

Scalable MongoDB solution reduced Query Latency for leading E-Learning Firm



The Customer

A leading E-Learning firm partners with educators, districts, educational technology solution developers and content providers to design and implement innovative personalized learning solutions. Their mission is to help schools and educators nurture the innate desire to learn within every child, in the effort of reducing barriers to learning.

Business Scenarios

E-Learning is evolving and will have a rapid pace for growth, with the insights Big Data provides.

- Keeping in toe with the future technology demands, our customer was in need of a solution to store and read high volume of data from the end customers' usage of a cloud based education platform (click stream information).
- They were also in need of a solution to store "access and preference" data at a user level and be able to retrieve it with high performance.

Challenges faced

- Need for a reliable data store irrespective of data volume.
- Required handling of data security concerns such as access-based security for sensitive data.

Scenario 1

- Rapid growth of usage related data from end-customers which they had difficulty in storing and accessing in short time.
- Wanted to capture the click stream usage as opposed to just the service usage that was being captured in the MySQL.
- Existing SQL solution fell inadequate for scaling.

Scenario 2

- As the access and preference data was at a user level, the data was growing very rapidly and taking very long to query/update in MySQL.
- Different types of objects that needed to be secured, required creating separate tables with different schema in MySQL.



Solution

Aspire identified the best-fit infrastructure, a scalable MongoDB database with secure storage and access.

Scenario 1

- We were able to store and query huge amounts of click stream data in relatively short time.

Scenario 2

- We architected the MongoDB schema to suit the content present in the relational model.
- We also made the MongoDB schema generic to fit different types of objects to be secured (within the same collection).
- Migrated the relational data to MongoDB's non-relational system, with the goal to eventually sunset the MySQL store.

Technology Snapshot

- MySQL
- MongoDB
- Java
- AWS



Customer Benefits

- Increased storage capability, with significantly reduced query latency.
- Capability to offer historical tracking information for reports and statistics computation.
- Scalable solution that captures data from AWS, and stores in MongoDB on-premise. This can be easily moved to the cloud, if there is a need for 'elasticity' in the future.
- Schema was flexible enough to store different types of objects within same collection.
- Currently, there are around 800000 active user accounts.

Situation Comparison

Before	After
<ul style="list-style-type: none">→ Could not store large amounts of click stream data.→ Took lots of time to query usage data from MySQL.→ Required different tables for different objects to be secured .→ Time consuming to query/update user-level data.	<ul style="list-style-type: none">→ Able to capture and store large amounts of click stream data.→ Reduced time to pull data using MongoDB.→ Single MongoDB collection takes care of all access and preferences related to every user.→ Considerable reduction in time to query and especially update user-level data.



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