

# MONGODB ATLAS: SETTING UP & USING MANAGED MONGODB



In this article, I'll show you how to set up a NoSQL cloud database using MongoDB Atlas.

The MongoDB Atlas free tiers provide developers a turnkey solution to prototype and test applications using MongoDB as the backend database. [Database as a service \(DBaaS\)](#) aims to eliminate the tedious configuration process of a database while providing a scalable, highly available, and high-performance database.

Let's take a look.

*(This article is part of our [MongoDB Guide](#). Use the right-hand menu to navigate.)*

## What is MongoDB Atlas?

MongoDB Atlas is a cloud-based [NoSQL database service](#) developed by MongoDB Inc. It was developed to offer a flexible, scalable, and on-demand platform to eliminate the need for costly infrastructure, configurations, and maintenance.

MongoDB Atlas provides all the features of MongoDB—without the need to worry about database administration tasks such as:

- Infrastructure provisioning
- Database configurations
- Patches
- Scaling
- Backups

# Features of MongoDB Atlas

Key features of Atlas include:

- **Cloud provider agnostic.** MongoDB Atlas is a cloud provider agnostic service that allows users to run the database service on a cloud provider of their choice, including, of course, AWS, Azure, and GCP.
- **Up-to-date features.** MongoDB Atlas provides support to the two latest versions of MongoDB service with automatic patching and one-click upgrades.
- **Scalability & high availability.** Atlas can scale out and scale up to meet the database's needs effortlessly while having a minimum of three data nodes per replica set deployed across availability zones, providing continuous database functionality.
- **High performance.** The MongoDB WiredTiger storage engine, along with compression and fine-grained concurrency control, gives the required performance for any database need.

Additionally, Atlas provides monitoring and alerts, strong security, workload isolation, and [disaster recovery functions](#).

## Setting up MongoDB Atlas

MongoDB Atlas provides a free tier that can be used for learning and prototyping databases. This free tier is called Mo Sandbox, and it is limited to 512MB of storage, shared vCPU, and RAM with 100 maximum connections on a single Mo cluster.

The MongoDB Atlas paid services are billed hourly based on your usage.

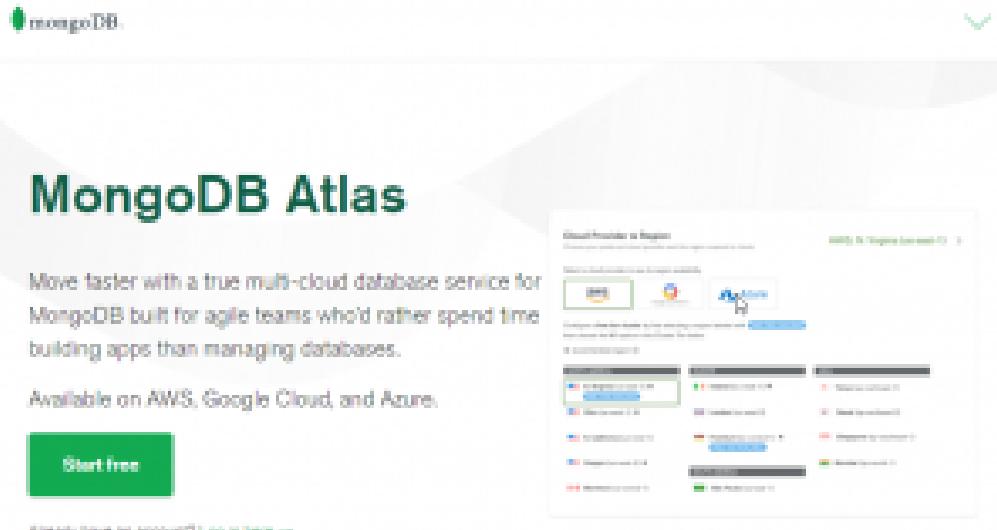
This section will guide you step-by-step guide through creating a MongoDB database cluster on Atlas using the free tier account.

## Creating a MongoDB Atlas account

First, we need to create an account in MongoDB Atlas. There are two methods to create an account:

- You can use your pre-existing Google account to log in to the service.
- You can use your email to create a new account by providing an email address, name, password, and company name.

Review and accept the Terms of Service and Privacy Policy before clicking Sign Up. In this tutorial, we will use an email to create a MongoDB Atlas account.



Move faster with a true multi-cloud database service for MongoDB built for agile teams who'd rather spend time building apps than managing databases.

