

No SQL Databases: Mongo DB

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Object Oriented Programming

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Data bases in the Cloud

- ▶ A database in the cloud (DBaaS Data Base as a service) is a service accessed through cloud platforms. It provides the same facilities as a traditional database, but with the flexibility of the Cloud Computing (CC). Among others, its main characteristics are:
 - ▶ 1) Access through the cloud
 - ▶ 2) the company should not purchase dedicated hardware
 - ▶ 3) it can be managed by the user or it can be managed by the service provider
 - ▶ 4) it supports relational databases such as MySQL, Postgres, and noSQL such as MongoDB, Apache CouchDB (IBM Cloudant)



Data bases in the Cloud

- ▶ Accessed through a web user interface, a GUI, or vendor API.
- ▶ Considerations to take into account when talking about databases in the cloud.
- ▶ Control options, similar to virtual machine management, it is managed like a traditional database, or it can be managed through your provider.
- ▶ Database technology is more scalable in the cloud. DBaaS providers encrypt information or provide means of security.

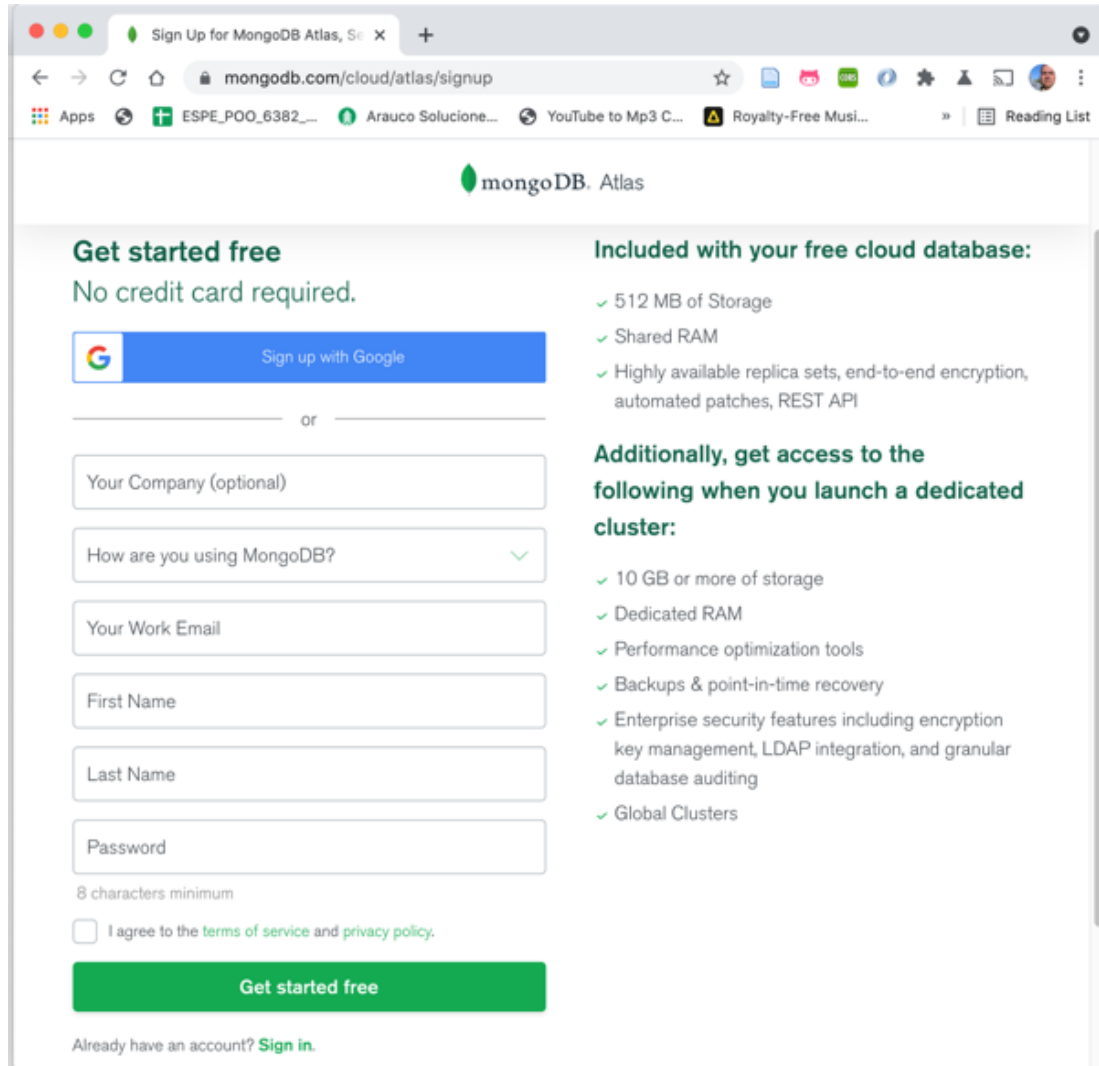
MongoDB ... Atlas



- ▶ For developers, DBaaS providers offer free services. But they are restricted in access, storage, number of users. Once the service goes into production or goes beyond those limits, the developer follows the pay-as-you-go model, per transaction, per time of use.
- ▶ **MongoDB Atlas** offers a free initial service with 512MB of storage, shared RAM, highly available replica, end-to-end encryption, automatic patching, REST API. You register using a Google account (Gmail) or by entering personal data: Company name, company email, first name, last name, password. The service can be provisioned in AWS, Azure, or Google Cloud.
- ▶ Following is the process for creating a cluster, database, user, and data in MongoDB Atlas. And the insertion of data (collections) and to retrieve the date. This solution creates a data repository in the MongoDB Atlas service on AWS.

