

# Voice over LTE using Call Admission Control [Survey]

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## ABSTRACT

Long Term Evolution (LTE) is the Fourth-Generation (4G) mobile broadcast technology. This paper proposes a Call Admission Control scheme (CAC) which is based on macroscopic modeling of vehicular traffic. Macroscopic model describes vehicular traffic in terms of number of vehicles, mean speed and cell transition probability. CAC schemes have been previously proposed for cellular networks where a certain amount of system bandwidth is reserved for high-priority calls. This paper also deals with the Quality of Service (QoS) in a Voice Over LTE (VoLTE) Service. This introduces a problem of how to provide voice services in networks. When a new call request arrives in a cell, our call admission control scheme considers ongoing calls in the cell and adjacent cells. We propose a channel borrowing approach in which new best effort (BE) calls can borrow the reserved bandwidth for high-priority calls. The analytic model for this scheme is a mixed loss-queuing system for which it is difficult to calculate call blocking probability (CBP) and call dropping probability (CDP). Our focus in this paper is on the system modeling and performance evaluation of the proposed scheme. This scheme shows better network utilization and it is observed that our channel borrowing approach decreases the CBP considerably while increases the CDP slightly over a large range of hand-off rates.

**Keyword :** - Wireless Communication, Call Admission Control, Quality of service (QoS).

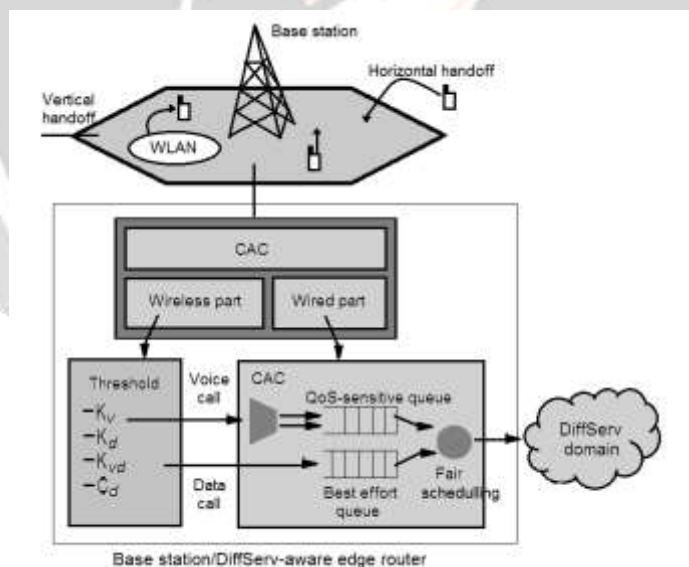
## 1. INTRODUCTION

The Wireless technology is wide used for tether-less communication access. The prevailing penetration of the second generation and third generation wireless systems has proven the wide acceptance of wireless communications. The second generation systems like GSM IS-136 and third generation system like GPRS square measure digital slim band systems. They will support solely digitized voice and restricted low bit rate data services. Because the quality of internet and also the World Wide Web is growing at exponential rate, the extension of those services from the fastened wireline domain to the wireless domain becomes inevitable. The requirement of multimedia support manifests the inadequacy of second and third generation wireless systems. The drive towards fourth generation is currently on a full swing. Count offers the presently visualized evolution path of wireless systems from the third generation (3G) to 4G. The telecommunication business landscape for cellular networks is growing chop-chop from 2G to 4G to accommodate the increasing usage of multimedia applications and user's quality. In 4G, Worldwide ability for Microwave Access (WiMAX) and long Evolution (LTE) square measure two rising broadband wireless technologies aimed to supply high-speed net of a hundred Mbps at a transport speed of up to 350 km/h [1]. Recently, analysis on the performance analysis and improvement of 4G/5G transport networks has been below the main target of researchers within the field of transport networking. CAC scheme are often classified supported numerous style choices. Every style possibility has its own upsides and downsides. Author has represented a survey of various CAC schemes used for mobile multimedia networks deploying soft computing techniques like artificial neural networks, symbolic logic, and genetic algorithms [4]. Kohonens counter propagation network (CPN) are often wont to improve the QoS mechanism that is additionally appropriate for CAC with

restricted resources/ bandwidth; and it's the advantage like less decision obstruction and dropping chance less information measure consumption and higher resource utilization etc. That tries to extend the output, and shows deduction in delay happens in wireless heterogeneous networks [2]. Here, the decision Admission management plays a key role in providing bonded QoS within the communication links between heterogeneous networks. We also evaluated the VoLTE QoS performance in terms of end to end delay, jitters, packet loss rate[2,4]. The aim of rule is to at the same time offer priority supported transmission and area. During this paper, a unique decision admission management rule for wireless cellular networks is planned. The decision admission management rule is predicated on power management.

