



CN-SIM:
A qualitative comparison
of PAUSE, BCN(0,0),
and BCN-Max



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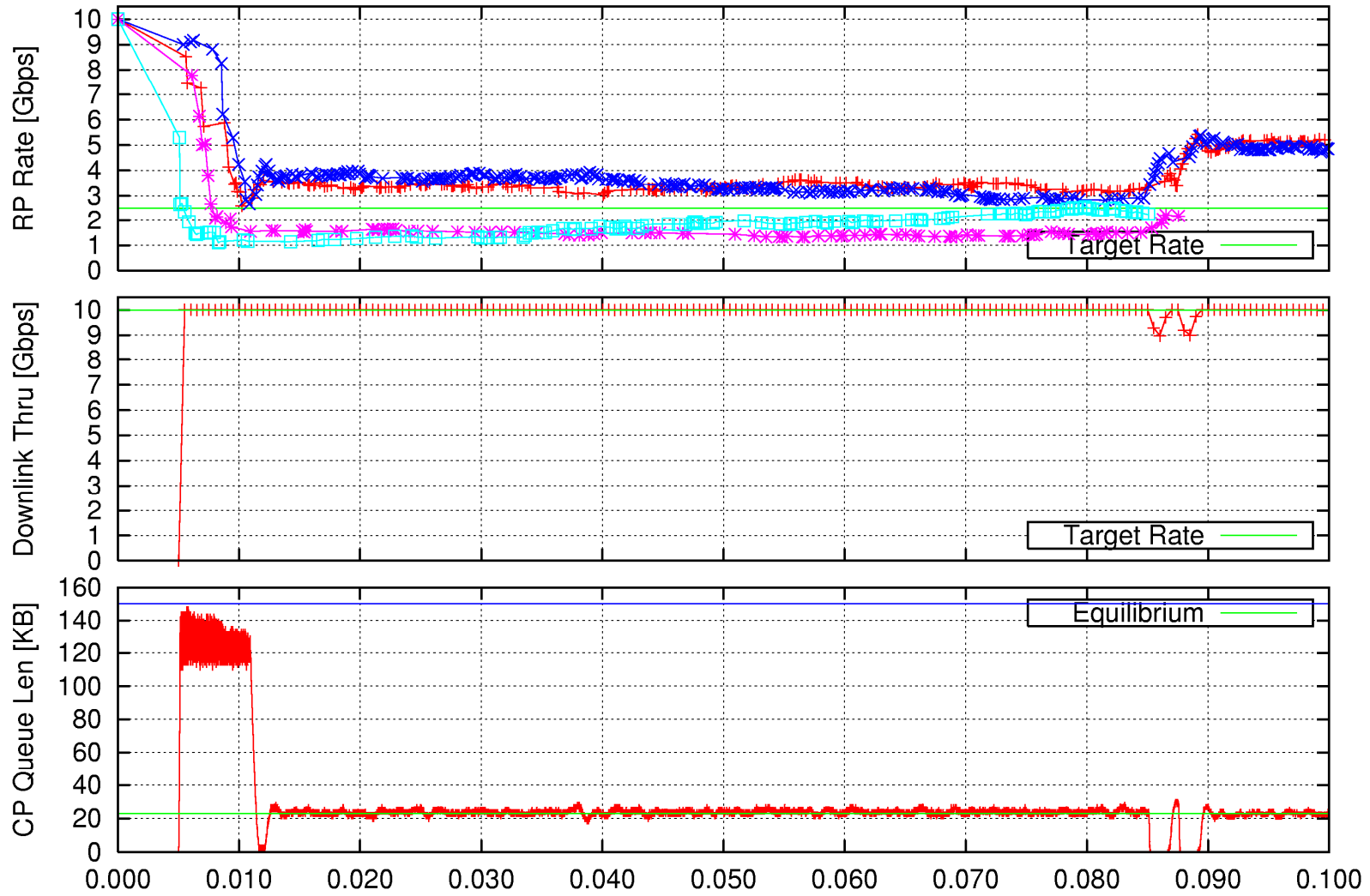
Objective

- Compare from a purely qualitative standpoint the following mechanisms:
 - Pause
 - Pause + BCN(0,0)
 - Pause + BCN-Max
- Simulation Environment
 - Topology, workload, configuration, and parameters as per Baseline Simulation Scenario