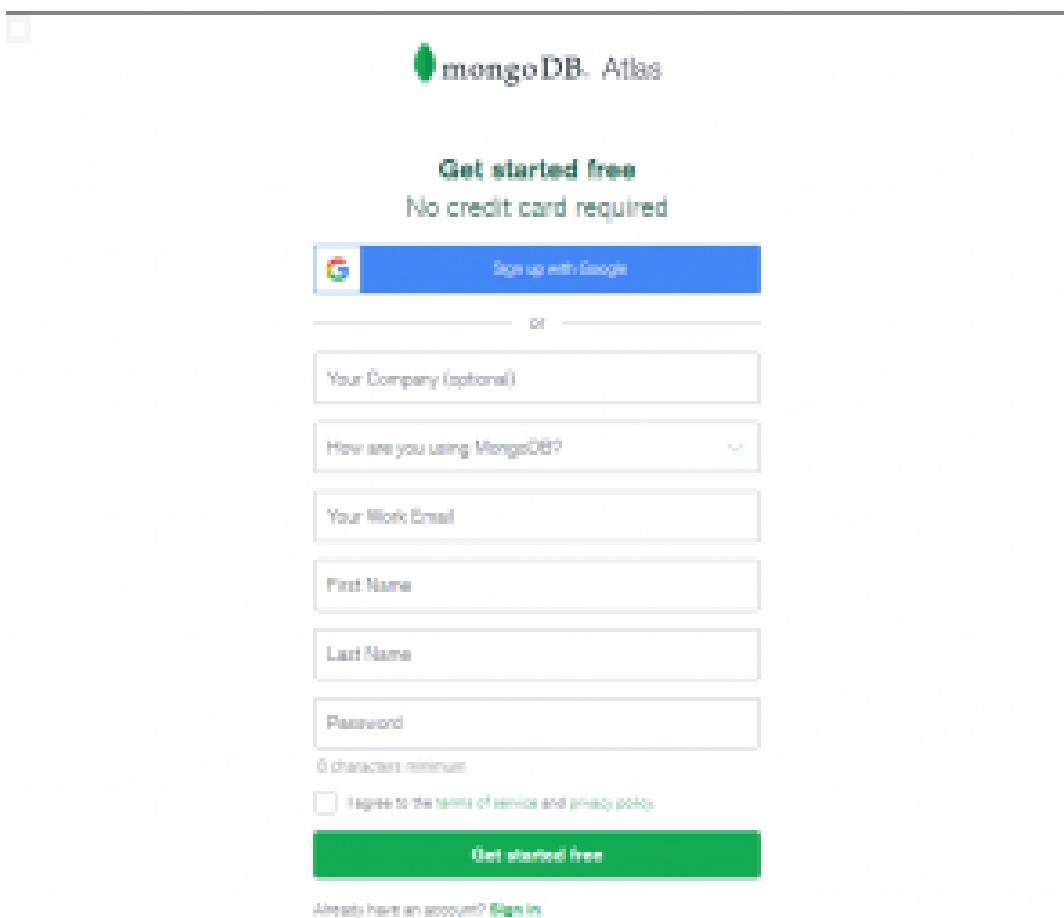
Available on AWS, Google Cloud, and Azure.

[Start free](#)

Already have an account? [Log in here](#)

[Pricing](#) [Getting started](#) [Migrate to MongoDB Atlas](#) [Frequently Asked Questions](#)

MongoDB Atlas website



Get started free

No credit card required

[Sign up with Google](#)

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.

