

ABSTRACT

The increasing complexity of information technology infrastructure poses challenges in managing large data volumes efficiently, particularly in Cloud Data Management (CDM). One of the main issues is the lack of efficiency in cluster creation and Service Level Agreement (SLA) management, which impacts service quality and cloud resource utilization. This topic is crucial because SLAs play a significant role in ensuring service quality that meets user expectations, such as in cloud-based media streaming or video conferencing. Currently, there is a gap between user needs and the efficiency of cloud resource management, often resulting in high processing times and SLA non-compliance. This study develops an SLA-based Rubrik cluster creation method to optimize CDM service performance. The proposed solution includes admission control and resource rescheduling algorithms that utilize data splitting for parallel processing. Ghost VMs are employed to enhance resource management efficiency, reducing VM creation time by up to 11.98%. The results demonstrate improvements in efficiency and SLA compliance, with significant enhancements in Quality of Service (QoS) attributes, including throughput, latency, and response time. The system also effectively reduces the workload of resource management and contributes significantly to improving the effectiveness of large-scale data management in cloud environments.

Keywords: *cloud computing, cdm, sla, rubrik cluster, qos, resource management.*