Abstract

In this paper we propose an efficient location management strategy called the profile-based two-level pointer forwarding cache scheme to improve the overall performance of the wireless mobile networks. It uses the two-level pointer for location update and the profile-based cache for call delivery. Location update for each Mobile Terminal (MT) is managed by the nearby Visitor Location Register (VLR) until it crosses the threshold of the number of movements between Registration Areas (RAs). This reduces the frequency of accessing the remote Home Location Register (HLR) which eventually minimizes the location update cost by distributing its work. On the other hand, a profile of the MT’s calling pattern is maintained in HLR and it is copied in the VLR caches from where majority of the calls are generated. These caches are searched first to find out the called MT’s location in order to deliver a call. This delivery cost will be reduced if the location information is found in the caches since it does not have to access the remote HLR for searching the location information. The analytical modeling and numerical results show that the proposed method outperforms all other previous methods in terms of network signaling traffic load irrespective of the MTs’ mobility and calling pattern.
Reference


Index Terms

Telecom Mobile Communication
Key words

Pointer forwarding
profile-based cache
location update cost
call delivery cost
HLR
VLR