

TABLE OF CONTENTS

APPROVAL PAGE	i
SELF DECLARATION AGAINST PLAGIARISM	ii
ABSTRACT	iii
ABSTRAK	iv
DEDICATION.....	v
ACKNOWLEDGMENTS	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	xi
LIST OF FIGURES	xii
CHAPTER I INTRODUCTION	1
1.1 Background.....	1
1.2 Problem identification.....	3
1.3 Objectives	3
1.4 Scope of the Research.....	3
1.5 Hypothesis	4
1.6 Research Methodology	4
CHAPTER II LITERATURE REVIEW	6
2.1 Definition of cloud computing.....	6
2.2 Service model of cloud computing	6
2.3 Essential characteristics of cloud computing.....	8
2.4 Cloud computing reference architecture.....	9
2.5 Fault Tolerance	10

2.6	Regulation.....	11
2.6.1	Uptime Institute (certificate) on tier classification and availability management	12
2.6.2	ANSI/TIA-942B:2017 <i>Telecommunications Infrastructure Standards for Data centers</i>	12
2.6.3	Indonesian National Standard 8799: 2019 Information Technology – Data Center.....	13
2.6.4	Law No.11 of 2008 in conjunction with Law No.19 of 2016	18
2.6.5	Government Regulation No.71 of 2019 (Peraturan Pemerintah No.71 tahun 2019).....	20
2.6.6	Presidential Regulation No. 95 year 2018 (<i>Peraturan Presiden No. 95 tahun 2018</i>)	23
2.6.7	Draft Ministerial Regulation (KOMINFO) Ministry of Communication and Information Technology 2018 (<i>Rencana Peraturan Menteri (KOMINFO) Kementerian Komunikasi dan Informatika tahun 2018</i>)	24
2.6.8	ISO/IEC 19086-3	26
CHAPTER III SYSTEM DESIGN AND MODEL.....		27
3.1	Research Framework	27
3.2	System models and scenarios	28
3.3	Technical testing scenario.....	29
3.3.1	Multi cloud provider testing.....	29
3.3.2	Multi region provider testing	30
3.3.3	The same zone provider testing.....	31
3.4	Data collection scenario.....	33
3.5	Regulatory development scenario.....	33
3.5.1	Testing on multi cloud region	34

3.5.2	Testing multi zone on the cloud provider	35
3.5.3	Testing the same zone on the cloud provider.....	36
3.6	Monitoring system	37
3.7	SLA on cloud provider	38
3.8	Component specifications.....	40
3.9	System installation and configuration.....	43
3.9.1	Installation and configuration of web services.....	43
3.9.2	Installation and configuration of data replication for interregional databases	46
3.9.3	Domain configuration	49
CHAPTER IV RESULT AND ANALYSIS.....		52
4.1	Test scenario	52
4.2	QoS performance	53
4.2.1	Delay	55
4.2.2	Throughput.....	58
4.3	Monitoring	61
4.3.1	Availability.....	62
4.3.2	Downtime.....	65
4.3.3	MTTR (Mean Time To Resolve)	67
4.3.4	MTBF (Mean Time Between Failure)	67
4.4	Regulatory comparison between Indonesia and Singapore	67
4.5	Results of regulatory recommendations based on technical studies.....	70
4.5.1	Regulations for regulators	70
4.5.2	Regulations for cloud providers	73
CHAPTER V CONCLUSION AND SUGGESTION		75

5.1	Conclusions.....	75
5.2	Suggestions	76
REFERENCES.....		77