GOA COLLEGE OF ENGINEERING

"Bhausaheb Bandodkar Technical Education Complex"

Experiment No: 8

Case study of Distributed Databases

Aim: Perform a case study of any distributed database

Theory:

AmazonSimpleDB

Amazon SimpleDB is a highly available NoSQL data store that offloads the work of database administration. Developers simply store and query data items via web services requests and Amazon SimpleDB does the rest.

Unbound by the strict requirements of a relational database, Amazon SimpleDB is optimized to provide high availability and flexibility, with little or no administrative burden. Behind the scenes, Amazon SimpleDB creates and manages multiple geographically distributed replicas of your data automatically to enable high availability and data durability. The service charges you only for the resources actually consumed in storing your data and serving your requests. You can change your data model on the fly, and data is automatically indexed for you. With Amazon SimpleDB, you can focus on application development without worrying about infrastructure provisioning, high availability, software maintenance, schema and index management, or performance tuning.

Benefits

Low touch

- The service allows you to focus fully on value-added application development, rather than arduous and time-consuming database administration.
- Amazon SimpleDB automatically manages infrastructure provisioning, hardware and software maintenance, replication and indexing of data items, and performance tuning.

Highly available

- Amazon SimpleDB automatically creates multiple geographically distributed copies of each data item you store.
- This provides high availability and durability – in the unlikely event that one replica fails, Amazon SimpleDB can failover to another replica in the system.

Flexible

- As your business changes or application evolves, you can easily reflect these changes in Amazon SimpleDB without worrying about breaking a rigid schema or needing to refactor code – simply add another attribute to your Amazon SimpleDB data set when needed.
- You can also choose between consistent or eventually consistent read requests, gaining the flexibility to match read performance (latency and throughput) and consistency requirements to the demands of

your application, or even disparate parts within your application.

Simple to use

- Amazon SimpleDB provides streamlined access to the store and query functions that traditionally are achieved using a relational database cluster – while leaving out other complex, often-unused database operations.
- The service allows you to quickly add data and easily retrieve or edit that data through a simple set of API calls.

Designed for use with other Amazon Web Services

- Amazon SimpleDB is designed to integrate easily with other AWS services such as Amazon S3 and EC2, providing the infrastructure for creating web-scale applications. For example, developers can run their applications in Amazon EC2 and store their data objects in Amazon S3. Amazon SimpleDB can then be used to query the object metadata from within the application in Amazon EC2 and return pointers to the objects stored in Amazon S3.
- Developers can also use Amazon SimpleDB with Amazon RDS for applications that have relational and non-relational database needs. Data transferred between Amazon SimpleDB and other Amazon Web Services within the same Region is free of charge.

Inexpensive

- Amazon SimpleDB passes on to you the financial benefits of Amazon's scale. You pay only for resources you actually consume.
- For Amazon SimpleDB, this means data store reads and writes are charged by compute resources consumed by each operation, and you aren't billed for compute resources when you aren't actively using them (i.e. making requests).

Featured Use Cases

Logging

Since Amazon SimpleDB allows you to completely offload the work required to run a production database, many developers find it an ideal, low-touch data store for logging information about conditions or events, status updates, recurring activities, workflow processes, or device and application states. Amazon SimpleDB lets you cost-effectively "set and forget" these data logs and use them for diverse purposes, such as:

- Monitoring or tracking
- Metering
- Trend of business analysis
- Auditing
- Archival or regulation compliance

Application examples include:

- Storing server logs centrally to reduce the space they consume on each running server
- Logging operational metrics or the results of ongoing performance tests for later analysis

Online Games

For developers of online games on any platform, Amazon SimpleDB offers a highly-available, scalable, and administration-free database solution for user and game data.
Common data online games can store, index, and query with Amazon SimpleDB includes:

- User scores and achievements
- User settings or preferences
- Information about a player's items or user-generated content
- Game session state (when play is saved or interrupted)

Indexing Amazon S3 Object Metadata

Many developers use Amazon SimpleDB in conjunction with Amazon Simple Storage Service (Amazon S3). Amazon SimpleDB can be used to store pointers to Amazon S3 object locations and detailed information about the objects (metadata), thereby supplementing Amazon S3 with the rich query functionality of a database. For developers storing large numbers of objects in Amazon S3, Amazon SimpleDB offers a flexible, scalable, and inexpensive way to store object metadata while offloading all of the administrative overhead associated with running a database. Common examples of object metadata that can easily be stored, indexed, and queried in Amazon SimpleDB include:

- Data type or format (image, video, document)
- User associations or access designations
- Dates the object was created, accessed, or modified
- Name or location of related objects
- User ratings and comments
- Subject or category tags
- Geolocation tags

Conclusion: Amazon SimpleDB distributed database was understood successfully