



MongoDB

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Table of Contents

- Introduction
- Implementation
- Consistency model
- Advantages
- Connections
- User stories
- Demo

Introduction



- MongoDB
- Document oriented
- Format Bson
- Basic features:
 - Ad-hoc queries for optimized ,RT analytics
 - Indexing for better query executions
 - Replication for data availability and stability
 - Sharding
 - Load balancing

JSON VS BSON

- JSON's readable format is far from space-efficient, another database concern
- JSON only supports a limited number of basic data types
- JSON is a text-based format, and text parsing is very slow

```
{ "hello": "world" } → \x16\x00\x00\x00 // total document size
                     \x02 // 0x02 = type String
                     hello\x00 // field name
                     \x06\x00\x00\x00world\x00 // field value
                     \x00 // 0x00 = type E00 ('end of object')
```

```
{ "BSON": [ "awesome", 5.05, 1986 ] } → \x31\x00\x00\x00
                                       \x04BSON\x00
                                       \x26\x00\x00\x00
                                       \x02\x30\x00\x08\x00\x00\x00awesome\x00
                                       \x01\x31\x00\x33\x33\x33\x33\x33\x33\x14\x40
                                       \x10\x32\x00\xc2\x07\x00\x00
                                       \x00
                                       \x00
```

Implementation

- ▶ MongoDB website : [Data | Atlas: MongoDB Atlas](#)
- ▶ Drivers supported : C, C++, C#, .Net, Go, Java, Node.js, Perl, PHP, Python, Motor, Ruby, Scala, Swift, Mongoid.

MongoDB Website

The screenshot displays the MongoDB Atlas web interface. At the top, the user is logged in as 'mustafalouDB'. The interface includes a sidebar with navigation options: DEPLOYMENT (Databases, Triggers, Data Lake) and SECURITY (Database Access, Network Access, Advanced). The main content area shows the 'Collections' tab for the 'Mustafalou' database. The 'Mustafalou.Clients' collection is selected, showing a collection size of 184B, 1 total document, and 20KB of index size. A filter bar is present with the text '{ field: 'value' }'. Below the filter, the query results are displayed as a single document:

```
{
  "_id": ObjectId("61696898d7be70c05c25878f"),
  "Nom": "Roquero",
  "Prenom": "Pedro",
  "Date de naissance": "29/11/1998",
  "Sexe": "M",
  "GSM": "0492567897",
  "Adresse": "Avenue Saint Antoine 24",
  "Status social(*)": "C"
}
```

The interface also includes a 'VISUALIZE YOUR DATA' button and a 'REFRESH' button. A green chat icon is visible in the bottom right corner.

Example of driver's connections

Connect to MustafalouCluster

✓ Setup connection security > ✓ Choose a connection method > Connect

1 Select your driver and version

DRIVER

Java

VERSION

4.3 or later

2 Add your connection string into your application code

☒ Include full driver code example

```
ConnectionString connectionString = new
ConnectionString("mongodb+srv://dbUser:
<password>@mustafaloucluster.euggs.mongodb.net/myFirstDatabase?
retryWrites=true&w=majority");
MongoClientSettings settings = MongoClientSettings.builder()
    .applyConnectionString(connectionString)
    .build();
MongoClient mongoClient = MongoClient.create(settings);
MongoDatabase database = mongoClient.getDatabase("test");
```

Replace **<password>** with the password for the **dbUser** user. Replace **myFirstDatabase** with the name of the database that connections will use by default. Ensure any option params are [URL encoded](#).

Consistency Model

► Causal consistency

Read Concern	Write Concern	Read own writes	Monotonic reads	Monotonic writes	Writes follow reads
"majority"	"majority"	✓	✓	✓	✓
"majority"	{ w: 1 }		✓		✓
"local"	{ w: 1 }				
"local"	"majority"			✓	

Advantages

- Fast and easy to work with
- Able to work with a lot of languages
- No need to have the same columns/data for each document
- Stocked in a Bson format
- Multiple people can update the database at the same time
- Allows map reduce

Connections

- Two steps to follow:
 - Add IP address to the cluster:

Network Access

IP Access List			
Peering			
Private Endpoint			
+ ADD IP ADDRESS			
You will only be able to connect to your cluster from the following list of IP Addresses:			
IP Address	Comment	Status	Actions
193.190.63.202/32	ECAM	● Active	⚙ EDIT ⚡ DELETE
109.136.185.140/32 (includes your current IP address)		● Active	⚙ EDIT ⚡ DELETE

Add IP Access List Entry

Atlas only allows client connections to a cluster from entries in the project's IP Access List. Each entry should either be a single IP address or a CIDR-notated range of addresses. [Learn more](#).

