

## **An Experimental Study of Multimedia Traffic Performance in Mesh Networks**

As far as I can tell this paper was published at the 2005 Workshop on Wireless Traffic Measurements and Modeling (<http://portal.acm.org/citation.cfm?id=1072430.1072435>).

This workshop was sponsored by USENIX and ACM SIGMOBILE, both well regarded organizations. I was not able to find this workshop on Kevin's stats website, so I guess it isn't one of the bigger workshops.

The main goal of this paper was to do performance evaluation and analysis of mesh networks, specifically with regards to multimedia (audio and video) transfer. The first parts of the paper talk about the equipment, test environment, testing procedures and evaluation procedures. The test was conducted at the UCSB campus, spread across five floors in the Eng. 1 Building.

The metrics used to evaluate the performance was packet latency, packet loss rate, inter-flow fairness and packet jitter. The main findings of the paper are: the capacity of the network is construed by the number of hops, the number of flows is most impacted by the packet sending rate and not the packet size, auto-rate adaption does not always lead to capacity improvement when bursty traffic is present, channel capture can result in unfairness among competing flows, packet jitter variations can be significant in current 802.11b networks, RTS/CTS does not typically help in improving performance of real-time traffic and finding an optimal value for the maximum retransmission number may help improve performance. Another thing I noted was that the paper mentioned that audio streams was not easier on the network than video, because audio has a high packet rate.

I would have liked to see tests with different types of audio and video streams, different bandwidth and packet rates. Before making conclusions like this it could also have been interesting to see more generic measurements not so focused on multimedia.

## **Application-Driven Cross-Layer Optimization for Video Streaming over Wireless Networks**

This article was published in IEEE Communications Magazine in January 2006. It discusses a Cross-Layer Design (CLD) specifically for video streaming over wireless networks. The CLD proposed in this article uses both a top-down and a bottom-up approach, that is, each of the layers optimize with regards to information from higher and/or lower layers. The layers they attempt to optimize in the suggested solution is the application-, data- and link-layer. They also discuss some of the costs associated with a CLD solution.

The Introduction chapter discusses previous work done with CLDs and introduces the basics of the authors solution. Then they go into detail on how their solution works by defining how the parameters will be evaluated/optimized, the authors decide on PSNR as the parameter to be optimized. Then they describe the simulations they did to evaluate their solution. And finally they show their results and discuss the costs and further work.

I have a few gripes with some of their decisions, they never talk about why they didn't include the Transport-layer in their CLD. And they never give any reference or proof as to why PSNR is the best way to measure perceived video quality. I also feel like they spend a lot of time describing their solution, but very little time on the evaluation of the solution, and they also don't do much comparison with other solutions. I would also have liked more discussion about the implementation costs and how feasible it would be to implement something like this in the real internet.