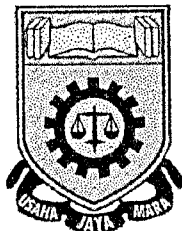


TELETRAFFIC ENGINEERING
ON
CONGESTION AND FORECASTING

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ABSTRACT

The objective of this thesis is to analyse the teletraffic engineering on congestion and forecasting as to control and monitor the performance of Global System for Mobile Communication (GSM) telephone network in CELCOM Malaysia Sdn Bhd, Kelana Jaya.

These two criteria are needed when introducing new services in signalling networks. Traffic measurement are primarily to check the service performances and monitoring the system capacity. The aim of traffic measurement is to assist the administration to manage and plan the network effectively and efficiently.

Performance evaluation methods are required in order to analyse congestion effects on the network and to adapt forecasting procedure to the network operating conditions. The data obtained is taken on the average data on weekly basis (five days a week) which were monitored at the exchange. Data is collected using a C++ computer program to be used for forecast and dimensioning for future requirements. Capacity planning is very useful to determine on how many circuits are required in order to control the proportion of blocked calls or congestion. From the observation, further recommendations were made with other considerations in order to provide the best performance for the customers.

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CHAPTER 1

INTRODUCTION

1.1 GENERAL INTRODUCTION TO TELETRAFFIC ENGINEERING

Cellular mobile telephony is a significant step forward in the provision of communication services. The aim of cellular systems is to provide personal telephone services to subscribers on the move [6]. In telecommunication systems, it would be uneconomical if exclusive resources such as switching and transmission facilities were dedicated to each customer [7].

Teletraffic is the technical term identifying all phenomena of the control and transport of information within telecommunications networks [8]. Teletraffic engineering is one discipline of telecommunications involves the measurement of telephone traffic intensity at various switching exchanges in a telephone network and the subsequent analysis of the data obtained [3].

The work of a teletraffic engineer consist of designing and dimensioning networks to meet specified quality of services (QoS) objectives; developing routing, scheduling and other algorithms that improve the cost/performance trade-off of the network, designing overload controls that protect the network and its components from disastrous surges due to either traffic or error conditions; designing congestion controls that mitigate the impact of network traffic on user perceived performance; characterising and