

Measured Traffic Statistics and Throughput of IEEE 802.11b Public WLAN Hotspots with Three Different Applications

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Abstract:

Public wireless local-area networks (PWLANs) based on IEEE 802.11 a/b/g standards are growing rapidly. Thus, it is critical to understand aggregated traffic statistics and network performance at and around PWLAN service areas. This paper presents measured PWLAN traffic statistics and application-level throughput at four hotspots that provide free Internet access. The four hotspots, located in Austin, Texas and owned by Schlotzsky's Inc., a national restaurant chain, used standard IEEE 802.11b equipment. This measurement campaign provided approximately 16 million PWLAN packets and several hundred throughput and SNR measurements. Throughput prediction models are developed based upon the measured data. These analysis results and throughput prediction models may facilitate the design and development of IEEE 802.11 e/n standards and implementations. Moreover, the results provide insights into the required provisioning for PWLANs and autonomous control approaches for future broadband wireless access and real-time wireless voice/video services.

Index Terms:

local area networks (LAN), wireless LAN, traffic control, throughput, computer network performance