HTTP Video Streaming in the New Era of Cloud Mobile Media: Challenges and Solutions

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Abstract: Streaming video content over HTTP, and consequently, via TCP, has become one of the popular techniques for consumer entertainment in the past decade. Early deployments of HTTP streaming are based on the client-server model, in which the client opens a TCP connection to a video server and progressively downloads the video content. The adaptive HTTP streaming solutions require the clients to feedback bandwidth information to the server to modify the streaming session on-demand to maximize the HTTP streaming performance. In the new era of cloud mobile media, two paradigm shifting changes have occurred in which the video servers are now located in the cloud at one end while the clients use the mobile devices to access and view the video content at the other end. These two fundamental changes pose significant challenges because (1) adaptive HTTP streaming now needs to assemble video contents from multiple servers in the cloud, and (2) the traditional client-server model does not work for mobile device users whose connection to the cloud-based video servers is centrally controlled by the wireless access networks. In this talk, several challenging technical issues will be investigated and corresponding solutions will be illustrated. It will be demonstrated that innovative techniques can be designed to resolve these challenging issues and achieve much improved HTTP video streaming performance in the new era of cloud mobile media.



Biography: Chang Wen Chen is a Professor of Computer Science and Engineering at the University at Buffalo, State University of New York. He has been Allen Henry Endow Chair Professor at the Florida Institute of Technology from July 2003 to December 2007. He was on the faculty of Electrical and Computer Engineering at the University of Rochester from 1992 to 1996, on the faculty of Electrical and Computer Engineering at the University of Missouri-Columbia from 1996 to 2003.

He has been the Editor-in-Chief for IEEE Trans. Multimedia since January 2014. He has also served as the Editor-in-Chief for IEEE Trans. Circuits and Systems for Video Technology from 2006 to 2009. He has been an Editor for several major IEEE Transactions and Journals, including the Proceedings of IEEE, IEEE Journal of Selected Areas in Communications, and IEEE Journal of Journal on Emerging and Selected Topics in Circuits and Systems. He has served as Conference Chair for several major IEEE, ACM and SPIE conferences related to multimedia video communications and signal processing.

He received his BS from University of Science and Technology of China in 1983, MSEE from University of Southern California in 1986, and Ph.D. from University of Illinois at Urbana-Champaign in 1992. He and his students have received eight (8) Best Paper Awards or Best Student Paper Awards over the past two decades. He has also received several research and professional achievement awards, including the Sigma Xi Excellence in Graduate Research Mentoring Award in 2003, Alexander von Humboldt Research Award in 2009, and the State University of New York at Buffalo Exceptional Scholar – Sustained Achievement Award in 2012. He is an IEEE Fellow and an SPIE Fellow.