

## 4G Networks based on quality of service

G. Alisha Evangeline\*, R.Indumathi, K.Sasirekha

ECE Department, Aarupadai Veedu Institute of Technology, Vinayaka Missions University

\*Corresponding author: E-Mail: rjaichandran@gmail.com

### ABSTRACT

In telecommunication systems, 4G is the fourth generation of mobile communication standards. It is a progression of the third generation (3G) standard. The 4G Standard provides mobile phone ultra-broadband Internet access. The applications of 4G networks include mobile access, video conferencing, IP Telephony and 3D television. Exponential development of user demands on a single junction platform has brought researchers to discover various aspects/features of Fourth Generation (4G) Mobile Communication System. In this paper, an assortment algorithm has been proposed which provides a better way to implement user preferences as per the features of 4G. Rank based function has been used for various available services, known as networks. As per the quantity of user needs, Weighted distance function is based on multiple QoS parameters. The proposed algorithm gives the enhanced result when compared to single parameter based system under heterogeneous network.

**KEY WORDS:** WNSF, Mobile VCE, TOPSIS, Network Selection.

### 1. INTRODUCTION

In mobile communication Standards, the most extensively used Fourth Generation (4G) wireless networks was originally expected as ultra-high speed broadband wireless system. The 4G network system has a cellular configuration which means that it will be built on presented architecture of the former generations. An ultimate conformity on what features differentiate 4G mobile system is not proficient. The circulation of the 4G targets within research area is still open and lot of features and purposes has been suggested by the researchers.

The Wireless World Research Forum (WWRF), planned at essential features of “beyond 3G” wireless interactions, the Japanese MIRAI and the Mobile VCE (Mobile Virtual Centre of Excellence) in mobile communications, and numerous European IST projects such as, Magnet, Simplicity, Daidalos Ambient systems, etc. are solitary a small number of models of international grouping dedicated to 4G utilization. The most momentous design intention of 1G mobile network was to endow with a wireless architecture that allows subscribers to consign mobile calls and preserve connectivity as they moved from one coverage area (cell) to another.

**Related works:** The expansion of a progression to estimate three packet-switched networks (GPRS, UMTS and WLAN) in orientation to the QOS obtainable and in conclusion, the assortment of the system that offers the maximum standard for QOS in (Charilas, 2008). In (Xiaohuan Yan, 2010), an innovative algorithm is used for superlative network selection based on multiple user inclination under heterogeneous network. A widespread review of the VHD algorithms premeditated to satisfy these requirements in (Manu Mohan, 2013). In (Lahby Mohamed, 2012) An algorithm which uses a distance function to fabricate a structured list of a variety of contact technologies known as networks in an exacting region according to numerous user preferences and level of interest, An intellectual network selection approach merges two multi attribute decision making (MADM) methods such as analytic network process (ANP) and the performance for order inclination by comparison to an ideal solution (TOPSIS) method in (Bohlin, 2004).

### 2. MATERIALS AND METHODS

**Proposed system:** The new conception which is established by 4G is based on the postulation that each user has own necessities that are unique. The User demands that the network selection should be as per their needs, even during handoff method. The user has not to indicate his/her particular necessities at the time of handoff. The device must be able to choose the network that satisfies the current session’s QOS requirements. Thus, a novel network discovery and selection mechanism must be provided. The proposed network selection algorithm works on the preference of the user specified QOS parameters. The handoff process must take place in order to provide the persistent services; the network selection is completed astutely out of the accessible options for the user. An innovation and selection mechanism to find a new Base Station (BS) must be done within the specified time. This system explores user specific routine parameters that are used in the network selection algorithm.