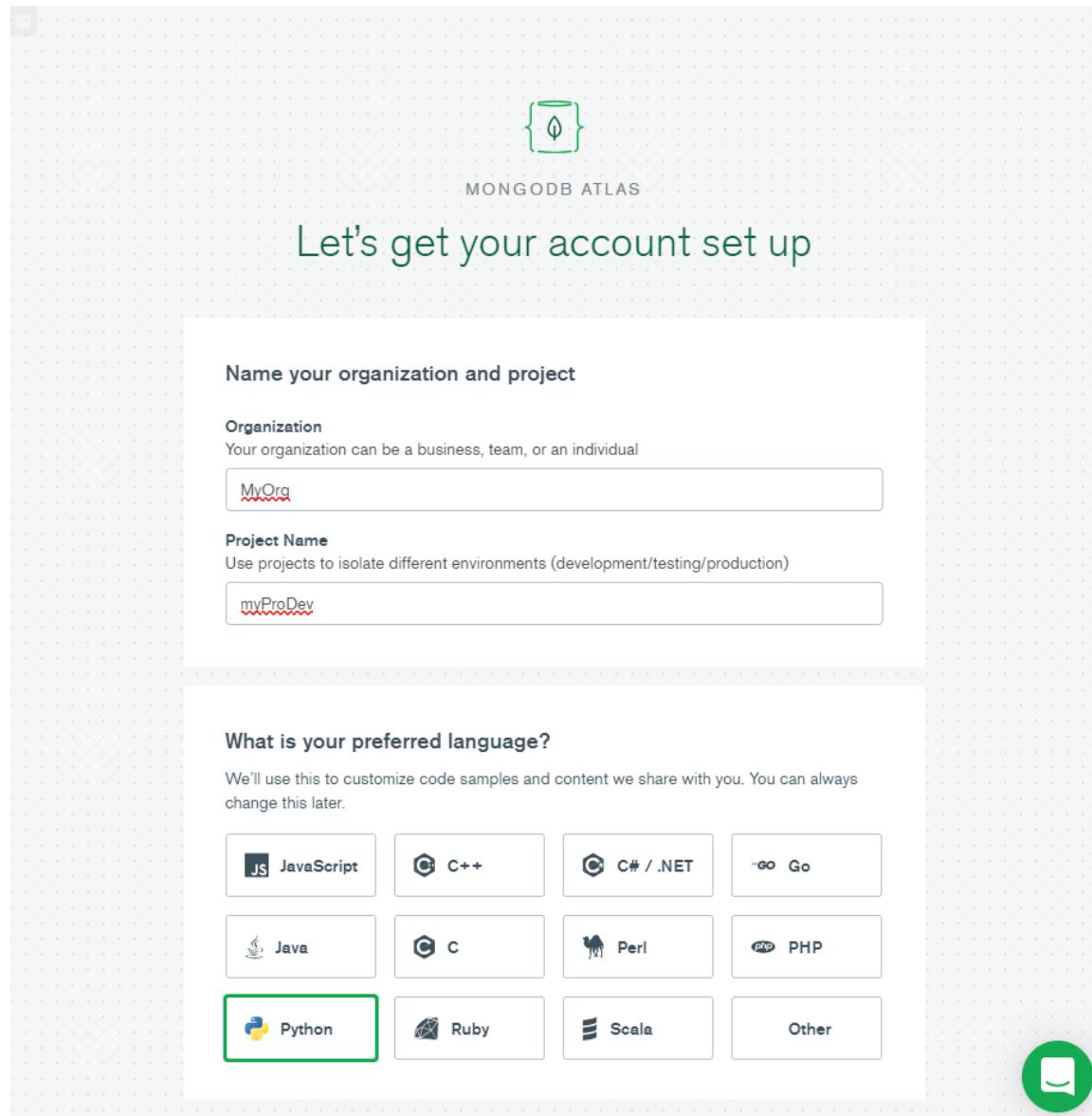
[Get started free](#)

Already have an account? [Log in](#)

MongoDB Atlas registration page

# Configuring your Atlas account

After creating the account, enter the organization name, project name, and select your preferred language. For this tutorial, we will select [Python](#).



MONGODB ATLAS

## Let's get your account set up

**Name your organization and project**

**Organization**  
Your organization can be a business, team, or an individual

**Project Name**  
Use projects to isolate different environments (development/testing/production)

**What is your preferred language?**

We'll use this to customize code samples and content we share with you. You can always change this later.

JS JavaScript	C++ C++	C# / .NET C# / .NET	Go Go
Java Java	C C	Perl Perl	PHP PHP
Python Python	Ruby Ruby	Scala Scala	Other Other

**Next Step**

## Select cluster type

We will select the Shared Clusters option because we are creating a free tier cluster.



## Choose a path. Adjust anytime.

Available as a fully managed service across 60+ regions on AWS, Azure, and Google Cloud

### Dedicated Multi-Region Clusters

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

- ✓ Includes all features from Shared and Dedicated Clusters
- ✓ Replicate data across multiple regions
- ✓ Globally distributed read and write operations
- ✓ Control data residency at the document level

[Create a cluster](#)

Starting at

**\$0.13/hr\***

\*estimated cost \$98.55/month

### Dedicated Clusters

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

- ✓ Includes all features from Shared Clusters
- ✓ Auto-scaling
- ✓ Network isolation
- ✓ Realtime performance metrics

[Create a cluster](#)

Starting at

**\$0.08/hr\***

\*estimated cost \$56.94/month

### Shared Clusters

For teams learning MongoDB or developing small applications.

- ✓ Highly available auto-healing cluster
- ✓ End-to-end encryption
- ✓ Role-based access control

[Create a cluster](#)

Starting at

**FREE**

[Dismiss](#)[Advanced Configuration Options](#)

## Create a starter cluster

After going through the above steps, you'll be presented with the **Create a Starter Cluster** page. Here, you'll select:

- Cloud provider
- Region
- Cluster tier
- MongoDB settings, like version and backup frequency

You can improve the connection latency between the application and the database by selecting a region closest to the location where your application is deployed. We will select AWS as our cloud provider and the N. Virginia (us-east-1) as the location.

Importantly, there is no option to create backups in the free tier. Finally, we name the cluster and click on **Create Cluster** to deploy the cluster.

