



PROGRESSION TOWARDS MOBILITY MANAGEMENT IN WIRELESS SYSTEMS

J.Hima Bindu¹

¹Assistant Professor, Mahatma Gandhi Institute of Technology, Hyderabad, A.P, India

himabindu1984@gmail.com

ABSTRACT:

The Rising applications in video streaming, telemedicine, sensor networking and surveillance are likely to control and shape the next generation of systems of mobile communication. In spite of the network, one of the most significant and demanding problems for tether less communication in addition to computing is mobility management. Mobility management plays an important responsibility in the present and the future wireless networks in effectively delivering services to the mobile users. Thus, mobility management hold up mobile terminals, permitting users to roam while concurrently offering them incoming calls in addition to supporting calls in advance and comprises of two components such as handoff management and location management. The performance of the techniques of mobility management can be enhanced by means of using replicas of user profiles that are set aside at numerous locations.

Keywords: Mobile communication, Mobility management, Handoff management, Location management.

1. INTRODUCTION:

Mobility management hold up mobile terminals, permitting users to roam while concurrently offering them incoming calls in addition to supporting calls in advance.

One of the significant features that facilitate the ubiquitous communication is the mobility management which is supposed to make available continuous steady quality of service even under extremely insensitive and unexpected conditions. Basic operations of

mobility management include location updating as units of units move around and location search as mobile units are required [4]. Mobility management plays an important responsibility in the present and the future wireless networks in effectively delivering services to the mobile users. Traditional applications of mobile communication were in voice communication of two-way, text emails in addition to downloading of remote file. The rising applications in video streaming, telemedicine, sensor networking and surveillance are likely to control and shape the next generation of systems of mobile communication. The performance of the techniques of mobility management can be enhanced by means of using replicas of user profiles that are set aside at numerous locations. The intention of replication is to make profile information readily available and to decrease the lookup expenditure as well as latency [8]. To keep these replicas reliable and up-to-date, they have to be updated whenever required. It is consequently valuable to replicate if advantage is superior to the overhead. In spite of the network, one of the most significant and demanding problems for tether less communication in addition to

computing is mobility management. Mobility management facilitates telecommunication networks to find roaming terminals intended for call delivery and to sustain associations as the terminal is moving into a novel service neighbourhood [1].

2. AN OVERVIEW OF MOBILITY MANAGEMENT:

Mobility management plays an important responsibility in the present and the future wireless networks in effectively delivering services to the mobile users. Mobility management is supposed to make available continuous steady quality of service even under extremely insensitive and unexpected conditions. Mobility management comprises two components such as handoff management and location management. Handoff management permits the network to preserve the connection of user as the mobile terminal prolongs to move and alter its access point to the network. The operations of handoff management are shown in fig1. The three-stage procedure for handoff initially involves initiation, where the user or a network agent, identify the requirement for handoff [11]. The second stage is innovative connection generation,

where the network has to discover new resources intended for the handoff association and carry out any additional operations of routing. Under network-controlled handoff or else mobile-assisted handoff, the network creates a new association, finding new resources intended for the handoff and performing any additional operations of routing. For mobile-controlled handoff, the mobile terminal discovers the novel resources and the network supports [3]. The concluding stage is data-flow control, where the deliverance of the data from the path of old connection path to the new path is preserved in accordance with the service of agreed-upon guarantees. Handoff management comprises two conditions such as intra cell handoff and inter cell handoff. Intra cell handoff takes place when the user move about within a service area and experiences signal strength weakening below a convinced threshold that outcomes in the transfer of the user's calls towards new channels of radio of suitable strength at the similar base station [14]. Intercell handoff takes place when the user move about into an adjacent cell and all of the terminal's associations have to be transferred to a new base station. While executing handoff the terminal may possibly

