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# Computer Science Lecture Series

## Scalability of Multicast-based Internet Streaming Delivery: Implications from Workload and Topology Characterization

Mr. Shudong Jin

Boston University

12:30-1:30pm  
Monday, March 10, 2003  
Room 381 - Computer Science Dept.

### Abstract:

Internet streaming applications present a formidable strain on system resources. Multicast-based streaming delivery is an attractive approach to lower server and network resource requirements of such applications.

In the first part of this talk, I will demonstrate how characterization of streaming access workloads (and the understanding of client access patterns) is critical to the evaluation of server bandwidth requirements of multicast-based streaming delivery protocols. My analysis indicates that to provide immediate service to asynchronous clients, the lower bound on server bandwidth grows as the square root of request arrival rate if access is non-sequential, much higher than the logarithmic lower bound if access is sequential. In the second part of this talk, I will demonstrate how characterization of Internet topologies (and the understanding of power laws and small-world behavior) is important for quantifying the network cost of multicast delivery protocols. I discovered that small-world behavior can be caused by high variability of vertex degrees and by the preference of vertices to have local connections. Capturing these causes leads to more accurate evaluation of multicast efficacy.

If time permits, I will elude to my other projects on improving the scalability and efficiency of content delivery on the Internet, and will hint to directions for future work.

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