

# Enhancing Quality of Service and Security for Heterogeneous Network using Game Theoretic Algorithm

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**Abstract** - The emergence of various new generations in Differentiated applications along with their services will greatly increase the accessing of base station in use of multiple accessing nodes in wireless sensor networks. The presence of several users in a wireless media will cause the disturbance for the user in the required access range. Due to this disturbance the unwanted links will increase. In order to minimize that disturbance, we have to provide the interconnection of Expected access and suitable Security. But in regular these two techniques are treated in a unique form not in a combined form. And also have some problems in treating these two in a combined manner. Due to this combined form of usage we have to introduce the approach of playing game with each other on the basics of bandwidth and delay between user and base station. And the solutions are shown in graphical representations.

**Keywords**- Quality Of Service, Heterogeneous Networks, Evolved Packet Core.

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## I. INTRODUCTION

The explosion of Differentiated applications can tend to the generation of traffic between the users in a cellular network. So many audio and video applications are very much peculiar for today's work from home to Business environment. To support with enormous growth of mobile traffic will created by many users in multiple access Network. This will be reduced by increase the small cell coverage in multiple access Networks and make the base station accessing to be get closer to the user to provide the expected s service and security for their required applications.

One of the major problem will arise during the small cell coverage increasing will create the unwanted links. Due to that we have to create the security with interconnection of expected services.

For large applications it will provide only the weak security parameter. Due to that it will want a combined form of service and security. This combined format will base on Bandwidth level from the user it will provide the required Quality of Services. And based on the

accessing speed of the users it will provide the required security mode.

Then simultaneously increasing the providence of Service to the selected network and Security level it will create the distant between them. Due to that we create the user to act in a selfish way to get their required service and security and to clear the trade-off between them.

In this we create the Algorithm it will be used for giving equal level of service and security to the user within their range. We will show how the Algorithm will work to provide an exact solution. And the result is simulating through the Network Simulator version.

## II. DESCRIPTION OF EXSISTING SYSTEM

The interconnection between Expected quality of service and Security will create some of the Pre-required techniques Reference.[6].Stable characteristics are used for the required choice of expected service for selected network and security in a low range that is for small applications.

An explosion of security level will base on the changes in the services of base station to the accessing users. Reference.[7] characteristics will be changed randomly based on applications by using this will create

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the extended security level with minimum delay. On the Basis of service level we have to implement the required security requirement into internet protocol. Additional elaboration of Service level specification will also occur. This is not only degenerate the power usage and memory and also increasing the required delay and bandwidth. On the basics of internet protocol, Authentication Header, Integrity, Confidentiality we have to use the different modes of bandwidth usage. In wireless network the problem of mobile traffic will be noticed as one of the major issue and remain as in open platform which is described in below section.

**III. PROBLEM STATEMENT:**

The major disadvantage of stable characteristics of expected service will get the low range of security. Not suitable for large applications.

But in random requirement services will get the drastic range of mobile traffic it will provide the higher security but not in guaranteed.

Service Level Specification is a cost effective one. Then in Evolved packet core system will increase the service level but not the security level that will considered as one of the disadvantage.

Based on threats levels they will show the security level to be wanted.

In this mode of increasing the service level will increase the processing burden and decreasing of getting the security level for that required services.

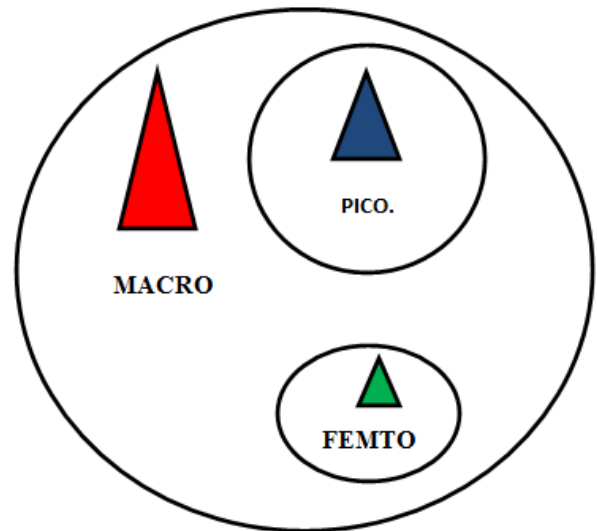
It will be taken into two modes they are the multiform of security level, that is security level will change automatically depends upon services. And also provide additional security level for the required services.

The major term is the utility will be considered as both Quality of service and security. The term utility refers to the processing rate which will consider both on service providence and security providence.

The evolved packet core(EPC) which define only the extensive QOS but not a security. And also many threats that have anticipate in the HETNET. Some of the threats are node injection, node modification; eavesdropping and so forth It will support the local failure

of traffic whether the roaming subscriber is accessing the Evolved packet core via 3GPP or non 3GPP

**IV. ARCHITECTURE OF HETEROGENEOUS NETWORK**

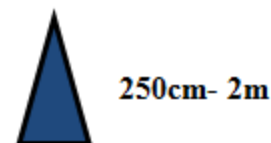


**Femto**

It is one of the closed access mode of operation, it will be a traffic free technique. This technique will only used for small coverage range application.



