Stability of bandwidth request control based on dual feedback in BWA networks

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Abstract: In order for the base station to respond quickly and efficiently to the uplink bandwidth request in broadband wireless access (BWA) networks using time-division duplex (TDD), a dual feedback control algorithm has recently been proposed [3]. In this algorithm the bandwidth request is adjusted in accordance with both the length of the backlogged queue and the mismatch between packet arrival and service rates. This paper presents a thorough study of the stability of the dual feedback algorithm in both continuous-time and discrete-time domains. It turns out that the stability condition in [3] is necessary but not sufficient to guarantee the stability of its discrete-time implementation. ©2009 IEEE.

Index Keywords: Bandwidth request; Broadband wireless access; Continuous time; Discrete-time; Discrete-time domain; Dual feedback; Dual feedback control; Packet arrivals; Service rates; Stability condition; Time division duplex; Uplink bandwidth; Access control; Algorithms; Bandwidth; Wireless networks; Stability

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References:

• IEEE standard for local and metropolitan area networks part 16: Air interface for fixed and mobile broadband wireless access systems, Amendment 2 (2005) IEEE 802.16 Standard, , December

