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A Review Paper On Advanced Network Parameter in LTE 4G

Varun Das[1], Mrs Shikha singh[2]

1 M.Tech Scholar, Dept. Electronics & Communication Engg, Dr. C.V. Raman University, Bilaspur, Chhattisgarh-India

2 Asst. Prof. , Dept. Electronics & Communication Engg, Dr. C.V. Raman University, Bilaspur, Chhattisgarh-India

***Abstract*: Long-Term Evolution (LTE) is a standard for high-speed wireless communication for mobile phones and data terminals. It is based on the GSM/EDGE & UMTS network technologies, increasing the capacity and speed using a different radio interface together with core network improvements. The main difference between LTE & UMTS is that the LTE is purely packet switched network. During congestion loss of packets occurs which affects the performance of LTE. This is review paper on study of different parameter which affects the performance of LTE.**

***Index Terms*—LTE, UMTS, LTE-Network, TCP**

I. INTRODUCTION

LTE stands for Long Term Evolution and is a registered trademark owned by ETSI (European Telecommunications Standards Institute) for the wireless data communications technology and a development of the GSM/UMTS standards. However, other nations and companies do play an active role in the LTE project.

The goal of LTE was to increase the capacity and speed of wireless data networks using new DSP (digital signal processing) techniques and modulations that were developed around the turn of the millennium. A further goal was the redesign and simplification of the network architecture to an IP-based system with significantly reduced transfer latency compared to the 3G architecture. The LTE wireless interface is incompatible with 2G and 3G networks, so that it must be operated on a separate radio spectrum.

LTE was first proposed by NTT DoCoMo of Japan in 2004, and studies on the new standard officially commenced in 2005. In May 2007, the LTE/SAE Trial Initiative (LSTI) alliance was founded as a global collaboration between vendors and operators with the goal of verifying and promoting the new standard in order to ensure the global introduction of the technology as quickly as possible. The LTE specification provides downlink peak rates of 300 Mbit/s, uplink peak rates of 75 Mbit/s and QoS provisions permitting a transfer latency of less than 5 ms in the radio access network.

LTE has the ability to manage fast-moving mobiles and supports multi-cast and broadcast streams. LTE supports scalable carrier bandwidths, from 1.4 MHz to 20 MHz and supports both frequency division duplexing (FDD) and time-division duplexing (TDD). The IP-based network architecture, called the Evolved Packet Core (EPC) designed to replace the GPRS Core Network, supports seamless handovers for both voice and data to cell towers with older network technology such as GSM,UMTS and CDMA2000. The simpler architecture results in lower operating costs (for example, each E-

UTRA cell will support up to four times the data and voice capacity supported by HSPA.

II. LITERATURE REVIEW

In the literature, there are a number of studies which are focused on the optimum scheduling of resources for supporting service. The paper published by Siomina et.al. have analysed the impact of prioritizing of other services in the radio network. The performance of prioritized in terms of increase in capacity is explained. The paper published by Zaki, et.al. have studied the impact of dynamic packet scheduling on the performance of LTE. Puttonen, J and Yasir Zaki , have studied the impacts of MAC scheduling algorithm for different types of services. Most of these studies are focused on the scheduling of resources in the LTE radio network. To the best of my knowledge there are very few studies that have been done on analysing the impact of scheduling in the LTE transport network. The most relevant study in this aspect is done in the paper in which Li, et.al. have studied the impact of dimensioning in the transport network. In this study, analytical models have been proposed for dimensioning the transport network for real time and non real time services and the proposed models are verified by simulations.

III. PROBLEM IDENTIFICATION

In mobile broadband networks like LTE, the high performance of the radio network can be realized with proper scheduling of resources for different types of services. But proper scheduling of resources in the radio network alone is not sufficient to guarantee a good end to end performance.

Different parameter which affects the performance of LTE:

(i)Transport network between the radio and core networks:- During periods of high congestion, packet losses might occur in the transport network which can reduce the overall performance of the service that is offered to the user. Hence, the transport network between the radio and core networks is another area which needs proper dimensioning and scheduling of resources for various types of services.

(ii) IP based QoS techniques:-

The transport network is not aware of the QoS architecture of LTE. This implies that the various bearers that are used to classify the services in LTE domain needs to be mapped to IP based QoS techniques. The Differentiated services architecture (Diffserv) which is commonly used in IP based networks is used to classify the various types of services in the LTE transport network. The Diffserv architecture needs to be integrated with the LTE QoS architecture to guarantee good end to end performance.

(iii) Scheduling Of Resources:-

The scheduling of resources in the transport network is another area which needs proper attention as the choice of scheduling algorithms is pivotal for optimum usage of resources. There are various scheduling strategies like Weighted Fair scheduling, Strict Priority scheduling and Weighted Round Robin scheduling that are used to schedule the packets based on the priority of each type of service. The aim of this paper is to study the various transport network scheduling strategies and loss of packets

during congestion. When the packet loss during transmission BER occurs. We also analyse the SNR and BER.

IV. PROPOSED METHODOLOGY

The information related to the network architecture of LTE and IMS networks is introduced followed by a brief explanation on the QOS concepts in LTE. It also gives an overview on the Diffserv architecture that will be used in the transport network for classification of various services like voice, FTP etc. It concludes with the explanation on the various scheduling strategies that will be used in the transport network. The new improved method of scheduling strategies used. As shown in fig LTE network architecture.

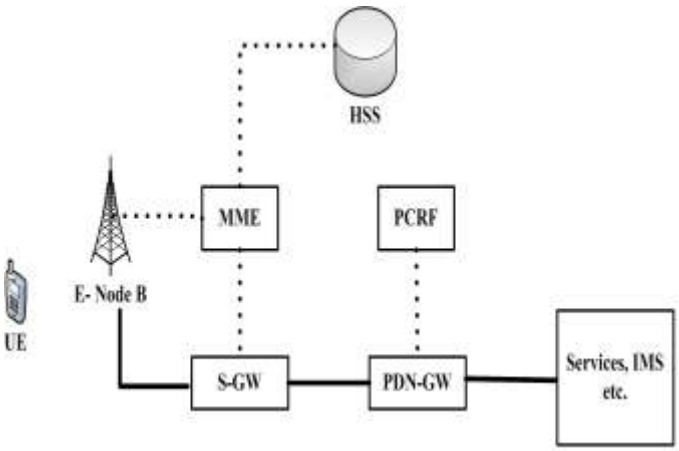

Fig 2.1 LTE network architecture

V. CONCLUSION

In this paper, the performance LTE is analysed when the transport network is congested with data traffic. The scheduling of resource is needed for transport layer. We study the problem occur during congestion proposed a methodology for it.

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Varun Das is a student of M.Tech (D.C.) at Dr.C.V.Raman Institute of Science & Technology, kota-Bilaspur C.G, India. He has done B.E. from Institute of Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur, India. He has about two year of academic experience His area of interest includes Mobile communication, Image and signal processing and Digital communication.

Mrs. Shikha Singh is currently an Assistant Professor at Dr.C.V. Raman Institute of Science & Technology, kota-Bilaspur C.G, India. She has completed her M.Tech. from CEC Bilaspur C.G, India and B.E. from KIT, Raigarh, India. She has about four years of academic experience and one year industrial experience. Her area of interest includes Digital electronics, Image processing and Wireless communication.