A SURVEY TO IMPROVED THE LIFETIME OF WIMAX USING 802.16g BASED TECHNOLOGY

[1]Divya.S,[2] Vishalakshi.A, [3]Anandakumar.H, [4]Anuradha.B

[1]PG Scholar, [2,3]Asst. Professor, [4]Associate Professor

Department of Information Technology

SNS College of Engineering, Coimbatore

Abstract— **. Wimax (World Wide Interoperability Mobile Access) is commonly known as IEEE 802.16 Standard. The two important technologies used in WIMAX are MIMO and OFDMA. These two services together provides high rate, high speed, can provide services even in difficult environment and can support more number of user. The core work carried out in this paper focus on the energy consumption in Wimax. We propose a protocol that matches with the standard of Wimax and enhances the lifetime of the network. The protocol 802.16g amendment is responsible for the overall management of the protocol and is responsible for energy conservation of the network. Our results show that the overall management of the protocol and energy conservation is increased.**

Index Terms— **Wimax, 802.16g, spectrum, Data Rate, Media Independent Handover.**

1.INTRODUCTION

The IEEE standard 802.16 provides services in metropolitan area for various application using various parameter at different levels. There are two types of WIMAX used, (i) Mobile WIMAX (ii) Fixed WIMAX. To understand the performances evaluation of WIMAX, OFDMA(Orthogonal Frequency Division Multiple Access) is needed. In OFDMA the channel is divided into eight subcarriers and individuals subcarriers are used to transmit the data[1]. For Fixed WIMAX the OFDMA uses about 11 Ghz of spectrum at the PHY layer. For high data traffic the uplink and downlink speed is in the ration of 2:1 which is at symmetric. One of the major advantages of WIMAX is that it supports both the licensed and unlicensed spectrum. The amendment 802.16e is used to define both physical and MAC layers a fixed and mobile operation that is used in licensed bands. The promising effect of 802.16e is the efficiently management of

limited energy a Mobile Subscriber Station (MSS) which is generally powered by battery[2] . The IEEE 802.16e provides support for the mobility of Mobile Stations (MSs) at vehicular speed. The energy efficiency of MSs in IEEE 802.16e is the major criteria for its application because most of the mobile stations are powered by an energy-limited battery. The energy consumption of a mobile station is due to its Wireless Network Interface (WNI)[2].

The following paper is classified into the following section, section II describes about the literature review done for the paper with their disadvantages and the steps to overcome the fouls. The section III deals with the proposed model and their advantages, section IV describes about the discussion of the modules and their flow diagrams. The section V is about the conclusion of the work and finally section VI is the references.

2.LITERATURE REVIEW

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3.PROPOSED MODEL

3.1 802.16g ENERGY EFFICIENCY

As mentioned above the network lifetime depends upon the Energy consumed or utilized by mobile station to forward the data from one point to another point. Our proposed model 802.16g is equipment with procedures and services to enable interoperable and efficient management of network resources, mobility, and spectrum. In 802.16g, the management plane behavior in 802.16 fixed and mobile devices is standardized. IEEE 802.16g creates standardized procedures and interfaces for the management of 802.16 devices [IEEE, 2007b] [8].
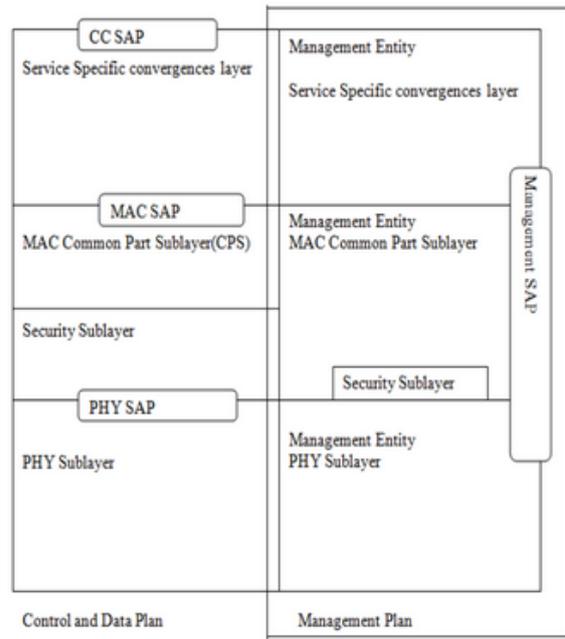

Fig 1 Architecture of 802.16g protocol.