MongoDB ... Atlas

1. Create a user <https://www.mongodb.com/cloud/atlas/signup>



The screenshot shows the MongoDB Atlas sign-up page in a web browser. The browser's address bar displays the URL `mongodb.com/cloud/atlas/signup`. The page header includes the MongoDB logo and the word "Atlas". The main content area is divided into two columns. The left column, titled "Get started free", states "No credit card required." and features a "Sign up with Google" button. Below this, there are input fields for "Your Company (optional)", "How are you using MongoDB?" (a dropdown menu), "Your Work Email", "First Name", "Last Name", and "Password" (with a note "8 characters minimum"). A checkbox for "I agree to the terms of service and privacy policy." is located below the password field. A green "Get started free" button is at the bottom of the left column. The right column, titled "Included with your free cloud database:", lists features: "512 MB of Storage", "Shared RAM", and "Highly available replica sets, end-to-end encryption, automated patches, REST API". Below this, a section titled "Additionally, get access to the following when you launch a dedicated cluster:" lists more features: "10 GB or more of storage", "Dedicated RAM", "Performance optimization tools", "Backups & point-in-time recovery", "Enterprise security features including encryption key management, LDAP integration, and granular database auditing", and "Global Clusters". At the bottom of the page, a link says "Already have an account? Sign in."

Sign Up for MongoDB Atlas, Se x

mongodb.com/cloud/atlas/signup

Apps ESPE_POO_6382... Arauco Solucione... YouTube to Mp3 C... Royalty-Free Musi... Reading List

mongoDB. Atlas

Get started free
No credit card required.

Sign up with Google

or

Your Company (optional)

How are you using MongoDB?

Your Work Email

First Name

Last Name

Password

8 characters minimum

☐ I agree to the [terms of service](#) and [privacy policy](#).

