NS2
Project Proposal

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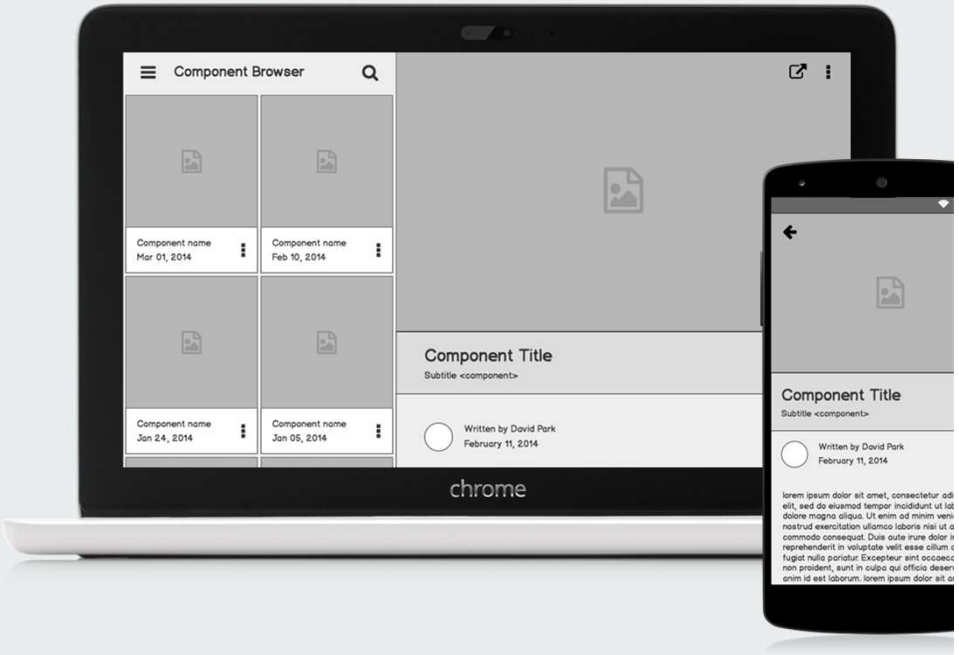
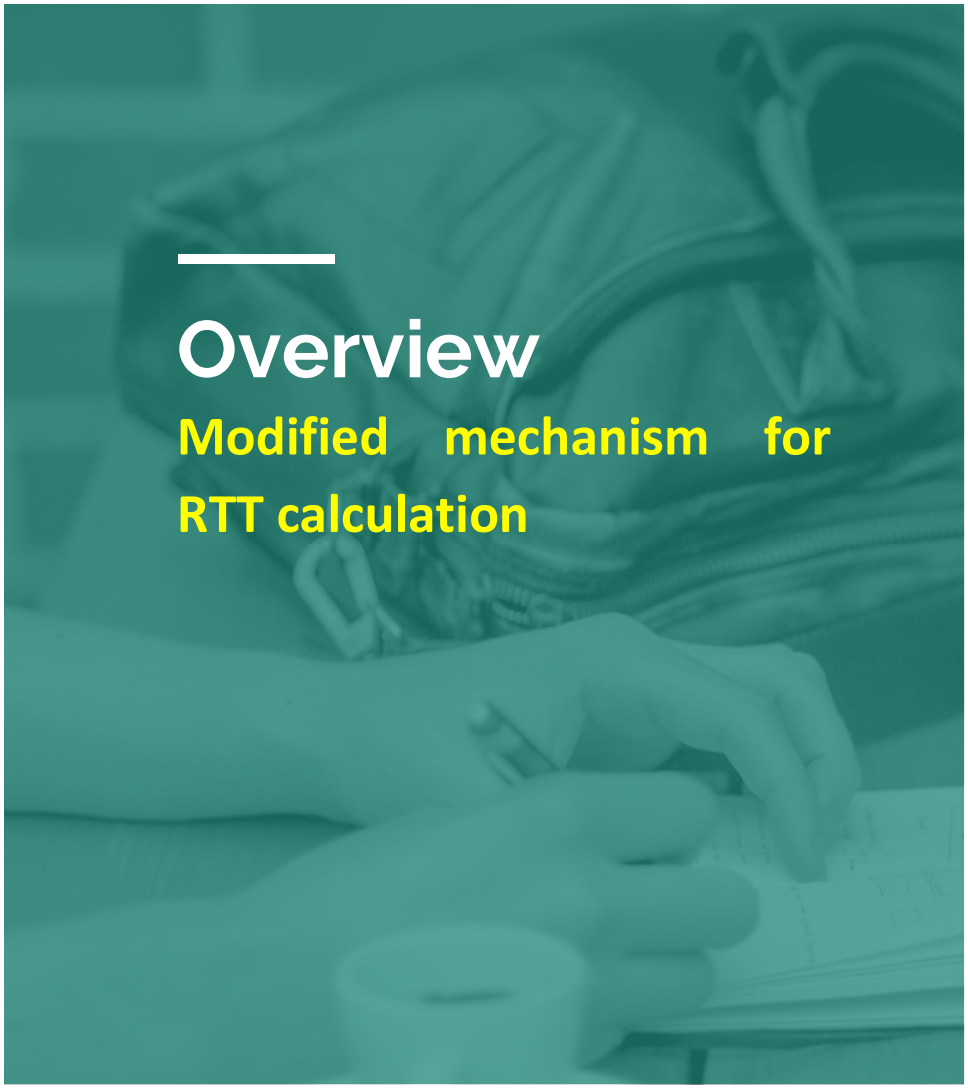


