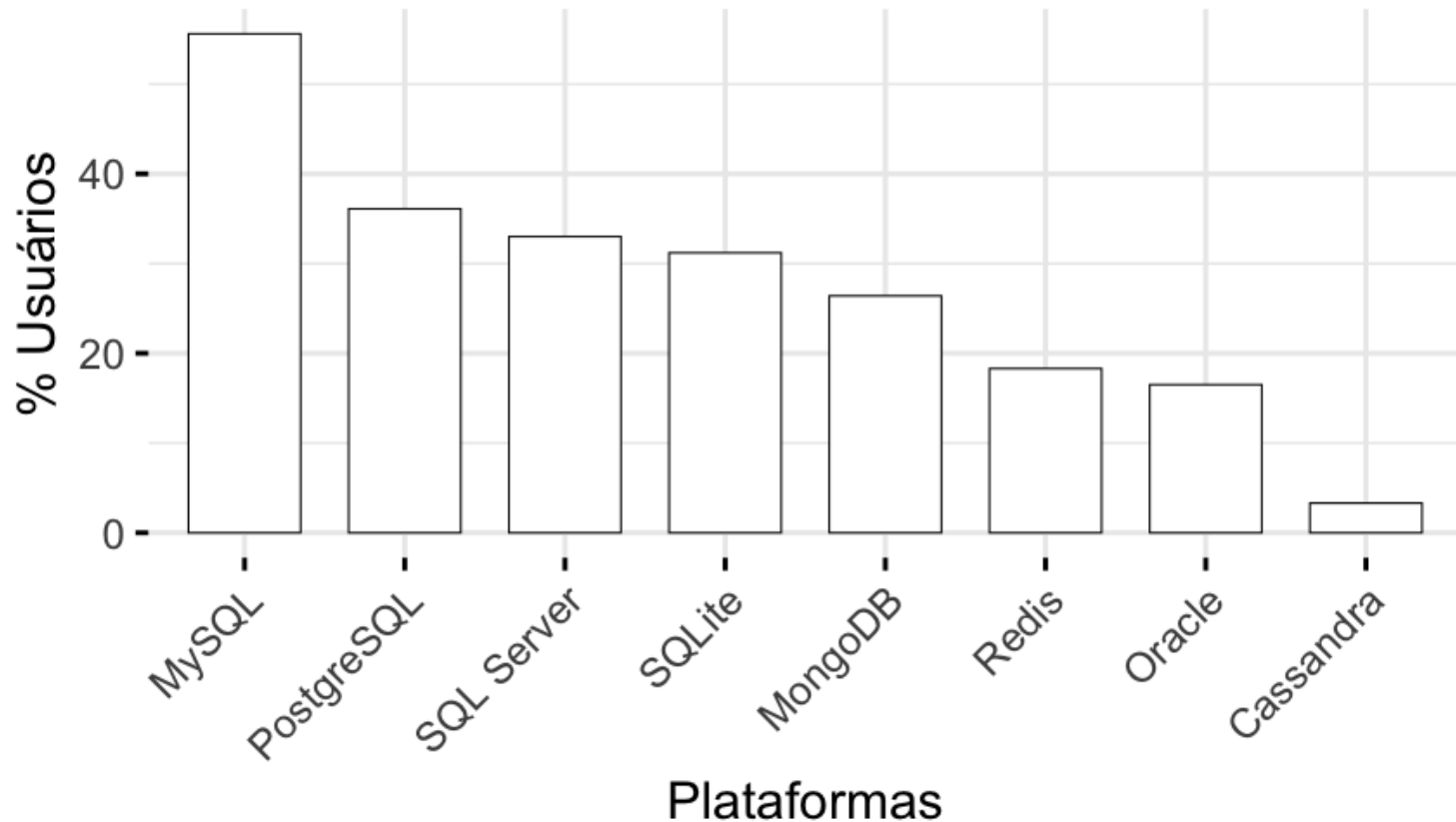


# MongoDB

## Uma Introdução

# Popularidade no StackOverflow em 2020



# Introdução ao MongoDB

- Código aberto;
- Gratuito;
- Alta performance;
- Sem esquemas;
- Orientado a documentos;
- Implementado em C++;

# Orientado a Documentos

- Orientado a documentos JSON;
- Lembrete:
  - documentos JSON possuem estrutura hierárquica;
  - podem ser facilmente utilizados pelo R ou outras ferramentas para realização de analítica;
  - suportam hierarquias complexas e mantêm índices;

# O que é JSON

- JavaScript Object Notation
- Sintaxe para armazenamento e troca de dados
- É texto puro
- Amplamente utilizada em ambientes web servidor/cliente
- Regras da sintaxe:
  - Dados são definidos em pares do tipo chave/valor
  - Dados são separados por vírgulas
  - Chaves são utilizadas para armazenar objetos
  - Colchetes são utilizados para armazenar vetores

```
# dados em JSON
```

```
"primeiroNome":"João"
```

```
# objeto JSON
```

```
{"primeiroNome":"João", "ultimoNome":"Vieira"}
```

```
# vetor JSON
```

```
"alunos":[  
  {"primeiroNome":"João", "ultimoNome":"Vieira"},  
  {"primeiroNome":"Joana", "ultimoNome":"Silva"},  
  {"primeiroNome":"Maria", "ultimoNome":"Gomes"}  
]
```

# Tipos de Dados em JSON

- *string*

```
{"nome": "Fernanda"}
```

- número

```
{"idade": 27}
```

- objeto (JSON)

```
{  
  "funcionario": {"nome": "Fernanda",  
                  "idade": 27,  
                  "cidade": "Campinas"}  
}
```

# Tipos de Dados em JSON

- *array*

```
{  
  "funcionarios": ["João",  
                  "Fernanda",  
                  "Maria"]  
}
```

