



CN-SIM: A Baseline Simulation Scenario for Output- Generated Congestion



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V1.0

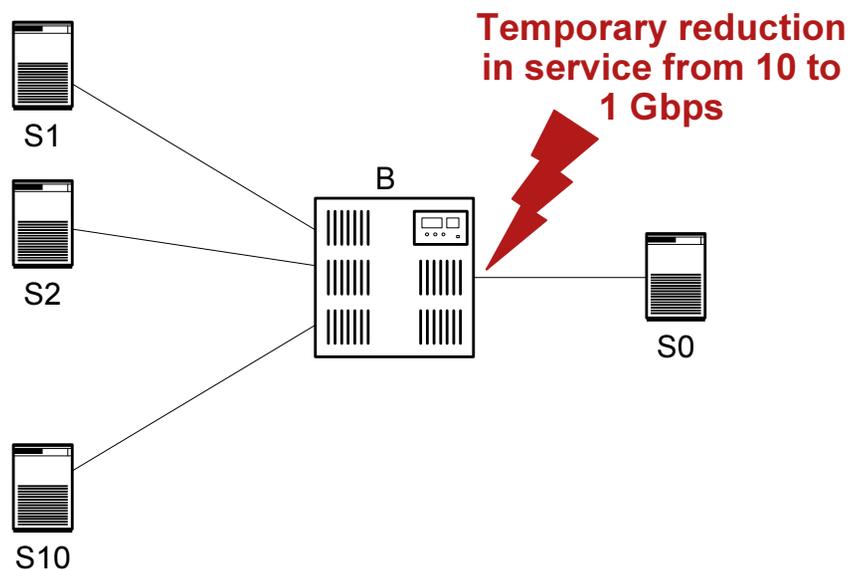
December 14th, 2006

Objective

- A first attempt at understanding how BCN deals with output-generated congestion
 - Metrics
 - Individual Throughput (qualitative)
 - Average Throughput (quantitative)

