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Performance Evaluation of Wireless LAN on Multimedia Information Communication Environments[1]

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Abstract. Wireless LANs (WLANs) are used for fully-distributed users in multimedia information communication environments that has the ability to provide real-time bursty traffic (such as voice or video) and data traffic, the importance of performance evaluation of WLAN system on such environments intensifies. In this paper, we first introduce the multimedia communication network system integrated WLAN, from which, we make a traffic demand experiment for WLAN. Next, we investigate the performance limitations on such services due to the multiplexing inherent in WLAN services and the shared capacity nature of the local access technologies. We also describe the results of the evaluation for the system characteristics by the network performance test such as the transmission speed, processing delay, response time delay, effect of file compression technology, etc. Finally, we present a simulation analysis of a WLAN system in a hidden-user environment with contention-based CSMA/CA employing RTS/CTS (Request To Send and Clear To Send) access control method. In simulation results, we give some numerical results to evaluate the system performance as the utilization of channel and the packet blocking probability.
Keywords. Wireless LANs, Multimedia Information Communication Networks, CSMA/CA Protocol, RTS/CTS Mechanism, Performance Evaluation.

1 Introduction

Wireless local area networks (WLANs) are a rapidly emerging field of activity in computer communication networks. WLANs are being developed to provide a high bandwidth to users in a limited geographical area. It can be used in many places like wireless offices, campus classrooms, conference registration and so on. Using wireless network interfaces, mobile devices

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