Get started free

Already have an account? [Sign in.](#)

Included with your free cloud database:

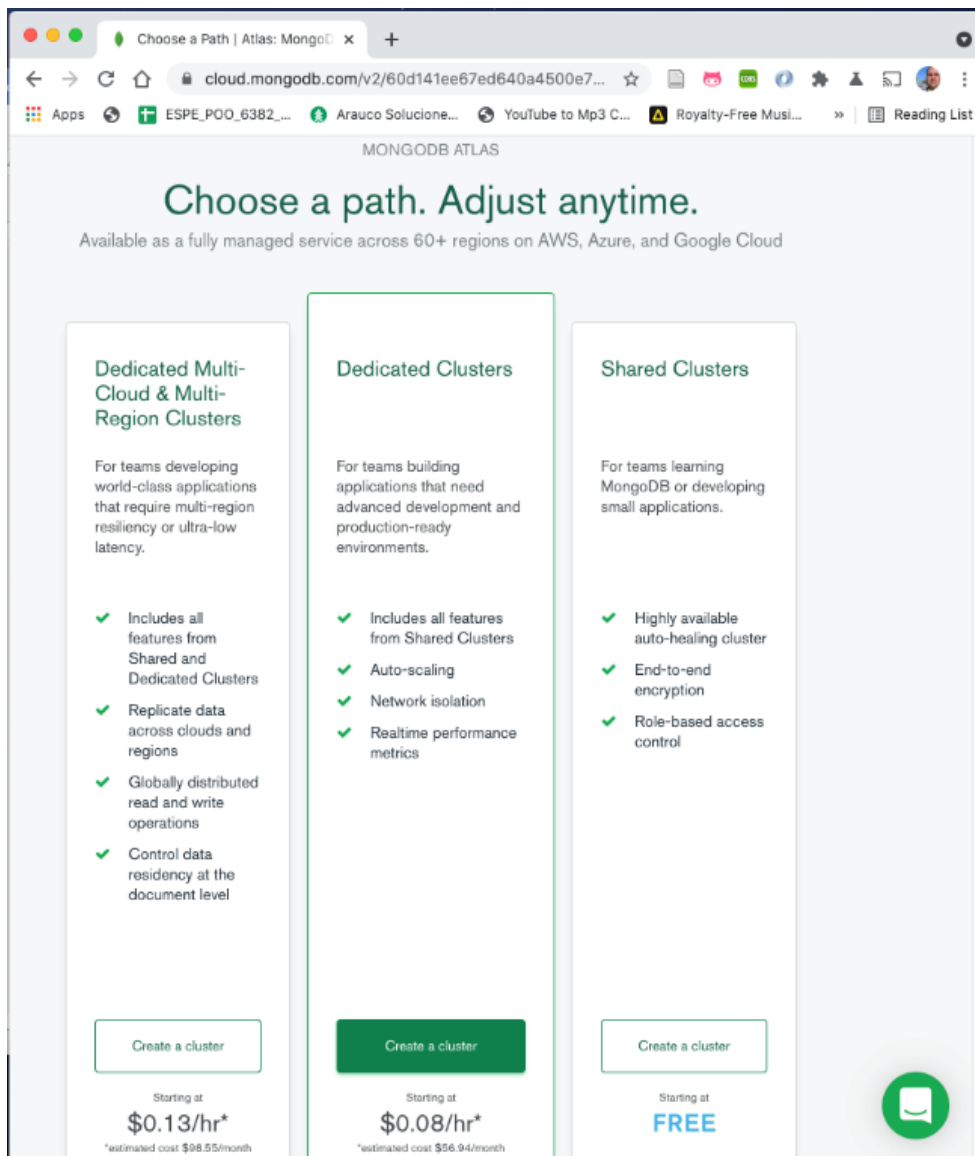
- ✓ 512 MB of Storage
- ✓ Shared RAM
- ✓ Highly available replica sets, end-to-end encryption, automated patches, REST API

Additionally, get access to the following when you launch a dedicated cluster:

- ✓ 10 GB or more of storage
- ✓ Dedicated RAM
- ✓ Performance optimization tools
- ✓ Backups & point-in-time recovery
- ✓ Enterprise security features including encryption key management, LDAP integration, and granular database auditing
- ✓ Global Clusters