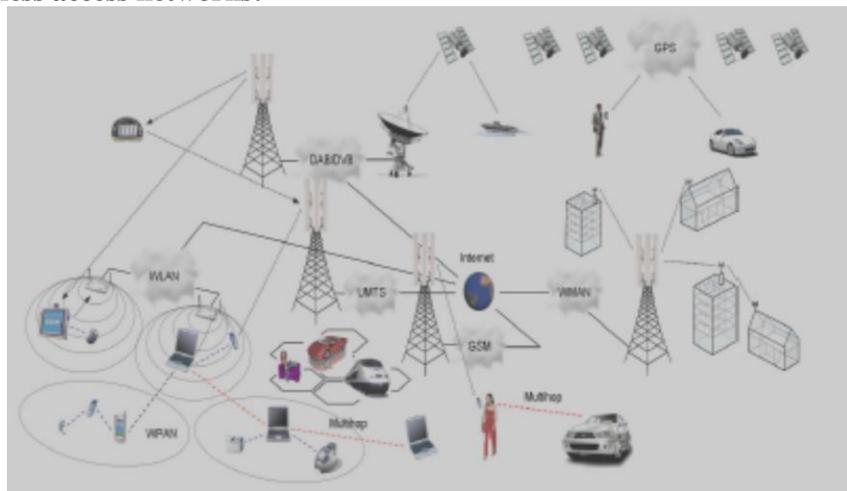
#### Modules

- Wireless Evolution Standarads
- Customozing Parameters
- Network Selection

**Wireless evolution standards:** In the 1G to 2G evolution, as well as evolution from analog to digital, a mono-service to multi-service transition is implemented. From 2G to 3G, as well as a mono-media to multimedia transition a transition from person-to-person, person-to-machine interactions, users accessing video, Internet/intranet and

database feeds. The 3G to 4G progression supported by such technologies and has a transition towards a prevalence of programmed and separately initiated machine-to-machine interactions.

### Heterogeneous wireless access networks:

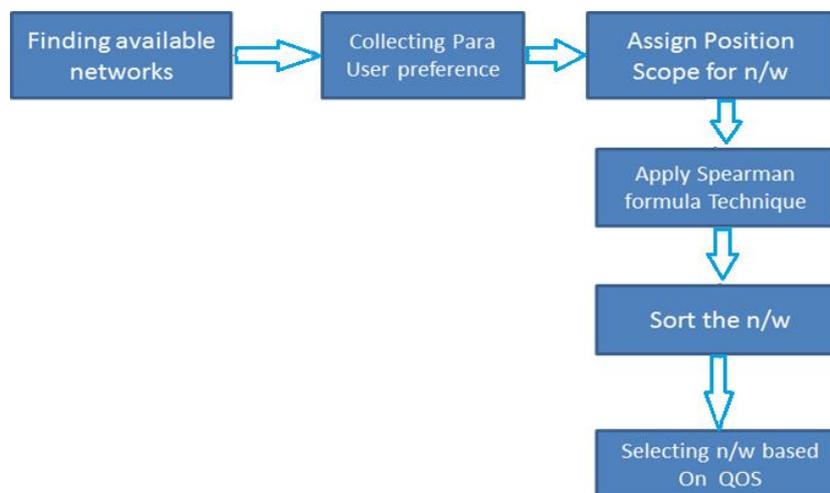


**Figure.1. Heterogeneous wireless access networks**

The next invention of cellular/wireless communications is estimated to be entirely IP-based and consist of access networks and a congregated core network. The sprouting 4G network will effortlessly incorporate various types of wireless access networks including the following:

- Wireless personal area networks (WPANs), such as ultra wideband and Bluetooth which provide range-limited ad hoc wireless service to users;
- Wireless local area networks (WLANs), such as 802.11x (Wi-Fi) which provide high-throughput associations for stationary/quasi-stationary wireless users without costly communications of 3G;

### Network selection



**Figure.2. Network selection**

An appropriate access network has to be preferred once the handoff instigation algorithm indicates the requirement to handoff from the present access network to a intention network. We originate the network selection decision process as a MADM hitch that deals with the assessment of a set of substitute access networks using a numerous aspect wireless network selection function (WNSF) defined on a set of characteristics. The WNSF is an objective function that dealings the efficiency in consume radio resources and the enhancement in quality of service to mobile users gained by handing off to an exacting network. It is defined for all alternative target access networks that cover the service area of a user. The network that provides the highest WNSF value is selected as the best network to handoff from the current access network according to the mobile workstation conditions, network conditions, service and application requirements, cost of service, and user preferences.

