GSM TRAFFIC MEASUREMENT ON LOSS ROUTES

AZRIL BIN IDRIS

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This thesis is approved by,

ZUNAIRAH HJ. MURAT
Project Supervisor,
Department of Electrical Engineering,
Institut Teknologi Mara,
40450 Shah Alam, Selangor.
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ABSTRACT

The objective of this work is to monitor the performance of Global System for Mobile Communication (GSM) telephone network. The performance involve three main aspects that is the service performance, system capacity and the Grade of Service (GOS). This paper explains how to measure the GSM telephone traffic and how to analyze the measured traffic data. From the data, daily analysis is made where the peak value, peak day, lowest value and lowest day of the week is determined. The peak value of the week obtained from daily analysis is used to plot a graph of peak traffic vs week and the trend is monitored. Calculation is also made to determine the traffic offered. From the values, a graph of traffic vs days is plotted and traffic flow is monitored. Relatively simple programs has been written in BASIC computer language to solve the Erlang B equation. Probability of calls blocked obtained from the Erlang B equation can be converted into GOS by multiplying it with 100 %. The conversion is to determine the GOS that the customers received. Besides that, traffic is also monitored from 9:30 am - 18:30 pm to show that 11:00 am - 12:00 noon is the busiest hour. From this observation, further recommendations are made with other considerations in order to provide the best performance for the customers.

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CHAPTER 1

1. INTRODUCTION

1.1 General

Martin P. Clark [1] mentioned that telecommunications networks, like roads, are said to carry 'traffic', consisting not of vehicles but of telephone calls or data messages. The more traffic there is, the more circuits and exchanges must be provided. On a road network, the more cars and lorries, the more roads and roundabouts are needed. In either kind of network, if traffic exceeds the design capacity then there will be pockets of congestion. On the road this means traffic jams; on the telephone the frustrated caller gets frequent 'busy tones'. Short of providing an infinite number of lines, it is impossible to know in advance precisely how much equipment to build into a telecommunications network so as to meet demand without congestion. But there is a tool for 'dimensioning' network links and exchanges. It is the rather complex statistical science of 'teletraffic theory' (sometimes also called 'teletraffic engineering'). He begin with the teletraffic dimensioning method used for circuit-switched networks, first published in 1917 by a Danish scientist, A. K. Erlang. Erlang defined a number of parameters and developed a set of formulae, which together give a frame-work of rules for planners to design and monitor the performance of telephone, telex and circuit-switched data network.