## Create a Starter Cluster

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) ▾

**AWS** **Google Cloud** **Azure**

★ Recommended region ⓘ

**NORTH AMERICA** **ASIA** **EUROPE**

🇺🇸 Oregon (us-west-2) ★ 🇸🇬 Singapore (ap-southeast-1) ★ 🇮🇪 Ireland (eu-west-1) ★

🇺🇸 N. Virginia (us-east-1) ★ 🇮🇳 Mumbai (ap-south-1) 🇩🇪 Frankfurt (eu-central-1) ★

**AUSTRALIA** 🇦🇺 Sydney (ap-southeast-2) ★

Cluster Tier

M0 Sandbox (Shared RAM, 512 MB Storage) ▾ Encrypted

Additional Settings

MongoDB 4.2, No Backup ▾

Cluster Name

Cluster0 ▾

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

Creating a starter cluster

## Admin interface

It will take a couple of minutes after clicking on the **Create a Cluster** button to create a MongoDB with all the options specified. Then we will be redirected to the MongoDB Atlas Admin interface. We have named the cluster as MainDBCluster.

DATA STORAGE

Clusters

Triggers

Data Lake

SECURITY

Database Access

Network Access

Advanced

Atlas

REALM

Charts

MYORG > MYPRODEV

Clusters

Find a cluster...

SANDBOX

MainDBCluster

Version 4.2.11

CONNECT METRICS COLLECTIONS ...

CLUSTER TIER

M0 Sandbox (General)

REGION

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

TYPE

Replica Set - 3 nodes

LINKED REALM APP

None Linked

Operations R: 0 W: 0 100.0/s

Logical Size 0.0 B 512.0 MB max

Connections 0 500 max

Last 6 Hours

Last 6 Hours

Enhance Your Experience

For dedicated throughput, richer metrics and enterprise security options, upgrade your cluster now!

Upgrade

Create a New Cluster

Admin Interface

## Configuring your Atlas cluster

We have now successfully created a MongoDB cluster within MongoDB Atlas. Now, we must configure the access and security to the database before we can use the database. This section will cover the basic configurations of the cluster.

### Whitelist IP address

The first thing to do is to whitelist the IP address that can be used to access the database. By limiting the database access to specific IP addresses, we can limit the security risk of unwanted connection attempts to the database.

To whitelist an IP address, go to the Network Access section. Then click **Add IP Address** and enter the details. We have the option to add the current IP address and configure an expiry time.

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](#).

**Access List Entry:**

**Comment:**

This entry is temporary and will be deleted in

Add an IP address

Configure which IP addresses can access your cluster.

[Learn more](#)

## IP Whitelist page

We have selected a single IP with an expiry of six hours.

MyOrg

Access Manager Support Billing

All Clusters

myProDev

Atlas Realm Charts

DATA STORAGE

Clusters Triggers Data Lake

SECURITY

Database Access

**Network Access**

Advanced

MYORG > MYPRODEV

**Network Access**

**IP Access List** Peering Private Endpoint

**+ ADD IP ADDRESS**

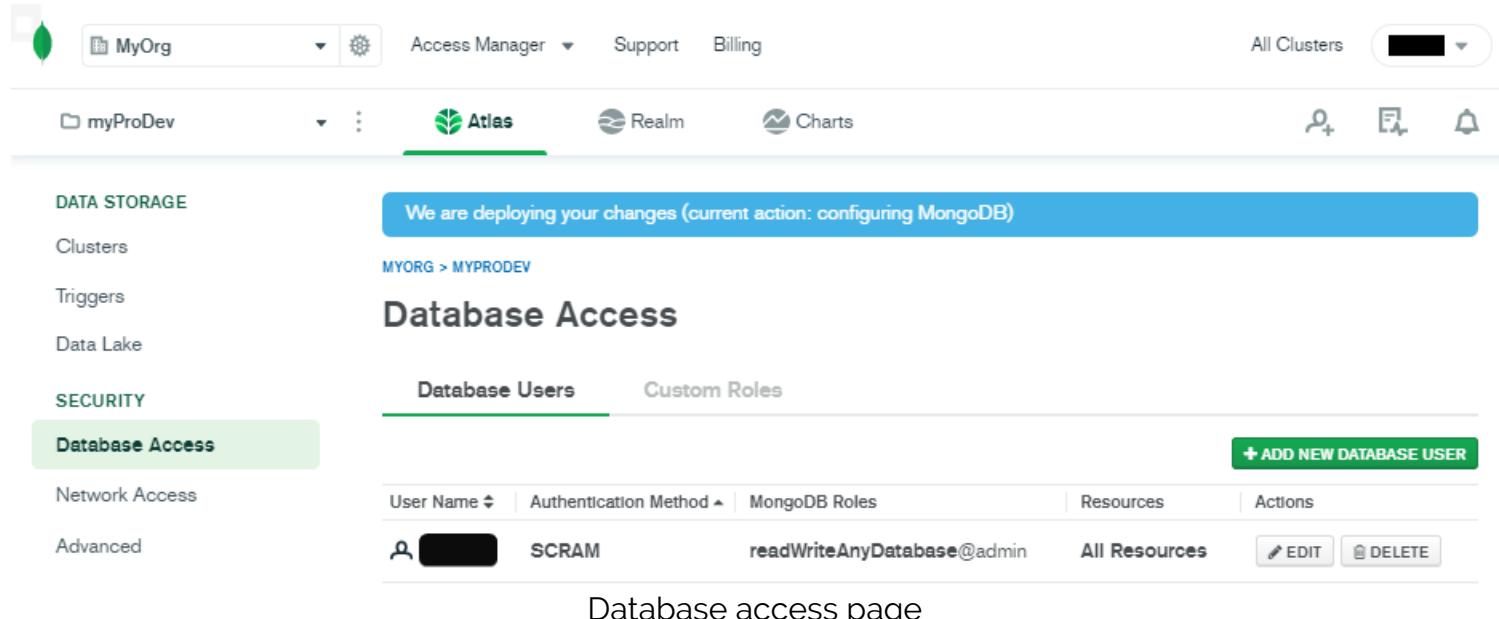
You will only be able to connect to your cluster from the following list of IP Addresses:

