THE ANALYSIS OF CELL RECEIVED CAPABILITIES IN ATM NETWORK

Project report presented in the partial fulfillment for the award of the Bachelor of Electrical Engineering (Hons) UNIVERSITITEKNOLOGI MARA

	NOREHAN BINTIABD MUTALIB
HF ••••• ^11	Faculty of Electrical Engineering
	Universiti Teknologi MARA
	40450 SHAH ALAM, SELANGOR
	MAY 2006

ACKNOWLEDGEMENTS

In the name of Allah The Most Gracious, The Most Merciful and The Most Beneficent. Praise in only Allah S.W.T for his bounty and blessing upon us. It is with deepest sense of gratitude to Allah who has given the strength and ability to complete this project.

I would like to express my countless appreciation and gratitude to my project supervisor, Mr. Ir Muhammad bin Ibrahim for his guidance, ideas and all the support in doing this project.

My special thanks also go to Mr. Zanaruddin Kandar who spent much time to give an explanation and teach me on how to use Victoria SDH/ATM/IP (4080C) equipment.

My thanks also go to all lectures in Faculty of Electrical Engineering UiTM and to those who have devoted their time either directly or indirectly, especially friends for their ideas, support and a lot of contribution towards the success of this project.

Last but not least, to both of my parents and family for their understanding and support throughout the years. You are the source of my strength and inspiration.

ABSTRACT

This project presents the application of an ATM network. ATM techniques are applied in integrating digital video into broadband networks, IP internetworking and local area networks. *Cell* is the core of ATM networks. This project presents the measurement results on cell received in ATM traffic by configuring the Victoria equipment parameter settings for an ATM network. The testing and measurement is conducted using Victoria SDH/ATM/IP (4080C) and Victoria ATM/IP (4071C). The study focused on the cell received by the different transmission medium. Three types of transmission medium that have been tested are El (2MBits/s), E3 (34MBits/s) and STM-1 (155MBits/s). The measurement test is done according to two traffic classes which are Constant Bit Rate (CBR) and Variable Bit Rate (VBR). The test also performed Out-of-Service measurement (OOS) parameters for Cell Transfer Delay (CTD) when burst error is injected. The measurements are taken in interval time of five, 10 and 30 minutes.

TABLE OF CONTENTS

CHAPTER

PAGE

Acknowledge	ment		i
Abstract			ii
Table	of	Contents	iii
List	of	Figures	vi
List	of	Tables	viii
List	of	Abbreviation	ix

1 INTRODUCTION

1.1	Introduction	of		ATM	1
1.2	Objectives	of	the	Project	3
1.3	Scope	of	the	Work	3
1.4	Organization	of	the	Project	4

2 ATM NETWORKING

2.1	Introduction				5
2.2	Definit	tions	of	ATM	6
2.3	ATM Networking			7	
	2.3.1	ATM Access N	ode		8
	2.3.2	ATM Adaption	Layer (AAL)		9
	2.3.3	ATM Layer			10
	2.3.4	Physical Layer			11
2.4	.4 ATM Basics				14
	2.4.1	ATM Cell Basic	e Format		14
	2.4.2	ATM Network	Interface Types		15
	2.4.3	ATM Cell Head	ler Formats		16
	2.4.4	ATM Services			17

3 LOCAL TRAFFIC CONTROL

3.1	Need for traffic control in ATM		
3.2	Traffic	Traffic Contracts and Parameters	
	3.2.1	Peak Cell Rate (PCR)	20
	3.2.2	Sustained Cell Rate (SCR)	22
	3.2.3	Maximum Burst Size (MBS)	22
3.3	ATM Traffic Parameters		23
	3.3.1	Cell Transfer Delay (CTD)	23
	3.3.2	Cell Delay Variation	24

METHODOLOGY

4.1	Hardv	Hardware Description	
	4.1.1	Introduction	26
	4.1.2	Application of SDH/ATM/IP (4080C)	27
4.2	Metho	Methodology	
	4.2.1	Changing the Application Mode	29
	4.2.2	Generating ATM Traffic Generator	29.

RESULTS AND DISCUSSION

5.1	Results and Analysis		
5.2	Signal of E1, E3 and STM-1 from oscilloscope	34	
5.3	Results for Cell Received at CBR and VBR	36	
5.4	Results for Cell Received after Burst Error is injected	42	
5.5	Results for Cell Transfer Delay (CTD)	47	
5.6	Results for Traffic Trace	50	