- *booleano*

```
{"ferias":true}
```

- *nulo*

```
{"nomeDoMeio":null}
```

# Data Frames vs. JSON

```
## mtcars[1:3, 1:2]
```

	mpg	cyl
Mazda RX4	21.0	6
Mazda RX4 Wag	21.0	6
Datsun 710	22.8	4

```
library(jsonlite)
toJSON(mtcars[1:3, 1:2])
[{"mpg":21, "cyl":6, "_row":"Mazda RX4"},
 {"mpg":21, "cyl":6, "_row":"Mazda RX4 Wag"},
 {"mpg":22.8, "cyl":4, "_row":"Datsun 710"}]
```



# Efeitos Práticos

- Cada documento é autossuficiente;
- Cada documento possui todas as informações de que possa precisar;
- Lembrete:
  - em SQL, evitam-se repetições e combinam-se tabelas via chaves;
- Evitam-se JOINS;
- Desenha-se a base de dados de forma que as *queries* busquem apenas uma chave e retornem todas as informações necessárias;
- Preço: espaço em disco;

# Utilização de MongoDB

- Foco em *big data*;
- Escalonamento horizontal (*sharding*) - desempenho;
- Escalonamento vertical (*replica sets*) - multicore;
- Se os dados não possuem formato fixo, MongoDB é uma boa opção;
- (J/B)SON não possuem esquemas;
- Opção natural para sistemas web. Exemplo: Comércio eletrônico - detalhes de produtos;

# Quando não utilizar MongoDB?

- Quando relacionamentos entre múltiplas entidades for essencial;
- Quando existirem múltiplas chaves externas e JOINS;
- Expectativas em MongoDB:
  - Documentos autossuficientes;
  - Mínimo de chaves;
  - etc;

# Disponibilidade

- MongoDB Atlas - Database as a Service (AWS, GCP, Azure);
- Linux;
- MacOS;
- RHEL;
- Windows;

# Uso do pacote `mongoLite`

- Sempre monta-se uma conexão via `mongo()`;
- O arquivo pode ser remoto ou local;
- Contagem de registros via `con$count()`;
- Remoção de coleção via `con$drop()`;
- Inserção de coleção via `con$insert()`;

# Enviando dados para o servidor MongoDB

```
library(mongolite)
#url:"mongodb://usuario:senha@servidor:porta/base?retryWrites=false"
url="mongodb://readwrite:test@mongo.opencpu.org:43942/jeroen_test?ret
con <- mongo("mtcars", url = url)
if(con$count() > 0) con$drop()
con$insert(mtcars)
```

```
## List of 5
## $ nInserted : num 32
## $ nMatched : num 0
## $ nRemoved : num 0
## $ nUpserted : num 0
## $ writeErrors: list()
```

```
stopifnot(con$count() == nrow(mtcars))
```

# Uso do pacote mongolite

- Seleção de dados presentes no banco de dados via `con$find()`;
- No pacote `mongolite`, remover o objeto de conexão, `con`, já desconecta a sua sessão do banco de dados;
- Mas também existe o método `disconnect()` para realizar a desconexão;

```
mydata <- con$find()
```

	<b>mpg</b>	<b>cyl</b>	<b>disp</b>	<b>hp</b>	<b>drat</b>	<b>wt</b>	<b>qsec</b>	<b>vs</b>	<b>am</b>	<b>gear</b>	<b>carb</b>
Mazda RX4	21.0	6	160	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108	93	3.85	2.320	18.61	1	1	4	1

```
stopifnot(all.equal(mydata, mtcars))  
con$drop()  
rm(con)
```

# Coleções Maiores e Seleções mais Complexas

- Inserção de um conjunto de dados mais volumoso;

```
library(nycflights13)
## subconjunto pq o servidor eh publico
flights = flights[sample(nrow(flights), 10000), ]
m <- mongo(collection = "nycflights", url=url)
m$drop()
m$insert(flights)
```

```
## List of 5
## $ nInserted   : num 10000
## $ nMatched    : num 0
## $ nRemoved    : num 0
## $ nUpserted   : num 0
## $ writeErrors: list()
```



# Seleções mais Complexas

- `find()` é análogo ao `SELECT * FROM tabela`;
- É possível ordenar os dados já na seleção;
- As chamadas devem acontecer usando formato JSON;

```
m$count('{"month":1, "day":1}')
```

```
## [1] 19
```

```
jan1 <- m$find('{"month":1,"day":1}', sort='{"distance":-1}')  
jan1[1:5, 1:7] %>% knitr::kable()
```

year	month	day	dep_time	sched_dep_time	dep_delay	arr_time
2013	1	1	1720	1725	-5	2121
2013	1	1	1937	1905	32	2250
2013	1	1	628	630	-2	1016
2013	1	1	1059	1053	6	1342
2013	1	1	1730	1730	0	2126

# Ordenação em Grandes Bases

- Bases volumosas exigem a existência de um índice para permitir a ordenação;
- O índice pode ser adicionado via `index()`;
- `find()` aceita o argumento `sort=`.

```
# criação de índice eh essencial para grandes volumes de dados  
m$index(add = "distance")
```

```
##   v key._id key.distance      name      ns  
## 1 2      1          NA      _id_ jeroen_test.nycflights  
## 2 2      NA          1 distance_1 jeroen_test.nycflights
```

```
allflights <- m$find(sort='{"distance":-1}')
```

# Seleção de Colunas Específicas

- Utiliza-se `find()`;
- Adiciona-se o argumento `fields=`, que recebe a lista (em JSON) das variáveis de interesse;
- Ao especificar colunas de interesse, o MongoDB retorna uma coluna adicional, `_id`, que corresponde a um identificador interno do banco de dados;

```
# Select columns  
jan1 <- m$find('{"month":1,"day":1}',  
             fields = '{"_id":0, "distance":1, "carrier":1}')
```

```
head(jan1, 5) %>% knitr::kable()
```

