Validating the Behaviour of TCP-BBR Through Plots

Week 4

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Data collected from the Linux Kernel

The list of the useful parameters:

- **Bandwidth**
- **Congestion Window**
- **Delivery rate**
- **Pacing Gain**
- **RTT**
- **min RTT**
- **Congestion Window Gain**
- *Data in flight*

Observing the Various Phases of TCP-BBR

The various phases and their characteristics are as follows:

- **Startup Phase**
  - pacing_gain = 2.89
  - cwnd_gain = 2.89
- **Drain Phase**
  - pacing_gain = 0.35 (1/2.89)
  - cwnd_gain = 2.89
- **Probe BW**
  - pacing_gain follows a gain cycle of [1.25,0.75,1,1,1,1,1,1]
  - cwnd_gain = 2
- **Probe RTT (Only if required)**
  - cwnd_gain = 1

Gains (Pacing Gain and Cwnd gain)

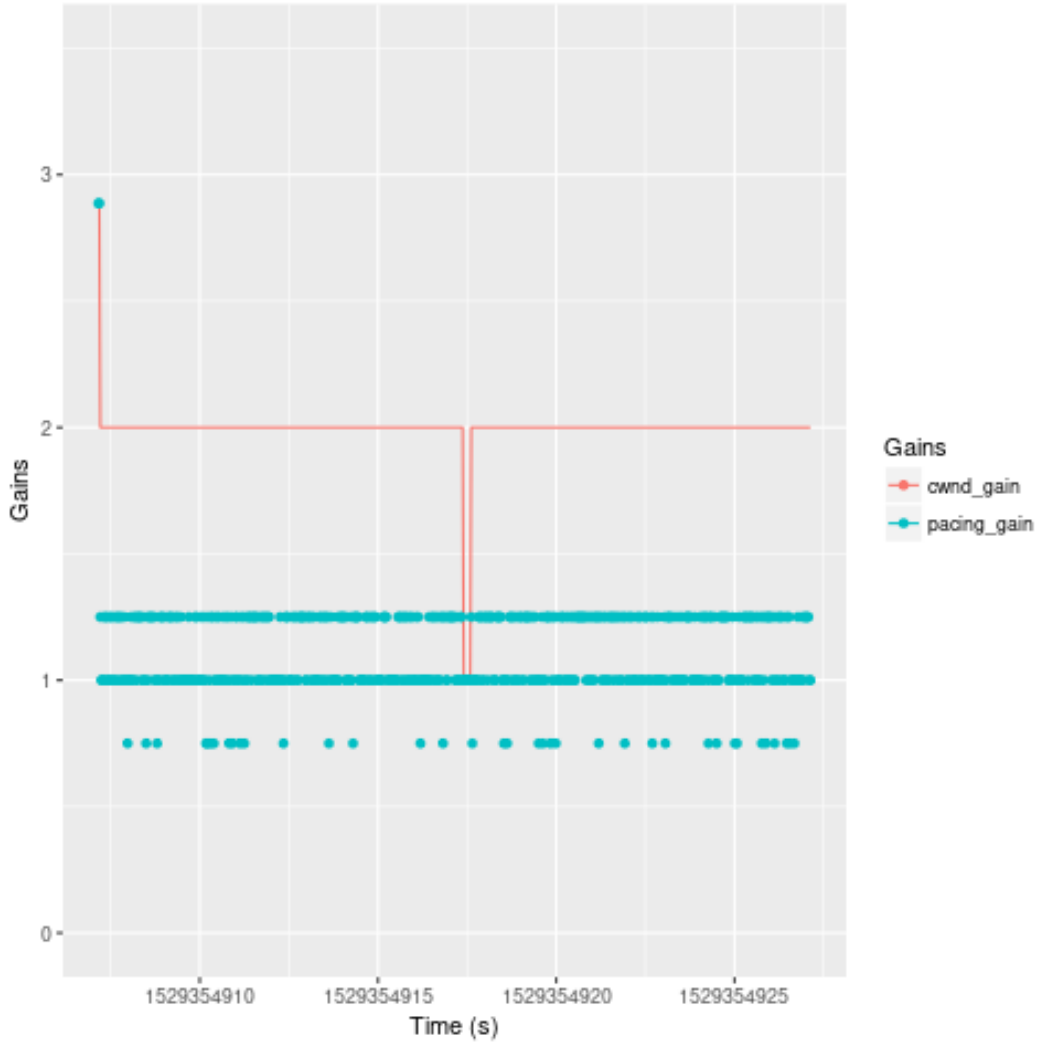


Figure: Gains vs Time

Observing the Probe RTT phase

