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A Delay Aware Super-Peer Selection Algorithm for Gradient Topology Utilizing Learning Automata

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Abstract

Peer-to-peer network is organized on top of another network as an overlay network. Super peer network is one of the peer-to-peer networks. A super peer, in a super peer based network, is a peer that has more responsibility than other peers have and is responsible for some of the tasks of network management. Since different peers vary in terms of capabilities, selecting a super peer is a challenge in super peer based networks. Gradient topology is of the networks based on super peers. Existing adaptive algorithms, which have been proposed to select super peer in gradient topology, are not aware of delays among the peers. In this paper, the proposed algorithm being aware of the delay among super peers, using learning automata, which is a reinforcement model of learning, selects the new super peers in an adaptive manner. According to the simulation results, the proposed algorithm with respect to the average end-to-end delay in community of super peers, and error in the super peer selection, has better performance than existing algorithms.

Keywords

Super peer selection Learning automata Gradient topology Delay

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