PAPER ABSTRACTS

One of the fundamental requirements for IEEE
802.16/WiMAX, to become a key technology for high-speed
multimedia service delivery, is QoS (Quality of Service)
differentiation. Although different types of QoS classes have
been defined by the IEEE 802.16 standard, the scheduling
architecture is left to be vendor specific. In this paper, new
modifications are purposed, and a detailed simulation study is
performed, for different scheduling algorithms which are: RR
(Round Robin), WRR (weighted Round Robin) and DRR
(Deficit Round Robin). Analysis and evaluation of the
performance of each scheduler to support the different QoS
classes have been performed. The simulation results show that
the purposed channel aware modified DRR scheduler can
provide higher service standards to support the QoS in terms
of packet loss ratio and bounded delay, which is required
by different types of traffic in a time varying channel.

M.Sc. Title: Two Layer Channel Aware Scheduling Algorithms for
Quality of Service Support in WiMAX Networks

M.Sc. Abstract:

A worldwide demand for high speed broadband wireless systems across commercial
and residential regions is emerging rapidly due to the increasing reliance on web for
information, business, entertainment and new upcoming high bandwidth intensive or
realtime
applications. The IEEE 802.16 WirelessMAN standard is promising to meet all such
requirements and becoming the most popular way for wireless communication. The
IEEE
802.16 advantages include variable and high data rate, last mile wireless access, point
to
multipoint communication and QoS for various types of applications.
Despite of the above advantages, IEEE 802.16 WirelessMAN lacks in MAC
scheduling architecture in uplink as well as downlink direction. Efficient scheduling
design is left for the designers and thus providing QoS for IEEE 802.16 system is
challenge for system developers.
In this research, new modifications are proposed. These modifications are done by
adding two new blocks to the scheduling architecture which are: channel error
compensator block which make the scheduling algorithm aware of the channel
conditions
and buffer manager block which mainly removes those packets buffered for a time
longer
than their maximum tolerated delay. Also in this research, a buffer size optimization
where done for each QoS traffic class to meet QoS requirements.
A detailed simulation study is performed, for different scheduling algorithms which
are: RR (Round Robin), WRR (weighted Round Robin) and DRR (Deficit Round
Robin).
Analysis and evaluation of the performance of each scheduler to support the different

QoS classes have been performed. The simulation results, which are carried out by MATLAB, show that the proposed channel aware Modified DRR (MDRR) scheduler can
provide higher service standards to support the QoS in terms of packet loss ratio and scheduling delay, which is required by different types of traffic in a time varying channel.

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