Multipath TCP Congestion Control: from Theory to Implementation

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Abstract

Multipath TCP (MPTCP), an experimental IETF standard, has the potential to significantly improve application performance by transparently taking advantage of the increasingly available multiple network paths and multiple interfaces on user devices. In this talk we describe our recent research on MPTCP congestion control, which spans control theory and open-source implementation. We describe our Balia congestion control algorithm, a key feature of the new open-source v0.90 release of MPTCP Linux Kernel implementation, and review the theory behind its design that enables it to optimize performance tradeoffs. We highlight applications in wireless 5G, data centers and SDN-enabled networks. Ongoing research directions will also be discussed.

Bio

Anwar Walid is a Distinguished Member of Technical Staff with the Mathematics of Networks and Systems Research Department in Bell Labs (Murray Hill, N.J.). He also served as Director of Research Partnership and University Collaborations, Bell Labs Chief Scientist Office. He received the B.S. degree in Electrical and Computer Engineering from Polytechnic of New York University, and the Ph.D. in Electrical Engineering from Columbia University, New York. He has 13 patents granted and more than 10 pending on various aspects of networking and computing. He received Best Paper Award from ACM SIGMETRICS, IFIP Performance, and the IEEE LANMAN. He contributed to the Internet Engineering Task Force (IETF) and co-authored RFCs. He is an associate editor of IEEE/ACM Transactions on Cloud Computing and IEEE Network Magazine, and was associate editor of the IEEE/ACM Transactions on Networking (2009-2014). He served as Technical Program Co-chair of IEEE INFOCOM 2012. Since 2009, he has been an adjunct Professor at Columbia
University Electrical Engineering department. Dr. Walid is an IEEE Fellow and an elected member of the IFIP Working Group 7.3.

Faculty Host: Thu Nguyen