The Value of Repeatable Experiments and Negative Results

- A Journey through the History and Future of AQM and Fair Queuing Algorithms.

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ABSTRACT

The Bufferbloat project was founded three and half years ago to explore solutions to why modern data networks became so slow when loaded. We set out to explore the literature, and code, from the earliest days of the Internet to today, to try and find out what had gone wrong, and to find ways to fix it. A result of that effort (so far!) has been a renaissance in interest in congestion control, and huge - orders of magnitude - improvements in network latency along the edge of the Internet, with deployable new algorithms and code. Surprisingly, we also made large improvements in simultaneous bidirectional goodput on asymmetric networks.

This talk goes into the history and future of Active Queue Management (AQM) and fair queuing algorithms, touches upon current work across the field and tries to identify useful techniques for exploring and designing future work that can scale.

Categories and Subject Descriptors

C.2 [**Computer Systems Organization**]: COMPUTER-COMMUNICATION NETWORKS

General Terms

Algorithms; Performance; Standardization

Keywords

Bufferbloat; Active Queue Management; Stochastic Fair Queuing; CoDel; fq_codel; WiFi; OpenWrt; Linux; MIPS; ARM

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Short Bio

Dave Täht is the co-founder of the Bufferbloat project.

He is also the architect of the CeroWrt reference home router project, which is a testbed for AQM and packet scheduling algorithms that anyone can use, in anything.

In prior lives, he worked extensively on VOIP technologies and in embedded Linux on handhelds and settops. He was involved in the very early days of wifi, ran network operations in multiple ISPs and service providers, and founded three companies along the way.

Presently, he is working with the IETF on standardizing some of the results from the Bufferbloat effort, and his present research is on speeding up modern wireless technologies such as 802.11ac and 802.11ak.

For fun, he surfs, and designs spacecraft, and spends excessive amounts of time in a hammock, thinking up new ways to annoy academia and industry into helping make the Internet faster, and better, for everyone.

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