Simulation Environment

- Topology & Workload as per Mitch's proposal



- Traffic pattern

- Uniform (except self)
- Load 85%

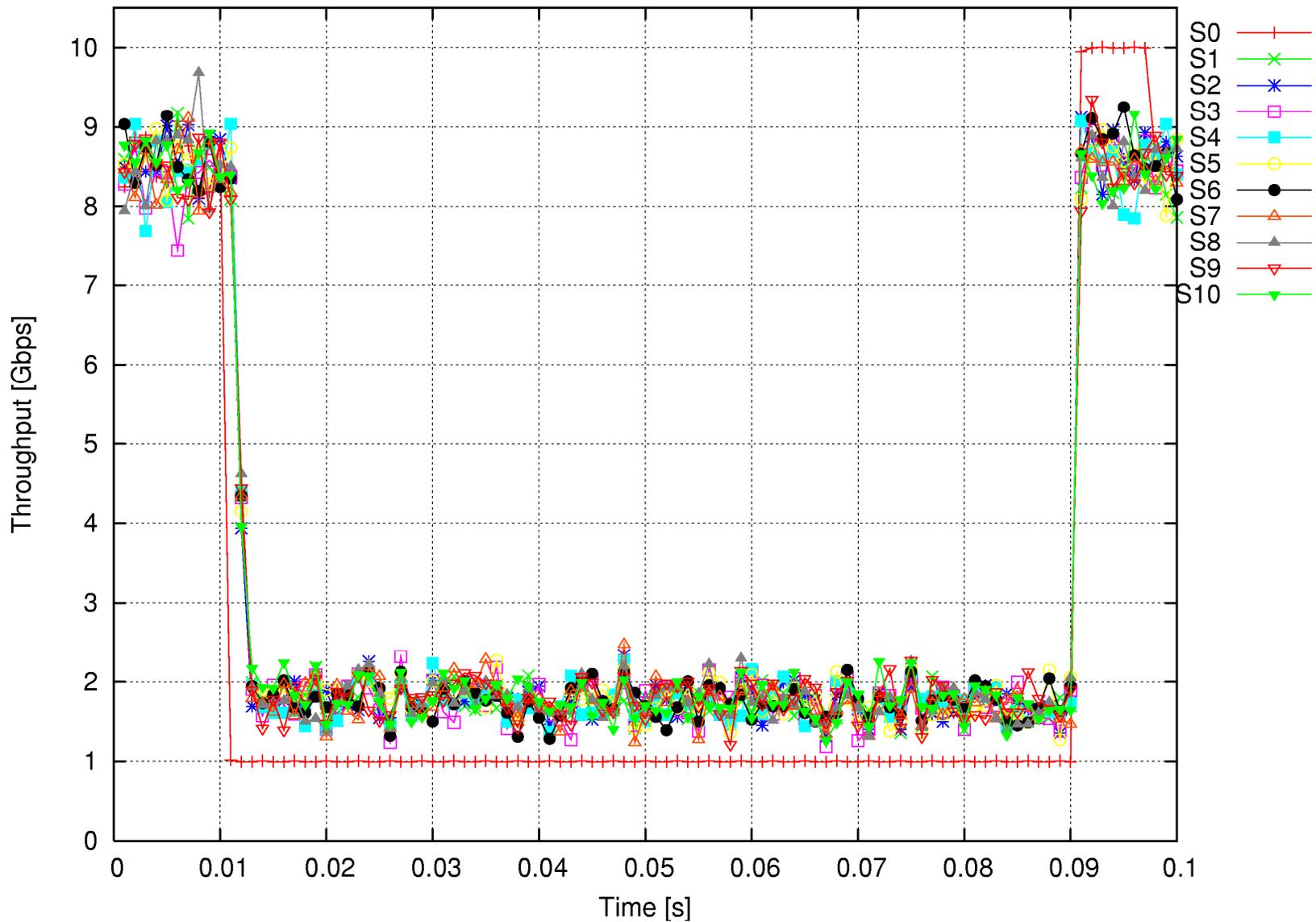
- Hotspot

- Duration: 80 ms, from $t_i = 10$ to $t_f = 90$ ms
- HS degree = 10
- HS severity = 8.5 : 1

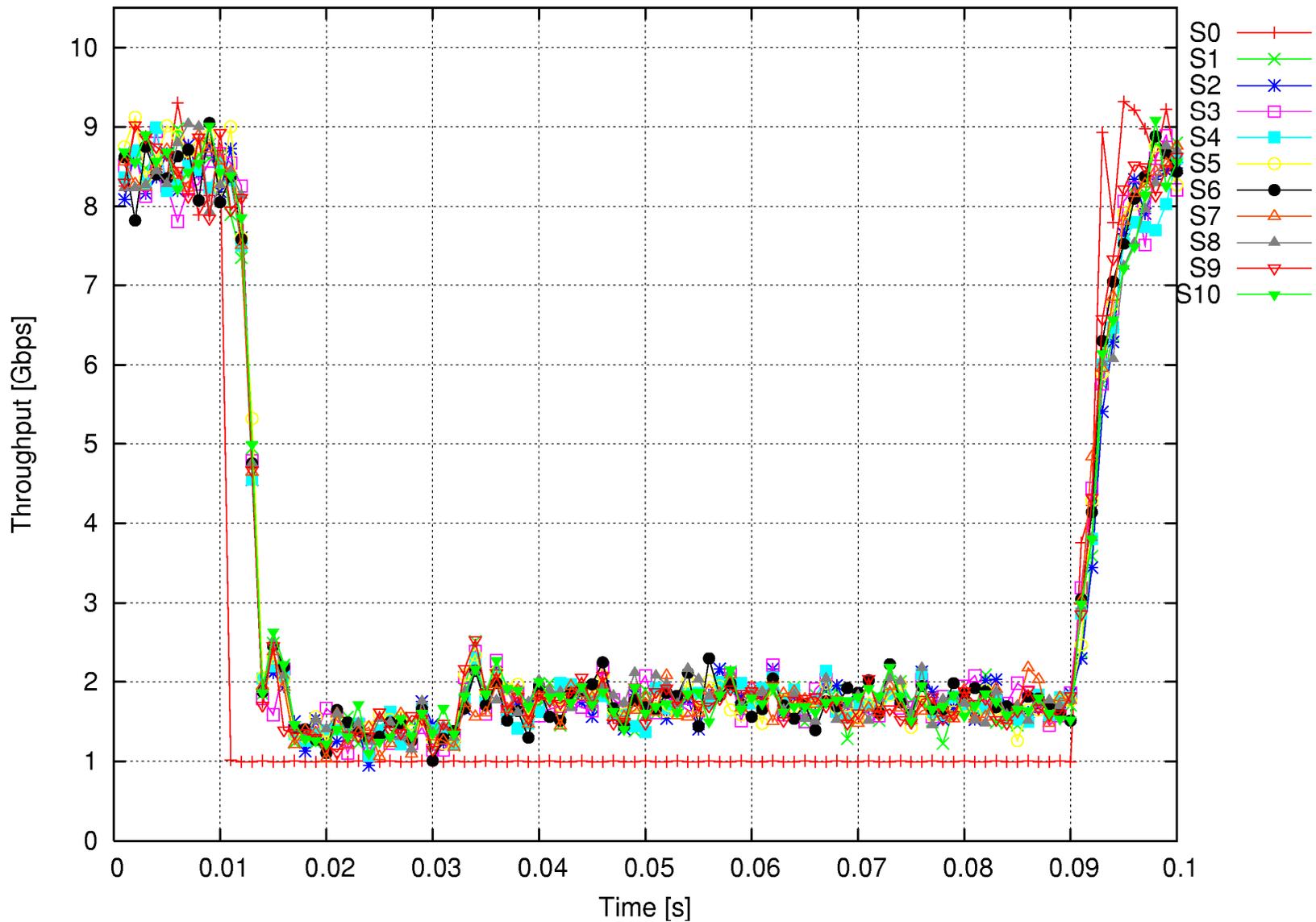
Simulation Environment (cont)