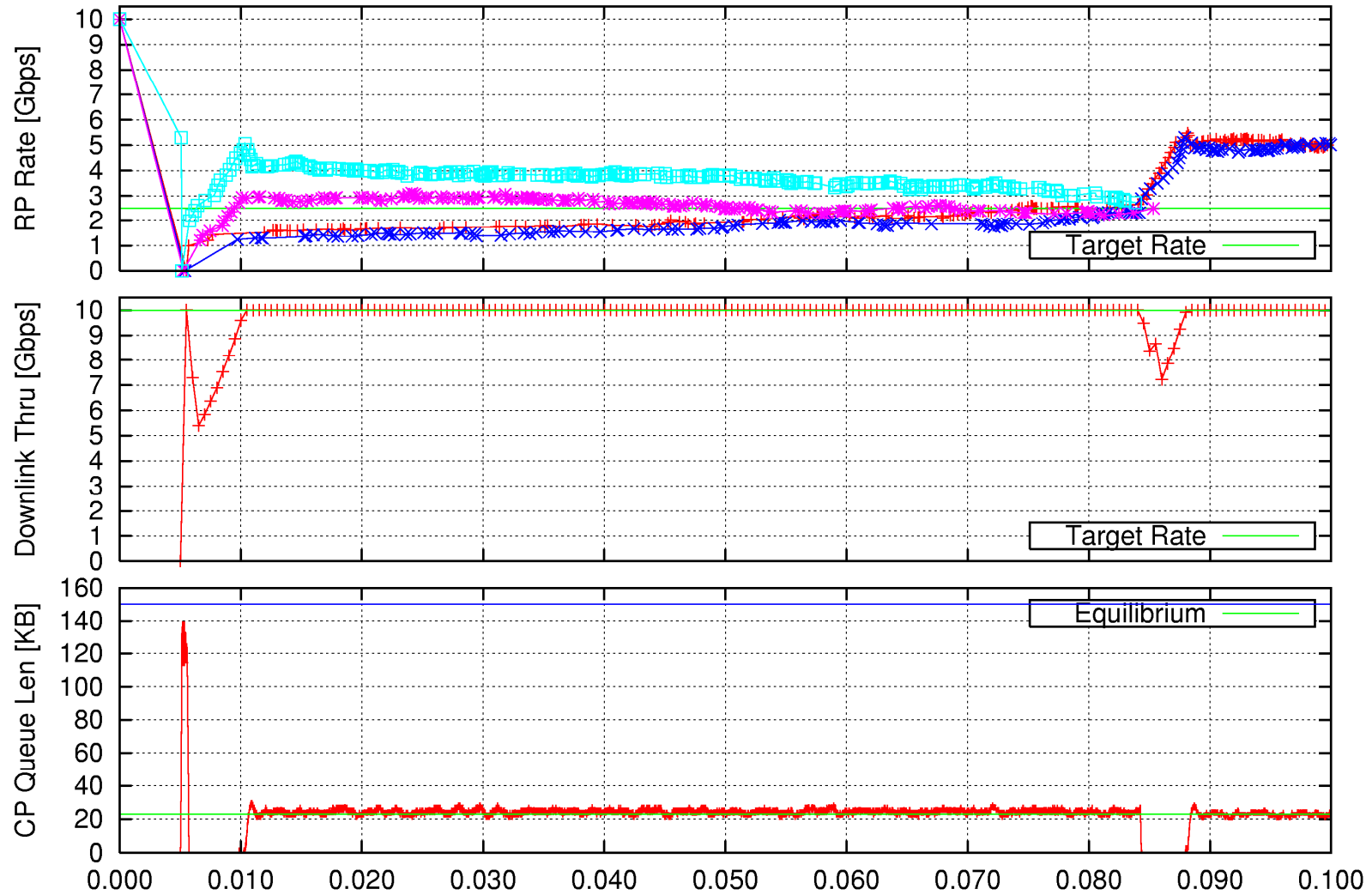
Pause and Pause + BCN(0,0)

- Both mechanisms have already been defined and studied in the Baseline Simulation Scenario
- Simulation results are repeated in this document for ease of comparison

