ABSTRACT

In today's modern era, most institutions and educational institutions around the world have used the E-Learning System or LMS (Learning Management System) in the teaching and learning process. The use of E-learning is very helpful for teachers and students. One of the most widely used E-Learning Systems is Moodle. However, the use of Moodle as an E-learning system needs to be further configured by implementing High Availability with Docker Swarm so that it can meet growing needs such as the number of students who always increase each year making the Moodle system less effective because the number of users continues to grow beyond the limit.

Therefore, one of the methods to achieve High Availability in Moodle is the Server Clustering method, in which case Clustering in Moodle uses Docker Swarm. With this method we can do tests with the Horizontal Scaling method. The implementation of this method has succeeded in answering the need for a system that is High Availability and reliable.

The application of the Horizontal Scaling method by increasing the number of pod containers from one pod to three pods in the docker swarm provides a high level of availability, an average Throughput value that increases by up to 43%, the Average Time decreases by up to 68% and the number of Errors up to 100% decreases, and 100% Server Uptime when the stress testing was carried out.

Keywords : *Docker Swarm, Horrizontal Scaling, Moodle.*