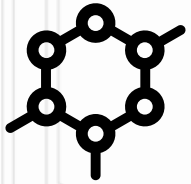
MOOLNOGS

1. Why use mongoDB :

Flexible

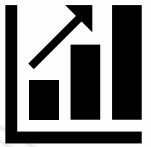


Using JSON, Fields aren’t set beforehand, allowing for rapid application development.

Document-oriented

Allows us to store hierarchical data without joins. This simplifies data retrieval for complex structures.

Scalable



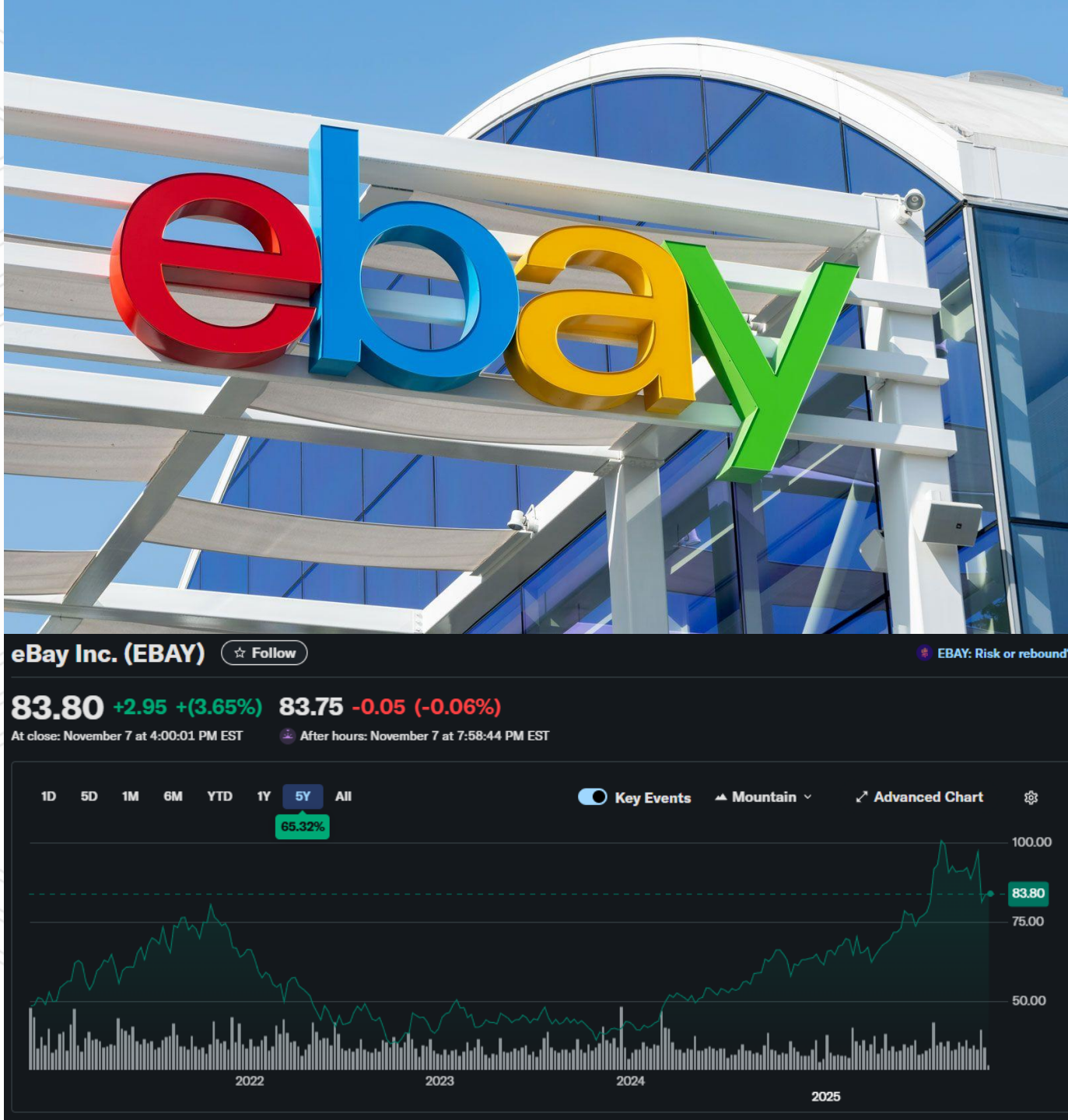
Sharding distributes data across multiple servers ensuring high performance.

Compatible

Compatible with Python, JavaScript, Java, and C#, really useful for web integration.

Case study: ebay

Ebay uses **MongoDB** to store **billions** of records, including product listings, user profiles, and transaction data.