Pause



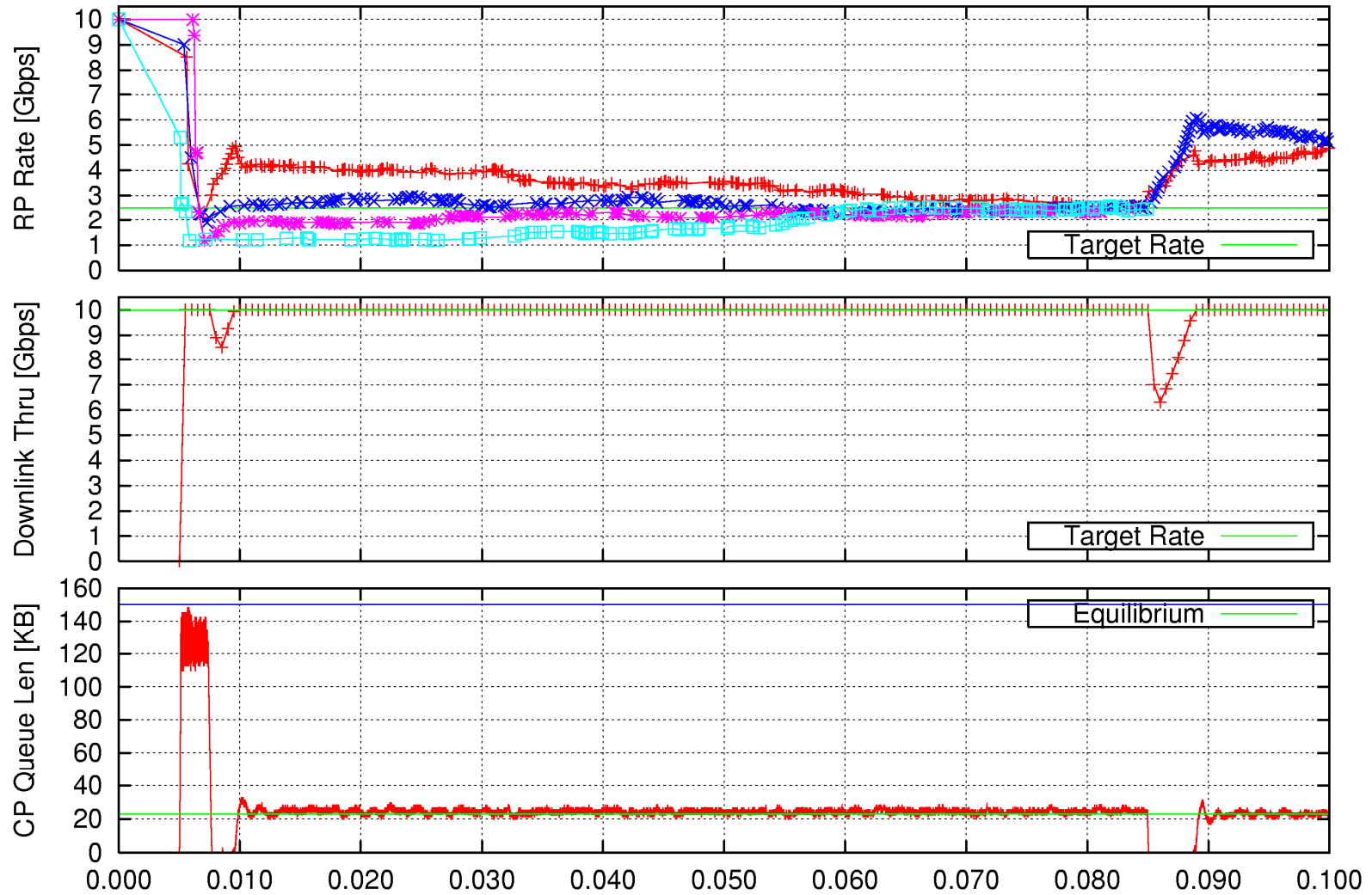
Pause + BCN(0,0)



