Améliorations la prise en charge de la Mobilité dans les Réseaux sans fil Hétérogènes

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Résumé du projet de recherche (Langue 1)

With the rapid growth of IP networks in wireless environments, management of mobile nodes has become a more important issue. As the heterogeneity increases in network environments, the integration of different types of wireless networks occurs in the IP layer. Therefore, it is expected the network layer and above layers to be aware of movement of mobile nodes. Mobility management based on IP protocols is not yet efficient enough to be used for large-scale service deployment. One of the most important issues related to the performance of mobility management is related to the fact that the application layer suffers from the changing of IP addresses during the movement of the mobile node. In fact, the application layer established and ongoing sessions relies on the current IP address and the port number. New wave in the improvement ideas on this concept is separating the session identification and the location identification. More precisely, up to now the IP address was playing these two roles: the location, and the identification. So, by separating these two concepts, the sessions are not identified according to IP addresses but the new unique identifiers that define a node. This avoids the applications to suffer when the IP address changes during the mobility. This new approach needs to introduce a new layer in the TCP/IP protocol stack, on top of the IP layer that will handle the new identifiers correspondent with the current IP address. According to these concepts, Host Identity Protocol (HIP) is proposed by IETF and IRTF. This protocol proposes to solve the locator/identifier split problem by also including the security support. In this thesis study, HIP protocol is examined and new methods based on this protocol have been designed and proposed. In this study, a hierarchical network structure for HIP protocol and a new handover management mechanism will be designed in order to propose a solution for especially HIP’s existing imperfections about mobility management. This new method aims to start the location updates of a mobile node earlier during mobility and so to enhance the handover time and latency. Later, studying on real network testbed and proposing a system model related to mobility algorithm proposed is being planned. The proposed algorithm will be compared to existing mobility related techniques based on HIP protocol. We are also planning to continue our studies especially related to scalability problem of our proposed algorithm’s network architecture and enhancing the prediction extension by integrating more accurate prediction decision algorithms and methods.