IP Address	Comment	Status	Actions
24/32 (06:00) (includes your current IP address)		Active	<input type="button" value="EDIT"/> <input type="button" value="DELETE"/>

## Create users

We can create users using the Database Access section in the MongoDB Atlas admin interface.

To add a user, click **Add New Database User** in Database Access, and enter the details of the user. Let's create a simple user account with the Password Authentication method and give him Read and Write access to any database within the cluster.



The screenshot shows the MongoDB Atlas interface. The top navigation bar includes 'MyOrg', 'Access Manager', 'Support', 'Billing', 'All Clusters', and a search bar. Below the navigation is a secondary navigation bar with 'myProDev', 'Atlas' (which is highlighted in green), 'Realm', 'Charts', and three icons. On the left, a sidebar lists 'DATA STORAGE' (Clusters, Triggers, Data Lake) and 'SECURITY' (Database Access, Network Access, Advanced), with 'Database Access' currently selected. The main content area is titled 'Database Access' and shows a table for 'Database Users'. The table has columns for 'User Name' (dropdown), 'Authentication Method' (dropdown), 'MongoDB Roles' (dropdown), 'Resources' (dropdown), and 'Actions' (with 'EDIT' and 'DELETE' buttons). A blue banner at the top of the content area says 'We are deploying your changes (current action: configuring MongoDB)'. The URL 'MYORG > MYPRODEV' is visible above the main title. The table contains one row for a user named 'user' with 'SCRAM' authentication and the role 'readWriteAnyDatabase@admin'.

User Name	Authentication Method	MongoDB Roles	Resources	Actions
user	SCRAM	readWriteAnyDatabase@admin	All Resources	<button>EDIT</button> <button>DELETE</button>

Database access page

## Connect to the cluster

Within the Clusters section, click the **Connect** button in the MainDBCluster to connect to the database. MongoDB Atlas provides three methods to connect to the cluster:

- Connect with [the Mongo shell](#)
- Connect your application
- Connect using [MongoDB Compass](#)

We will select the MongoDB Compass as the connection method as it would provide us a graphical user interface (GUI) to interact with the database. After selecting the MongoDB Compass option, we have the option to either:

- Download the MongoDB Compass client
- Use an existing MongoDB Compass installation