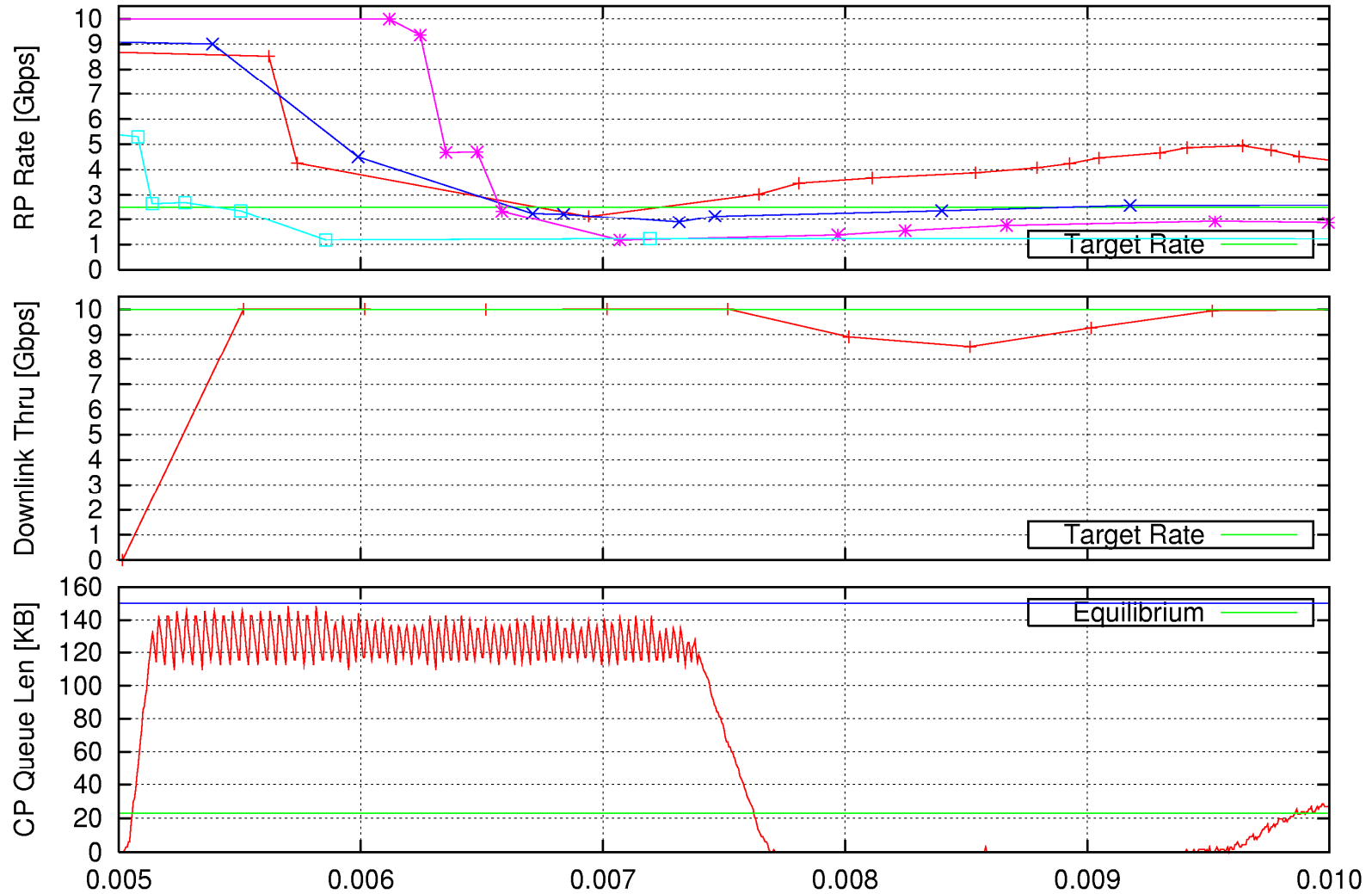
BCN-Max (Maximum negative feedback)

- Two flavors of BCN-Max
 - 1) When pause is asserted, turn any $BCN(x,y)$ generated into the maximum negative feedback $BCN(Q_{eq}, 2*Q_{eq})$
 - 2) Just like $BCN(0,0)$ (i.e., trigger based on Q_{sc}), but instead of sending $BCN(0,0)$ send $BCN(Q_{eq}, 2*Q_{eq})$
- Settings
 - BCN(0,0) disabled

