

CALL FOR PAPERS
IEEE Journal on Selected Areas in Communications
Advances in Peer-to-Peer Streaming Systems

Peer-to-peer (P2P) file sharing, emerging with Napster in 1999, has become increasingly popular, accounting for as much as 70% of Internet traffic by some estimates. Along with the widespread adoption of broadband residential access and the increasing demand of multimedia service over the Internet, we are now witnessing the emergence of a new class of popular P2P applications, namely, P2P audio and video streaming. Popular P2P video streaming applications have successfully demonstrated the support of thousands of concurrent peers per channel at bit rates in excess of 400 kbps. While traditional P2P file distribution applications are targeted for elastic data transfers, P2P streaming focuses on the efficient delivery of audio and video content under tight timing requirements. Still in its infancy, both live and on-demand P2P streaming present many research challenges.

To date, a number of architectures have been suggested by using either the tree-based push approach (e.g., Narada and SplitStream) or the mesh-based pull approach (e.g., CoolStream) which basically divides the media content into blocks for trading among peers. Further improvements are possible by taking advantage of advanced source and channel coding techniques such as layered coding, multiple description codes, fountain codes, and network coding. Given the initial success of P2P live streaming, questions still remain about how to extend the existing peer-to-peer models for more advanced applications with more stringent requirements such as video-on-demand services and how to support live and on-demand streaming in the same P2P network. Furthermore, with the wide deployment of wireless networks (WLAN, ad hoc, and 3G networks) and various wireless backhaul technologies (wireless mesh networks and WiMax), there are still open research challenges on how to realize a large-scale P2P media streaming over highly dynamic wireless channels and with user mobility.

This special issue solicits original state-of-the-art works addressing all aspects related to supporting peer-to-peer multimedia content distribution service from both theoretical and implementation aspects. It aims at putting together a collection of the latest high-quality research results in this area. Topics of interest include, but are not limited to:

- Novel live or on-demand P2P streaming architectures
- Topology design and locality aware P2P system
- Applications of advanced coding techniques
- Routing and QoS provisioning
- Content partitioning and block scheduling algorithms
- Peer-matching algorithms for efficient media distribution
- Traffic measurement and deployment experience
- Performance evaluation and analysis
- Security issues
- Digital rights management
- Wireless P2P streaming
- Cross-layer design

Prospective authors should follow the IEEE J-SAC manuscript format described in <http://www.jsac.ucsd.edu/>. All papers should be submitted in PDF format via email to [Danny H.K. Tsang](mailto:eetsang@ece.ust.hk), eetsang@ece.ust.hk, according to the following timetable. Along with the paper submission, authors are also requested to submit a cover letter via email to the above email address, which contains the paper title, authors with affiliations, and an abstract.

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