Shivani Soni, 2021, 9:1
ISSN (Online): 2348-4098
ISSN (Print): 2395-4752

A Implementation of Next Generation Mobile Broadcasting Services

M.Tech. Scholar Shivani Soni, Mr. K. K Sharma
Dept. of ECE
Patel College of Science and Technology
MP,Indore,India

Abstract- The demand of mobile user is ever increasing in this world of digital systems. Consumers demand more from their technology. Whether it is a television, cellular phone, Washing machine or refrigerator, the latest technology purchase must have new features. With the advent of the Internet, the most-wanted feature is better, faster access to information. The time not far away when access to all necessary information and the power of a personal computer, sits in the palm of one's hand. To support such a powerful system, we need pervasive, high-speed wireless connectivity. In the present scenario existing technologies are capable of performing functions like broadband data access, supporting voice traffic using voice over IP (VoIP), in mobile environment etc., but there is a great requirement of integrating all such technologies into a single combined system. 4G promises a solution to this problem by seamlessly integrating the terminals, networks and applications. This paper presents an overall study of the 4G systems, architecture, standard, benefits, challenges in implementation, design for the LTE and WiMAX technologies, Security issues and future scope of 4G technologies.

Keywords: - WiMAX technologies, Broadband data access, 4G systems etc.

I. INTRODUCTION

The Mobile devices are getting smaller, lighter, and more powerful; they have bigger screens and longer battery life, more features and more capabilities. Bandwidth will always be the limiting factor in the development of applications and devices, be it wired, or wireless. The short fall of 3G networks is clear, it's just not fast enough, offering 384kbps doesn't meet the requirements of what the end user has come to expect these days. Some people see 3G as a stop-gap, until a fully integrated IP network is created; some countries have even chosen to bypass 3G and head straight to 4G, a method which has its advantages, and its disadvantages. 4G technology is actually an integrated, global network that will be able to provide a comprehensive IP solution where voice, data and streamed multimedia can be given to users on an "Anytime, Anywhere" basis [1].

performance and enable voice/video multimedia applications. The enabling technologies and standards for 4G wireless communications allow for significant increases in data rates over 2G (second generation), 3G (third generation) and 3.5G wireless technologies.

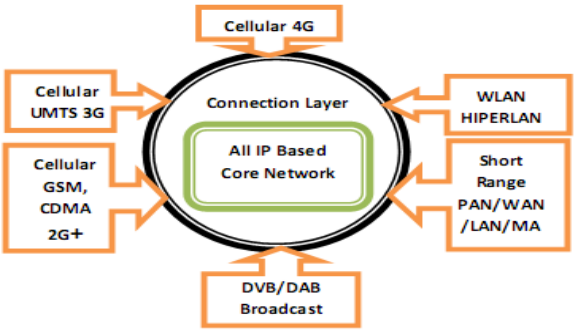

Fig 1. Seamless connections of networks. [1]

At the present time, LTE (Long Term Evolution) and WiMAX (Worldwide Interoperability for Microwave

International Journal of Science, Engineering and Technology

An Open Access Journal

Access) are the two technologies considered as candidates to achieve the 4G wireless performance objectives [2].

These objectives include: that 4G will be a fully IP-based integrated system. 4G will be capable of providing between 100 Mbit/s and 1 Gbit/s speeds both indoors and outdoors, with premium quality and high security. The term 4G is used broadly to include several types of broadband wireless access communication systems, not only cellular telephone Systems [1].

One of the terms used to describe 4G is MAGIC—Mobile multimedia, anytime anywhere, Global mobility support, integrated wireless solution, and customized personal service. As a promise for the future, 4G systems, that is, cellular broadband wireless access systems have been attracting much interest in the mobile communication arena.

The 4G systems not only will support the next generation of mobile service, but also will support the fixed wireless networks [4]. Figure1 illustrates the seamless connectivity of the different Networks to IP.

II. LITERATUTRE REVIEW

According to **Kamarularifin Abd Jalil et al.,2009** the emergence of new technologies in the mobile communication systems and also the ever increasing growth of user demand have triggered researchers and industries to come up with a comprehensive manifestation of the up-coming fourth Generation (4G-LTE) mobile communication system.

