rLEDBAT experiments

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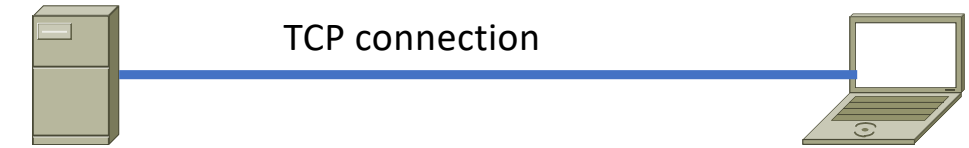
rLEDBAT

- Set of mechanisms that enable using LEDBAT++ at the receiver side for a TCP connection

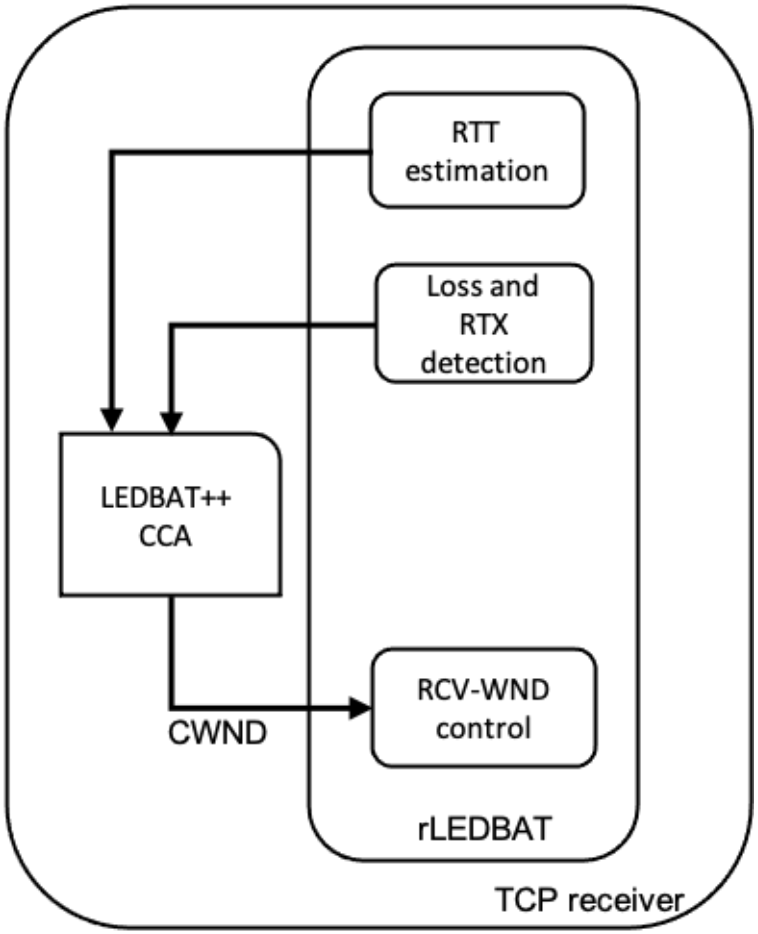


Server
Cubic/BBR/etc

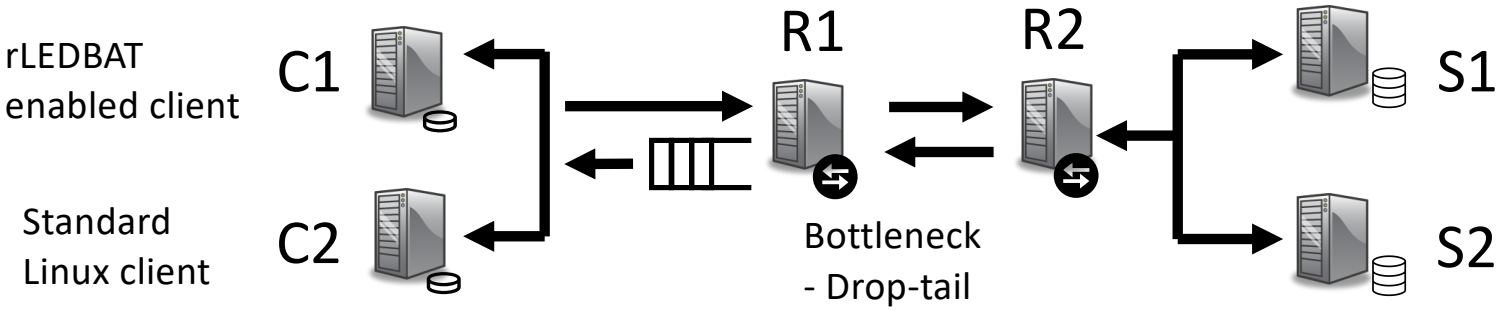
Client
rLEDBAT

- Use cases: LEDBAT(++) oblivious servers/CDNs/middleboxes/firewalls
- rLEDBAT implementation for Linux:

https://github.com/net-research/rledbat module



Experiment setup



Servers generating bulk transfer

Windows Server – LEDBAT++

Linux – Cubic, BBR (v1 & v2)

Experiments

- Goal: Compare rLEDBAT and LEDBAT++ performance
- Impact on a Constant Bit Rate communication
- Performance when running solo
  - Different RTTS, capacities, buffer larger/smaller than target (60ms)
- Inter rLEDBAT fairness
  - Simoultanous flows, late comer
  - Different RTTs, capacities
- Competition against Cubic
  - Different RTTs, capacities, buffer larger/smaller than target (60ms)
- Competition against BBR
  - Different RTTs, capacities, buffers, BBRv1 and BBRv2

Conclusions

- In all experiments, rLEDBAT performance is close to LEDBAT++
- Including known LEDBAT++ pitfalls
  - Struggle to seize capacity when running solo for large RTTs
  - Fail to yield when competing with BBR for RTTs smaller than T.
  - Reported in: M. Bagnulo & A. García-Martínez, An experimental evaluation of LEDBAT++, Computer Networks, 2022.