网络、通信、安全

Ad Hoc网络中基于遗传蚁群算法的QoS多播路由算法

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摘要　 利用遗传算法的快速全局搜索能力和蚁群算法的正反馈收敛机制，把蚁群算法和遗传算法融合起来，提出了一种遗传蚁群算法（GAAC）来解决Ad Hoc网络中QoS路由问题。首先利用遗传算法生成信息素分布，然后用蚁群算法求精解，优势互补，期望获得优化性能和时间性能的双赢。并针对算法应用于Ad Hoc网络QoS路由普遍产生的拥塞问题，采用拥塞回避的策略，从而实现网络业务流负载均衡。仿真表明该算法比其它单一采用蚁群算法进行路由选择更适合于动态Ad Hoc网络环境。

关键词　 Ad Hoc网络　QoS多播路由　遗传蚁群算法　拥塞回避

分类号

QoS multicast routing based on genetic algorithm and ant colony algorithm for Ad Hoc networks

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Abstract

Genetic algorithm has the ability of doing a global search quickly and stochastically.Ant colony algorithm has the ability of distributed parallel processing，and has good feedback capacity.The combination of both the algorithms can make full use of each advantage.In this paper，a hybrid algorithm GAAC is presented for solving QoS multicast routing problem in Ad Hoc networks.Firstly，it adopts genetic algorithm to give information pheromone to distribute.Secondly，it makes use of the ant colony algorithm to give the precision of the solution.In addition，the algorithm can judge the congestion by the average queue length quickly and avoid it.Simulation results show the algorithm has a better performance than the algorithm only based on ant colony algorithm.

Key words　Ad Hoc networks　QoS multicast routing　Genetic Algorithm and Ant Colony Algorithm（GAAC）　congestion avoidance

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