<b>carrier</b>	<b>distance</b>
EV	266
UA	2227
DL	1096
UA	997
US	214

# Operadores em MongoDB

- Comparação:
  - `$eq`: equivalência
  - `$gt` (`$gte`): maior que (maior ou igual)
  - `$lt` (`$lte`): menor que (menor ou igual)
  - `$ne`: não-equivalentes
- Matemáticos
  - `$abs`: valor absoluto
  - `$ceil`: menor inteiro maior ou igual
  - `$floor`: maior inteiro menor ou igual
  - `$ln`: logaritmo natural
  - `$sqrt`: raiz quadrada

<https://docs.mongodb.com/manual/reference/operator/aggregation/>

# Identificação de Ocorrências Únicas

- O método `distinct()` retorna o que são valores únicos de um certo campo;
- Ele pode receber condições para serem avaliadas durante a execução;

```
# List unique values  
m$distinct("carrier")
```

```
## [1] "WN" "AA" "US" "9E" "EV" "MQ" "DL" "UA" "B6" "VX" "FL" "AS" "HA" "YV"  
## [16] "F9"
```

```
m$distinct("carrier", '{"distance":{"$gt":3000}}')
```

```
## [1] "UA" "HA"
```

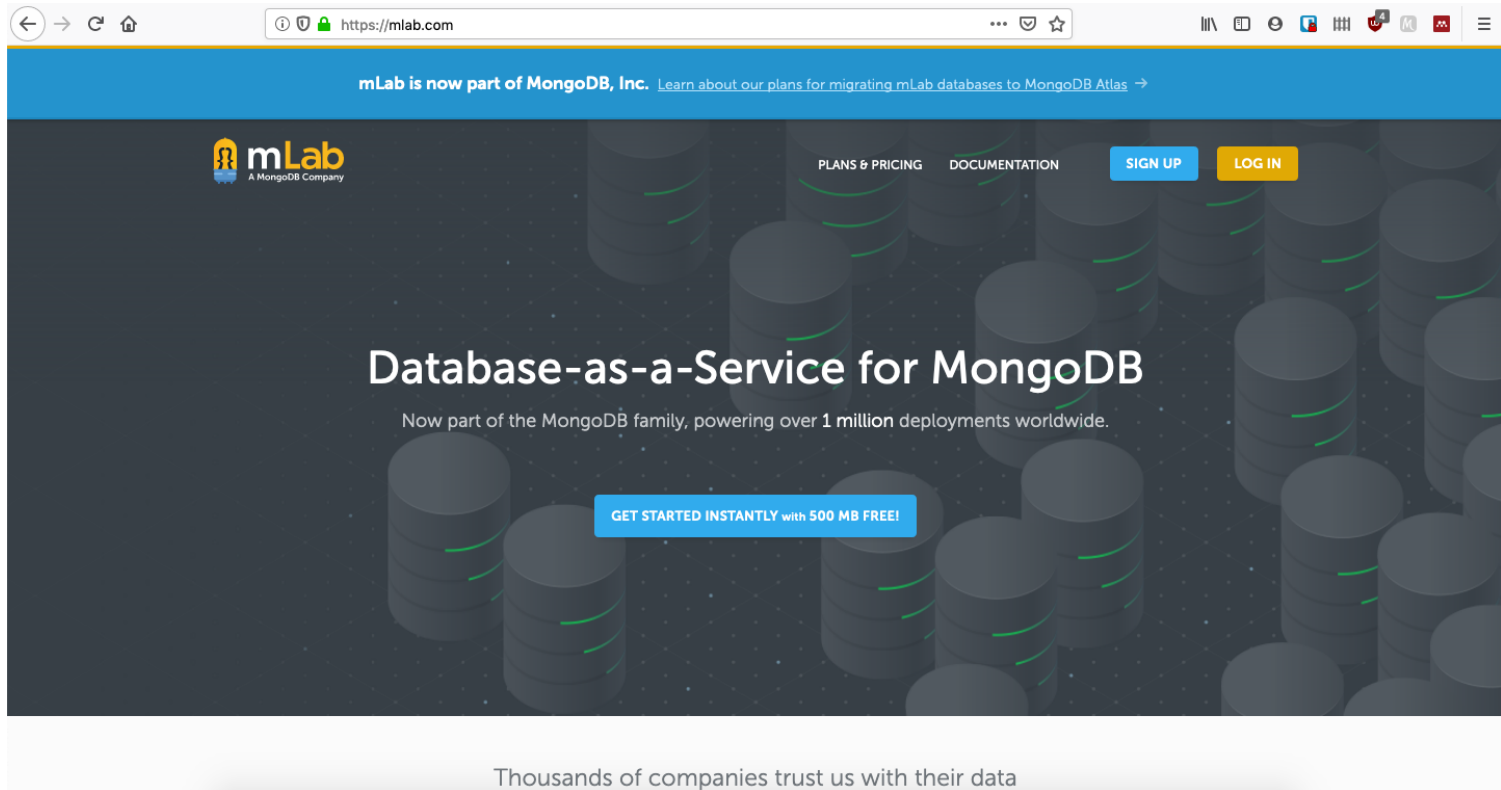
# Tabulação de Dados em MongoDB

- O método `aggregate()` permite a tabulação de dados;
- Ele exige, em seu primeiro argumento, a apresentação de um *pipeline* para cálculos desejados;

```
out = m$aggregate(['[{"$group": {"_id": "$carrier",  
                                "count": {"$sum": 1},  
                                "average": {"$avg": "$distance"}}  
                  ]'])  
m$drop()  
out[1:4,] %>% knitr::kable()
```

<b>_id</b>	<b>count</b>	<b>average</b>
F9	14	1620.0000
OO	2	453.5000
AS	10	2402.0000
9E	536	551.2071

