

A Novel Approach For Energy Optimization In Distributed Databases In Wireless Network Applications

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Abstract

Energy consumption is a significant factor in wireless networks with battery-powered nodes and transceivers as a dominant energy consumer. Also mutual exclusion is a fundamental problem in distributed systems. "Mutual exclusion" allows only one process at a time to access the shared resource and the others have to be locked and wait for their turns.. Retaining mutual exclusion, is proposed as a solution to guarantee the correctness of read/written information from/in the shared resource or critical sections (CS). Wireless Network is an unstable network formed dynamically by a connection of wireless mobile nodes without the use of an existing network substructure. Since energy consumption during communication is a major depletion parameter the number of communication must be reduced as much as possible to achieve extended battery life. Since battery technology does not grow as rapidly as CPU or memory does so there is a strong need for the presence of protocols which are as energy efficient as effective. In this paper we present a new fully distributed token-based mutual-exclusion algorithm for clustered Mobile ad-hoc network with message count reduction purpose which eventuates to power optimization. Therefore we use Raymond's algorithm (which is well-known in stepping down message complexity) within the clusters and perpetual Mobility of token (that is so efficient in high load network such as Manet's) between the clusters.

Keywords: Wireless Network, Distributed Databases, Energy optimization, Critical section