MongoDB ... Atlas

2. Create un cluster



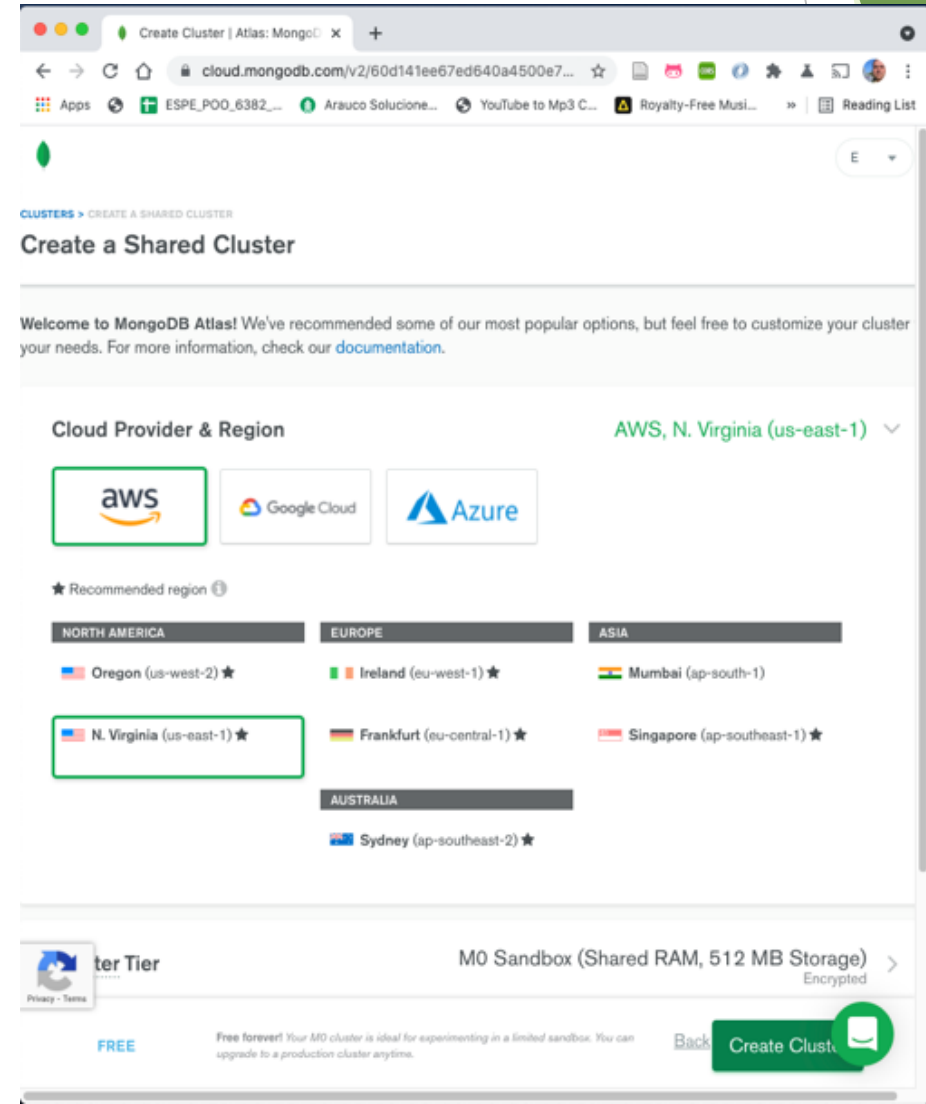
The screenshot shows the 'Choose a Path' page on the MongoDB Atlas website. The page title is 'Choose a path. Adjust anytime.' and it mentions availability on AWS, Azure, and Google Cloud. There are three main options: 'Dedicated Multi-Cloud & Multi-Region Clusters', 'Dedicated Clusters', and 'Shared Clusters'. Each option has a description, a list of features, a 'Create a cluster' button, and a starting price.

