

# **Growing impact of Distributed Computing and Distributed Database**

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## **Abstract**

**In this research paper, I will discuss about the impact of Distributed system. A distributed system is also known as distributed computing and distributed database. It is a collection of independent components located on different machines that share messages with each other to achieve some common targets. Systems have become more distributed than ever and modern applications no longer run in isolation and it is because of increasing the complexity of computing systems. The massive majority of products and applications believe on distributed systems. Distributed database is a type of database that is not limited to a single system; it is spread across many computer systems in the network. In other words, "distributed database is a collection of many interconnected databases that are spread over different locations and communicate with each other through computer networks." In this, parts of the database are stored in many physical locations and its processing is distributed among many database nodes. This database is controlled by distributed database management system (DDBMS).**

## **Introduction**

Contamination Distributed computing environments typically involve requests from users at one database client that are processed by a database server. The server database is typically remote to the client. The databases that are in the group are logically interrelated to each other. In this, data is physically stored in many computers or sites. It is not a loosely connected file system. In this, all the sites are connected through a communication network. The data of each site is controlled by DBMS. Each site of DBMS has its own right to handle local applications independently. Each DBMS of distributed system has at least one global application. We can say that distributed system is a group of computers working together as to appear as a single computer node to the end-user node. These machines have a shared state, operate concurrently and can fail independently without affecting the whole system's uptime.

Distributed database systems help us to innovate and cope with growing data needs by scaling effortlessly. In the place of limiting data storage and transaction processing to one machine, distributed database utilizes multiple machines across different locations. This, in turn, increases performance, data recovery, and general user experience. Distributed relational databases are built on formal requester-server protocols and functions. An application requester supports the application end of a connection. It transforms a database request from the application into communication protocols suitable for use in the distributed database network. These requests are received and processed by an application server at the other end of the connection.

A distributed system is made up of different configurations with Microcomputers, Minicomputers, Mainframes, workstations; and Multi-computer collaboration to handle a single problem which is known as distributed computing. It transforms a computer network into an efficient single computer that has ample resources to handle difficult problems.

## **Why we focus on Distributed database system?**

- Availability - In this, if one server stops, then the other server fulfills the request of the client.
- Performance - It consists of databases in different locations, due to which one database is available for each location, which is easier to maintain and improves its performance.
- Reliability- In distributed database system, if one system fails or stops working, then the other system completes its work.

## **Findings**

Modern distributed systems have evolved to include autonomous processes that may run on a single physical machine, but interact with each other by exchanging messages. The important functions of distributed computing include:

- Concurrent - Multiple machines can process the same task at the same time.
- Resource sharing - whether it is hardware,

software or data that can be shared.

- Scalability - how computing and processing capabilities increase when extended to multiple machines.
- Openness - how open is the software designed to be developed and shared with each other.
- Fault tolerance – how easily and quickly failures in some part of the system can be detected and recovered.
- Transparency - How much access does a node have to locate and communicate with other nodes in the system?

### **Results on Distributed database Systems available in the society**

#### ➤ **Distributed Real-time Systems**

Many industries use real-time systems that are distributed locally and globally. In Military operations transferring messages, Airlines use flight control systems, transportation facilities use dispatch systems, manufacturing plants use automation control systems, logistics and e-commerce companies use real-time tracking systems.

#### ➤ **Telecommunication networks**

Cellular networks are distributed networks consisting of physically distributed base stations in areas called cells. As telephone networks evolved to deliver voice over IP, it grew in complexity as a distributed network.

#### ➤ **Parallel Processing**

Distributed systems mean separate machines with their own processors and memory. These days with the rise of modern operating systems, processors and cloud services, distributed computing also includes parallel processing.

#### ➤ **Distributed artificial intelligence**

Distributed artificial intelligence is a way to use massive computing power and parallel processing and process very large data sets using multi-agents.

### **Conclusion:**

Distributed databases can offer better data management for enterprises with large-scale, geo-distributed branches. Distributed database systems are a reality. Many organizations are now deploying distributed database systems. Therefore, we have no choice but to ensure that these systems operate in a secure environment and with integrity. Security is concerned with the assurance of confidentiality, integrity and availability of information in all forms. Distributed databases are capable of modular development, meaning that the system can be expanded by adding new computers and local data at new sites and connecting

them to the distributed system without interruption.

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