

Distributed all-IP mobility management architecture supported by the NDN overlay

ABSTRACT

Two of the most promising candidate solutions for realizing the next-generation all-IP mobile networks are Mobile IPv6 (MIPv6), which is the host-based and global mobility supporting protocol, and Proxy MIPv6 (PMIPv6), which is the network-based and localized mobility supporting protocol. However, the unprecedented growth of mobile Internet traffic has resulted in the development of distributed mobility management (DMM) architecture by the Internet engineering task force DMM working group. The extension of the basic MIPv6 and PMIPv6 to support their distributed and scalable deployment in the future is one of the major goals of the DMM working group. We propose an all-IP-based mobility management architecture that leverages the concept of Named Data Networking (NDN), which is a distributed content management and addressing architecture. In the proposed solution, mobility support services are distributed among multiple anchor points at the edge of the network, thereby enabling a flat architecture that exploits name-based routing in NDN. Our approach overcomes some of the major limitations of centralized IP mobility management solutions, by extending existing routing protocol and mobility management architecture, to distribute the mobility management function of anchor points in the IP network and optimize the transmission path of mobile traffic.