

Abstract

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Performance Evaluation of Mobile Agent-based Dynamic Load Balancing Algorithm

The proliferation of heterogeneity of today's network and the rapid development in wireless networks has raised an urgent requirement for a new communication paradigm. The Mobile agent paradigm is a promising technique that addresses the client-server limitations in network management applications. This paradigm helps to alleviate bandwidth limitations and supports disconnected operations that are significant problems in wireless and mobile environments. On the other hand, load balancing is one of the important problems of heterogeneous computer networks. To address this problem, many centralized approaches have been proposed in the literature but centralization has proved to raise scalability tribulations. In this work, we present a decentralized algorithm for dynamic load balancing based on the mobile agent paradigm. We introduce the architecture of three types of agents that are employed to meet the requirements of the proposed load-balancing algorithm. We explain the functionality of each suggested type of agent. Moreover, we propose a data communication packet format for each type of agent. Subsequently, and based on the developed simulator, our results are discussed. In addition, we study the impact of the cluster size, the agent lifetime on the algorithm convergence times and the variance of the workload over the cluster.