ABSTRACT

IMPLEMENTING HIGH AVAILABILITY AND HIGH SCALABILITY WITH FAILOVER METHOD FOR LMS MOODLE IN AWS ENVIRONMENT: A CASE STUDY AT SMKN 8 SEMARANG

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The advancement of technology has had a significant impact on the field of education, particularly in the use of e-learning as a digital-based learning platform. SMKN 8 Semarang has implemented a Learning Management System (LMS) based on Moodle to support teaching and learning activities for more than 1,500 students and 64 teachers. However, the high number of user accesses has caused system downtime, disrupting the learning process and academic administration.This research aims to implement the concepts of High Availability and High Scalability using the Active-Active Failover method on a Moodle-based LMS in an AWS environment to enhance system availability and reliability. The main issue faced is the frequent downtime of the Moodle-based LMS due to traffic surges, particularly during exam periods, which hinders the smooth running of teaching and learning activities.The methodology used in this study includes the implementation of failover to ensure system continuity even in the event of server failures, as well as the utilization of AWS auto-scaling features to dynamically adjust service capacity according to demand. System performance testing was conducted using Apache Benchmark to measure system efficiency under various workload scenarios. The results of the High Availability and High Scalability testing demonstrated a significant improvement in system uptime, achieving an availability rate of over 99.9%. The High Scalability implementation allowed the system to automatically adjust server capacity based on user demand, effectively reducing the risk of downtime and optimizing server resource efficiency..

Keywords: e-learning, failover, High Availability, High Scalability , LMS Moodle