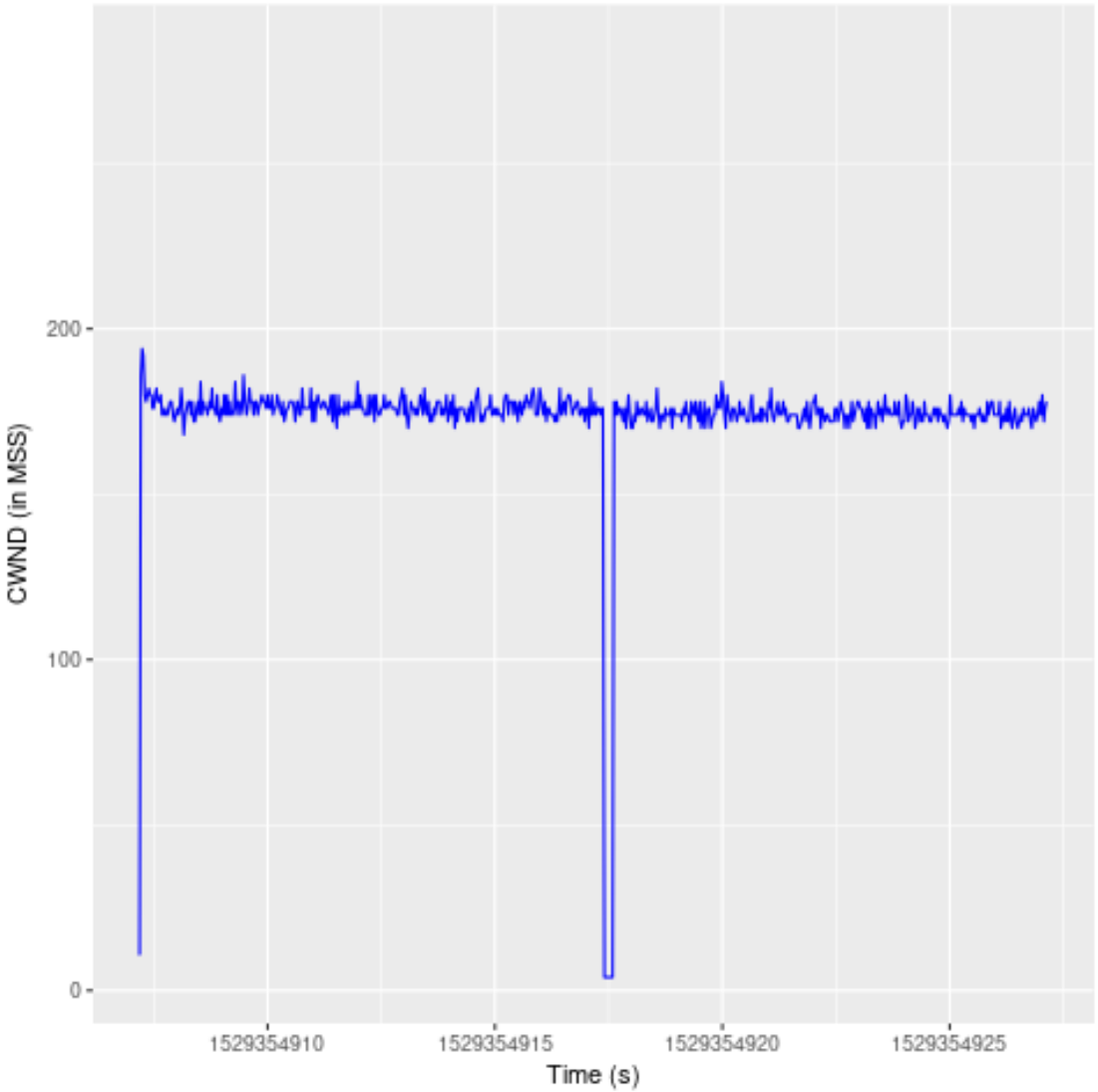


Figure: Cwnd vs Time

RTTs in a TCP Connection

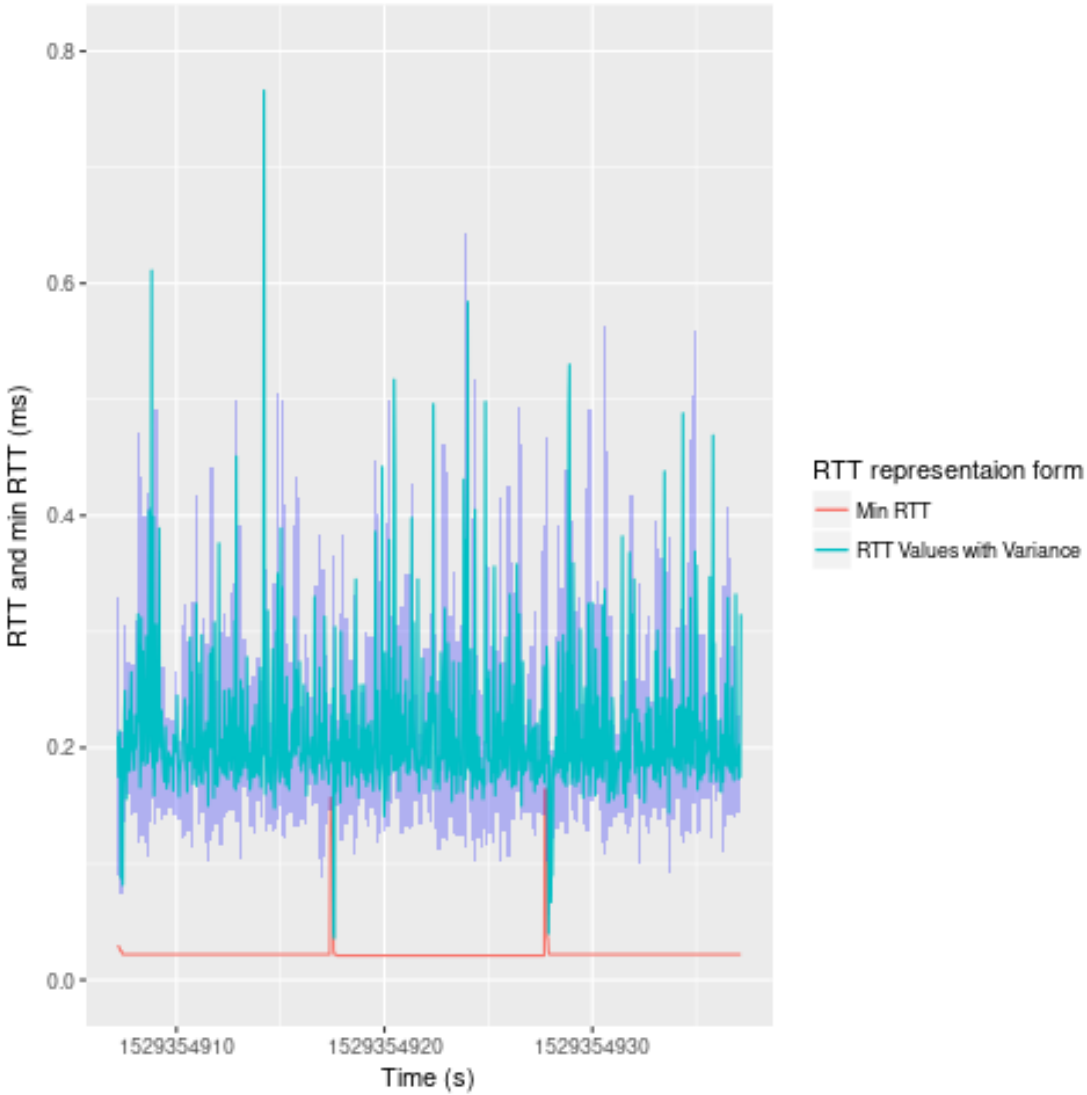


Figure: RTTs vs Time

Bandwidth of a TCP Connection

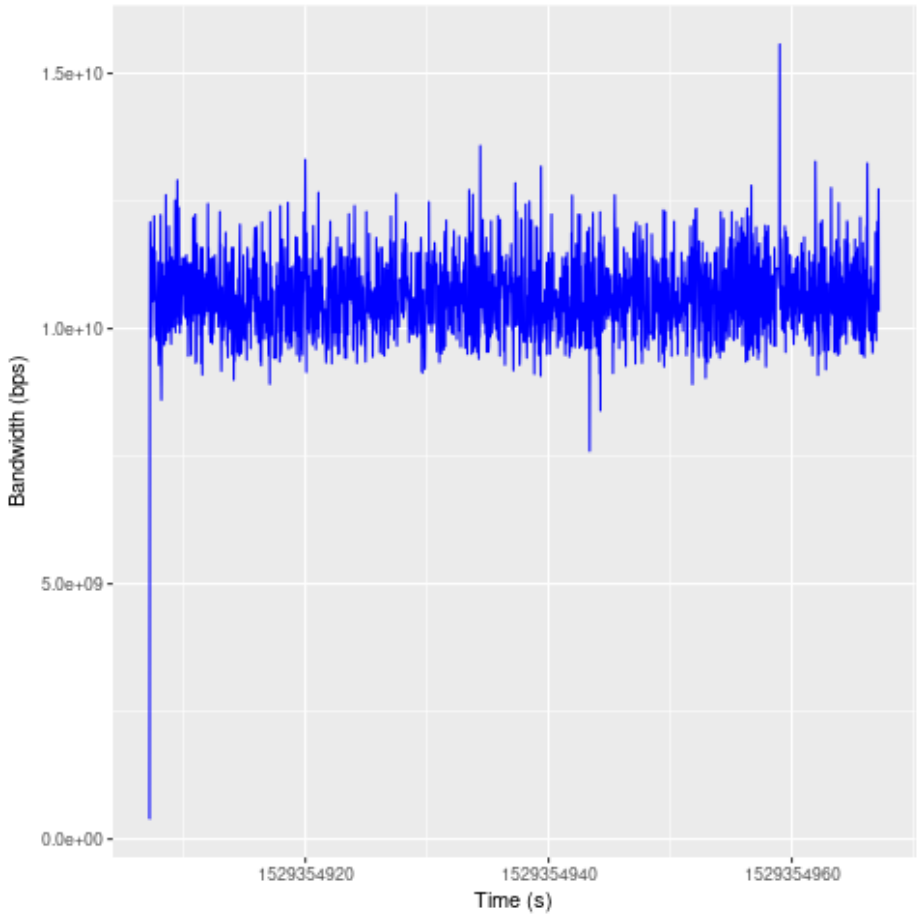
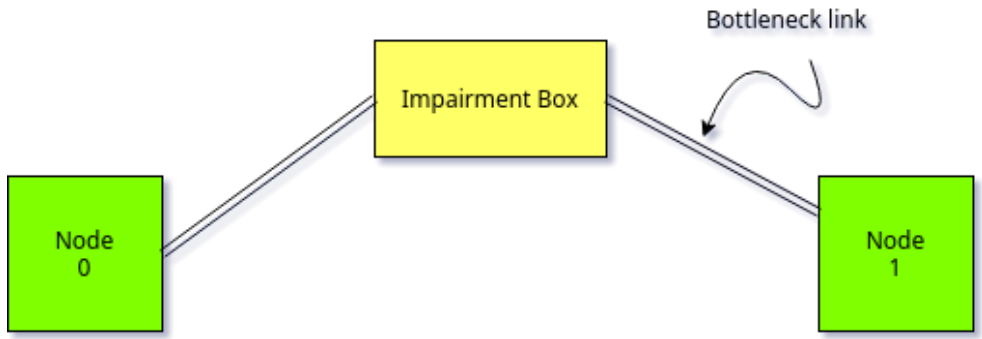


