

Abstract: Mobile Agent Group Communication Protocol Guaranteeing Totally Ordered Message Delivery Condition

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Abstract

In this paper, an atomic mobile agent group communication protocol is designed to have the following beneficial features. The protocol enables each agent to adaptively choose a small number of forwarders among its visiting nodes based on its decision. This feature leads to avoiding the home node centralization, and reducing the size of storage for saving agent location information required by each forwarder and the length of the routing path to targeted agents. Also, it replicates paths on which messages should be transmitted to their targeting mobile agents in an effective manner. The mobile agent group location cache each sending agent keeps in our protocol can considerably speed up message delivery to a group of agents and lower message forwarding load imposing on forwarders. Furthermore, it allows messages destined to a group of agents to be reliably delivered to all surviving agents in the same order despite their mobility and F forwarders' failures unlike the other existing ones. Simulation results indicate that our protocol considerably performs better than the existing one in terms of message delivery and location information management costs.

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