Trust Evaluation Scheme for Hierarchical Ad HocCluster Networks Based on Weight Method

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ABSTRACT

Mobile ad hoc networks have many unstable characteristics, such as unexpected logoff, power, data delivery rate, malicious attacks, and so on. The use of hierarchical clusters can reduce the impact of the defects mentioned above. However, the joining, leaving, management and communication of nodes have to be managed by cluster heads. In such a framework, cluster heads play important roles. Thus, the establishment of a trust evaluation system to find out wore the most reliable cluster heads is the most crucial issue in managing hierarchical cluster. The current technique of managing Hierarchical clusters is to evaluate every node based on its trust evaluation derived from its neighbor nodes. The one with the highest trust value will play the role of cluster head. However, it cannot objectively find out more reliable cluster heads, and it cannot also prevent itself from being attacked by malicious node which intend to be the role of cluster head. Therefore, this research will make the most use of the action history of nodes as well as the attribute information. Moreover, we further use the optimal weighting scheme to evaluate the trust value in each node and to find out more reliable cluster head. This will reinforce the security of the hierarchical cluster framework. In addition, the current selection technique of proxy multicast node does not consider the credibility. Thus, it will expose to the risk of being attacked by malicious nodes which intend to be the role of cluster head. So, this research is based on the trust value to select its proxy multicast node and to establish a mobile ad hoc network that has a reliable hierarchical cluster.

Keywords : mobile ad hoc network ; hierarchical cluster ; cluster head ; trust evaluation

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