CHAPTER I PRELIMINARY

I.1 Background

Technological advances have evolved along with the times, which can provide ease and effectiveness in daily activities. One of the technologies that are currently increasingly in demand because it has efficiency, ease of use, and maintenance is cloud computing. According to Juhnyoung Lee (Lee, 2013), cloud computing is a natural evolution of the widespread adoption of multiple technical advances in distributed computing, including virtualization, grid computing, autonomic computing, utility computing, and software-as-a-service. Virtualization is an overall trend in enterprise IT that centralizes administrative tasks while improving scalability and workload by combining autonomic computing in which the IT environment will be able to manage itself based on perceived activity, and utility computing in which computer processing power is seen as a utility that clients can pay for only as needed (Lee, 2013).

The development of cloud computing technology, which is now widely used because it does not require a lot of energy and time is automation of configuration management. The automation configuration management breakthroughs in the IT world is the concept of changing the process that has initially been still manual to be automatic and the processes in the configuration step will be made into one process. The use of this new concept is expected to decrease the number of configuration errors made by humans or commonly referred to as human errors because the use of WordPress as a higher service server needs are also directly proportional to the service needs. Increasingly high server requirements make server management must be fast in installation and maintenance. Ansible is the solution of easier server maintenance and management. Compared to the manual method that is done with many processes, this automated method is more efficient because it is performed by Ansible software with a single process (Fallis, 2013).

The problem that arises is the frequent occurrence of human errors, and the time needed to configure it tends to be longer. In this research, the writer will analyze

the performance of the deployment process of an application with the title "Analysis of Deployment Process in CMS Platform by Using Kubernetes and Automation System With Ansible". The configuration that will be implemented in this research is monitoring architecture on the server to monitor the time interval, CPU usage, memory usage, and configuration management.

I.2 Problem Formulation

Based on the description of the background, the formulation of the problem in this research is as follows:

1. The impact of the number of nodes on the time interval and resource usage of WordPress and MySQL deployment processes in the Kubernetes cluster by using Ansible.
2. Configuration management performed by Ansible in managing tasks.

I.3 Research Objective

Based on the formulation of the problem, the purposes of this research are:

1. Identify the impact of the number of nodes on the time interval and resource usage of WordPress and MySQL deployment processes in the Kubernetes cluster.
2. Define the configuration management performed by Ansible in managing tasks.
3. Analyze the impact of the number of nodes on CPU and memory usage of WordPress and MySQL in conditions after deployment as a predictive function for capacity planning

I.4 Scope

This research is to analyze the application deployment process with the following limitations:

1. Researcher use container technology named Kubernetes as an open-source tool for containerization and automation configuration management tool named Ansible in managing task.
2. Researcher analyze CMS Platform such as WordPress and MySQL database as the object application.
3. Researcher use Google Cloud Platform as a cloud computing provider.

I.5 Research Benefit

The expected benefits of this research are as follows:

1. Optimize the performance of application deployment process by using Kubernetes and Ansible
2. The effectiveness in managing task of system administrator when deploying application
3. The efficiency of resource usage in automation deployment process

I.6 Report Systematic

The systematics of writing in this study consists of six chapters, which are arranged as follows:

CHAPTER I PRELIMINARY

This chapter contains a description of the background, problem formulation, research objectives, scope, research benefits, and writing systematic.

CHAPTER II LITERATURE VIEW

This chapter contains a description of the literature that is relevant to the problems faced, previous research related to the scope of the research being carried out, and the theories used in this study.

CHAPTER III RESEARCH METHODOLOGY

This chapter contains an explanation of the research methods used as well as a detailed explanation of the research steps including the identification stage, the analysis phase, the design stage, the simulation stage, and the final stage of this research.

CHAPTER IV SYSTEM DESIGN AND WORKFLOW

This chapter contains a system design and workflow of implementation deployment process WordPress and MySQL application by using Kubernetes and Ansible automation systems.

CHAPTER V EXPERIMENT RESULTS AND ANALYSIS

This chapter contains an explanation of the results of the analysis of the implementation deployment process of an application that has been tested in the Kubernetes container.

CHAPTER VI CONCLUSION AND SUGGESTION

This chapter contains an explanation of the conclusions of the research carried out as well as for further research on the same topic.