

An Efficient Subcarrier Scheduling Algorithm for Downlink OFDMA-Based Wireless Broadband Networks

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Abstract : The growth of wireless technology made opportunistic scheduling a widespread theme in recent research. Providing high system throughput without reducing fairness allocation is becoming a very challenging task. A suitable policy for resource allocation among users is of crucial importance. This study focuses on scheduling multiple streaming flows on the downlink of a WiMAX system based on orthogonal frequency division multiple access (OFDMA). In this paper, we take the first step in formulating and analyzing this problem scrupulously. As a result, we proposed a new scheduling scheme based on Round Robin (RR) Algorithm. Because of its non-opportunistic process, RR does not take in account radio conditions and consequently it affect both system throughput and multi-users diversity. Our contribution called MORRA (Modified Round Robin Opportunistic Algorithm) consists to propose a solution to this issue. MORRA not only exploits the concept of opportunistic scheduler but also takes into account other parameters in the allocation process. The first parameter is called courtesy coefficient (CC) and the second is called Buffer Occupancy (BO). Performance evaluation shows that this well-balanced scheme outperforms both RR and MaxSNR schedulers and demonstrate that choosing between system throughput and fairness is not required.

Keywords : OFDMA, opportunistic scheduling, fairness hierarchy, courtesy coefficient, buffer occupancy

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