# Criando sua instância para testes: mongodb.com



The screenshot shows the mLab website homepage. At the top, a blue banner reads "mLab is now part of MongoDB, Inc. Learn about our plans for migrating mLab databases to MongoDB Atlas →". Below this, the mLab logo is on the left, and navigation links for "PLANS & PRICING" and "DOCUMENTATION" are in the center. Two buttons, "SIGN UP" (blue) and "LOG IN" (yellow), are on the right. The main content area features the headline "Database-as-a-Service for MongoDB" and the subtext "Now part of the MongoDB family, powering over 1 million deployments worldwide." A prominent blue button in the center says "GET STARTED INSTANTLY with 500 MB FREE!". The background is a dark space filled with 3D database cylinder icons. At the bottom, a white bar contains the text "Thousands of companies trust us with their data".

mLab is now part of MongoDB, Inc. [Learn about our plans for migrating mLab databases to MongoDB Atlas](#) →

**mLab**  
A MongoDB Company

PLANS & PRICING DOCUMENTATION [SIGN UP](#) [LOG IN](#)

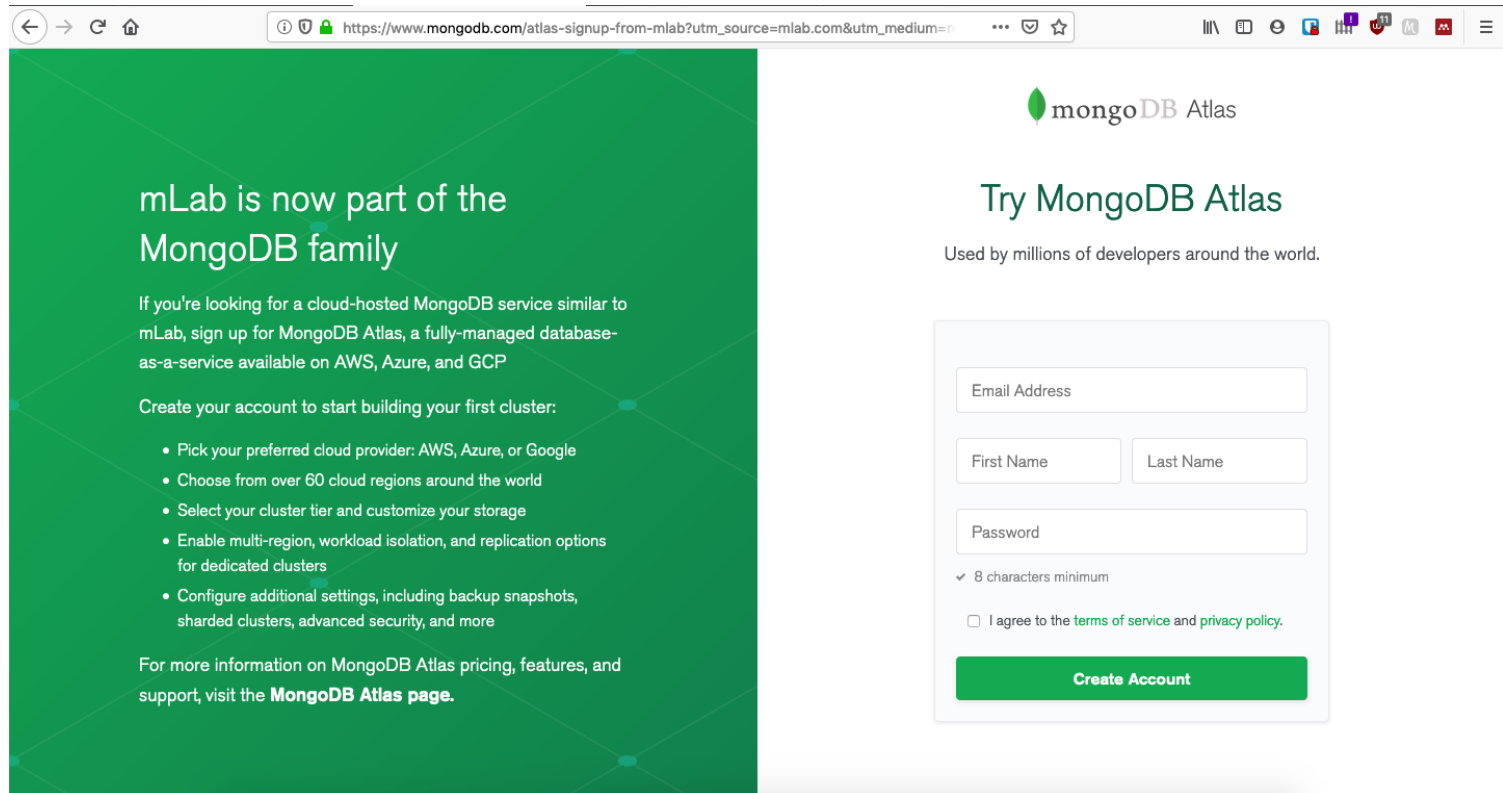
## Database-as-a-Service for MongoDB

Now part of the MongoDB family, powering over 1 million deployments worldwide.

[GET STARTED INSTANTLY with 500 MB FREE!](#)

Thousands of companies trust us with their data

# Criando sua instância para testes: CREATE ACCOUNT



← → ↻ 🏠

🔒 [https://www.mongodb.com/atlas-signup-from-mlab?utm\\_source=mlab.com&utm\\_medium=r](https://www.mongodb.com/atlas-signup-from-mlab?utm_source=mlab.com&utm_medium=r) ⋮ 📄 ☆

📄 📄 📄 📄 📄 📄 📄 📄 📄 📄

## mLab is now part of the MongoDB family

If you're looking for a cloud-hosted MongoDB service similar to mLab, sign up for MongoDB Atlas, a fully-managed database-as-a-service available on AWS, Azure, and GCP

Create your account to start building your first cluster:

- Pick your preferred cloud provider: AWS, Azure, or Google
- Choose from over 60 cloud regions around the world
- Select your cluster tier and customize your storage
- Enable multi-region, workload isolation, and replication options for dedicated clusters
- Configure additional settings, including backup snapshots, sharded clusters, advanced security, and more

For more information on MongoDB Atlas pricing, features, and support, visit the [MongoDB Atlas page](#).