MyOrg

myProDev

DATA STORAGE

Clusters

Triggers

Data Lake

SECURITY

Database Access

Network Access

Advanced

Connect to MainDBCluster

✓ 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

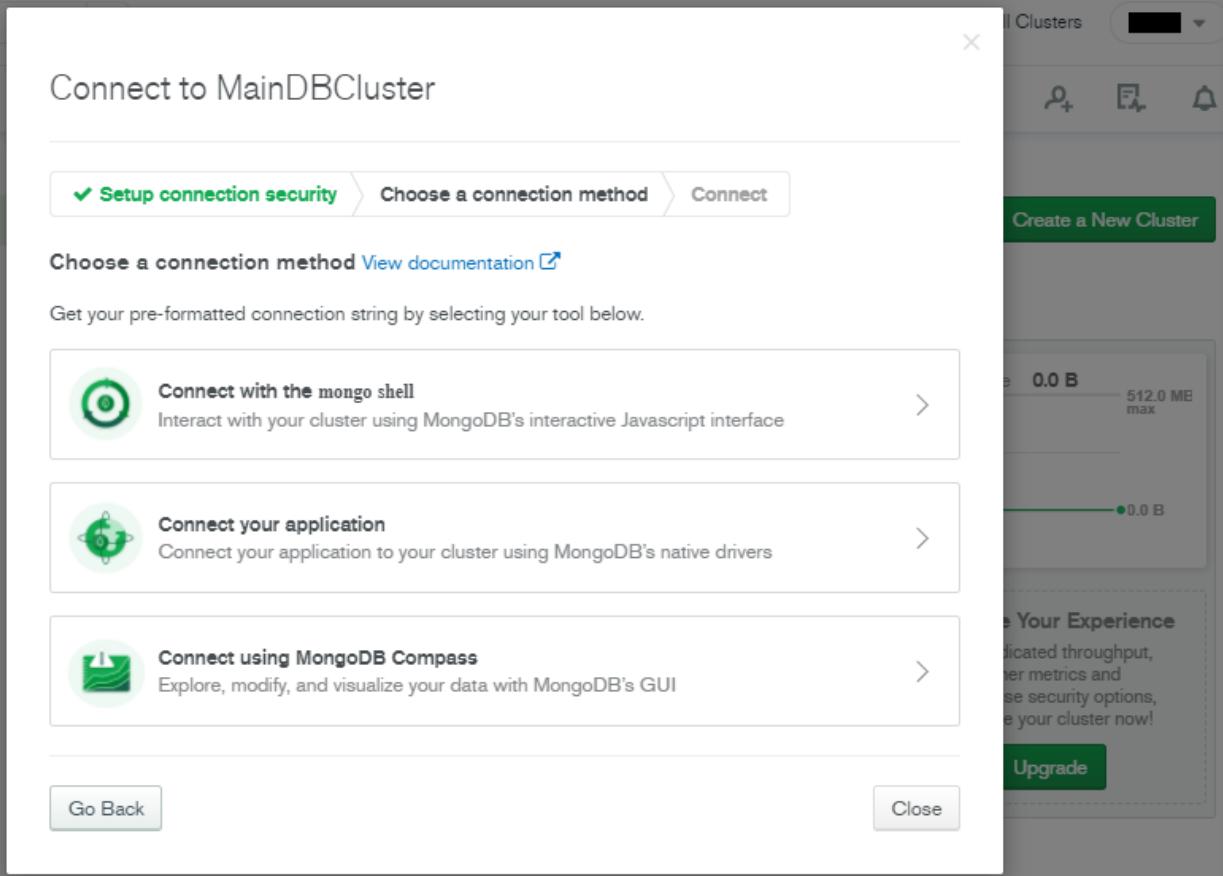
Create a New Cluster

0.0 B 512.0 MB max

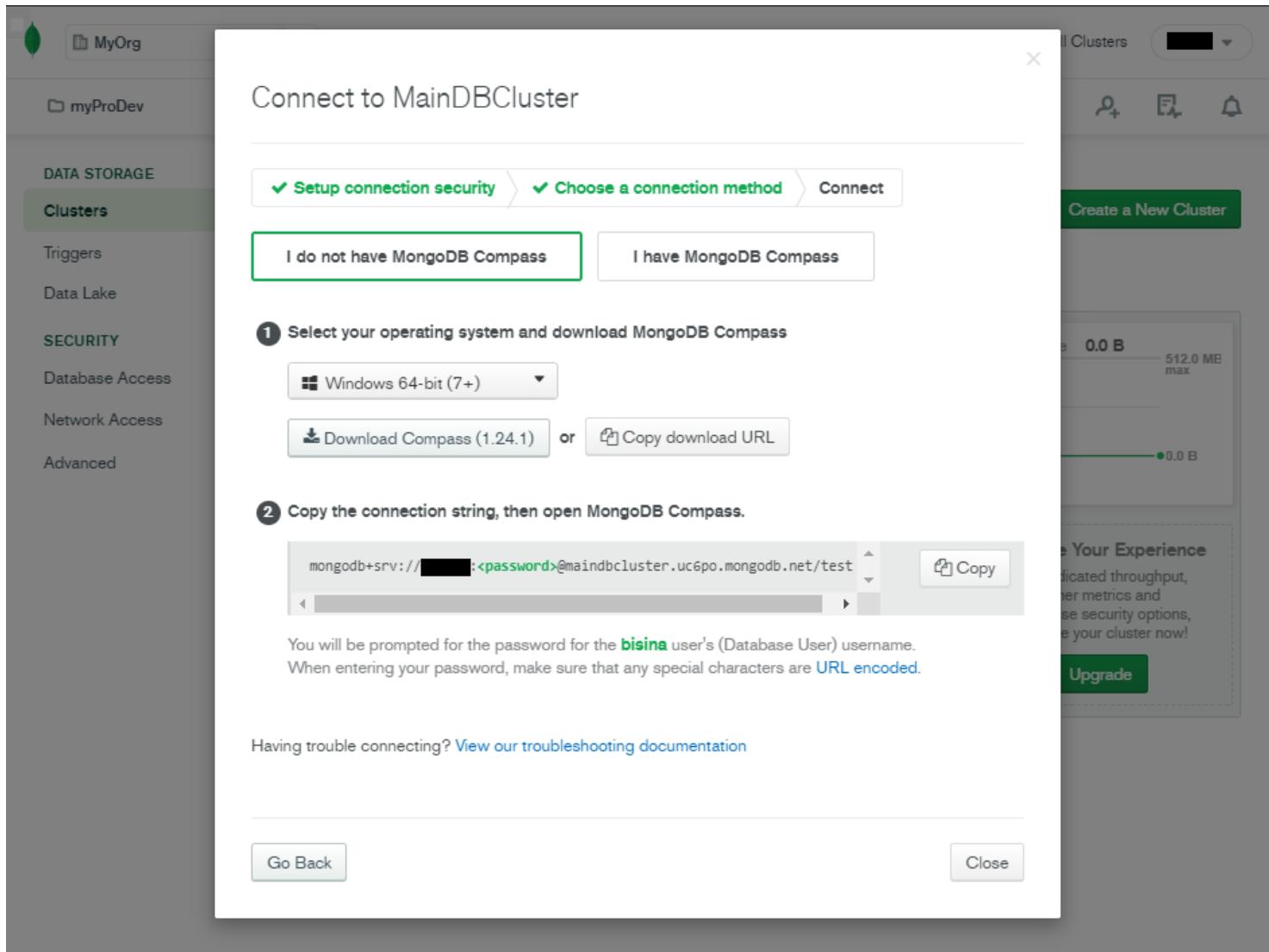
0.0 B

Your Experience

