

---

# CONTENTS

<b>APPROVAL</b>	<b>ii</b>
<b>SELF DECLARATION AGAINST PLAGIARISM</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>CONTENTS</b>	<b>v</b>
<b>LIST OF TABLES</b>	<b>vii</b>
<b>LIST OF FIGURES</b>	<b>viii</b>
<b>1 INTRODUCTION</b>	<b>1</b>
1.1 Background . . . . .	1
1.2 Problems Definition . . . . .	2
1.3 Research Objective . . . . .	3
1.4 Scope of Works . . . . .	3
1.5 Research Methodology . . . . .	3
1.6 Hypotheses . . . . .	4
1.7 Research Aspects . . . . .	4
<b>2 LITERATURE REVIEW</b>	<b>6</b>
2.1 Named Data Networking (NDN) . . . . .	6
2.1.1 NDN Forwarding Daemon . . . . .	8
2.1.2 Routing . . . . .	8
2.1.3 Forwarding . . . . .	9
2.1.4 Caching . . . . .	10
2.2 System Communication of Grid . . . . .	10
2.3 Field Area Network . . . . .	12
2.4 Communication of Grid Based on Named Data Network . . . . .	17
2.4.1 Queuing Priority Mechanism in Wide Area Network Grid based on Named Data Network . . . . .	19
2.5 ndnSIM . . . . .	20
<b>3 SYSTEM MODEL AND DESIGN</b>	<b>22</b>
3.1 System Model . . . . .	22
3.1.1 Communication Mechanism . . . . .	22
3.1.2 Network Topology . . . . .	25
3.1.3 Traffic Priority Mechanism . . . . .	26

---

---

3.2	Simulation Scenario . . . . .	28
3.3	Data Retrieval & Analysis Scenario . . . . .	29
<b>4</b>	<b>RESULT AND ANALYSIS</b>	<b>32</b>
4.1	Generated Models . . . . .	32
4.1.1	Generated Flow . . . . .	32
4.1.2	Generated Traffic . . . . .	35
4.2	Simulation Result of System Model I: Basic NDN Traffic Models . . . . .	36
4.2.1	Delays . . . . .	36
4.2.2	Cache Hit . . . . .	37
4.2.3	Packet Drop . . . . .	38
4.3	Simulation Result of System Model II: NDN Traffic Models with Traffic Priority Queuing . . . . .	40
4.3.1	Delay . . . . .	40
4.3.2	Cache Hit Ratio . . . . .	42
4.3.3	Packet Drop . . . . .	42
4.4	Simulation Result of System Model III: NDN Traffic Models with Priority Queuing in Huge of Metering Device . . . . .	43
4.4.1	System Contains 320 Node Metering . . . . .	43
4.4.2	System Contains 640 Node Metering . . . . .	47
<b>5</b>	<b>CONCLUSION AND RECOMMENDATIONS</b>	<b>51</b>
5.1	Conclusions . . . . .	51
5.2	Recommendations . . . . .	51
	<b>BIBLIOGRAPHY</b>	<b>52</b>