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Performance Evaluation of Hierarchical Location-Based Services Coupled to the Greedy Perimeter Stateless Routing Protocol for Wireless Sensor Networks

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Abstract : Nowadays Wireless Sensor Networks have attracted worldwide research and industrial interest, because they can be applied in various areas. Geographic routing protocols are very suitable to those networks because they use location information when they need to route packets. Obviously, location information is maintained by Location-Based Services provided by network nodes in a distributed way. In this paper we choose to evaluate the performance of two hierarchical rendezvous location based-services, GLS (Grid Location Service) and HLS (Hierarchical Location Service) coupled to the GPSR routing protocol (Greedy Perimeter Stateless Routing) for Wireless Sensor Network. The simulations were performed using NS2 simulator to evaluate the performance and power of the two services in term of location overhead, the request travel time (RTT) and the query Success ratio (QSR). This work presents also a new scalability performance study of both GLS and HLS, specifically, what happens if the number of nodes N increases. The study will focus on three qualitative metrics: The location maintenance cost, the location query cost and the storage cost.

Keywords : location based-services, routing protocols, scalability, wireless sensor networks
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