

Distributed dbms reliability

Business, Management



Distributed DBMS Reliability Name: Class: Date: Distributed DBMS Reliability

A distributed database is an arrangement where the central storage devices are not attached to one common central processing unit. The database may be stored in several computers, which have the same geographical location, or in a network of computers. The collections of the different sets of data in the database may be distributed in different geographical locations.

This is enabled by the use of network servers, the internet, extranets and intranets or a simple company network. Database distribution improves the performance of databases and the end user receives most benefit from it. For instance, the distributed database and their management systems are used in different branches of a bank or in different parts of a government database with different information about an individual. A distributed database management system or the DDBMS is the software that allows for the management of the distributed database. The DDBMS also helps in making the distribution transparent to the end user. The applications in the database allow the users access and create a interface to enable the user easier operation. The applications are of two types, local applications and global applications.

Local applications do not require data from any other site while global applications require data from other sites. Distributed database management systems are said to be reliable when they have the ability to process requests from the user even when the system is unreliable. A reliable DDBMS should have the ability to execute the requests of the user without violating the consistency of the database (Gray and Reuter 1993, 120). Distributed database management systems are of two types a

<https://assignbuster.com/distributed-dbms-reliability/>

homogenous DDBMS and a heterogeneous DDBMS. In a homogenous system, all the sites use identical software though they appear to use a single system.

The sites also have awareness of each other and synchrony in the processing of the user requests. Though the sites are and should be autonomous, each of them surrenders a portion of their autonomy in terms of offering the right to change software. In a heterogeneous DDBMS, the different sites make use of different software. Here the sites are not entirely aware of each other and most of the times provide very little facilities for use in the transaction processing. Specifically, the reliability of the DDBMS refers to how durable and how atomic its transactions are.

It is also the probability that the system will not experience any instances of failure at any given time. This is in light of systems that are not repairable or those that perform highly critical functions where a stop in operation for purposes of repair can cause severe setbacks. The DDBMS have several advantages and disadvantages. The advantages of the DDBMS include the increased level of reliability and the availability it offers the user. The system can also be controlled locally or in a central point. The modular growth is also an advantage associated with the DDBMS. The Distributed database management system also offers lower communication costs and faster response to the user making it more efficient and cost effective.

The DDBMS however have a few disadvantages including, high software costs as each site has to have software installed. Moreover, the software is complex in nature. The DDBMS incur processing overheads and their data

integrity is low (Ozsu and Valduriez 2011, 190). There has been a demand for the change in the trends of DDBMS operations.

This is because there have been difficulties in the storage and use of the random Database management system, the increase in demand for data in other forms apart from just text, the introduction of e-business which caused the increase in the demand for online DBMS and the increase in demand for mobile access. Some of the current trends in the DBMS and DDBMS field include the introduction of multimedia databases, document-oriented databases and mobile databases. Multimedia means all forms of media including video, audio, digital images, graphics and animations. As the name suggests the multimedia database handles all these kinds of media and processes them giving results to the end user. This has grown exponentially in the recent past.

The contents of the multimedia databases include the actual data representing the media, the type of format they are in and the key words by which they can be searched. Another trend in the DDBMS field is the use of cloud computing services along with the professional and social networking sites. These sites are greatly advantaged by the DDBMS, as they require great capacities of storage and frequent access by the users. The DDBMS offer this operability and efficiency. The document-oriented database is another recent trend in the databases field. The database stores data in documents that have specific characteristics that are unique to them. The documents are designed in a way that allows for expansion as different fields can be added to the document without exhaustion (Saake and Schwarz

2000, 65). In recent times, users of DDBMS are not supposed to be aware of the specific locations of the database they would like to access.

This is because the distribution has been incorporated in the transaction atomicity and data independence. However, the applications that support these functions are hard to support in an efficient manner and therefore the cost becomes higher. Moreover, in globally distributed sites, the properties may become less desirable due to the increase in overheads for administration and the making of locations of data accessible and transparent always.

Distributed database management systems are very reliable in terms of large-scale use. This means that the installation of distributed database management systems in one firm that has very few branches might prove to be very expensive as the resources required are great. References: Gray, Jim and Reuter, Andreas. 1993.

Transaction processing: concepts and techniques. New York, NY: Morgan Kaufmann. Ozsü, M. Tamer, and Valduriez, Patrick. 2011. Principles of Distributed Database Systems.

New York, NY: Springer. Saake, Gunter and Schwarz, Kerstin. 2000.

Transactions and database dynamics. New York, NY: Springer.