Hamilton Institute

Predictive Distributed Channel-Adaptive Fair Allocation for IEEE 802.11e WLAN

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Abstract

In this talk an efficient route relay bandwidth mechanism that incorporates end-to-end residual bandwidth, distributed link quality, and the use of admission and adaptive control, to satisfy the Quality-of-Service (QoS) requirements of real-time application will be presented. Our approach implements these schemes by using two relay bandwidth methods to find the available bandwidth at each station and estimated transmission time for the support of new streams. Improved results, in terms of successful packet delivery, overall throughput and average end-to-end delay, are obtained when comparing with existing routing protocols.

In addition a method termed Predictive Distributed Channel-Adaptive Fair Allocation (P-DCAFA) is proposed to extend the IEEE 802.11e MAC Enhanced Distributed Coordination Function (EDCF), by dynamically adapting the back-off window size to the current network contention level and guarantees that the MAC layer asymptotically achieves its optimal channel utilization. A physical rate based admission control scheme that accounts for both the wireless channel and stations' mobility is presented. Simulation results show the significant improvement of the proposed scheme.

Venue: Seminar Room, Hamilton Institute, Rye Hall,
NUI Maynooth

Time: 1.00 - 2.00pm (followed by tea/coffee)

Travel directions are available at www.hamilton.ie

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