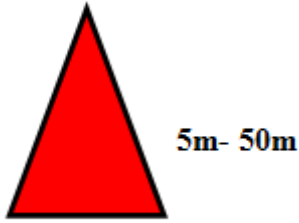
**PICO:**



**MACRO:**

This is the one of the interfacing network between core network and the user. This will include all pico and femto node ranges.

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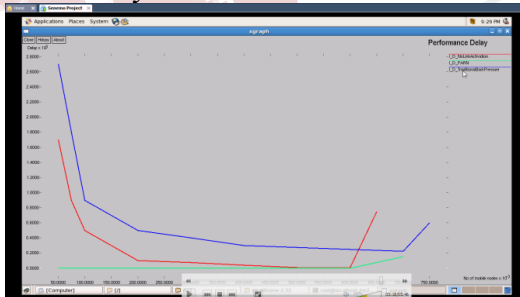
**V. PROPOSING ALGORITHM:**

For getting an equivalent form of expected service of selected network and a state of being free from threats by perform a form of competitive activity according to the rules preferred between the user and the base station along with their parameters.

At first the required user will initialize their operation by make a determination of their suitable application type. Based on that application type the base station will check the required bandwidth of each user. If the required bandwidth range is match to the base station requirement , for that application type. It will obviously provide the expected service to the selected network. Based on the delay range between many users within that coverage range it will provide the suitable service and security technology.

**VI. PERFORMANCE EVALUATION:**

**Performance delay:**



The above graphical representation will show the Service and Security providence for the selected users.

**GREEN:**

It will represent that no operation will be taken.

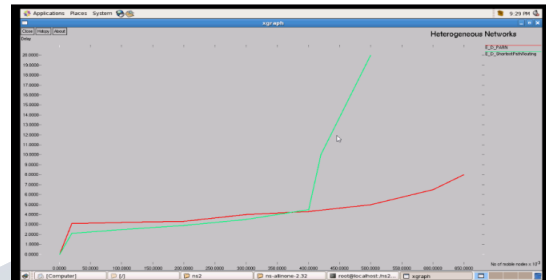
**RED:**

It will indicate the service providence for the selected users from source to destination and vice versa on the basis of bandwidth and provide it's delay performance.

**BLUE:**

It will show the Security for the above service provided by the base station to the user.

**HETEROGENEOUS NETWORK:**



In this also it will shows the required service and security for a selected network in heterogeneous basis. It will use the shortest path algorithm for avoiding the interference between the users in a heterogeneous network. And also provide the required security to the user.

**Performance evolution:**

In this approach we have to provide the graphical representation of result analysis will be obtained. In this no activation will indicate that no operation will be started. And the performance of delay will provide using backpressure will represent the communication between the source and destination or vice versa. Based on Bandwidth from user to the base station and the base station will provide the expected service for the selected network. Another one is the tracing file it will provide the security for the information within the coverage range.

**VII. CONCLUSION:**

Hence in this we have to increase the small cells utility .By increasing this utility we have getting the higher range of interconnection of expected Service for the selected network and the required security for that getting accessing. An envisioned Algorithm was proposed by both service and security in a suitable range for the user's .And also the Network Simulator will provide the required service and security in form of graphical representation with suitable procedures. . At the same time, the base station is able to maximize its bandwidth utilization. Simulation results demonstrated that our proposal provided much higher service in terms of delay.

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The Maximum number of UE's with timeliness of application is to be proposed in future work in comparison with their conventional methods.

**REFERENCE**

- [1] K. Meerja, A. Shami, and A. Refaey,(2015)“Hailing Cloud Empowered Radio Access Networks,” .
- [2] S. Arai et al.,(2014) “An Efficient Method for Minimizing Energy Consumption of User Equipment in Storage-Embedded Heterogeneous Networks,” .
- [3] H. Nishiyama, M. Ito, and N. Kato,(2014) “Relay-by-Smartphone: Realizing Multi-Hop Device-to-Device Communications”.
- [4] J. B. Abdo, J. Demerjian, and H. Chaouchi,(2012) “Security v/s QoS for LTE Authentication and Key Agreement Protocol”.
- [5] L. S. Cardoso,(2006) “Quality and Security Usability,” .
- [6] W. He and K. Nahrstedt,(2006) “An Integrated Solution toDelay and Security Support in Wireless Networks,” .
- [7] Z. Fadlullah et al.,(2009) “Exploring the Security Requirements for Quality of Service in Combined Wired and Wireless Networks,” .
- [8] S. Dufloset et al.,(2005) “Improving the SLA-Based Management of QoS for Secure Multimedia Services,” .
- [9] T. Yahya and H. Chaouchi, (2010)“On the Integration of LTE and Mobile WiMAX Networks,” .