unite to numerous base stations simultaneously and makes use of signalling diversity to merge the multiple signals and this is known as soft handoff. If the terminal stays joined to only one base station at a time, clearing the associations with the former base station instantly before or after setting up a connection with the target base station, then the process is known as hard handoff [9]. Research concerns issues relating to Handoff management are competent and expedient packet processing; diminishing the signalling load on the network; optimizing the route intended for each connection; proficient bandwidth relocation; assessing existing methods for standardization; and refining eminence of service intended for wireless connections. Location management is a process of two-stage that facilitates the network to find out the present point of attachment of the mobile user intended for call delivery. The initial stage is location registration and the mobile terminal intermittently notifies the network of its new point of access, permitting the network to confirm the user and improve the location profile of user [7] [13]. The second stage is known as call delivery and the network is queried for the location profile of user and the present position of the mobile

host is set up. Present techniques intended for location management entails the design of database construction and the transmission of signalling messages among several components of a signalling network. As the number of mobile subscribers augments, improved systems are essential to maintain efficiently a continuously increasing the population of the subscriber [2].

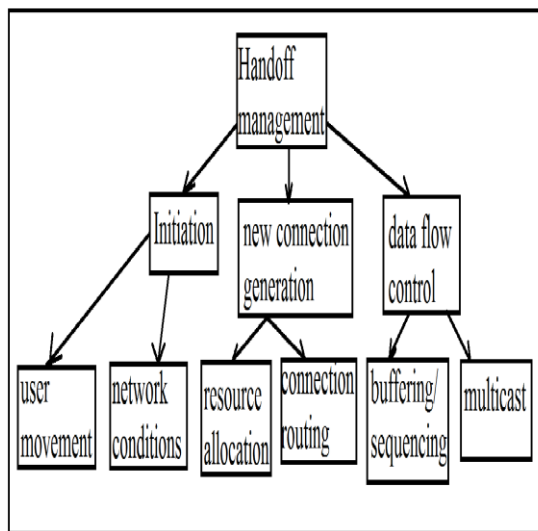


Fig1: An overview of Handoff management operations.

3. DESIGNING OF FUTURE WIRELESS NETWORK:

An architectural and structural basis that will permit evolving networks to put into practice free circulation of terminals, personal mobility, as well as network service portability was made available.

Radio Spectrum: The International Telecommunication Union is encouraging national regulators to go after its guidelines with the purpose of promoting harmonized exploitation of the radio spectrum as well as to make possible the expansion of systems of global personal communication [15]. In the past, frequencies have been assigned only in restricted amounts intended for specific services such as paging, mobile data, as well as private mobile radio. The future radio spectrum will comprise all these groups and will regulate a pool of frequencies which may possibly be managed vigorously to meet the needs of global market [12]. This will contain the technological developments necessary to make such active spectrum allocation from the pool of spectrum. **Hierarchical Cell Structure:** It will maintain radio environments that range from high ability picocells, to urban terrestrial micro- as well as macro-cells, to great satellite cells. The mobile user will access the wireless network by means of a device known as mobile terminal which will make use of radio channels to communicate base stations to expand access to the terrestrial network [5]. In the satellite network, the mobile terminal will converse through fixed Earth stations

which govern wireless traffic intended for satellite terminals or by means of the satellite itself. Dual mode terminals will communicate over both the terrestrial and satellite networks. Each cell will contain dedicated base station and an equivalent broadcast channel. The use of Channel is managed by means of the base station, which switches the network signalling traffic in addition to data traffic to the radio interface intended for communication with the mobile terminal [10]. The base station will also transmit messages of paging to the mobile terminal and compute the link quality to carry out handoffs to other cells. A cell site switch will administer one or more base stations and this switch will make available access to the network of serving mobile and will also administer the radio resources present functions of mobility management control. The mobile terminal will be capable to roam freely within an area comprising of numerous cells known as location area [6].

4. CONCLUSION:

The advancement in mobile communication continues to progress quality of human life. The performance of the techniques of mobility management can be enhanced by

means of using replicas of user profiles that are set aside at numerous locations. An architectural and structural basis such as Hierarchical Cell Structure and Radio Spectrum was made available. Hierarchical Cell Structure will maintain radio environments that range from high ability picocells, to urban terrestrial micro- as well as macro-cells, to great satellite cells. The future radio spectrum will regulate a pool of frequencies which may possibly be managed vigorously to meet the needs of global market.

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