Upgrade



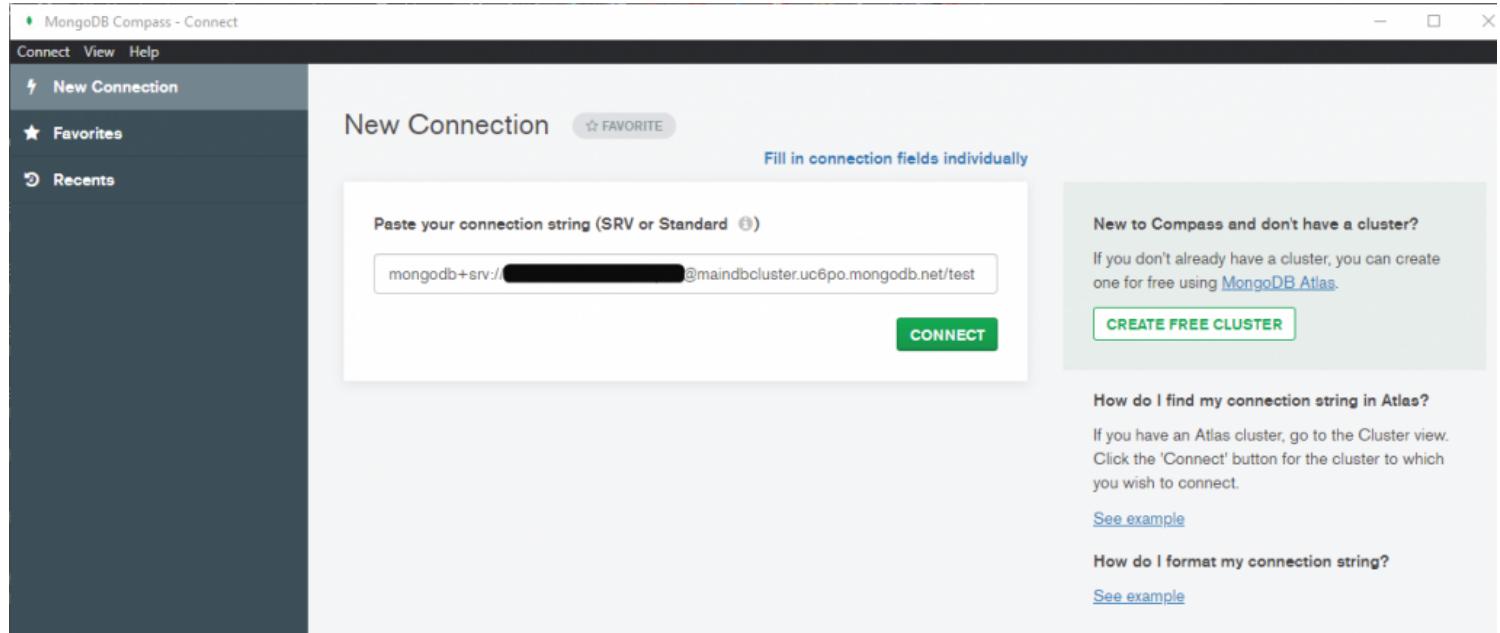
Connection methods



MongoDB Compass connection method

## Access the database

Using MongoDB Compass, we will connect to the MongoDB Atlas cluster to access the database. We will start the MongoDB Compass application and enter the connection string and click on **Connect**.



