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An Optimum Scheme for WiMAX Bandwidth Management Using Dynamic Channel Allocation

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Abstract: WiMAX is a promising technology that provides broadband wireless access and supports high data rate, wide service coverage, and strong QoS. The uplink bandwidth management in WiMAX networks is one of the important issues that requires effectively allocating the bandwidth among contending users according to their services. In this paper, an efficient bandwidth management scheme, named WiMAX Dynamic Channel Allocation Scheme (WDCAS), is proposed. The scheme uses the cognitive radio for dynamic channel allocation in order to improve the bandwidth utilization while satisfying the QoS requirements. A queuing model based on the maximum entropy principle for performance analysis is introduced, and closed-form expressions for the state probability and the blocking probability are obtained. The simulation results show that the proposed scheme has a better performance than existing schemes, in terms of bandwidth utilization and network throughput.