

The final university studies work presented below is found in the wireless communication environment, specifically WLAN networks based on the IEEE 802.11b Standard. The objective of this work is to improve the communication in these networks, optimising the resources of the system by means of Cross-Layer techniques. These techniques lie on the interchange of information between the OSI layers of a communication system. In this case the MAC layer will be the one which receives information from the physical layer, adapting the transmissions depending on the radio channel status. We have used a high efficient protocol for the MAC layer named DQRUMA (Distributed Queuing Request Update Multiple Access).

All the proposed techniques have been studied and adapted to the used MAC protocol with a subsequent simulation.

The results that we have obtained confirm an improvement in the different used work scenes, principally in terms of *Throughput*, average delay and system capacity in number of users, besides its optimal functioning and easy implementation.

After analysing the realised studies, we propose make use of the efficiency of these techniques in the design and implementation of future WLAN's.