Option	Description	Features	Starting Price
Dedicated Multi-Cloud & Multi-Region Clusters	For teams developing world-class applications that require multi-region resiliency or ultra-low latency.	<ul style="list-style-type: none">Includes all features from Shared and Dedicated ClustersReplicate data across clouds and regionsGlobally distributed read and write operationsControl data residency at the document level	Starting at \$0.13/hr* <small>*estimated cost \$98.55/month</small>
Dedicated Clusters	For teams building applications that need advanced development and production-ready environments.	<ul style="list-style-type: none">Includes all features from Shared ClustersAuto-scalingNetwork isolationRealtime performance metrics	Starting at \$0.08/hr* <small>*estimated cost \$56.94/month</small>
Shared Clusters	For teams learning MongoDB or developing small applications.	<ul style="list-style-type: none">Highly available auto-healing clusterEnd-to-end encryptionRole-based access control	Starting at FREE

MongoDB ... Atlas

3. Select a service provider (Google / Amazon / Azure),

I prefer Amazon, you can choose what you wish



MongoDB Atlas

4. Setup remote Access and database user


1 Add a connection IP address

IP Address	Description (Optional)
<input type="text" value="157.100.172.146"/>	<input type="text" value="An optional comment describing this entry"/>
<div>Cancel Add IP Address</div>	

1 Add a connection IP address

✓ An IP address has been added to the IP Access List. [Add another address in the IP Access List tab.](#)

2 Create a Database User

This first user will have [atlasAdmin](#)  permissions for this project.

Keep your credentials handy, you'll need them for the next step.

Username	Password
<input type="text" value="elascano"/>	<div><input type="password" value="....."/> Autogenerate Secure Password SHOW</div>
<div>Create Database User</div>	

MongoDB Atlas

5. Setup connectivity (in these examples, the connection is through mongo Shell (command line) and ComngoDB Compass (GUI client). When you program your system, you must choose “Connect your application”

mongo Shell

Program

MongoDB Compass

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 mongo 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

Go Back

Close

Privacy Settings

To enhance the user experience, Compass can integrate with 3rd party services, which requires external network requests. Please choose from the settings below:

☐ **Enable Product Feedback Tool**
Enables a tool for sending feedback or talking to our Product and Development teams directly from Compass.

☒ **Enable Geographic Visualizations**
Allow Compass to make requests to a 3rd party mapping service.

☒ **Enable Crash Reports**
Allow Compass to send crash reports containing stack traces and unhandled exceptions.

☐ **Enable Usage Statistics**
Allow Compass to send anonymous usage statistics.

☒ **Enable Automatic Updates**
Allow Compass to periodically check for new updates.

With any of these options, none of your personal information or stored data will be submitted.
Learn more:[MongoDB Privacy Policy](#)

Start Using Compass

MongoDB Atlas: Mongo Shell

6. Insert and read data using mongo Shell

- ▶ `$ mongo <connection_string>`
- ▶ `>db` (list databases of the cluster)
- ▶ `>use myFirstDatabase` (it connects to myFirstDatabase)
- ▶ `> db.myContactsCollection.insertOne ({id: 1, "name": "Maria Isabel", "cellphoneNumber": "0999883737"});` (insert one document to the collection)
- ▶ `> db.myContactsCollection.find({"id":1})` (list the documents with critérium id=1.

