

Understanding MongoDB and Exploring the Features of a NoSQL Database

The History of NoSQL

NoSQL data sets arose in the latter part of the 2000s as the expense of storage drastically diminished. The days of expecting to create a complicated, hard to-oversee data model to avoid data replication were long gone and the primary expense of programming and development was now focused on the developers themselves, and hence NoSQL databases were brought into the picture to enhance their productivity.

As storage costs quickly diminished, the measure of data that applications expected to store increased, and query expanded as well. This data was received in all shapes and sizes — organized, semi-organized, and polymorphic — and characterizing the schema ahead of time turned out to be almost incomprehensible. NoSQL databases permitted the developers to store colossal measures of unstructured data, providing them with a ton of flexibility.

Soon, cloud computing arose in popularity, and developers began to utilize public clouds to host their applications as well as data. In order to make their applications strong, to scale out, and to astutely geo-place their data, they worked towards accessing the ability to distribute data across manifold servers and regions. MongoDB was one such NoSQL database that provided these capabilities.

NoSQL Explained

Alternatively known as "not only SQL", NoSQL databases store data uniquely in contrast to relational tables as they are non-tabular databases. They arrive in an assortment of types depending on their data model and consist of the main types such as document, key-value, wide-column, and graph. They furnish adaptable schemas and scale effectively with a huge amount of data and high user loads. At the point when individuals utilize the expression "NoSQL database," they normally use it to allude to any non-relational database.

NoSQL Database Features

Schema Agnostic: NoSQL databases are adaptable and offer unique schema support whereas when it comes to SQL databases, where data is stored in a specific schema. This implies that it gives an incredible capacity of storage for structured, unstructured, or semi-structured data. As referenced above, there are various kinds of NoSQL databases accessible, and subsequently picking a fitting database dependent on application necessity is a key design choice.

Scalable: NoSQL databases are exceptionally scalable both horizontally as well as vertically and can run on huge clusters of PCs seamlessly. These databases are commonly utilized for distributed applications where manifold data centers store the data.

Data Storage: In order to oversee enormous volumes of data from terabytes to petabytes, NoSQL databases can be utilized to scale. Adding to its storage capabilities, it likewise offers superior execution benefits independent of the variety and intricacy of data.

Open Source: NoSQL databases are generally open-source, which implies they are economical and organizations utilizing them can save enormous amounts of investments that are utilized for purchasing licenses. The core database platform capabilities continue to improve due to the tremendous measure of contributions by the open-source community.

Cloud Friendly: Many times it becomes tough to oversee the on-premise infrastructure which leads several companies to think of moving to cloud-based solutions that offer database as a service. In this regard, NoSQL databases are truly adaptable with cloud platforms and there are quite a few that spike the demand for cloud platforms such as Azure, Amazon, etc.

Developer Friendly: NoSQL databases supply all the necessary devices and programming software required for all common programming languages due to which they are considered to be extremely developer-friendly as they support all major operating systems and frameworks.

Although the NoSQL database market is immense, MongoDB is the top choice among organizations, all things considered. NoSQL databases can store gigantic measures of data and are utilized across all businesses and for a wide assortment of applications. Let's focus more on the features and advantages of MongoDB and understanding it as a database.

MongoDB Explained

Being one of the most popular NoSQL databases in the industry, MongoDB can be used for modern, distributed, and cloud-based applications and additionally offers SQL-like features like ACID transactions, impromptu queries, joins, and indexing, etc. Having received its name from the word humongous, it is a document-based distributed NoSQL database that can be utilized in the present day, for distributed and cloud-based applications and additionally store data as a set of key-value pairs to be scaled horizontally across manifold nodes in a cluster.

MongoDB as a Document Database: A Document is a set of key-value pairs utilized to store data by MongoDB. When contrasted to SQL databases, one can consider a document as a solitary row of records. Data can be stored with a dynamic schema for each document, which implies that data of various structures or fields can be held by each document. A set of documents can likewise be consolidated and Stored as a Collection, which can be considered as an RDBMS table. MongoDB permits the storage of embedded documents as well as arrays that address a complicated hierarchical model, which in turn permits developers to work with advancing data models.

