IMPROVEMENT OF SUCCESSFUL LOOKUP RATIO OF CHORD DISTRIBUTED HASH TABLE (DHT) IN WIRELESS COMMUNICATION ENVIRONMENT

Hung Nguyen Chan, Vinh Vu Thanh, Giang Ngo Hoang

TÓM TẮT:

One of the most critical problems of peer to peer (P2P) multimedia applications is the effect of churn to the efficiency of locating data items, which is a fundamental function of P2P networks. Especially, when P2P network extends to the mobile environment, churn effect may heavily affect the whole network and disrupt normal service. In this paper, we adapt a mechanism named atomic ring maintenance for Chord DHT to mitigate the effect of churn. By implementing two mechanisms: 1) a new locking mechanism to ensure the stability of neighbor nodes and eliminate concurrent joining and 2) modifying the pointer stabilization process, we try to mitigate the inconsistency of node pointers to increase DHT performance. Simulation results show significant improvement in successful ratio of lookups for modified Chord protocol in high churn condition while latency of successful lookups is as good as that in basic Chord. We also observed the phenomenon of topology partitioning under churn and investigate the correlation between successful lookup ratio and network size and churn rate