

Efficient resource management for uplink scheduling in IEEE 802.16e standard

ABSTRACT

The IEEE 802.16e standard, known as mobile Worldwide Interoperability for Microwave Access (WiMAX) becomes the most demanding broadband wireless access (BWA) technology recently. Its main advantage is rapid delivery of services in remote areas due to the cost efficiency factor. The base station (BS) supports data rate up to 70 Mbps, mobile stations with 5–15 km length of coverage, and for the fixed stations the wireless access range up to 50 km. To resolve the bandwidth contention issue and guarantee seamless packet transmission from the subscriber stations (SS) to the BS, the uplink (UL) traffic scheduling must be efficient and reliable. This paper studies the work on the UL scheduling algorithm, namely minimum rest time (MRT). The MRT goal is to strengthen the packet transferring time between the SS and the BS by refining the pre-stipulated expired time and the deadline time of the earliest expiry first (EEF) and earliest deadline first (EDF) hybrid algorithms. These legacy algorithms are inadequate to support the multi-class traffic systems due to the shortage of quality of service (QoS) parameters featuring. Moreover, the algorithms are highly static. Using the Omnet++ with the relevant performance metrics the obtained results confirmed the MRT outperforms effectively from the legacy algorithms.

Keyword: Algorithm; Broadband wireless access; Scheduling; QoS; WiMAX