MongoDB Atlas: Mongo Shell

```
[Edisons-MacBook-Pro:labsDocExamples edisonlascano$ mongo "mongodb+srv://cluster0.48kp5.mongodb.net/myFirstDatabase?authSource=admin&compressors=disabled&gssapiServiceName=mongodb&replicaSet=atlas-ej954i-shard-0&ssl=true" --username elascano
MongoDB shell version v4.2.2
[Enter password:
connecting to: mongodb://cluster0-shard-00-00.48kp5.mongodb.net:27017,cluster0-shard-00-01.48kp5.mongodb.net:27017,cluster0-shard-00-02.48kp5.mongodb.net:27017/myFirstDatabase?authSource=admin&compressors=disabled&gssapiServiceName=mongodb&replicaSet=atlas-ej954i-shard-0&ssl=true
2021-06-22T14:43:57.693-0500 I NETWORK [js] Starting new replica set monitor for atlas-ej954i-shard-0/cluster0-shard-00-00.48kp5.mongodb.net:27017,cluster0-shard-00-01.48kp5.mongodb.net:27017,cluster0-shard-00-02.48kp5.mongodb.net:27017
2021-06-22T14:43:57.693-0500 I CONNP00L [ReplicaSetMonitor-TaskExecutor] Connecting to cluster0-shard-00-01.48kp5.mongodb.net:27017
2021-06-22T14:43:57.693-0500 I CONNP00L [ReplicaSetMonitor-TaskExecutor] Connecting to cluster0-shard-00-02.48kp5.mongodb.net:27017
2021-06-22T14:43:57.693-0500 I CONNP00L [ReplicaSetMonitor-TaskExecutor] Connecting to cluster0-shard-00-00.48kp5.mongodb.net:27017
2021-06-22T14:43:58.567-0500 I NETWORK [ReplicaSetMonitor-TaskExecutor] Confirmed replica set for atlas-ej954i-shard-0 is atlas-ej954i-shard-0/cluster0-shard-00-00.48kp5.mongodb.net:27017,cluster0-shard-00-01.48kp5.mongodb.net:27017,cluster0-shard-00-02.48kp5.mongodb.net:27017