**mongoDB Atlas**

## Try MongoDB Atlas

Used by millions of developers around the world.

Email Address

First Name Last Name

Password

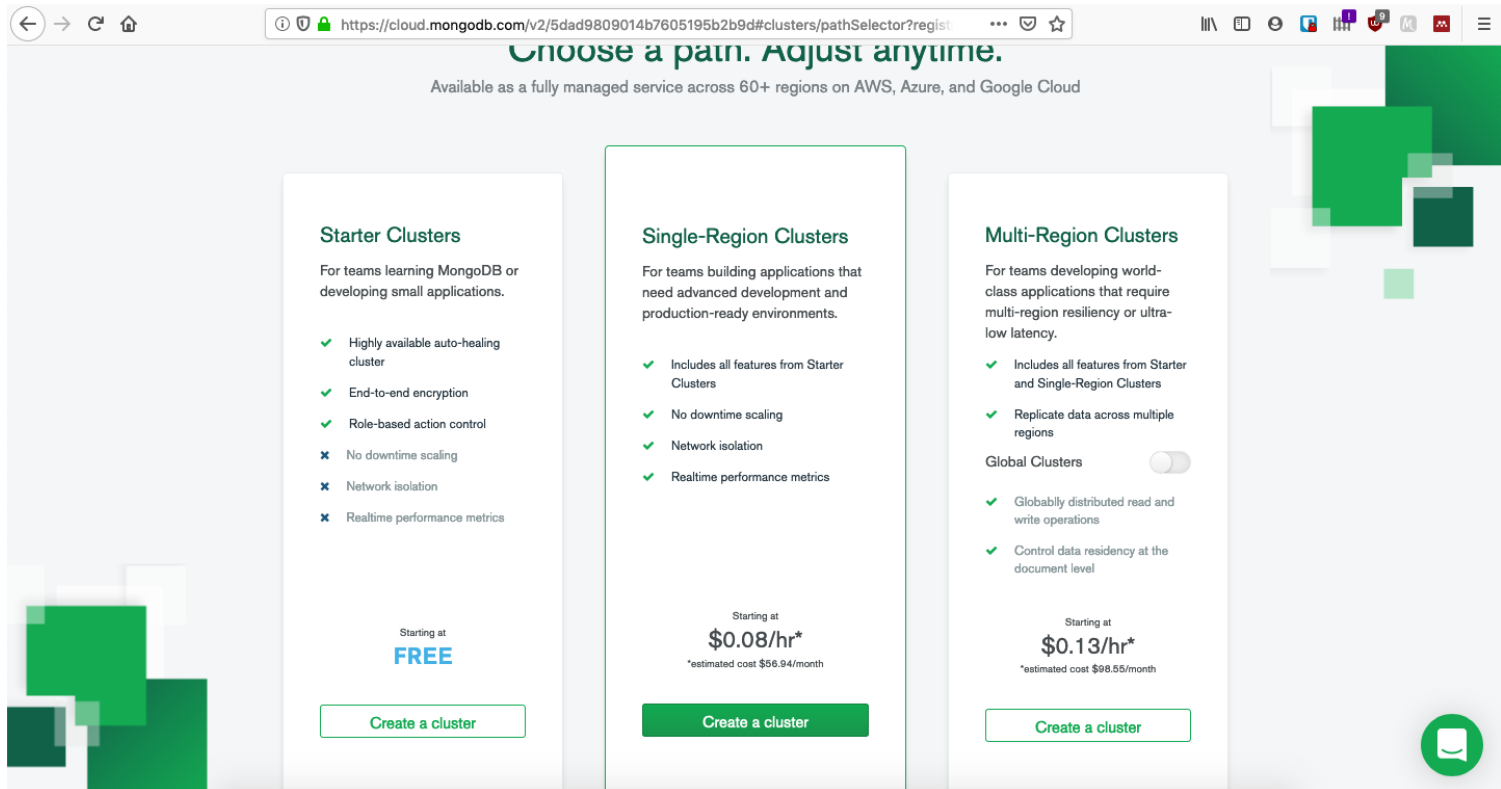
✓ 8 characters minimum

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

**Create Account**



# Criando sua instância para testes: FREE



Choose a path. Adjust anytime.  
Available as a fully managed service across 60+ regions on AWS, Azure, and Google Cloud

### Starter Clusters

For teams learning MongoDB or developing small applications.

- ✓ Highly available auto-healing cluster
- ✓ End-to-end encryption
- ✓ Role-based action control
- ✗ No downtime scaling
- ✗ Network isolation
- ✗ Realtime performance metrics

Starting at  
**FREE**

Create a cluster

### Single-Region Clusters

For teams building applications that need advanced development and production-ready environments.

- ✓ Includes all features from Starter Clusters
- ✓ No downtime scaling
- ✓ Network isolation
- ✓ Realtime performance metrics

Starting at  
**\$0.08/hr\***  
\*estimated cost \$56.94/month

Create a cluster

### Multi-Region Clusters

For teams developing world-class applications that require multi-region resiliency or ultra-low latency.

