

Seeker Assisted Information Search In Mobile Clouds

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Abstract: The increase in the size of mobile cloud as well as the volume of information necessitates efficient search mechanisms for finding the searched information or the target node. In this paper, we focus on search mechanisms to retrieve information from within a mobile cloud in which nodes have intermittent connectivity and hence operate on a store-carry-forward manner. We design an opportunistic search scheme in which the searching node spreads a limited number of replicas of the query to the nodes it meets and these nodes, so called seekers, perform the search on behalf of the searching node. We assume that nodes are grouped into communities based on their interest profiles, and seekers use this community information to forward the data and the query to the right community – the community that is more likely to store the searched content. Since people store and search for similar information in the scope of their interest, the nodes in the same community as the searching node have higher probability to store the searched content. We model this seeker-assisted search scheme as a continuous time Markov process and analyze its performance under various inter-community/intra-community meeting rate, number of replicas, and network population. Our analysis shows that seeker-assisted search achieves a good balance between the search response time and search cost compared to the two extremes of epidemic search and direct delivery search.