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On Design of a Route-Optimized and Seamless HCoP-B Scheme for Nested Mobile Networks

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Abstract

In this paper, we first apply the hierarchical concept to the care-of prefix (CoP) scheme as HCoP and enhance HCoP with a novel binding update tree (BUT) structure as HCoP-B for network mobility (NEMO) management of the nested mobile network. Second, we further extend HCoP-B to support the seamless handoff of the nested NEMO. As compared to schemes such as reverse routing header (RRH), route optimisation using tree information option (ROTIO) and HCoP with numerical performance evaluations, HCoP-B achieves the shortest handoff latency and significantly reduces the consumed network bandwidth of global binding update messages for route optimisations (RO) of all correspondent nodes (CN) after the nested mobile network hands over to a new AR. Besides, HCoP-B also achieves shorter playback disruption time and buffering time than ROTIO does, which is the only one scheme mentioned how to achieve seamless handoff for the NEMO in the literature, for ongoing real-time multimedia applications whenever the mobile subnet in the old nested mobile network hands over to a new one.

Key words：Binding update tree; BUT; Care-of prefix; CoP; HCoP-B;

Hierarchical CoP; High performance networking; NEMO; Seamless handoff