

Security enhancement of route optimization in mobile IPv6 networks

ABSTRACT

Mobile IPv6 (MIPv6) allows Mobile Node (MN) to be always addressable by its home address. Route Optimization (RO) is standard in MIPv6 to route packets between MN and Correspondent Node (CN) using shortest possible path. It provides better bandwidth and faster transmission. RO greatly increases the security risk. This is one of the main reasons that IPv6 is not implemented yet. However, IPSec is used to protect signaling between MN and Home Agent. In this paper, focus is given on enhanced security scheme in terms of RO based Test-bed evaluation experiment. An enhanced security algorithm is developed on top of MIPv6 RO to secure data and prepare a safe communication between MN and CN. This algorithm is able to detect and prevent the attacker from modifying the data with using an encryption algorithm by cost of little bit increase but tolerable delay. The real-time network Test-bed is implemented to prove the efficiency of proposed method. The experimental results show that the proposed security scheme increases the security performance of the network. This gives advantage of safe communication that can significantly improve the data security of RO while maintaining the quality of other network performance.

Keyword: IPv6 test-bed; Mobile IPv6; Route optimization; Security