T. H. Le and A. H. Aghvami, 2000 says about the cable television industry, the expansion to 4G Networks is a very real possibility in 2009. Recently, Comcast and T-Mobile have collaborated and agreed to the development of a "mobile 4G-network" to be tested in Washington D.C. and Baltimore, MD.

The researchers in **Yu, F. R., Wong, et al, 2011** Latest developments in mobility solutions are being updated and essential mobility protocols for circuit-switched and packet-switched networks have been addressed at various stages. The researchers proposed which intra-system and inter-system handoff protocols are appropriate.

The researchers stressed the need to establish cross-sectional approaches to coordinate the transition between access networks and continuing maintenance of links.

III. STANDARDS AND BENEFITS OF 4G

This section outlines the details of 4G Standard and its various objectives, and comparison with existing 3G technologies. In telecommunications, 4G is the fourth generation of cellular wireless standards. It is a successor to the 3G and 2G families of standards. 4G is described as MAGIC: mobile multimedia, any-time anywhere, global mobility support, integrated wireless solution, and customized personal service.

In 2009, the ITU-R organization specified the IMT-Advanced (International Mobile Telecommunications Advanced) requirements for 4G standards, setting peak speed requirements for 4G service at 100 Mbit/s for high mobility communication (such as from trains and cars) and 1 Gbit/s for low mobility communication (such as pedestrians and stationary users).

Initially, candidate technologies for 4G wireless standard are:

- HSPA+ (High Speed Packet Access)
- UMB (Ultra Mobile Broadband)
- LTE
- Mobile WiMAX
- XGP (eXtended Global Platform) [2].

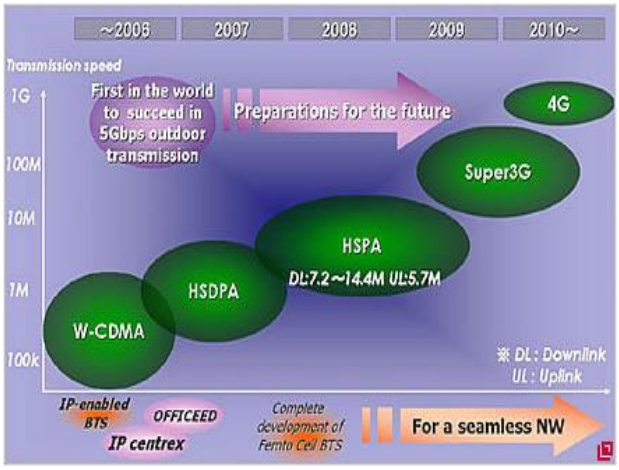

Fig 2. Evolution to 4G Technology.

There are a number of advantages of 4G to answer one question "Why do we need 4G technologies?" 4G promises to deliver extremely high quality video of quality comparable to HD (high definition) TV. In

International Journal of Science, Engineering and Technology

An Open Access Journal

addition 4G is being developed to accommodate the quality of service (QoS) and rate requirements set by further development of existing 3G applications like mobile broadband access, Multimedia Messaging Service (MMS), video chat, mobile TV, but also new services like HDTV. 4G may allow roaming with wireless local area networks, and may interact with digital video broadcasting systems.

IV. RESEARCH METHOD

A hypothesis is a cultivated guess or scheme that goes to explain a set of facts or natural phenomenon. In other words a hypothesis is a prediction of expected results; it conditions the relationships between variables that the researcher expects to discover as a result of the study.

The following hypothesis will be measured in this research:

- IP based 4G-LTEMobile wireless network and is better than non IP based wireless network.
- 4G-LTE Mobile wireless network perform better while applications are running individually rather than simultaneously.
- Geographical coverage area of 4G-LTEMobile wireless network is larger.

In wireless system, the speed of transmission is impacted by particular factors such as noise, frequency etc. The transmission speed develops profligate and earlier with a modification in communication drift and generations. 4G-LTE afford higher Bandwidth, higher data rate. We mentioned earlier that 5G is actually not officially used by any standard or other formal paper.

