Corrections to "How Does TCP Generate Pseudo-Self-Similarity?"

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In this note we would like to clarify and amend a number of points made in [3].

One of the central points in [3] was that although TCP's exponential backoff algorithm can introduce noticeable correlations in traffic from individual flows, the resulting correlation structure is not self-similarity. The term "pseudo-self-similarity" was used to describe this correlation structure. This term, introduced in [4], was first used in [1] to describe the same correlation structure in TCP flows. An early version of our paper appeared as [2]. In [2], although we pointed out from simulations that the limited retransmission timeout (RTO) in TCP's exponential backoff causes effects only over "limited timescales," we did not make clear that TCP's correlation structure was not self-similarity. Adding this point was the principal improvement in [3] over [2].

In [3] we wrote that [1] "extended our model" which does not credit [1] in two ways. First, [1] was the *first* to correctly and forcefully make the point that the correlation structure is not self-similarity due to limited RTO in exponential backoff. Second, the Markovian model in [1] was independently derived, is more detailed, and can be used to illustrate the correlation structure of both exponential back-off and congestion avoidance phases of TCP.

We regret these inaccuracies in our paper.

1. REFERENCES

[1] D. R. Figueiredo, B. Liu, V. Misra, and D. Towsley. On the Autocorrelation Structure of TCP Traffic. Technical Report UMass-CMPSC-00-55, University of Massachusetts, Amherst, Computer Science Department, November 2000.

[2] L. Guo, M. Crovella, and I. Matta. TCP Congestion Control and Heavy Tails. Technical Report BU-CS-2000-017, Boston University, Computer Science Department, July 2000. Subsequently revised by Technical Report BU-CS-2001-014.

[3] L. Guo, M. Crovella, and I. Matta. How does TCP Generate Pseudo-Self-Similarity? In *Proceedings of the International Workshop on Modeling, Analysis and Simulation of Computer and Telecommunications Systems - MASCOTS '01*, Cincinnati, Ohio, August 2001.

[4] S. Robert and J.-Y. L. Boudec. On a Markov Modulated Chain with Pseudo-Long Range Dependences. *Performance Evaluation*, 27&28:159–173, 1996.