

SQL Vs NoSQL

RDBMS Vs HBase



Agenda

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- SQL Database Examples
- Advantage of SQL Database
- Disadvantage of SQL Database
- What is NoSQL?
- Why do we need NoSQL
- NoSQL Characteristics
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- Advantages of NoSQL
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SQL Characteristics

Data is stored in rows & columns format.

Relationships are represented by data.

Data Definition Language(create/delete table)

Data Manipulation Language(insert/update data).

Good for Transactions.

SQL Database Examples

There are commercial & open source SQL databases which are as follows..

Commercial SQL softwares.

- IBM DB2
- Oracle RDMS
- Microsoft SQL Server

Open Source (Freeware)

- MySQL

Advantage of SQL Database

Response time is good.

Good for real time application.

Good for transactional services.

You can use join to get related data.

You can use indexes to increase performance

Having standard query language.

Disadvantage of SQL Database

Can't process large amount of data.

Not easily scalable.

No partial failure.

No fault tolerant.

Need a well defined schema .

Row oriented.

Not an open source.

What is NoSQL ?

Stands for Not only SQL (NoSQL)

NoSQL can handle structured/non-structured data.

HBase is an example of NoSQL.

NoSQL can use Hadoop as its storage.

NoSQL does not require a fixed table schema.

NoSQL does not use the concept of joins.

Why do we need NoSQL

Explosion of social media (Facebook, Twitter) & online shopping websites .

Need of analyzing non structured data.

Need of analysis for business intelligence.

Rise of cloud-based solutions such as Amazon S3 (simple storage solution)

Open-source community

NoSQL Products/Projects

NoSQL Databases are as follows

- Cassandra
- Hadoop & Hbase
- MongoDB

Advantages of NoSQL

NoSQL is schema less.

Cheap, easy to implement (open source).

Data are replicated to multiple nodes and can be partitioned.

Down nodes can be easily replaced.

No single point of failure.

Fault tolerant is taken care by Hadoop.

Disadvantages of NoSQL

NoSQL doesn't support joins.

NoSQL doesn't support group by.

NoSQL doesn't support order by.

NoSQL doesn't support ACID transactions

- Atomic
- Consistent
- Isolated
- Durable

Map Reduce in NoSQL

Queries can be executed as a map-reduce program on Hadoop.

A HBase table can be used as a source or sink for a map-reduce job.

Two Phases, Map and Reduce

Map

Extract sets of Key-Value pairs from underlying data
Potentially in Parallel on multiple machines

Reduce

Merge and sort sets of Key-Value pairs
Results may be useful for other searches.

...Thanks...