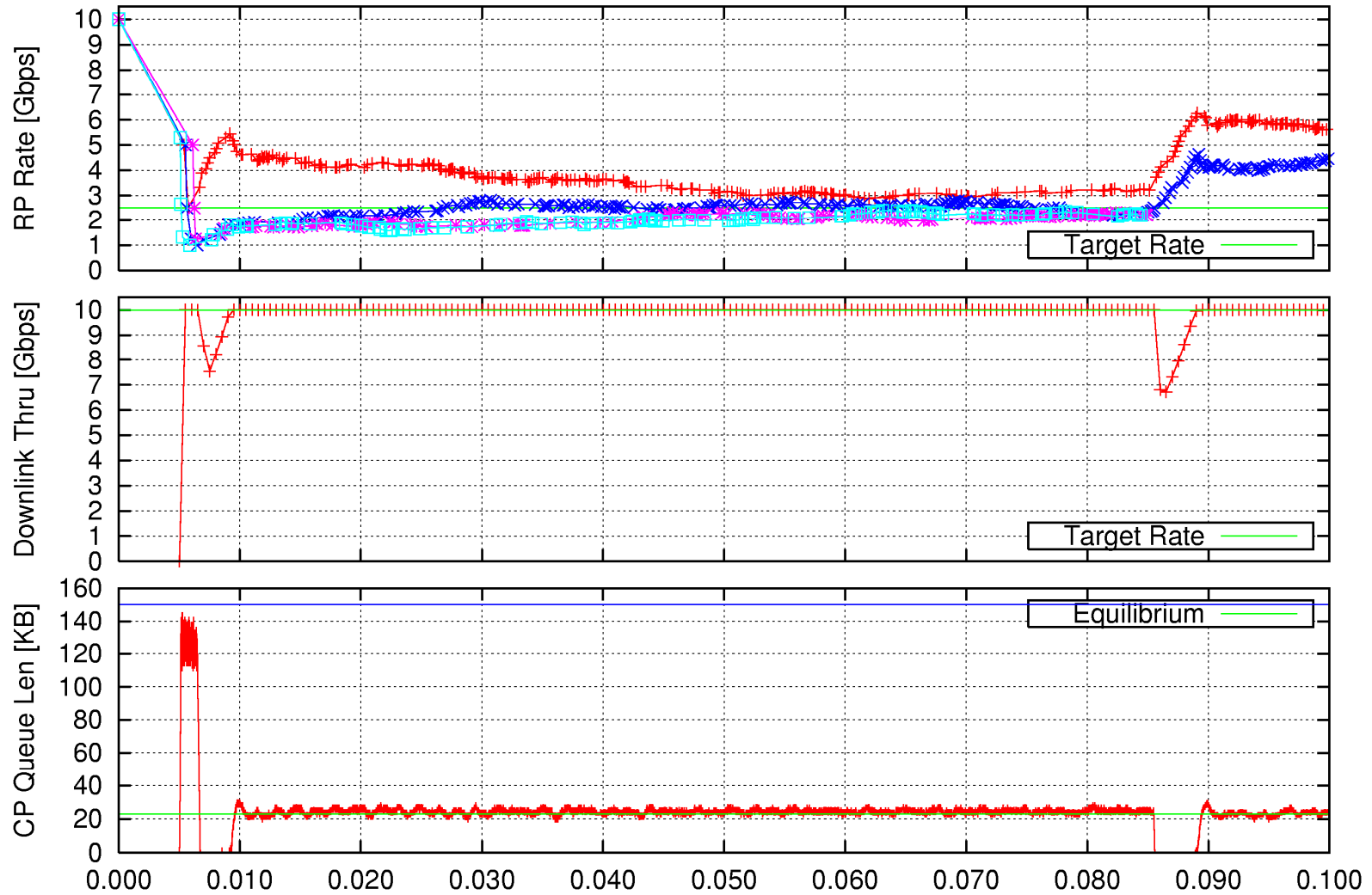
BCN-Max #1 (Pause-based)



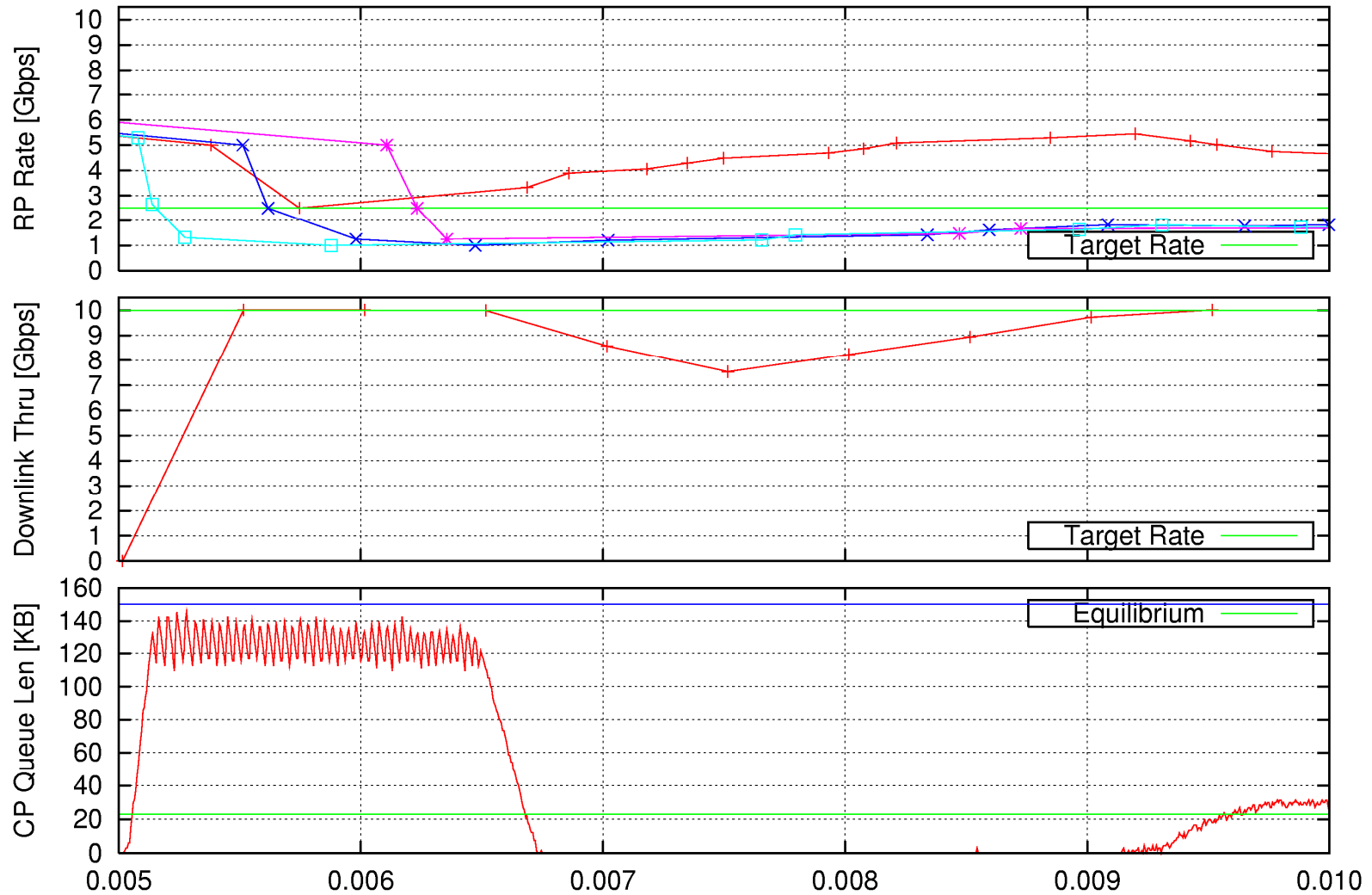
BCN-Max #1 (Pause-based)



BCN-Max #2 (Qsc-based)



BCN-Max #2 (Qsc-based)



Conclusions

- BCN-Max based on Qsc shows a better and more consistent behavior than BCN-Max based on Pause assertion
- Transient responsiveness can be improved (work in progress)
- Don't discount BCN(0,0) yet!
There may be situations where it is the only viable solution