MongoDB as a Distributed Database: At the point when the measure of data expands, it becomes crucial to scale your database. Through distributed databases, one can appreciate benefits such as parallel processing, data replication for fault tolerance, expanded dependability and accessibility, etc. Also, with distributed computing, without much of a stretch data can be distributed and developed over-budgeted equipment or in the cloud. A feature called Sharding is presented by MongoDB which deals with the intricacy of distributed computing and permits data distribution across the cluster.

MongoDB as a Cache: It is generally expected that performing any sort of procedure on the RAM is quicker than performing it on a disc. MongoDB however offers numerous storage capacity engines such as WiredTiger, In-Memory, etc. that have the ability to perform in-memory processing. This extraordinary feature added by MongoDB allows these engines to perform data storage and manipulation regularly

utilizing a filesystem cache, which in turn helps to compose the data in-memory to be done quicker than on a disc.

MongoDB as a Service: With MongoDB, you have the choice to run it as a service. This implies that you do not have to stress over setting up physical hardware, installing software, or configuring it for performance. MongoDB already has a service called Atlas which can be on any cloud platform.

Since we have understood what MongoDB is, how about we investigate a portion of its elements that makes this database extraordinary.

Features of MongoDB:

- **Schema-free:** MongoDB stores data in a JSON-like document format which like SQL databases doesn't authorize a document to follow a particular schema. This component makes MongoDB amazingly flexible and eliminates the extra weight of database schema setup and type mapping among database and application objects.
- **Supports Ad-hoc Queries:** MongoDB offers various assortments of querying abilities and allows one to query data using range, fields, etc. It moreover offers dynamic querying on documents that utilize a document-based query language that is as incredible as SQL.
- **Indexing:** MongoDB offers indexing on any field in a document which is pretty similar to indexing in a SQL database, which in turn improves search performance.
- **Aggregation:** With MongoDB, one can perform Aggregation that practically behaves like MapReduce, which is exceptionally well known for processing Big Data, however, performs much better.
- **In-built Replication:** It upholds the master-slave replication wherein it showcases that the master can perform reads and writes whereas the slave can only duplicate data from the master which can be used simply for read only or backup.
- **Sharding:** With the help of sharding, developers can easily arrange and perform operations within a clustered environment and MongoDB has the ability to provide auto-sharding capabilities with minimal configuration for horizontal scaling.
- **High Performance:** It aids with an in-memory storage mechanism that empowers quicker access to information.
- **MongoDB Management Service:** This is an amazing web instrument that permits one to track databases and create backups. It likewise tracks hardware metrics for overseeing and streamlining the deployment as well as provides the capacity to send custom-created alerts in the event that a MongoDB instance is influenced negatively.

CIGNEX & MongoDB Success Stories:

When it comes to Mongo DB, companies should opt for a credible service. In this regard, CIGNEX has been immensely engaged in creating applications to scale for manifold organizations and have increased their performances exponentially as well as reduced costs by focusing on NoSQL alternative such as MongoDB while preserving the ability to scale in the future.

Here are some of their case studies below:

They recently helped a \$5.5 billion semiconductor manufacturing and Design Corporation with 15,000 employees worldwide to replace their custom PHP-based website with a digital marketing portal to increase online revenue contributions and improve collaboration with the customer through personalized online account services. [Read all about it here.](#)

CIGNEX also aided a \$400 million US-based insurance company offering individuals with insurance coverage in the education, law enforcement, and fire-fighting and nursing sectors to replace their JSF-based legacy insurance quote system with a digital marketing platform that could help them increase web leads, provide an easy quote submission feature to reduce call center costs as well as reduce shopping cart abandonment. [Read the Case Study here.](#)

CIGNEX is an Advanced MongoDB Partner with 20+ consultants certified on MongoDB and has expertise & experience in supporting various MongoDB solutions for clients across verticals. Their Open Source Consultants integrate MongoDB with Liferay, Drupal, Alfresco & other Open Source/proprietary technologies and work towards providing support to manage MongoDB integrated deployments. Additionally, their support services are best deployed as an extended additional service with your MongoDB enterprise subscription and offer customized SLA-based support for your MongoDB integrated solutions, which includes 3rd party applications such as portal, ECM, WCM, e-Commerce, Big Data, and more.

To know more about MongoDB related Services reach out to info@cignex.com

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