Figure: Bandwidth vs Time

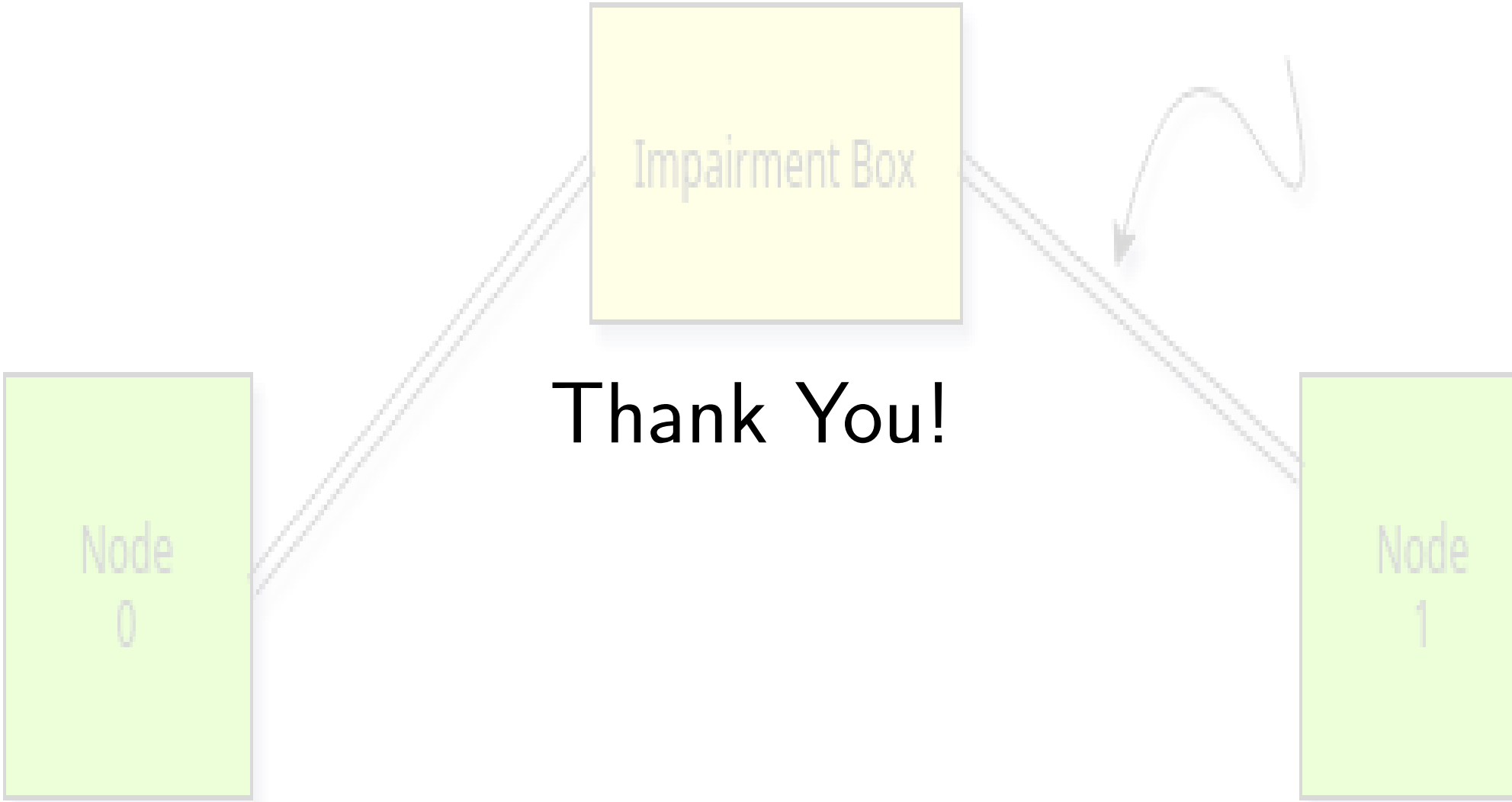
Work for Immediate future



Experimental Setup

- One **Bottleneck link** to build a buffer at the Impairment box.
- Add/modify delay to observe its effect on the TCP-BBR.

Questions & Suggestions



Thank You!

Experimental Setup