SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Mobile Satellite Communications and Navigation Technology (6)

Author: Dr. Liye Zhao
DFH Satellite Co. Ltd., China

A NEW ARCHITECTURE FOR CONVERGED MOBILE SATELLITE COMMUNICATION SYSTEM AND TERRESTRIAL MOBILE COMMUNICATION SYSTEM FOR PERSONAL COMMUNICATIONS

Abstract

Mobile Satellite Communication System (MSS) can provide a global seamless coverage, especially for sea and rural areas where Terrestrial Mobile Communication system (TMS) is unavailable. It is also impervious to disasters such as earthquakes and floods. However, the cost of a stand alone MSS is very expensive. This weakens its competitiveness in the telecommunication market. A key technology to solve the problem is to converge the MSS and TMS together and make the MSS as a compensatory network for the terrestrial one. Subscribers of the converged system can benefit from the low cost and still enjoy a worldwide coverage. Issues emerge in the process of convergence. How to manage the location information across the MSS and the TSS domain with overlapped coverage by doing location update just in one domain? In this paper, a new architecture for converged MSS and TSS is proposed. In this architecture , the concept of location information translation is introduced and a new network entity——Location Interchange Function (LIF) is added as the interworking entity between HSSHome Subscriber Server in the terrestrial domain and LMR(location management register) in the Satellite Domain. The idea is based on that the multi-module terminal is usually registered in the Terrestrial Domain. It will use the satellite resource in the case that it roam outside the coverage area of Terrestrial Mobile Systems or the channel quality is very bad for the latter .The LIF translate the location information in the HSS to the format in LMR based on geodetic information of terrestrial base stations. So the subscriber's location information is also available in the Satellite domain and the inter-domain location update is achieved. Heterogeneous paging is first carried out in terrestrial domain. If it failed, paging in the Satellite Domain is done. Thus, the problem of overlapped area mobility management is solved.