

*The University of Alabama  
Department of Computer Science  
Colloquium Series Speaker*

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# **"Supporting Content Distribution Applications in Overlay Multicast"**

**Monday, March 14th  
11:00 a.m., HO 108**

**Abstract:**

Multicast is an important communication paradigm supporting many distribution-based applications, such as video-on-demand, distance education, bulk data (software package, scientific data set) distribution, etc. In light of the reality that the deployment of IP multicast is slow and limited, overlay multicast is proposed. In this approach, end hosts organize themselves into an overlay network and relay data to each other via unicast connections.

In fact, other than instant deploy-ability, overlay multicast offers many unique advantages (abundant end-host resources, flexible network management, etc.) that fundamentally change the way distribution applications can be built. In this talk, I will support this argument by offering two case studies: (1) supporting on-demand media distribution by utilizing end-host caching spaces, and (2) augmenting multicast throughput by exploring the route diversity of overlay networks. First, I will present an overlay-based asynchronous multicast solution to address the asynchrony and non-sequentially of user requests in on-demand distribution applications. Analytical and experimental studies show our solution to be more scalable (server bandwidth cost) and efficient (network bandwidth cost) than IP-multicast-based solutions. Second, I will present a multi-tree multicast solution to increase the end-host receiving rate by maximally utilizing network capacity. At the end of this talk, I will discuss the development of layered peer-to-peer streaming, an application incorporating both of our solutions.