Novel IEEE 802.16 Mesh Node Architecture to Achieve QoS in Coordinated Distributed Mode

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Abstract—the IEEE 802.16 defines two basic operational modes: point-to-multipoint (PMP) and mesh. The mesh mode provides two scheduling algorithms for assigning time slots to each network node: centralized and distributed. The aim of this paper is to address the Quality of Services (QoS) problem in coordinated distributed scheduling in mesh mode by proposing a new architecture for QoS-aware IEEE 802.16 mesh node. The paper explains the new mechanism proposed in mapping the QoS parameter from the upper layer to the IEEE 802.16 Medium Access Control layer (MAC) and introduces a new technique in assigning the data minislots to satisfy the requirements for different traffic types. Another aspect that the paper discusses is how to achieve fairness while distributing the data minislots. Several simulations are performed using OPNET Modeler 16.0 to evaluate the proposed architecture and the important system parameters which affect the network performance.

Keywords-component; WiMAX; Traffic Classification; Mesh; Distributed; QoS