- ✓ Includes all features from Starter and Single-Region Clusters
- ✓ Replicate data across multiple regions

Global Clusters

- ✓ Globally distributed read and write operations
- ✓ Control data residency at the document level

Starting at  
**\$0.13/hr\***  
\*estimated cost \$98.55/month

Create a cluster

25 / 39

# Criando sua instância para testes: CREATE

Welcome to MongoDB Atlas! We've recommended some of our most popular options, but feel free to customize your cluster to your needs. For more information, check our [documentation](#).

### Cloud Provider & Region

AWS, N. Virginia (us-east-1) ▾

Create a **free tier cluster** by selecting a region with **FREE TIER AVAILABLE** and choosing the **M0** cluster tier below.

★ Recommended region ⓘ

NORTH AMERICA	EUROPE	ASIA
<b>N. Virginia (us-east-1)</b> ★ <b>FREE TIER AVAILABLE</b>	<b>Ireland (eu-west-1)</b> ★ <b>FREE TIER AVAILABLE</b>	<b>Singapore (ap-southeast-1)</b> ★ <b>FREE TIER AVAILABLE</b>
<b>Oregon (us-west-2)</b> ★ <b>FREE TIER AVAILABLE</b>	<b>Frankfurt (eu-central-1)</b> ★ <b>FREE TIER AVAILABLE</b>	<b>Mumbai (ap-south-1)</b> <b>FREE TIER AVAILABLE</b>
<b>AUSTRALIA</b>		
<b>Sydney (ap-southeast-2)</b> ★		

### Cluster Tier

M0 Sandbox (Shared RAM. 512 MB Storage) ▾

**FREE** Free forever! Your M0 cluster is ideal for experimenting in a limited sandbox. You can upgrade to a production cluster anytime.

# Criando sua instância para testes: Espere até criação

The screenshot shows the MongoDB Atlas interface. At the top, a blue banner indicates deployment progress: "We are deploying your changes: 0 of 3 servers complete (current action: provisioning 3 servers)". The main heading is "Clusters" with a search bar and a "Build a New Cluster" button. A sidebar on the left lists navigation options under categories like ATLAS, SECURITY, PROJECT, and SERVICES. The main content area displays details for a cluster named "Cluster0" (version 4.0.12) in a "SANDBOX" environment. The cluster tier is "M0 Sandbox (General)", the region is "AWS / N. Virginia (us-east-1)", and the type is "Replica Set - 3 nodes". A large message states "Your cluster is being created." with a note that "New clusters take between 7-10 minutes to provision." The footer includes system status ("All Good"), login information, and copyright details for MongoDB, Inc. (2019).

mongoDB Atlas All Clusters

Please set your time zone Usage This Month:\$0.00 details Benilton

CONTEXT  
Project 0

ATLAS  
Clusters  
Data Lake BETA

SECURITY  
Database Access  
Network Access  
Advanced

PROJECT  
Access Management  
Activity Feed  
Alerts 0  
Integrations  
Settings

SERVICES  
Charts  
Stitch  
Triggers

HELP

We are deploying your changes: 0 of 3 servers complete (current action: provisioning 3 servers)

BENILTON'S ORG - 2019-10-21 > PROJECT 0

## Clusters

Build a New Cluster

Find a cluster...

**SANDBOX**

← Cluster0  
Version 4.0.12

CONNECT METRICS COLLECTIONS ...

**CLUSTER TIER**  
M0 Sandbox (General)

**REGION**  
AWS / N. Virginia (us-east-1)

**TYPE**  
Replica Set - 3 nodes

**LINKED STITCH APP**  
None Linked

**Your cluster is being created.**  
New clusters take between 7-10 minutes to provision.

System Status: All Good Last Login: 177.87.78.110  
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# Criando sua instância para testes: Cluster pronto

The screenshot displays the MongoDB Atlas interface for a specific cluster. The browser address bar shows the URL: <https://cloud.mongodb.com/v2/5dad9809014b7605195b2b9d#clusters>. The page title is "mongoDB Atlas All Clusters".

**CONTEXT:** BENILTON'S ORG - 2019-10-21 > PROJECT 0

**Project 0** Clusters Build a New Cluster

Find a cluster...

**SANDBOX**

- Cluster0**  
Version 4.0.12
- CONNECT** **METRICS** **COLLECTIONS** ...
- CLUSTER TIER**  
M0 Sandbox (General)
- REGION**  
AWS / N. Virginia (us-east-1)
- TYPE**  
Replica Set - 3 nodes
- LINKED STITCH APP**  
None Linked

**Operations** 100.0/s  
NO DATA AVAILABLE

**Logical Size** 512.0 MB max  
0.0 B  
NO DATA AVAILABLE

**Connections** 100 max  
NO DATA AVAILABLE

**Enhance Your Experience**  
For dedicated throughput, richer metrics and enterprise security options, upgrade your cluster now!  
[Upgrade](#)

System Status: **All Good** Last Login: 177.87.78.110  
©2019 MongoDB, Inc. [Status](#) [Terms](#) [Privacy](#) [Atlas Blog](#) [Contact Sales](#)

# Criando sua instância para testes: Acesso

mongoDB Atlas All Clusters

CONTEXT Project 0

ATLAS Clusters

Cluster0 Version 4.0.12

CONNECT METRICS

CLUSTER TIER MO Sandbox (General)

REGION AWS / N. Virginia (us-east-1)

TYPE Replica Set - 3 nodes

LINKED STITCH APP None Linked

System Status: All Good

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### Connect to Cluster0

Setup connection security > Choose a connection method > Connect

You need to secure your MongoDB Atlas cluster before you can use it. Set which users and IP addresses can access your cluster now. [Read more](#)

**You can't connect yet. Set up your firewall access and user security permission below.**

- Whitelist your connection IP address**
  - 
  -
- Create a MongoDB User**

This first user will have [atlasAdmin](#) permissions for this project. Keep your credentials handy, you'll need them for the next step.

