Data management in cloud environments: NoSQL and NewSQL data stores

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Journal of Cloud Computing.

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Outline:

- A discussion of NewSQL data stores.
- A detailed comparison among various NoSQL and NewSQL solutions over a large number of dimensions.
- A discussion of the suitability of various NoSQL and NewSQL solutions for different sets of applications.

Overview:

Problem: Traditional relational databases were designed in a different hardware and software era and are facing challenges in meeting the performance and scale requirements of Big Data.

Introduction:

Cloud Computing. NoSQL and NewSQL data stores.

Background and Related Work:

Cloud computing . CAP Theorem.

Background and Related Work:

Consistency, as interpreted in CAP, is equivalent to having a single up-to-date instance of the data

The Availability property means that the data should be available to serve a request at the moment it is needed.

Partition Tolerance property refers to the capacity of the networked shared-data system to tolerate network partitions.

Background and Related Work:

CAP Theorem.

NoSQL and NewSQL.

Outside reference:

NoSQL: NoSQL solutions emerged as a reaction to frustration with the cost and inflexibility of legacy RDBMS products like Oracle and IBM DB2, which use SQL as a query language.

NewSQL: NewSQL systems offer the best of both worlds: The relational data model and ACID transactional consistency of traditional operational databases; the familiarity and interactivity of SQL; and the scalability and speed of NoSQL

Summary of new technology:

NoSQL: The origin of the NoSQL term is attributed to Johan Oskarsson, who used it in 2009 to name a conference about "open-source, distributed, non-relational databases".

Summary of new technology:

NoSQL Solution:

- Simple and flexible non-relational data models.
- Ability to scale horizontally over many commodity servers.
- Provide high availability.
- Typically, they do not support ACID transactions as provided by RDBMS.

Amazon's SimpleDB and DynamoDB, are considered to be NoSQL data stores.

Summary of new technology:

NewSQL: NewSQL is a new database access language being touted as superior to SQL.

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Author's Evaluation:

The authors evaluate their approach by running surveys. Author's have credible results.

Conclusion:

This paper has reviewed NoSQL and NewSQL data stores with the objectives of providing a perspective on the field, providing guidance to practitioners and researchers to choose appropriate storage solutions, and identifying challenges and opportunities in the field.

Strengths:

- Economy
- Database administration
- Big data application

Weaknesses:

- Less mature
- Administration
- No advanced expertise

Evaluation:

- Good quality evaluation
- Complete information
- Believable results
- Enough information

Questions: