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Using LTE-Sim in New Hanover Decision Algorithm for 2-Tier Macrocell-Femtocell LTE Network

Authors : Umar D. M., Aminu A. M., Izaddeen K. Y.

Abstract : Deployments of mini macrocell base stations also referred to as femtocells, improve the quality of service of indoor and outdoor users. Nevertheless, mobility management remains a key issue with regards to their deployment. This paper is leaned towards this issue, with an in-depth focus on the most important aspect of mobility management -handover. In handover management, making a handover decision in the LTE two-tier macrocell femtocell network is a crucial research area. Decision algorithms in this research are classified and comparatively analyzed according to received signal strength, user equipment speed, cost function, and interference. However, it was observed that most of the discussed decision algorithms fail to consider cell selection with hybrid access policy in a single macrocell multiple femtocell scenario, another observation was a majority of these algorithms lack the incorporation of user equipment residence parameter. Not including this parameter boosts the number of unnecessary handover occurrence. To deal with these issues, a sophisticated handover decision algorithm is proposed. The proposed algorithm considers the user's velocity, received signal strength, residence time, as well as the femtocell base station's access policy. Simulation results have shown that the proposed algorithm reduces the number of unnecessary handovers when compared to conventional received signal strength-based handover decision algorithm.

Keywords : user-equipment, radio signal service, long term evolution, mobility management, handoff
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