<b>Username</b>	<b>Password</b>	<input type="button" value="Autogenerate Secure Password"/>
<input type="text" value="ex. dbUser"/>	<input type="text" value="ex. dbUserPassword"/>	<input type="button" value="SHOW"/>
<input type="button" value="Create MongoDB User"/>		

Enhance Your Experience

# Criando sua instância para testes: Conexão

mongoDB Atlas All Clusters

CONTEXT Project 0

ATLAS Clusters

DATA LAKE BETA

SECURITY Database Access Network Access Advanced

PROJECT Access Management Activity Feed Alerts 1 Integrations Settings

SERVICES Charts Stitch Triggers

HELP

System Status: All Good Last Login: 177.87.78.110

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## Connect to Cluster0

Setup connection security Choose a connection method Connect

You need to secure your MongoDB Atlas cluster before you can use it. Set which users and IP addresses can access your cluster now. [Read more](#)

You're ready to connect. Choose how you want to connect in the next step.

- Whitelist your connection IP address**  
✓ An IP address has been whitelisted. Add another whitelist entry in the [IP Whitelist tab](#).
- Create a MongoDB User**  
✓ A MongoDB user has been added to this project. Not yours? Create one in the [MongoDB Users tab](#).  
You'll need your MongoDB user's username and password in the next step.

Close Choose a connection method

Build a New Cluster

Enhance Your Experience  
dedicated throughput, richer metrics and enterprise security options, upgrade your cluster now!  
Upgrade

# Criando sua instância para testes: Application

The screenshot displays the MongoDB Atlas web interface. A modal dialog titled "Connect to Cluster0" is open in the center. The dialog has a breadcrumb trail: "Setup connection security" (checked) > "Choose a connection method" > "Connect". Below this, it says "Choose a connection method" with a link to "View documentation". A note states: "See methods to add data and diagnostics in the Command Line Tools shortcut from within your cluster." Three options are listed, each with a right-pointing arrow:

- Connect with the Mongo Shell**: Mongo Shell with TLS/SSL support is required.
- Connect Your Application**: Get a connection string and view driver connection examples.
- Connect with MongoDB Compass**: Download Compass to explore, visualize, and manipulate your data.

At the bottom of the dialog are "Go Back" and "Close" buttons. The background interface shows the "Clusters" page for "Cluster0" (Version 4.0.12) with details for Cluster Tier (M0 Sandbox), Region (AWS / N. Virginia), and Type (Replica Set - 3 nodes). A sidebar on the left contains navigation menus for Context, ATLAS, SECURITY, PROJECT, and SERVICES. The footer includes system status ("All Good"), last login, and copyright information for MongoDB, Inc. (2019).

# Criando sua instância para testes: Info para conexão

mongoDB Atlas All Clusters

CONTEXT Project 0

ATLAS Clusters

Cluster0 Version 4.0.12

CONNECT METRICS

CLUSTER TIER MO Sandbox (General)

REGION AWS / N. Virginia (us-east-1)

TYPE Replica Set - 3 nodes

LINKED STITCH APP None Linked

System Status: All Good

©2019 MongoDB, Inc.

### Connect to Cluster0

✓ Setup connection security ✓ Choose a connection method Connect

1 Choose your driver version

DRIVER	VERSION
Perl	2.0.x or later

2 Add your connection string into your application code

Connection String Only Full Driver Example

```
mongodb+srv://benilton:<password>@cluster0-s8gg0.mongodb.net/test
```

Copy

Replace **<password>** with the password for the **benilton** user.  
When entering your password, make sure that any special characters are [URL encoded](#).

Having trouble connecting? [View our troubleshooting documentation](#)

Go Back Close



# Criando sua instância para testes: ADD

The screenshot shows the MongoDB Atlas web interface. At the top, the browser address bar displays the URL: `https://cloud.mongodb.com/v2/5dad9809014b7605195b2b9d#metrics/replicaSet/5dad98d`. The page header includes the MongoDB Atlas logo, 'All Clusters', and a notification to 'Please set your time zone'. The main content area is for 'Cluster0' under 'Project 0'. The 'Collections' tab is active, showing 'DATABASES: 0' and 'COLLECTIONS: 0'. A central message reads 'Interact with your data' with a subtext: 'Run queries, view metadata about your collections, manages indexes, and interact with your data with full CRUD functionality.' Below this are two buttons: 'Load a Sample Dataset' (green) and 'Add my own data' (grey). A 'More information' link is also present. The left sidebar lists navigation options under categories: ATLAS (Clusters, Data Lake), SECURITY (Database Access, Network Access, Advanced), PROJECT (Access Management, Activity Feed, Alerts, Integrations, Settings), SERVICES (Charts, Stitch, Triggers), and HELP. The footer shows 'System Status: All Good', 'Last Login: 177.87.78.110', and copyright information for MongoDB, Inc. A chat icon is visible in the bottom right corner.

# Criando sua instância para testes: Banco e coleção

The screenshot displays the MongoDB Atlas interface with a 'Create Database' modal window open. The background shows the 'Cluster0' overview page with navigation tabs for Overview, Real Time, and Metrics. The modal window contains the following elements:

- Header:** 'Create Database' with a close button (X).
- Form Fields:**
  - DATABASE NAME:** A text input field containing 'testmongodb'.
  - COLLECTION NAME:** A text input field containing 'meuteste'.
- Options:** A checkbox labeled 'Capped Collection' which is currently unchecked.
- Text:** A note below the checkbox: 'Before MongoDB can save your new database, a collection name must be specified at the time of creation.'
- Buttons:** 'Cancel' and 'Create' buttons at the bottom right of the modal.

The background interface includes a left sidebar with sections like ATLAS, SECURITY, PROJECT, and SERVICES. The top navigation bar shows 'Project 0' and 'Cluster0'. The main content area displays 'DATABASES: 0' and 'COLLECTIONS: 0'. At the bottom, there is a system status bar indicating 'All Good' and a copyright notice for 2019 MongoDB, Inc.

