An Application to Improve the Performance and Security in Cloud by File Division Technique

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Abstract: *Cloud computing has transformed the modern business landscape by providing scalable, flexible, and cost-effective solutions for data storage and processing. However, relying on external cloud providers to manage and protect sensitive data has raised significant security concerns, namely the risk of data breaches. To address these issues and optimize system performance concurrently, this research project introduces a novel approach that combines data fragmentation and replication in the cloud environment.*

Data fragmentation involves breaking down large files into smaller fragments or pieces, each of which contains only a portion of the original data. The fragments are then dispersed across multiple cloud nodes to ensure that no single node stores an entire file. This fragmentation and replication strategy reduces the potential risk of data exposure during a security breach.

Data replication across multiple nodes improves system performance in addition to providing security benefits. Replicating data fragments facilitates more efficient data distribution and retrieval, thereby reducing response times and enhancing overall system performance.

This paper provides a comprehensive overview of the methodology employed in this approach, highlighting its fundamental concepts, potential benefits, and key security considerations, such as the importance of data isolation and encryption. By combining data fragmentation and replication, organizations can strengthen their cloud data security while improving system performance, providing a comprehensive answer to the challenges posed by cloud computing.

Keywords: Cloud computing, data processing, scalability, flexibility, cost-effective solutions, security concerns, data breaches, data fragmentation, data replication, system performance, response times, encryption, benefits, cloud data security.

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