A Numerical Framework for the Analysis of Handoff Delay Component in Proxy NEMO Environment

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Abstract

Network Mobility Basic Support Protocol (NEMO-BSP), the existing IETF standard for mobile network support, signifies an important portion for future heterogeneous wireless access networks. The reason is to provide continuous Internet connectivity during movement of Mobile Router (MR) in NEMO. This paper conducted a quantitative analysis on the handoff delay component of NEMO-BSP as well as its existing enhancements, i.e., Fast NEMO (F-NEMO) handoffs, and an Extension of F-NEMO (EF-NEMO), using the numerical framework. The mathematical scenario includes two access routers, one local home agent and up to 20 MRs that interrelate by two different wireless access networks are mainly WiFi and WiMAX. The analysis offers quantitative outcomes of the performance enhancements achieved via the proposed improvements concerning handoff delay gain, packet loss, and packet loss ratio. The numerical results assist in understanding the influence of link switching delay, mobility rate, and radius on the handoff delay gain, packet loss, and packet loss ratio. The results of this analysis will also be aided to pick an appropriate mobility management scheme for Proxy NEMO environment.

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