# Criando sua instância para testes: Estrutura

The screenshot shows the MongoDB Atlas web interface. At the top, the browser address bar displays the URL: `https://cloud.mongodb.com/v2/5dad9809014b7605195b2b9d#metrics/replicaSet/5dad98d`. The page header includes the MongoDB Atlas logo, the text "All Clusters", and a notification: "Please set your time zone". Usage information shows "Usage This Month: \$0.00" with a "details" link, and the user's name "Benilton" is visible.

The main content area is titled "Cluster0" and shows the "Collections" tab selected. The page indicates "DATABASES: 1" and "COLLECTIONS: 1". A "REFRESH" button is present. The selected database is "testmongodb.meuteste". Below the database name, it shows "COLLECTION SIZE: 0B", "TOTAL DOCUMENTS: 0", and "INDEXES TOTAL SIZE: 4KB". There are tabs for "Find", "Indexes", and "Aggregation". A search filter is set to `{"filter": "example"}`. An "INSERT DOCUMENT" button is located in the top right of the main content area. The "QUERY RESULTS" section shows "0" results.

The left sidebar contains navigation menus for "ATLAS" (Clusters, Data Lake), "SECURITY" (Database Access, Network Access, Advanced), "PROJECT" (Access Management, Activity Feed, Alerts, Integrations, Settings), "SERVICES" (Charts, Stitch, Triggers), and "HELP".

At the bottom of the page, the system status is "All Good" with a "Last Login: 177.87.78.110". Copyright information for "©2019 MongoDB, Inc." and links for "Status", "Terms", "Privacy", "Atlas Blog", and "Contact Sales" are provided. A green chat icon is visible in the bottom right corner.

# Acesso via R

```
library(mongolite)
url = paste0(
  "mongodb+srv://",
  "beniltonBD:senha123dificil@",
  "cluster0.agyxj.mongodb.net/",
  "?retryWrites=true&w=majority"
)
url
```

```
## [1] "mongodb+srv://beniltonBD:senha123dificil@cluster0.agyxj.mongodb.net/"
```

```
myconn = mongo(collection="meuteste", db="testemongodb", url=url)
library(ggplot2)
myconn$insert(diamonds)
```

```
## List of 5
## $ nInserted : num 53940
## $ nMatched : num 0
## $ nRemoved : num 0
## $ nUpserted : num 0
## $ writeErrors: list()
```

# Criando sua instância para testes: Dados

The screenshot displays the MongoDB Atlas web interface. The browser address bar shows the URL: `https://cloud.mongodb.com/v2/5dad9809014b7605195b2b9d#metrics/replicaSet/5dad98d`. The page title is "mongoDB Atlas All Clusters". The main navigation bar includes "Project 0" and "Cluster0". The left sidebar contains sections for ATLAS (Clusters, Data Lake), SECURITY (Database Access, Network Access, Advanced), PROJECT (Access Management, Activity Feed, Alerts, Integrations, Settings), SERVICES (Charts, Stitch, Triggers), and HELP.

The main content area shows the "Collections" tab for "testmongodb.meuteste". It displays the following statistics: COLLECTION SIZE: 8.1MB, TOTAL DOCUMENTS: 53940, and INDEXES TOTAL SIZE: 4KB. Below these statistics, there are tabs for "Find", "Indexes", and "Aggregation". The "Find" tab is active, showing a search filter: `<filter>{"example"}`. A "QUERY RESULTS 1-20 OF MANY" section displays a single document:

```
{
  "_id": ObjectId("5dad9c07dc1d937a2d668a95"),
  "carat": 0.23,
  "cut": "Ideal",
  "color": "E",
  "clarity": "SI2",
  "depth": 61.5,
  "table": 55,
  "price": 326,
  "x": 3.95,
  "y": 3.98,
  "z": 2.43
}
```

The interface also includes a "REFRESH" button, an "INSERT DOCUMENT" button, and a "Find" button. A green chat icon is visible in the bottom right corner.

# Criando sua instância para testes: Manipulação Extra

The screenshot shows the MongoDB Atlas web interface. The browser address bar displays the URL: `https://cloud.mongodb.com/v2/5dad9809014b7605195b2b9d#metrics/replicaSet/5dad98d`. The page title is "mongoDB Atlas All Clusters".

The interface is divided into several sections:

- CONTEXT:** Shows "Project 0" and navigation tabs for Overview, Real Time, Metrics, Collections (selected), Profiler, Performance Advisor, and Command Line Tools.
- ATLAS:** A sidebar menu with categories: Clusters, Data Lake BETA, SECURITY (Database Access, Network Access, Advanced), PROJECT (Access Management, Activity Feed, Alerts, Integrations, Settings), SERVICES (Charts, Stitch, Triggers), and HELP.
- Database Overview:** Shows "testmongodb.meuteste" with a "+ Create Database" button and a search for "NAMESPACES".
- Collection Statistics:** "testmongodb.meuteste" with "COLLECTION SIZE: 8.1MB", "TOTAL DOCUMENTS: 53940", and "INDEXES TOTAL SIZE: 4KB".
- Aggregation:** A section for building aggregation pipelines. It includes a "53940 Documents in the Collection" indicator and a "Preview of Documents in the Collection" section. The preview shows a document with fields: `_id`, `color`, `depth`, `y`, `z`, `carat`, `cut`, and `clarity`.
- Aggregation Results:** A section for viewing aggregated results, currently showing "No Preview Documents".

The URL in the address bar at the bottom is: `https://cloud.mongodb.com/v2/5dad9809014b7605195b2b9d#metrics/replicaSet/5dad98d2bc1dc0d8b0195a34/explorer/testmongodb/meuteste`.

# Criação do material

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