4 Discussion

As upto our knowledge 802.16g has high spectrum management the spectral efficiency also paves way for the increase in energy level.. To improve the spectral efficiency we use SC-OFDM which more advanced than the OFDM. The SC-OFDM has more subcarriers to transmit the data and to improve the efficiency at the other end the interferences is reduced
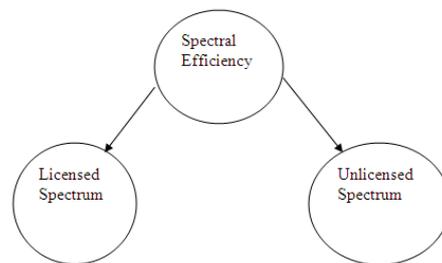

Fig 2 Spectral Efficiency in 802.16g

Table 1. Spectral efficiency

Spectrum	Bandwidth of spectral Band	Bandwidth Profiles
2.5-2.69 GHz	190Mhz	5/10 MHz
3.3-3.4Ghz	100 MHz	5,7 MHz
3.4- 3.6 GHz	200 MHz	5,7,10 MHz
3.4-3.8 GHz	400 MHz	5,7,10 MHz

One of the important milestone of 802.16 is that it supports about licensed and unlicensed spectrum. The frequency of an licensed spectrum is about 5.8, 2.3, 2.5, 3.6Hz and unlicensed spectrum 2.40, 2.4835, 5.15Hz Onces when the spectral efficiency is improved the data rate and modulation are the other two important criteria to improvise the energy level. 802.16g supports four modulation techniques BPSK, QPSK, 16 QAM and 64 QAM. Maximum data rate can be obtained is 100 Mhz. The following scenario below explains when the user is moving from network to another i.e, from 802.11(WIFI) to 802.16g(WIMAX). If the user is under the 802.11 standard he will using fixed scheme and in case of 802.16 it is adaptive scheme. Where user can change according to the constraints. The above four techniques are supported by both the network but the signal strength of 802.16g is higher when compared to the others. The following table illustrates the modulation techniques with their data rate and signal strength.

Table 2. The Modulation frequency of 802.16

Modulation	Coded bits per subcarrier	Coded bits per OFDM symbol	Raw Data rate Mbps	SNR
BPSK	1	192	2.65	-
QPSK	2	384	5.30	11 db
16 QAM	4	768	10.60	16db
64QAM	6	1152	15.90	33 db

Medium independent is an essential factor for handover management and it even works in Heterogeneous network. The main of Medium independent handover is to avoid a restart session after the handover. The power consumption is minimized once when the user is informed about the network coverage maps, optimal link parameters, sleep or idle parameter. Since 802.16 is based on the geographical link once when the particular range is available the connection is made automatically without any interruption
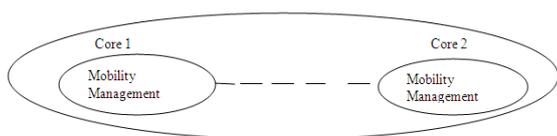

Fig 3 Medium Independent Process.

5 .CONCLUSION

The Wimax is growing technology but the major drawback found in the system was energy level. So we focused our works towards the increase in energy level with The 802.16g based technologies. The parameter that was taken into account for improvising the energy level are spectral efficiency, data rate, modulation etc. We conclude our paper by stating that 802.16g is more efficient than 802.16e in terms of energy and the overall management.

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