- Selective Pause enabled as per slide 9 of “*CN-SIM: A common Bridge Model*”
(<http://www.ieee802.org/1/files/public/docs2006/au-sim-bergamasco-common-bridge-model-101206v2.pdf>)
- Switch output buffer partitioned per input port
150 KB of space for each input → 2.4 MB for 16 ports
- BCN parameters as per Baseline Scenario
BCN-Max used in lieu of BCN(0,0)
- Simulation duration 100 ms

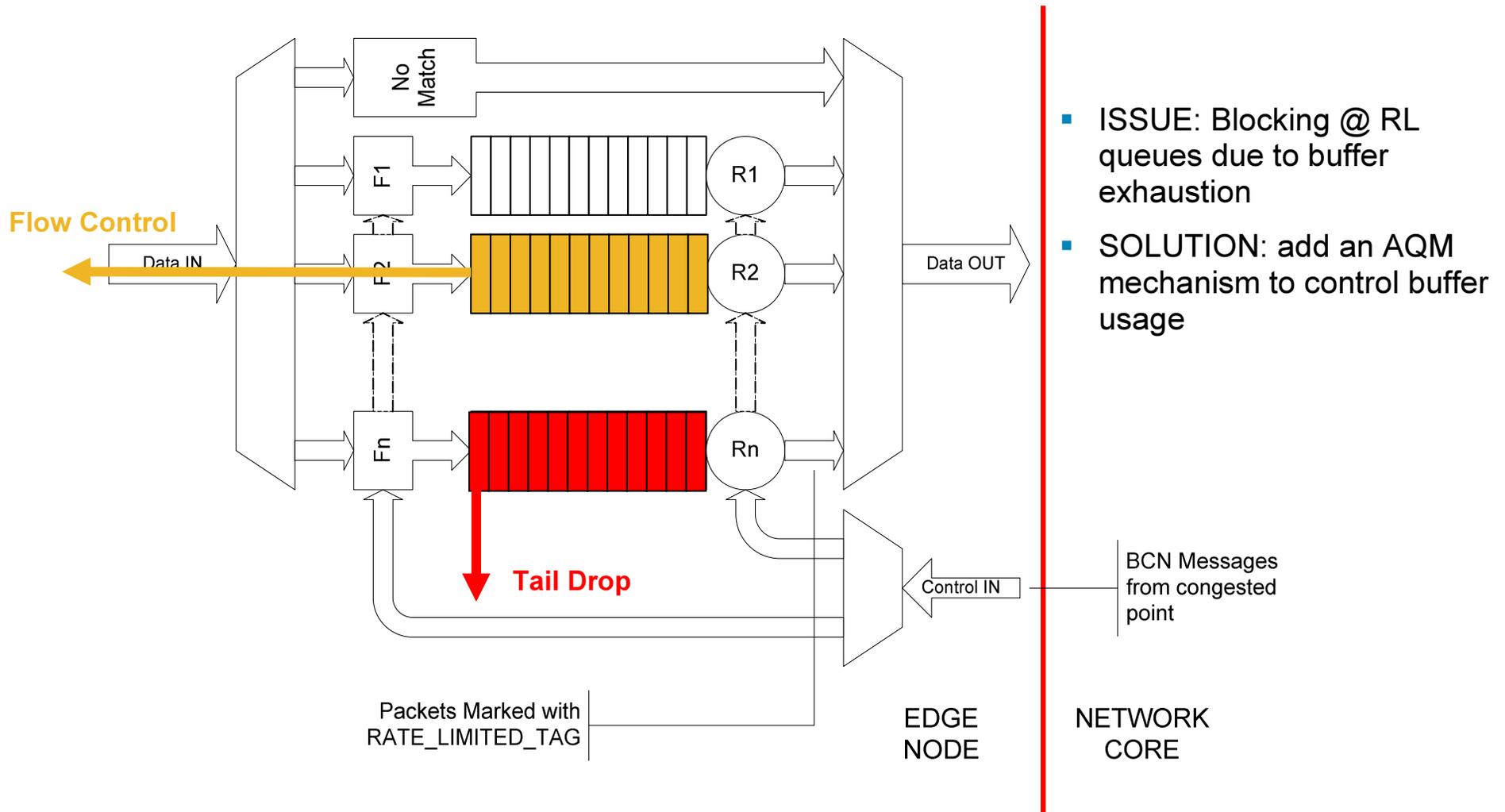
BCN Disabled



BCN Enabled



What is the problem? Blocking!!