The Paper:

The Peak-Hopper: A New End-to-End Retransmission Timer for Reliable Unicast Transport

Link:
https://www.cs.helsinki.fi/u/gurtov/reiner/PeakHopper_draft0207.pdf



TCP Retransmission Time Out (RTO) and Round-Trip Time (RTT)

Two RTO algorithm runs in parallel.

One is Short-Term History RTO.

Another one is Long-Term History RTO.

Calculating RTO [From the Paper]

$$\delta = \frac{RTT_{sample} - RTT_{previous}}{RTT_{previous}} \quad \text{(Step 1)}$$

$$D = 1 - \frac{1}{F * S} \quad \text{(Step 2)}$$

$$B \leftarrow \max(\delta, D * B) \quad \text{(Step 3)}$$

$$RTT_{\max} = \max(RTT_{sample}, RTT_{previous}) \quad \text{(Step 4)}$$

$$RTO \leftarrow \max(D * RTO, (1 + B) * RTT_{\max}) \quad \text{(Step 5)}$$

$$RTO \leftarrow \max(RTO, RTO_{\min}) \quad \text{(Step 6)}$$

Explanation

Step 1 $\delta = \frac{RTT_{sample} - RTT_{previous}}{RTT_{previous}}$	Having collected a new RTT sample, RTT_{sample} (in the picture), we compare this value to the previous RTT sample collected, $RTT_{previous}$ (in the picture), as shown in Step 1. We call the normalized change between these two samples δ. This is the measure of the short-term changes in RTT.
Step 2 $D = 1 - \frac{1}{F * S}$	D is decay factor. D determines how rapidly the RTO is decayed. F is fade variable, which controls the speed of this decay (a high F gives a slow decay and a low F gives a high decay).

Explanation

Step 3 $B \leftarrow \max(\delta, D * B)$	We calculate a booster variable B. The booster variable determines how high the RTO should hop when a large RTT increase has been detected.
Step 4 $RTT_{max} = \max(RTT_{sample}, RTT_{previous})$	We set RTTmax to the maximum of the new RTT sample, RTTsample, and the previous RTT sample, RTTprevious. RTTmax is used to represent the short-term history of the RTT

Explanation

Step 5 $RTO \leftarrow \max(D * RTO, (1+B) * RTT_{\max})$	We set RTO to the maximum of a long-term history (represented by the term D*RTO) and the short-term history (represented by the term ((1+B)*RTTmax).
Step 6 $RTO \leftarrow \max(RTO, RTO_{\min})$	we ensure that the RTO does not fall below the minimum allowed RTO.

Expected Output

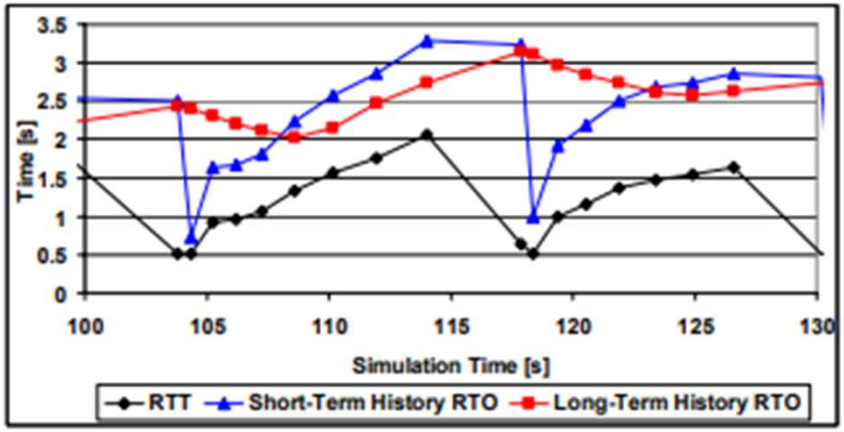


Figure 4. The PH-RTO is calculated as the envelope of the Short- and Long-Term History RTO curves

Thank you.