### Customizing parameters

**Fully converged services:** Personal communication Systems, information network systems, broadcasting and entertainment will be combined into a faultless pool of content which is available according to the user's requirement.

**Ubiquitous mobile access:** The prevailing mode of access to the pool of content will be mobile, accounting for all voice communications, the mainstream of high-speed information services, and a significant proportion of broadcast and entertainment services.

**Diverse user devices:** The user will be provided by a extensive variety of low-cost mobile devices to access content opportunely and seamlessly. These devices will commonly be wearable—in some cases throwaway— and will usually be motorized autonomously of the mains.

**Autonomous networks:** Essentially, these systems will be highly independent adaptive networks accomplished of self-management of their constitution to assemble the shifting and growing demands of users for both services and capacity.

**Software dependency:** Intelligent mobile agents will survive throughout the networks and in user devices, and will act frequently to shorten tasks and make sure precision to the user.

### 3. SIMULATION RESULT

#### Network set up

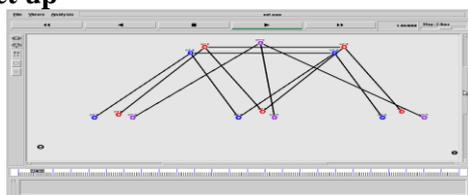


Figure.3. (a) User Setup

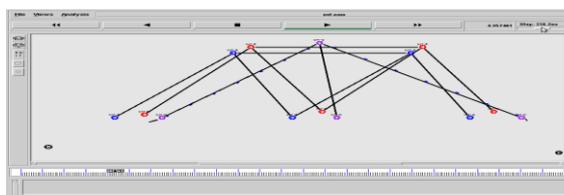


Figure.3. (b) Node (1 & 2)

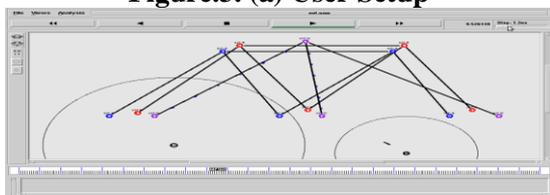


Figure.3. (c) Single Node

### 4. CONCLUSION & FUTURE SCOPE

The proposed algorithm uses a detachment function to produce an ordered list of various available access networks in particular region according to the multiple user inclination and level of interest. The results show that the proposed algorithm always best connects the user, as per his preferences of QoS parameters in a 4G System. Consumers demand that software and hardware be user-friendly and perform well. Indeed, it appears part of our culture that customers expect the highest quality and the greatest features from what they buy.

#### REFERENCES

Bohlin E, Lindmark S, Bjrkdahl J, Weber A, Wingert B, Ballon P, The Future of Mobile Communications in the EU, Assessing thePotential of 4G, ESTO Publications, 2004.

Charilas D, Markaki O, Nikitopoulos D, Theologou M, Packet Switched Network Selection with Highest QoS in 4G Networks, Computer Networks, The International Journal of Computer and Telecommunications Networking, 52(1), 2008, 248 – 258, 2008.

Lahby Mohamed , Cherkaoui Leghris and Adib Abdellah, An Intelligent Network Selection Strategy Based on MADM Methods in Heterogeneous Networks, International Journal of Wireless & Mobile Networks (IJWMN) 4(1), 2012.

Manu Mohan C M , Benoy Abraham, A Novel Algorithm for the Optimal Network Selection Scheme in the User Centric 4G networks, International Journal of Computer Applications, 61(16), 2013.

Xiaohuan Yan, Ahmed Sekercioglu Y, Sathya Narayanan, A survey of vertical handover decision algorithms in Fourth Generation heterogeneous wireless networks, Computer Networks, Elsevier, 54, 2010, 1848-1863.