

Approaches to P2P Internet Application Development

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Abstract

Research in overlay and P2P networking has been tightly focused on fundamentals in the last few years, leading to developments on a range of important issues. The time has come to integrate these insights into existing and new systems. We see this as a vital part of the effort to influence the development of Internet services and arrive at a generalized architecture within which to design and construct overlay and P2P systems. This paper analyzes deployed P2P systems in the public and research arenas providing a taxonomy of issues and research. The paper then discusses the roles of overlays, P2P applications and network infrastructure and argues for a multi-dimensional view of systems development to describe the inter-relationships between these components. The parametric space in which one defines the role of a P2P application depends on the level of complexity we expect in that application, in comparison to the richness of the services provided by overlays and the network core. The contribution of the work presented here is to identify the key research issues in both academic and industrial environments and then suggest that an alignment of research activities and application development should focus on constructing a unified overlay architecture which ensures efficiency, fault tolerance and scalability