Weekly Report 2

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4th March, 2013

Papers Read

- Cheng, Yuchung, Nandita Dukkipati, and Matt Mathis. "Proportional Rate Reduction for TCP." (2012).
- Dukkipati, Nandita, Tiziana Refice, Yuchung Cheng, Jerry Chu, Tom Herbert, Amit Agarwal, Arvind Jain, and Natalia Sutin. "An argument for increasing TCP's initial congestion window." ACM SIGCOMM Computer Communication Review 40, no. 3 (2010): 27-33.
- Mathis, Matt. "Laminar TCP and the case for refactoring TCP congestion control." (2012).
- Langley, A., N. Modadugu, and B. Moeller. "Transport Layer Security (TLS) False Start." (2010).
- Langley, Adam. "Transport Layer Security (TLS) Next Protocol Negotiation Extension." (2012).
- Contavalli, Carlo, Sean Leach, Edward Lewis, and Wilmer van der Gaast. "Client subnet in DNS requests." (2012).
- Belshe, Mike, and Roberto Peon. "SPDY Protocol." (2012).

Summary

A lot of these papers are really well deployed already and being used in real world. Some of the important ideas learnt include :

- Using data-driven analysis to arrive at the optimal value of TCP's initial congestion window and supporting those decisions with justifications based on domain knowledge.

- Re-factoring and abstracting TCP Congestion algorithms such that they are easier to reason about and novel mathematically "tractable" algorithms can be proposed on top of such a model. Separation of concerns related to transmission scheduling and TCP congestion control is especially helpful as described in "Laminar TCP"
- A novel hybrid approach to TCP congestion control that adjusts its cwind size proportional to the network state rather than being too aggressive or too passive(existing older congestion control algorithms).
- TLS False start is similar to TCP Fast Open in the sense that it tries to save one RTT by sending data even before a TLS handshake is complete.