Abstract

Wireless local area networks (WLANs) are providing the most economical means of internet access. However, their access is very much limited. They can be deployed in a large scale by integrating them with cellular networks such as universal mobile telecommunication system (UMTS), general packet radio services (GPRS) etc. A seamless roaming between these two hetero networks can be ensured through mobile IP. But the two networks don’t have support towards mobile IP which requires the deployment of home agents and a protocol between the mobile nodes, home agents and foreign agents. Hence seamless roaming can be provided by incorporating Mobile IP support in 802.11 (WLAN) networks. The cellular networks require the home agent placement to be placed and the appropriate home agents to be assigned. The home agent placement and home address assignment are the issues for supporting Mobile IP for heterogeneous roaming. If the mobiles use a home agent (HA) that is deployed in a UMTS network when roaming in a WLAN network, the UMTS network may get overloaded with WLAN traffic. The solution to this problem is to dynamically assign an HA in the WLAN domain. Different architectures can be obtained by placing HA at different positions each having its own shortcomings, in which HA is placed between border router and GGSN that requires HA performing very high speed routing as fast as GPRS gateway signaling node (GGSN) which is practically not possible occurring in the existing architecture. To overcome these difficulties different architectures are proposed in this paper. In the first architecture the HA and GGSN is connected to the border router instead of tightly coupling the HA to the GGSN, and the second architecture is HA can be collocated with one of the GGSN in UMTS network and in the third architecture, GGSN is the default router of the
mobile nodes (MN) under its coverage area, the foreign agent (FA) is best collocated with the GGSN. Based on the observation of proposed architectures through performance metrics on packet overhead an attempt towards dynamic home agent assignment has been proposed.

Reference


Index Terms

Computer Science

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Key words

Home agent
UMTS network
optimum network performance
mobile IP

high-speed routing