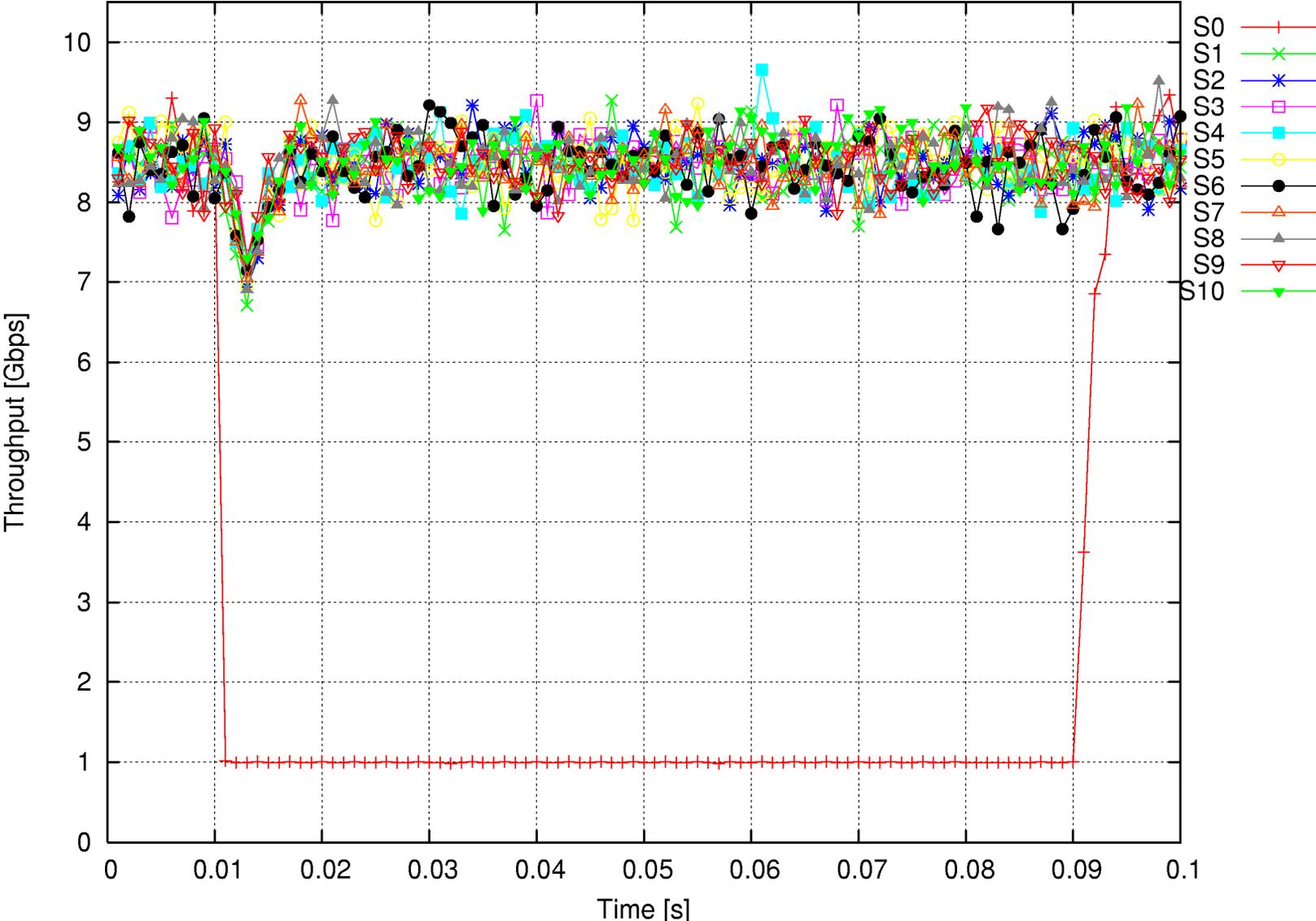


NB: This slide was already presented at the July 2005 Plenary Meeting in San Francisco

Possible Solution

- Partition the RL buffer on a per RL basis
- For traffic which can be dropped:
 - Tail-drop the excess traffic
 - Use an AQM scheme to deal with RL queue congestion (e.g., slide 7 of “*Updates on Backward Congestion Notification*” (<http://www.ieee802.org/1/files/public/docs2005/new-bergamasco-bcn-july-plenary-0705.ppt>))
- For traffic which cannot be dropped:
 - Use a selective backpressure to stop the application(s) whose flow(s) are mapped to the congested RL queue.

Non-Blocking BCN



Average Throughput