ADD CURRENT IP ADDRESS ALLOW ACCESS FROM ANYWHERE

Access List Entry:

Enter IP Address or CIDR Notation

Comment:

Optional comment describing this entry

☐

This entry is temporary and will be deleted in

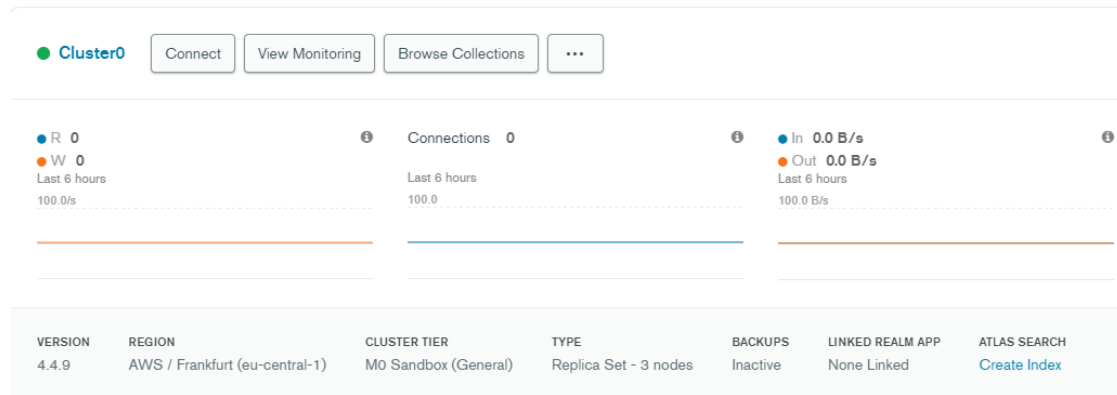
6 hours

Cancel

Confirm

Connections

- Use generated link to connect your application:



Connect to Cluster0

✓ Setup connection security > Choose a connection method > Connect

Choose a connection method [View documentation](#)

Get your pre-formatted connection string by selecting your tool below.

Connect with the MongoDB Shell
Interact with your cluster using MongoDB's interactive Javascript interface

>

Connect your application
Connect your application to your cluster using MongoDB's native drivers

>

Connect using MongoDB Compass
Explore, modify, and visualize your data with MongoDB's GUI

>

✓ Setup connection security > ✓ Choose a connection method > Connect

1 Select your driver and version

DRIVER: Python
VERSION: 3.6 or later

2 Add your connection string into your application code

☐ Include full driver code example

```
mongodb+srv://Pedro:<password>@cluster0.ybjmd.mongodb.net/myFirstDatabase?retryWrites=true&w=majority
```

Replace **<password>** with the password for the **Pedro** user. Replace **myFirstDatabase** with the name of the database that connections will use by default. Ensure any option params are [URL encoded](#).

User stories

- As a secretary, I want to be able to add a new customer in order to have their data on the database.
- As a secretary, I want to be able to search a customer in order to see all the information of the costumer.
- As a secretary, I want to be able to change customer information in order to update the database.

The background features a series of overlapping, semi-transparent green triangles and polygons that create a dynamic, layered effect. The colors range from a light, pale green to a deep, forest green. The shapes are primarily oriented diagonally, with some horizontal elements. The overall composition is modern and minimalist.

DEMO

Bibliography

- ▶ [MongoDB Atlas: Cloud Document Database | MongoDB](#)
- ▶ [Tutorial – PyMongo 3.12.1 documentation](#)
- ▶ [What is MongoDB? Introduction, Architecture, Features & Example \(guru99.com\)](#)
- ▶ [Top 5 Features of MongoDB | MongoDB](#)