Improve Downlink Burst Allocation to Achieve High Frame Utilization of Mobile WiMAX (802.16e)

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Abstract:

The burst allocation algorithm is responsible about calculating the appropriate dimensions and location of each user's data to construct the bursts in the downlink subframe in term of the number of slots for each user. Burst allocation is one of the performance parameter which influences the mobile WiMAX systems, due to resource wastage in the form of unused and unallocated slots per frame which affects the Base station performance. In this paper, a Sequential Burst Allocation (SBA) algorithm is proposed to overcome frame wastage. The SBA algorithm is based on the idea of sequential allocation of user slots. SBA limits the excessive unused slots, and burst fragmentation when necessary is forced to be used to eliminate unallocated slots between data bursts. Continuous allocation from one frame to the next has a significant impact on reducing resource wastage. It has been observed from the results that the percentage difference of the frame utilization between SBA and ST algorithms is 32.84 %, which achieve significant reduction of resource wastage per frame, leading to more exploit of the WiMAX frame.