00

8. November 2012

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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**

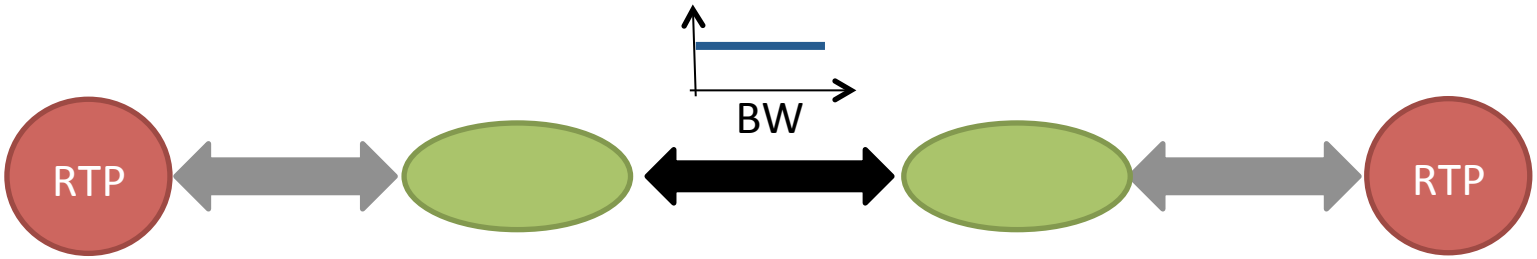
4-6. Diverse Environments
   - Wired and wireless (802.11x, HSPA, GPRS)
   - Varying Path Characteristics
   - Reacting to Transient Events or Interruptions

7. Fairness With Similar Cross-Traffic
8. Impact on Cross-Traffic

Do we need a minimum set of guidelines?

Evaluation Scenarios (1/4)

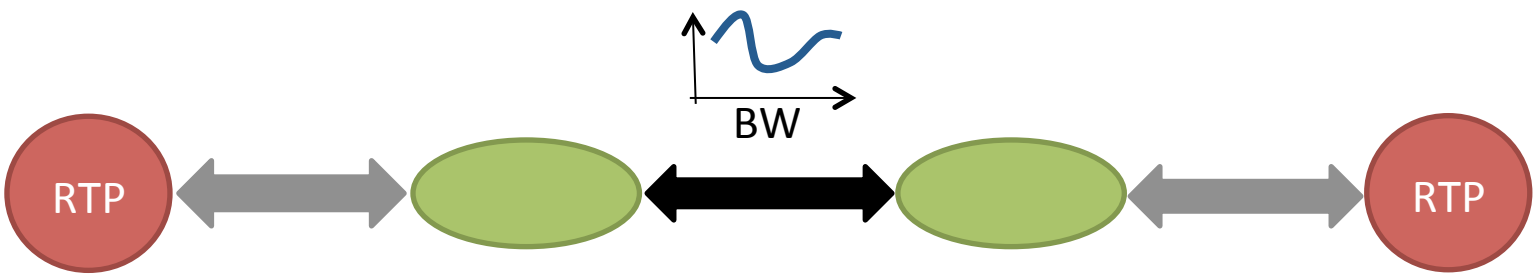
- RTP on a fixed link



For convenience we show only 3 hops and unidirectional flows

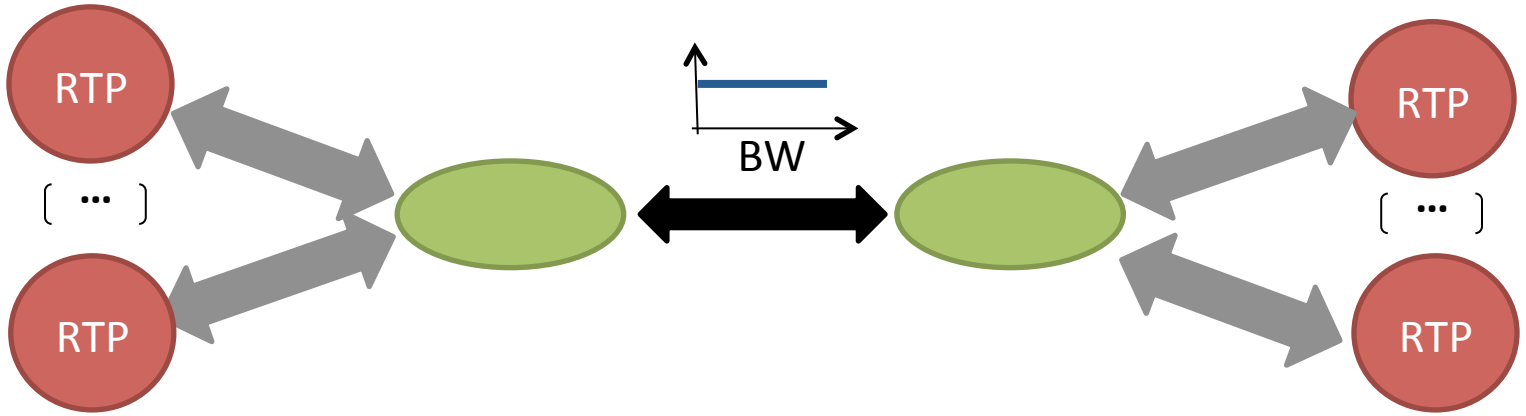
Evaluation Scenarios (2/4)

