TABLE OF CONTENTS

VALIDITY SHEET ii
STATEMENT OF ORIGINALITY iii
ABSTRACT iv
PREFACE v
TABLE OF CONTENTS vii
TABLE OF FIGURES x
LIST OF TABLES xi
TABLE OF ATTACHMENT xii
LIST OF ABBREVIATIONS xiii
CHAPTER I PRELIMINARY 1
I.1 Background 1
I.2 Problem Formulation 2
I.3 Research Objective 2
I.4 Scope 3
I.5 Research Benefit 3
I.6 Report Systematic 3
CHAPTER II LITERATURE VIEW 5
II.1 Cloud Computing 5
II.1.1 Definition of Cloud Computing 5
II.1.2 Services of Cloud Computing 5
II.1.3 Benefits of Cloud Computing 6
II.1.4 Deployment Model of Cloud Computing 8
II.2 Kubernetes 9
II.2.1 Definition of Kubernetes 9
II.2.2 Component of Kubernetes 9

II.3 Development and Operations (DevOps) 11
II.4 Ansible 12
II.4.1 Definition of Ansible 12
II.4.2 Ansible Concepts 13
II.4.3 Advantages and Disadvantages of Ansible 15
CHAPTER III RESEARCH METHODOLOGY 17
III.1 Conceptual Model 17
III.2 Research Systematic 18
III.2.1 Identification Stage 20
III.2.2 Analysis Stage 20
III.2.3 Experiment Design Stage 20
III.2.4 Simulation Stage 20
III.2.5 Final Stage 21
CHAPTER IV SYSTEM DESIGN AND WORKFLOW 22
IV.1 System Design 22
IV.1.1 Physical Instrument 22
IV.1.2 Program Instrument 23
IV.2 Topology of Testing 25
IV.2.1 Physical Connection 25
IV.2.2 IP Address Allocation 26
IV.3 System Architecture 27
IV.3.1 Ansible Architecture 27
IV.3.2 Kubernetes Architecture 29
IV.4 Testing Measurement 30
IV.5 System Workflow 31
CHAPTER V EXPERIMENT RESULTS AND ANALYSIS 36
V.1 Analysis Overview 36
V.2 Result of Analysis 36
V.2.1 Time Interval of Deployment 37

V.2.2 CPU Usage 38
V.2.3 Memory Usage (RAM Usage) 39
V.3 Configuration Management 39
V.3.1 AWX Ansible Tower 39
V.3.2 Replica Pods 43
V.4 Scaling Estimation 35
V.4.1 CPU Scaling Estimation 35
V.4.2 Memory (RAM) Scaling Estimation 37
CHAPTER VI CONCLUSIONS AND SUGGESTIONS 39
VI.1 Conclusions 39
VI.2 Suggestions 39
BIBLIOGRAPHY 40
ATTACHMENT II 43