Advances in Mobility Management for IP Networks

Editors:
Aisha Hassan Abdalla Hashim
Othman Khalifa
Shihab A. Hameed

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EMAIL: iiumprinting@yahoo.com

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MIPV6 EXTENSIONS

ABDULRHMAN MOHAMMED BIN MAHFODH, ABDI NASIR AHMED, AISHA HASSAN ABDALLLA HASHIM, OMER MAHMOUD, MD. RAFIQUL ISLAM

ECE Dept, Fac. of Eng., International Islamic Univ. Malaysia (IIUM), Jalan Gombak, 53100 Kuala Lumpur, Malaysia.

aisha@iium.edu.my

24.1 INTRODUCTION

The main objective of IP mobility support is to enable a mobile host to change its point of attachment to the Internet while still maintaining connectivity at the transport layerwhich usually assumes that a host address is permanent. A mobile host (MH), regardless of its location in the Internet, is always identified by its home address, which is its permanent address in its home network. While being attached to a so-called foreign network, an MH obtains a temporary address, which is defined as the care-of address (CoA) of the MH in the visiting network. The CoA is acquired by the MH.

A correspondent host, when receiving a BU, is then made aware of the mobile's CoA and can subsequently use this binding information to directly send its packets to the current position of the mobile. The CH uses the mobile's CoA as the destination address of the IPv6 packet and includes a routing header that contains the mobile's home address. When the mobile receives the packet, it copies the information contained in the routing header in the packet's destination address field before processing its content. Consequently, the packet will appear to have been sent to the mobile's home address.

24.2 MIPV6 EXTENSIONS

Mobile IPv4 (RFC2002) is the official IETF standard to support mobility in IPv4. When roaming, the MN detects its movement by listening to agent advertisements sent by the foreign agent (a dedicated Mobile IPv4 access router on each foreign link). When it attaches to a new foreign link, the MN first obtains a new care-of-address. This care-of-address can alternatively be a co-located address (i.e. this address is obtained through DHCP) or a forwarding address (i.e. this address of the foreign agent) Then, a Registration Request containing the binding between the permanent and the temporary addresses is sent to the HA.

The HA acknowledges with a Registration Reply, and records the binding in a table (Binding Cache). There is no routing optimization in this RFC, so packets sent by CNs always get routed to the home link of the MN where they are intercepted by the HA. The HA performs a lookup in its Binding Cache and encapsulates the packets to the MN's care-of-address. The packet is whether decapsulated by the foreign agent or the mobile node itself. Fig. 24.1 shows the architecture of MIPv4 [3, 5].