

# 电台关联和频谱分配联合优化算法

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**摘要:** 为实现电台“单跳接入”组织模式中的高效频谱分配, 以最大化频谱效用为目标建立优化模型, 提出电台关联和频谱分配联合优化算法. 设计了综合考虑电台负载强度和信道 SNR 的权重参数. 根据该权重参数求解无线接入结点与各电台间的最优关联以及各电台间的最优频谱分配. 前者缓解电台在接入时的“远近效应”, 并确保负载强度大的电台优先就近接入. 后者优化系统吞吐, 并兼顾频谱在各电台间分配的公平性. 仿真结果表明, 与静态和仅考虑电台负载强度的自适应频谱分配算法相比, 该算法可以有效提升系统性能.

**关键词:** 战术无线网络; 电台关联; 频谱分配

## Joint Optimization Algorithm for Radio Association and Spectrum Allocation

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**Abstract:** Aim at efficient allocating spectrum in radio “single-hop access” organization mode; we formulate an optimization model to maximize spectrum utility and propose a joint optimization algorithm for radio association and spectrum allocation. A novel weight taking both radios’ load intensities and SNRs into account has been designed. We solve the optimal association among wireless access nodes (WANs) and radios and optimal spectrum allocation among radios according this weight. The former alleviates the near-far problem when radios access WANs, and guarantees radios with heavy load intensity have priority to associate a nearer WAN. Also focuses on the fairness of spectrum allocation, the latter optimizes the overall system throughput. Simulation results demonstrate that, compared with static and adaptive spectrum allocation algorithm only considering the load intensities of radios, the proposed algorithm can improve the system performances effectively.

**Key words:** tactical wireless network; radio association; spectrum allocation

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