ANALYZING AND SIMULATION OF HANDOFF SCENARIO FOR WIRELESS COMMUNICATION NETWORK

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ABSTRACT

The aim of this project is to present the analysis and simulation of handoff scenario for wireless communication network exclusively within Global System for Mobile Communications (GSM) networks. The project started with designing a handover mechanism between GSM and a radio base network.

To be able to design such a handoff, it started out with an investigation of handoff within GSM networks. Through simulations and analysis of the model, the investigation on behavior of a hard handoff is possible. The model is being compared to the real system, to determine the received signal in hard handoff using Okumura-Hata Model in order to determine if the outcome of a handoff of the predicted is consistent throughout the network.

The data on handoff performance on mobile radio in UiTM Shah Alam area are collected and analyzed using a computer package called ROMES. While simulation is by using MATLAB software to evaluate the proposed methodology compared to the actual.

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CHAPTER I

INTRODUCTION

1.0 Introduction

With the introduction of digital cellular mobile networks, such as GSM, mobile telephone users experienced the freedom of traveling and always being connected. Even with a call in progress it is now possible to move from one radio cell into another without the call being interrupted. The action of switching a call in progress from one radio channel to another to secure the continuity of an established call is handoff. Originally this was the case for circuit switched voice and data connections. As GPRS is based on the 2G GSM network, handover is working with packet switched data connections as well. In the packet switched domain handover is known as routing area update (RAU). Network operators have to make sure that their networks are capable of performing handovers where continuous connectivity is request by the users.

Handoff is an essential component of mobile cellular communication systems. Mobility causes dynamic variations in link quality and interference levels in cellular systems, sometimes requiring that a particular user change its serving base station. In first-generation cellular systems like the Advanced Mobile Phone System (AMPS) handoffs were relatively simple. Second-generation cellular systems like the Global System for Mobile Communications (GSM) and the Personal Access Communication System (PACS) are superior to first-generation ones in many ways, including the handoff algorithms used. More sophisticated signal processing and handoff decision procedures have been incorporated in these systems. The control decision structures have been improved so that in progressing from network-controlled toward mobile assisted handoffs (MAHO) or mobile-controlled handoffs (MCHO), the handoff decision delay has been substantially reduced.