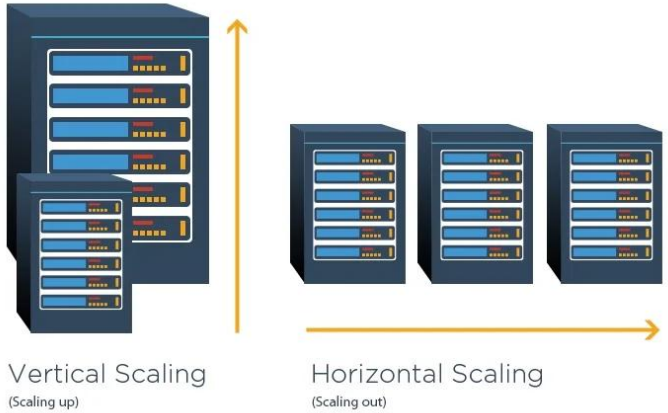


2. Main characteristics:

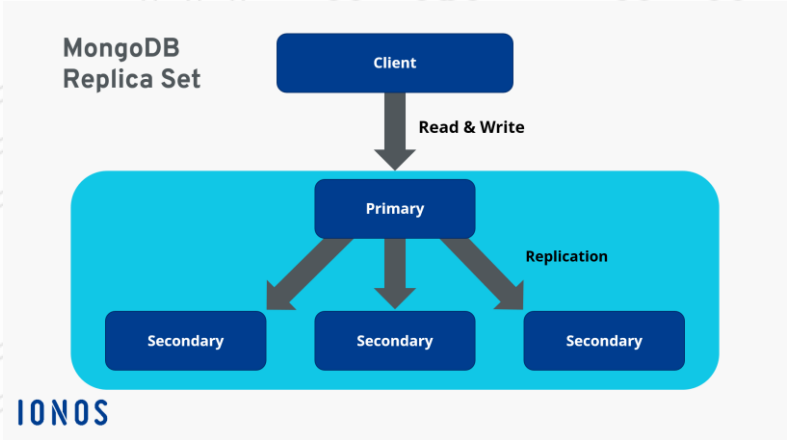
- Nested fields, arrays, and subdocuments
- Schema flexibility
- Maximum document size of 16 MB
- Multi-document transactions

Consistency, Scalability, and Availability.

Horizontal scalability



Replica sets



High performance

- ✅ Embedded information
- ✅ Duplicated data
- ✅ No nules

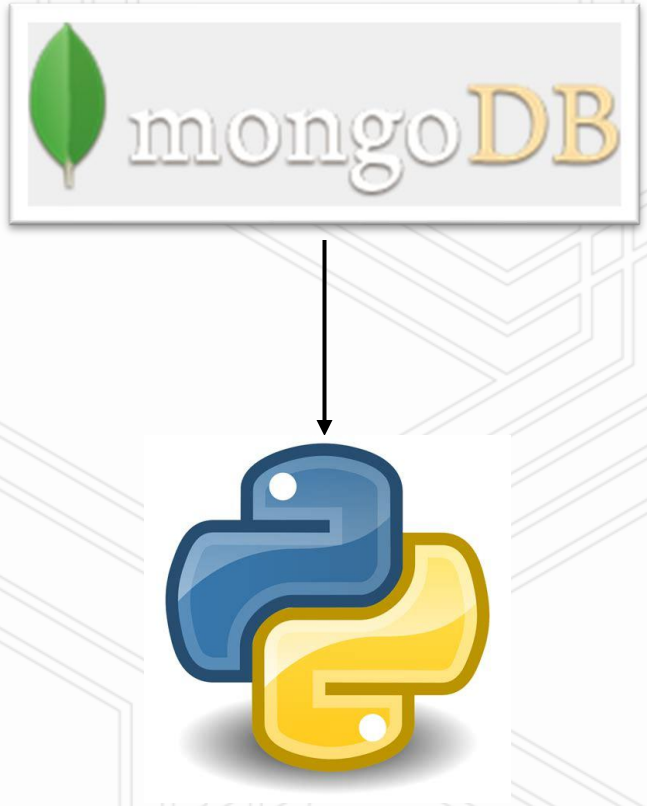
Replication and fault tolerance

Replica sets replicate data across nodes, providing **automatic failover** and **read scaling** (read preferences). This underpins **high consistency** for production systems such as **online stores**.

- **ACID transactions**

3. Interacting with the database:

- MongoClient
- Mongosh
- MongoDB for VS Code



Main commands

- **Connect:** mongosh
- **View database:** *show dbs*
- **Use a database:** *use –example-*
- **View all documents:** *db.products.find().pretty()*
- **Filter documents:** *db.products.find({ class: “example" })*
- **Available products:** *db.products.find({ stock: { $gt: 0 } })*
- **Sort by Price:** *db.products.find().sort({ price: 1(asc)/-1(desc) })*
- **See last:** *db.productsfind().sort({ _id: -1 }).limit(1)*

Demo:

An Online store for sports equipment +

Community based forum, with buyers' feedback.

Real Tournaments organized through the app.

5: Final reflections

MongoDB has some disadvantages:

- High memory use
- High resource consumption
- Can get very messy (flexibility)

Also, MongoDB has some features that we aren't taking advantage of, like:

- Real time processing, useful for analytics
- Replication and Workload Distribution