

REPLICA MANAGEMENT STRATEGY FOR IMPROVING AVAILABILITY, LOAD BALANCING AND SPACE UTILIZATION

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Abstract

In the existing information system applications like database and transaction processing; require both high throughput and high data availability from their storage subsystems. The most demanding of these applications require continuous operation, which in terms of storage subsystem requires, first the ability to satisfy all user requests for data even in the presence of a disk failure and second the ability to reconstruct the contents of a failed disk onto a replacement disk. To satisfy these requirements, parallel storage configurations with multiple disk drives are commonly adopted. So as availability and scalability of storage systems are vital for existing information systems, data placement methods are critical in realizing high availability and scalability. While some availability methods capable of balancing access load or reducing data skew have been proposed, this paper proposes a new data backup placement strategy, to improve data availability and the space utilization by balancing their access loads. The proposed method reduces data skews generated by data migration for balancing access load. Unlike the existing methods, this method also balances both access load and data load and improves the reliability and availability of the system because it reduces recovery time for damaged backups after a disk failure. The method achieves this acceleration by adaptive backup division and reducing a large amount of network communications and disk I/O.

Keywords : Keywords are adaptive backup division, availability, skews, data migration, replica management and space utilization