In this study the dissimilar operator numbers 1 (QPSK), 2 (BPSK), 3 (NCG), 4 (CG) operator, 5 4G-LTE device is analyzed compared with each other. T

he goal of the study is to carry forth broad research into Fourth Generation Long-term Evolution (4G-LTE) mobile wireless networks and results, through the use of various empirical techniques with improvem ents in the current connectivity pattern and generations, in different operating environments.

The foremost objectives of the research are with these subsequent points: A comparative study for services and applications of 4G-LTE Mobile wireless network offered by numerous telecommunication operators in India. Statistical analysis of 4G-LTE.

V. RESLTS AND DISCUSSION

We have various operators and these are classified on the basis of hardware (number of antennas at base station and other hardware) they are using, channel estimation methods they are using, data rate they are providing, data lost (bit error rate) due to environment etc.

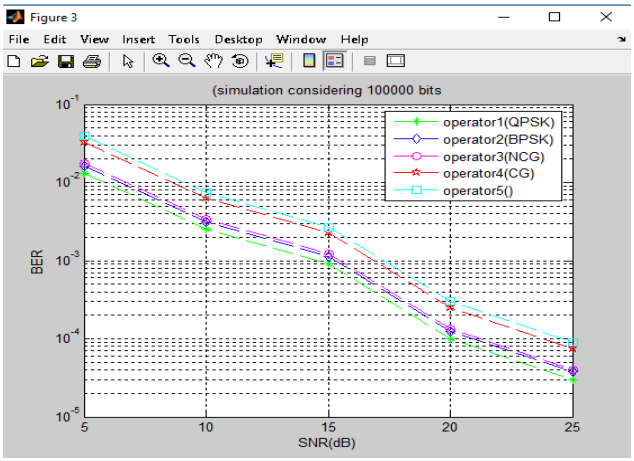

Fig 3. Comparative Analysis of 4g-Lte Based On Performance.

RESULT1-from result1 figure(BER vs. SNR), as the SNR is increasing that means noise in the atmosphere is reducing and therefore less number of bits(data) will be lost so BER is reducing. In result 1 the operator1 has the best performance.

RESULT2-figure2(node mobility Vs throughput(data speed)) As the node mobility is increasing that means mobile nodes are moving with fast rate so more chances of data (packets)lost ,throughput scale in figure shows that at different node mobility different operator can support different packet transfer rate. Operator1 has the best performance.

RESULT3 shows the end to end delay among nodes Vs node mobility, this result has mixed performance among the operators.

International Journal of Science, Engineering and Technology

An Open Access Journal

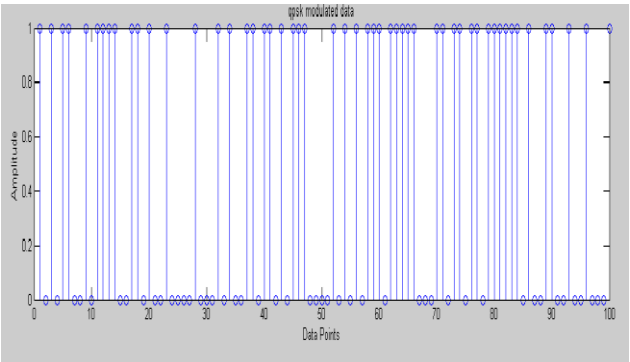

Fig 4. QPSK Modulated Data Results.

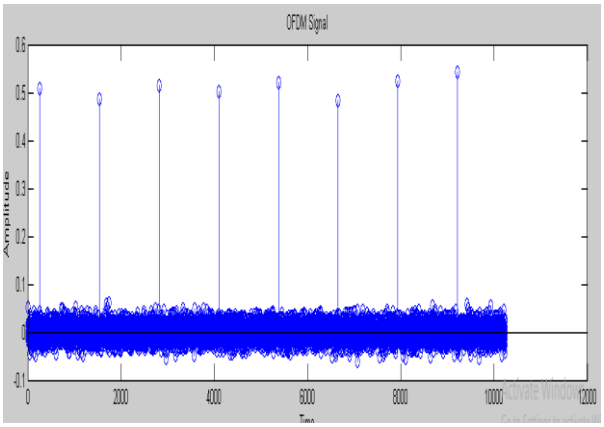

Fig 5. Show the results between the amplitude and OFDM signal.

