

**PSTN PERFORMANCE EVALUATION USING MODELING AND
SIMULATION FOR CENTRAL REGION**

Thesis is presented to fulfill the requirement of Advanced Diploma In Electrical
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ABSTRACT

The purpose of this project is to evaluate the performance of Public Switched Telephone Network(PSTN) exchange at Central Region. The PSTN performance evaluation is very important because any problem exists in PSTN exchange can influence the service quality and customer satisfaction. As we know, Central Region is a highly developing area with infrastructure, economy, social and politic. It is the main area for network growth and further for Telekom Malaysia's income. This project will try to overcome a specific problem that is the network congestion by using modeling and simulation method that can increase network utilization, service performance and quality of PSTN exchange. In this project the case study is carried out at Kuala Selangor (KS) exchange as a Group Switching Center (GSC). It is the NEAX 61 (Multi) type that is the Stored Program Controlled (SPC) switching system.

The existing four levels switching hierarchy in Telekom Malaysia is applied in this modeling and simulation method. The simulation package used in this method is the Block Oriented Network Simulator (BONeS). It is hoped that by using BONeS simulation package, the problems of network congestion faced in PSTN exchange could be properly modelled thus the appropriate kinds of modification to the system can be determined. It also can determine the right choice for PSTN exchange such as the right alternative routes, the right Grade of Service (GOS), the better exchange performance in order to give better quality services to subscribers and the better trunks and nodes (exchanges) utilization.

From the simulation result, it is hoped that the right model of PSTN exchange can be determined hence giving most accurate answer to the problem of network congestion.

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1.0 INTRODUCTION

1.1 Telecommunication Network

Telekom Malaysia (TM) is the main telecommunication service provider in Malaysia. After privatization, it further geared itself to provide better telecommunication services to the ever growing demands of the customer. Faced with fast changing technologies in telecommunication, the network has to be improved in line with the advancements in technologies.

Customers, especially in the business sectors, are demanding more flexible, diversified and sophisticated telecommunication services. As a private company, TM also faces the possibilities of network and service competitions. Furthermore as a leading network provider, it must guarantee a cheap, efficient, reliable and high quality service and at the same time giving full satisfaction to existing and potential customers.

The network is the core support of TM's business, and the area where technology makes its greatest impact. The capital works program for network development that amounted to RM637 Million in 1989 was to expand, digitalise and modernize the existing network. The increase in network capacity has been carefully planned to achieve a higher level of utilization of the existing network.

The PSTN comprises a network of various switching centers or exchanges that route local, trunk or international subscriber calls. The national network functions relating to the network of switches and transmission systems were centralized for efficiency and