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Abstract

In mobile environment, enhancing data consistency among data caches by mobile clients and data residing in a server is a big problem due to the mobility of nodes. Many updating schemes have been proposed to solve this problem. However, these updating schemes produce a high updating cost which consumes most of the limited resources of mobile clients as battery power. In this paper, to solve this problem, an adaptive hybrid data-based cache consistency scheme is proposed. The proposed scheme classifies the data items into push data items and pull data items. Push data items need to be updated periodically by their owners while pull data items are updated based on the request of their cache nodes. Also, the new scheme proposes two updating methods which are called separate path method and k-path tree method. In the first method, the updating mechanism uses separate paths to send update data to cache nodes of a certain data item. While the second method constructs a k path tree among cache nodes, then it sends the updating data through this tree, level by level. In addition, the proposed scheme does not only give the ability of sending update data to the owner of data, but also it gives this ability to any cache node that has the data items. Therefore, the proposed scheme can maintain the

data consistency, decrease unnecessary communication overhead, and reduce access latency. The results of conducted simulations have shown that the proposed consistency scheme is much better than existing methods.

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