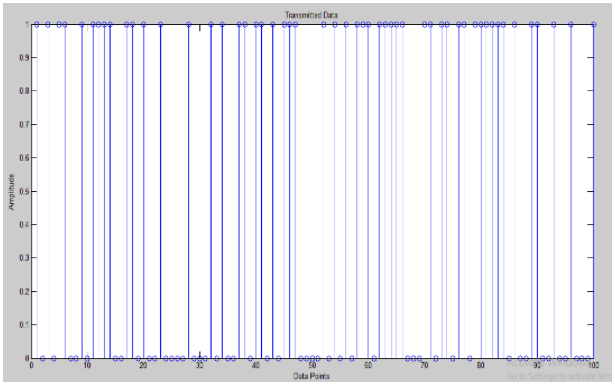

Fig 6. Show the result between the amplitude and transmitted data.

VI. CONCLUSION

This paper briefly described the 4G wireless technology as next generation networks. It presented the 4G architecture, the technologies involved, 4G standard, benefits, challenges in deployment, design for the LTE technologies and security issues. It can be finally concluded that the ever increasing demands of the customers can be only fulfilled by one and only one the 4G wireless system.

Today's wired society is going wireless and if it has problem, 4G is answer. 4G will be an intelligent technology that will be fast replacing 3G. But the final success of 4G mobile communication systems will depend upon when it is fully implemented and the new services and contents made available to users.

VII. FUTURE SCOPE

There are many good reasons for 4G development and a variety of current and evolving technologies to make 4G a reality. Both service providers and users want to reduce the cost of wireless systems and the cost of wireless services. Lesser the expensive of the system, the more people who will want to own it. 4G's flexibility will allow the integration of several different LAN and WAN technologies. Finally, the 4G wireless system would truly go into a "one size fits all" category, having a feature set that meets the needs of just about everyone.

REFERENCES

[1] Afaq H. Khan, Mohammad A Qadeer, Juned A Ansari, and Saria Waheed, "4G as a Next Generation Wireless Network," International Conference On Future Computer And Communication, pp. 334-338, March, 2009.

[2] N. Seddigh, B. Nandy, R. Makkar and J.F. Beaumont, "Security Advances and Challenges in 4G Wireless Networks," 2010 Eighth Annual International Conference on Privacy, Security and Trust, pp. 62-71, June, 2010.

[3] Jawwad Ahmad, Ben Garrison, Jim Gruen, Chris Kelly, and Hunter Pankey, "4G Wireless Systems," Next-Generation Wireless Working Group, May, 2003.

[4] Manu. R, "4G Wireless Systems," Technical Seminar report, Kalpataru Institute of Technology, Belgaum, Karnataka, 2009-2010.

[5] H. Harada & Ramjee Prasad, Simulation and Software Radio for mobile communications: Artech House, 2003.

[6] John. G. Proakis, "Digital Communications", 3rd edition, McGraw-Hill, 1995.

[7] Walter Tuttlebee, "Software Defined Radio", 2002 John Wiley & Sons, Ltd.

International Journal of Science, Engineering and Technology

An Open Access Journal

[8] "UMTS LTE Network Architecture", Technical specification TS 23.002, version 8.4.0 (Release 8), 3GPP.

[9] ITU-R M. 1645: Framework and overall objectives of the future development of IMT-2000 and systems beyond IMT-2000.

[10] http://en.wikipedia.org/wiki/4G.

[11] Kamarularifin Abd Jalil, Mohd Hanafi Abd. Latif, Mohamad Noorman Masrek, "Looking Into The 4G-LTE Features",MASAUM Journal of Basic and Applied Sciences Vol.1,No. 2 September 2009.

[12] T. H. Le and A. H. Aghvami, "Performance of an Accessing and Allocation Scheme for the Download Channel in Software Radio," Proc. IEEE Wireless Commun. And Net. Conf., vol. 2, 2000, pg. 517–521.