Implicit session: session { "id" : UUID("030325dd-20de-401f-88a1-7bb8c25a581c") }
MongoDB server version: 4.4.6
WARNING: shell and server versions do not match
MongoDB Enterprise atlas-ej954i-shard-0:PRIMARY>
```

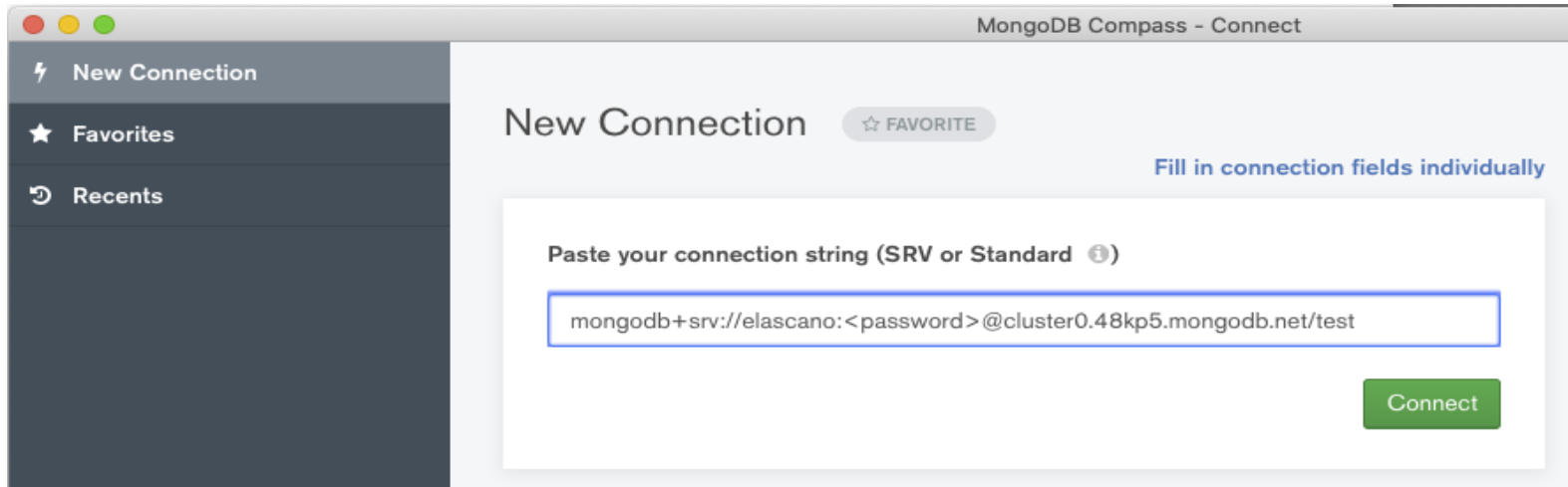
MongoDB Atlas: Mongo Shell

```
MongoDB Enterprise atlas-ej954i-shard-0:PRIMARY> db
myFirstDatabase
MongoDB Enterprise atlas-ej954i-shard-0:PRIMARY> use myFirstDatabase
switched to db myFirstDatabase
MongoDB Enterprise atlas-ej954i-shard-0:PRIMARY> db.myContactsCollection.insertOne( { id: 1, "
name": "Maria Isabel", "cellphoneNumber": "0999883737" } );
{
  "acknowledged" : true,
  "insertedId" : ObjectId("60d23f4f5f22639c266f5395")
}
MongoDB Enterprise atlas-ej954i-shard-0:PRIMARY> db.myContactsCollection.insertOne( { id: 2, "
name": "Jorge Edison", "cellphoneNumber": "0959383637" } );
{
  "acknowledged" : true,
  "insertedId" : ObjectId("60d23f785f22639c266f5396")
}
MongoDB Enterprise atlas-ej954i-shard-0:PRIMARY> db.myContactsCollection.insertOne( { id: 3, "
name": "Alfredo Rene", "cellphoneNumber": "0959383123" } );
{
  "acknowledged" : true,
  "insertedId" : ObjectId("60d23fc45f22639c266f5397")
}
MongoDB Enterprise atlas-ej954i-shard-0:PRIMARY> █
```

```
MongoDB Enterprise atlas-ej954i-shard-0:PRIMARY> db.myContactsCollection.find({"id":1})
{ "_id" : ObjectId("60d23f4f5f22639c266f5395"), "id" : 1, "name" : "Maria Isabel", "cellp
honeNumber" : "0999883737" }
MongoDB Enterprise atlas-ej954i-shard-0:PRIMARY> db.myContactsCollection.find({"id":1}) █
```

