Using Proximity Measure to Improve Locality in Structured P2P Networks

Abstract

Peer-to-peer networks are generally characterized in terms of sharing computer resources without the intermediation of a centralized server. Interconnected nodes in peer-to-peer networks are able to communicate through a self organizing topology which runs as an overlay on top of the physical network. The mismatch problem between underlay and overlay network in such systems, known as locality problem, creates extra traffic in the network. Knowledge about peers in the underlay network can be used to find the solution of locality problem by defining a proximity measure. This paper proposes an algorithm to measure proximity of nodes in peer-to-peer networks. In this algorithm, we measure proximity among pairs of nodes in the overlay network. The main advantages of our algorithm are making use of two metric for proximity evaluation, and comparing our simulation results with a well known and a structured peer-to-peer network for a better assessment. Also using real data is proper for algorithm performance verification. Results on real data indicate a good performance for the algorithm with low overhead in time and traffic by.

References

- Y. Wang, et al., "Analyzing the characteristics of gnutella overlays," in
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Index Terms

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Keywords

Peer-to-peer Networks; Locality Problem; Binary Tree; Diamond Tree; Hypercube Topology