## 2. SYSTEM ARCHITECTURE

This section includes discussion on common design for decision admission management theme known as Novel primarily based 4G wireless networks, admission management design. This CAC module is two-tier design. During this design, decision admission module is split into 2 sub-modules, one for the wired half and alternative for wireless half. During this CAC has to handle multiple categories of calls that conjointly includes vertical hand-offs from alternative sort of networks. So, during this ABA (Adaptive Bandwidth Allocation) is employed to effectively utilize the information measure from resources. Base station serves two styles of calls, voice and data to reduce hand-off call dropping probability, thresholds are set for voice, data or data calls severally. This thresholds helps to priorities the calls over the hand-off or network traffic conditions. In wired module QoS queue is for voice packet whereas the most effective effort queue is employed for data packet. A decision admission management mechanism is applied at QoS queue to ensure packet level QoS. As shown in Fig1 the DiffServ-aware edge router has two transmission queues: QoS and best effort (BE) with size U and V packets, severally. The QoS queue is employed for voice packets, whereas the BE queue is employed for data packets. A CAC mechanism is applied at the QoS queue to ensure packet-level QoS interest. CAC could be a network method that receives as associate input, a association request that specifies the traffic descriptor and QoS necessities of the association and returns a response granting or denying the admission request.



## 3. RELATED WORK

This study is associate analysis of a proposal designed to see the issue in concluding a delegated task. Generally, a feasible study precedes technical development and project implementation. Technical it deals with the

study of operation, performance, and constraints like resources accessibility, technology, development risk that will have an effect on the power to attain an appropriate system. It identifies whether or not the work are often done, whether or not technology used is compatible or not with current system. Since the system are platform freelance. Economic analysis is that the most often used methodology for evaluating the effectiveness of a brand new system. Additional normally called cost/benefit analysis, the procedure is to see the advantages and savings that are expected from a candidate system and compare them with prices. If benefits outweigh prices, then the choice is created to style and implement the system. Associate bourgeois should accurately weigh the value versus benefit before taking associate action. No special investment is required to manage the tool. No specific coaching is needed to use the tool. Investment needs one time at the time of installation. The software system employed in this project is software system that the price of developing the tool is least. The present resources out there are decent for implementing the planned system. It is a measure of how well a planned system solves the issues, and takes benefits of the opportunities known throughout scope definition and the way it satisfies requirement and identifies necessities known within the requirements analysis part of system development. The developed system must meet the following standards :

- Efficiency
- Accuracy
- It should be Secure and reliable.

#### 4. EXISTING SYSTEM

There has been a good analysis on CAC style and schemes within the literature. CAC schemes may be classified supported numerous style choices. Every style possibility has its own merits and demerits, as mentioned below. It's delineate a survey of various CAC schemes used for mobile multimedia system networks exploitation soft computing techniques like artificial neural networks, mathematical logic, and genetic algorithms [3]. Counter propagation network (CPN) may be accustomed improve the QoS mechanism that is additionally appropriate for CAC with restricted resources bandwidth; and it's the advantage like less decision obstruction and dropping likelihood, less information measure consumption and higher resource utilization etc [2]. Robust Call Admission Control algorithm is projected during this article, that tries to Control the access to network resources, and shows deduction in delay happens in wireless heterogeneous networks [6]. Here, the decision Admission management plays a key role in providing bonded QoS within the communication links between heterogeneous networks. The aim of algorithmic rule is to at the same time give priority supported transmission and area. The decision admission management algorithmic rule is predicated on power management. It determines the optimum range of admission users with optimum transmission power level therefore on cut back the interference level and decision obstruction. During this paper the admission decision is taken by taking different criterion into consideration. In this paper, the Call Blocking probability of the system for both the aggregate and individual traffic gets increased as the utilization rate gets increased, so by the use of their proposed fuzzy logic CAC, the probability is reduced to 20% [7]. In this paper, the terribly trending broadband communication for top speed train is mentioned within which the bottleneck downside of relinquishment , so to handle and solve this issue a DEA (Data Enclosing Analysis) is borrowed to evaluates six typical ways or system models of relinquishment. Their analysis result suggests that RoF (Radio over Fiber) model is that the best acceptable system to support high quality communications. Transmission may be opted by two ways in which either voice or data communication, however in cellular networks perpetually the priority is voice just in case of network traffic.

#### 5. REFERENCES

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