Application Plan of Big Data and NoSQL

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ABSTRACT

For a long time, Relational Databases have been widely used in many enterprises. Even though the Relational Databases have merits such as excellent power of data preservation, concurrency controlling as a standard model in databases, there are a demerit in the inconsistency of objects and relations. Against this backdrop, NoSQL is being magnified as a new solution for Big Data since it can be operated without any schema. In this paper, we research on not only merits and demerits of Relational Databases but also the comparison between application databases and integrated databases. And then, we define NoSQL for Big Data and check its characteristics.

KEYWORDS

Big Data, NoSQL, Application Plan, Integrated Database

I. Introduction

Relational Databases (RDB) have been widely used in many enterprises for a long time. The RDB have merits such as excellent power of data preservation, concurrency controlling as a standard model in databases. But, there are demerits in the inconsistency of objects and relations. Against this backdrop, NoSQL is being magnified as a new solution for Big Data since it can be operated without any schema. In this paper, we compare application databases with integrated databases. And then, we define NoSQL for Big Data and check its characteristics.
Most of enterprises take using RDB for granted. But the databases have both many merits and demerits. Let us check out some merits of RDB as follows. (1) The databases provide more outstanding flexibility than file systems when storing a large volume of data. So, we could find out and collect necessary information in many application programs. (2) Enterprise applications could have many users and generate errors since they are operated concurrently and simultaneously. RDB give a great help in handling these problems by use of concurrency controlling functions. The transaction mechanism could suppress the complexity related to concurrency control. (3) Enterprise applications live in the ecological system where many applications mutually collaborate on many applications. RDB use a method with integrated database sharing in order to store many applications in one database. Even though RDB succeed as a best standard method with these merits, there is a big demerit. The demerit is inconsistency between object and relation as the difference between relational model and data structure within memory. In using databases as an integrating point, there is a try to encapsulate databases in applications. The major factor of database changes is a fact that a large volume of data should be supported in clusters.

III. Application Plan of NoSQL

Against this backdrop, NoSQL begin its existence. NoSQL database provides a mechanism in collecting and retrieving a large number of data that employs less constrained consistency models than RDB. This approach has some motivations such as simplicity of design, horizontal scaling, and finer control over availability. NoSQL are often highly optimized key-value stores. In terms of latency and throughput, with the goal being significant performance benefits, the intentions of NoSQL are simple retrieval and appending operations. In Big Data and real-time web applications, NoSQL databases are used in the fields of significant and growing industry. Allowing SQL-like query languages to be used, NoSQL systems are referred to as “Not only SQL” (Figure 1). The common characteristics of NoSQL are as in the following. (1) NoSQL does not use RDB. (2) NoSQL works well in clusters. (3) NoSQL is an open source. (4) NoSQL was developed and established for the Web environment of the 21st century. (5) NoSQL has no schema. The most important result of No SQL appearance is the durability of redundant stores.

IV. Conclusions

Consequently, NoSQL databases could increase productivity by use of simplification of data access. The major reasons in considering NoSQL are two points. One is data access processing in the condition of the volume of data that clusters need and its performance. The other is to improve development productivity via more convenient operating methods of data.

References