- RTP flow on a variable capacity link



Evaluation Scenarios (3/4)

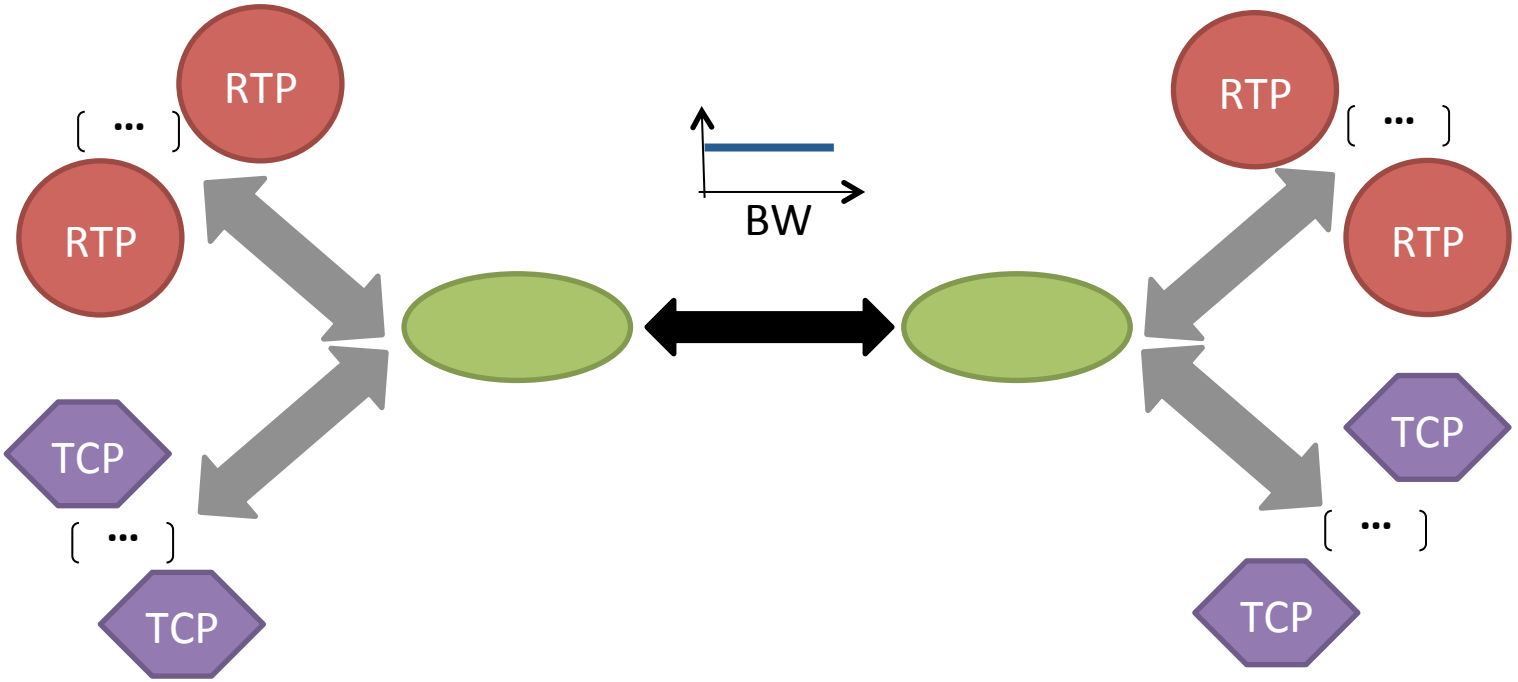
- Self-fairness



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?