



ThesisTitle	Development of a Software System for IMHP and MRP Mobile Computing Protocol Implementation and Analysis
Research Field	Computer Networks
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Abstract	
<p>The rapid advances in wireless communication technology and in the mobile networks result in extensive efforts in the research area that develop the mobile computing protocols such as the route optimization, integrated authentication, multicasting and the different management protocols.</p> <p>In this work, an event driven software simulator has been implemented using Visual Basic programming language. The designed simulator simulates some of the mobile computing protocols; these are the Internet Mobile Host Protocol (IMHP), both the triangle (Dog leg) route and the short cut route, the Handoff processing of Multicast Routing Protocol (MRP). Advanced Graphical User Interfaces (GUI) are built to help friendly use of this simulator.</p> <p>The simulator coverage area includes three extendable two dimensional subnets (LANs) with ten mobile hosts moving either randomly or manually over the whole network. The moving hosts have the ability to enter or leave the network at any time. The simulator simulates most of the expected possibilities that practically associated with mobile computing operation. In addition, the simulator stands for the unpredicted events such as rebooting or crashing in the network elements.</p> <p>The routing efficiency, Handoff transparency, protocols execution time, end-to-end delay and other judgments criteria are calculated, analyzed, and compared with each other to assess the performance of the adopted protocols. Comprehensive tests and comparisons are performed, in addition to simulator efficiency measurements. The obtained results showed better routing efficiency and higher speed of implementation for the short cut route compared to the triangle route. However, the triangle route exhibits good Handoff transparency. Whilst the Handoff transparency in the MRP depends on the location of the mobile host in the network relative to the destination location. It increases for the location on the same connectivity links.</p>	
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