MongoDB Atlas: MongoDB Compass

6. Connect using MongoDB Compass



The screenshot shows the 'MongoDB Compass - Connect' window. On the left is a sidebar with three options: 'New Connection' (selected), 'Favorites', and 'Recents'. The main area is titled 'New Connection' and includes a '☆ FAVORITE' button. Below this, a blue link says 'Fill in connection fields individually'. A text box prompts the user to 'Paste your connection string (SRV or Standard ⓘ)' and contains the string 'mongodb+srv://elascano:<password>@cluster0.48kp5.mongodb.net/test'. A green 'Connect' button is located at the bottom right of the text box.

MongoDB Compass - Connect

New Connection ☆ FAVORITE

Fill in connection fields individually

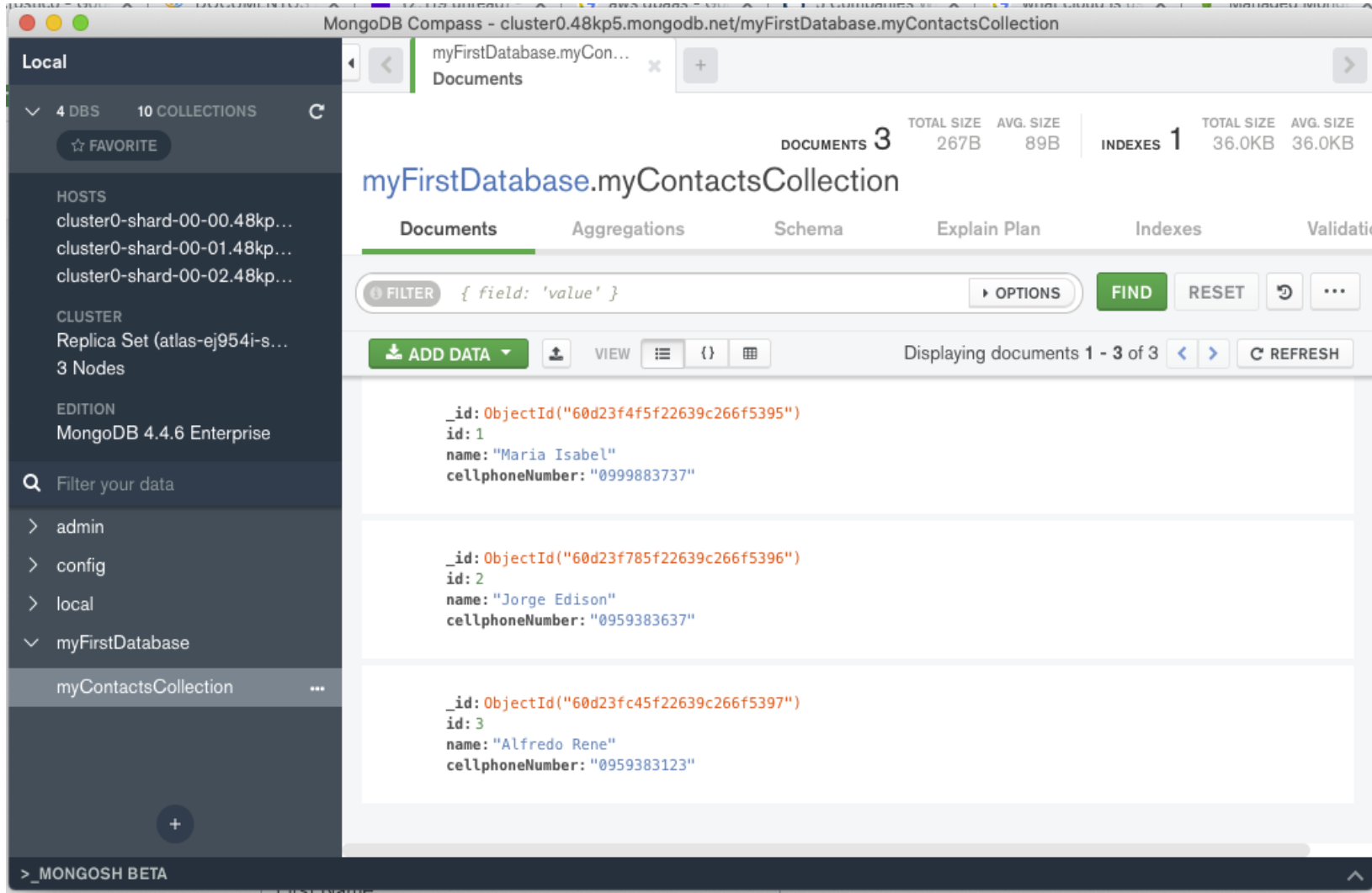
Paste your connection string (SRV or Standard ⓘ)

mongodb+srv://elascano:<password>@cluster0.48kp5.mongodb.net/test

Connect

MongoDB Atlas: MongoDB Compass

7. Using MongoDB collections with MongoDB Compass to read the documents



The screenshot displays the MongoDB Compass web interface. The left sidebar shows the database structure: 4 DBS, 10 COLLECTIONS, and a list of hosts. The main panel shows the 'myFirstDatabase.myContactsCollection' with 3 documents and 1 index. The 'Documents' tab is active, displaying a list of documents with fields: _id, id, name, and cellphoneNumber.

DOCUMENTS	TOTAL SIZE	AVG. SIZE	INDEXES	TOTAL SIZE	AVG. SIZE
3	267B	89B	1	36.0KB	36.0KB

myFirstDatabase.myContactsCollection

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' } OPTIONS FIND RESET REFRESH

ADD DATA VIEW

Displaying documents 1 - 3 of 3

```
{ "_id": ObjectId("60d23f4f5f22639c266f5395"),  
  "id": 1,  
  "name": "Maria Isabel",  
  "cellphoneNumber": "0999883737"  
}
```

```
{ "_id": ObjectId("60d23f785f22639c266f5396"),  
  "id": 2,  
  "name": "Jorge Edison",  
  "cellphoneNumber": "0959383637"  
}
```

```
{ "_id": ObjectId("60d23fc45f22639c266f5397"),  
  "id": 3,  
  "name": "Alfredo Rene",  
  "cellphoneNumber": "0959383123"  
}
```

> _MONGOSH BETA