PERFORMANCE ANALYSIS OF LOCATION UPDATE IN LTE BASED NETWORK

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ABSTRACT

A tremendous demand on mobile wireless technology due to the ability in providing users with information on the move has pushed development of mobile communication. Heterogeneous network architecture has attracted attention to boost performance and requirement of coverage in the most cost effective way. However, a massive volume of data to be processed and tunneled through network increased signaling traffic and long signaling delay. The aim of this project is to reduce signaling cost incurred in cellular network. Two schemes, centralized location management and distributed location management are proposed in handling a cost-efficient signaling traffic. A simulation algorithm is developed using MATLAB software to evaluate signaling cost. The simulation is carried out using different parameters which are number of UEs at one time within network and network size. The result shows that, distributed location management has better performance in reducing signaling cost when number of UEs and network size increased.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

The increasing numbers of people into an expending urban areas putting pressure on networks, especially in hotspot areas, thus network operators have to provide a better and efficient service to satisfy the users need. Heterogeneous network architecture allows operators to provide the most cost-effective in term of coverage and data capacity. Network operators can benefits from HetNet network as it increases capacity in hotspots area as traffic is not uniformly distributes and it also improves coverage at places where macro coverage is not available. Mobile devices with multiple communication interfaces such as WLAN, WiMax and UMTS are becoming very common and thus, mobile users will be able to roam across this IP-based heterogeneous wireless networks environment without any noticeable disruptions to ongoing communication flows [1].

The LTE network architecture is designed with the goal of supporting packet-switched traffic with seamless mobility, Quality of Service (QOS) and minimal latency. A packet-switched approach allows for the supporting of all services including voice through packet connections. The LTE architecture is a highly simplified flatter architecture with only two types of node namely evolved Node-B (eNB) and Mobility Management Entity (MME) [2]. As shown in Figure 1.1, eNBs in LTE architecture provide wireless connectivity to every UEs while MMEs support for tracking area update and handover via S1 interface. On the other hand, HSS acts as a permanent central subscriber database. All the network interfaces in LTE architecture is based on IP protocols with X2 interface interconnect the eNBs to the MME entity.