## MongoDB Compass Connection Interface

After a successful connection, you'll be presented with the MongoDB Atlas cluster (MainDBCluster).

Database Name	Storage Size	Collections	Indexes
admin	0.0B	0	0
local	0.0B	6	0

## Interacting with the database

Let's see how we can interact with the database using the MongoDB Atlas admin interface. MongoDB Atlas provides a sample dataset that can be added to a cluster for testing purposes. To load the sample dataset, select **Load Sample Dataset** in the Clusters section in the admin interface.

The screenshot shows the MongoDB Atlas admin interface. The top navigation bar includes 'MyOrg', 'Access Manager', 'Support', 'Billing', 'All Clusters', and a dropdown. Below the navigation is a secondary navigation bar with 'myProDev', 'Atlas' (selected), 'Realm', 'Charts', and icons for 'Create', 'Edit', and 'Delete'. The main content area is titled 'Clusters' under 'DATA STORAGE'. A sidebar on the left lists 'Clusters', 'Triggers', 'Data Lake', 'SECURITY', 'Database Access', 'Network Access', and 'Advanced'. The 'Clusters' section shows 'MainDBCluster' (Version 4.2.11) in a 'SANDBOX' tier. It displays metrics like 'Operations R: 0 W: 0 100.0/s', 'Logical Size 0.0 B', and 'Connections 7 500 max'. A context menu is open over the cluster details, showing options: 'Edit Configuration', 'Command Line Tools', 'Load Sample Dataset' (which is being clicked), and 'Terminate'. A 'Last 6 Hours' timeline is visible. A 'Create a New Cluster' button is in the top right. A 'Enhance Your Experience' callout with an 'Upgrade' button is also present.

MongoDB Atlas admin interface

The screenshot shows a modal dialog titled 'Load Sample Dataset' on top of the MongoDB Atlas admin interface. The modal contains the following text: 'We've created a sample dataset to help you test features on MainDBCluster.', 'Sample Dataset', and 'Size: ~350 MB'. Below this, a confirmation message reads: 'Please confirm that you want to load this sample dataset.' At the bottom of the modal are 'Cancel' and 'Load Sample Dataset' buttons. The background of the interface shows the 'Clusters' page for 'MainDBCluster', including the cluster details, metrics, and the 'Load Sample Dataset' context menu from the previous screenshot.

Load sample dataset

The screenshot shows the MongoDB Atlas Clusters page. At the top, there are navigation links for 'MyOrg', 'Access Manager', 'Support', 'Billing', 'All Clusters', and a cluster named 'myProDev'. Below this is a sub-navigation bar with 'Atlas' (highlighted in green), 'Realm', and 'Charts'. On the left, a sidebar under 'DATA STORAGE' shows 'Clusters' (selected), 'Triggers', and 'Data Lake'. Under 'SECURITY', it shows 'Database Access', 'Network Access', and 'Advanced'. The main content area displays a progress bar: 'We are deploying your changes (current action: configuring MongoDB)'. The title 'Clusters' is followed by a search bar with 'Find a cluster...'. A progress bar indicates 'Loading your sample dataset...' with a green bar at 0.0 B. The 'MainDBCluster' is listed with 'Version 4.2.11'. It has tabs for 'CONNECT', 'METRICS', 'COLLECTIONS' (which is selected), and '...'. Below the cluster details are sections for 'CLUSTER TIER' (M0 Sandbox (General)), 'REGION' (AWS / N. Virginia (us-east-1)), 'TYPE' (Replica Set - 3 nodes), and 'LINKED REALM APP' (None Linked). To the right are three metrics: 'Operations R: 0 W: 0 100.0/s' (Last 6 Hours), 'Logical Size 0.0 B 512.0 MB max' (Last 6 Hours), and 'Connections 7 500 max' (Last 6 Hours). An 'Enhance Your Experience' callout encourages upgrading with a 'Upgrade' button.

After successfully loading the sample dataset, we can interact with the data using either:

- The MongoDB Atlas admin interface
- MongoDB Compass

## Using admin interface

Within the admin interface, we can click the **Collections** button in the MainDBCluster. Then you'll be redirected to the Collections section.

MyOrg Access Manager Support Billing All Clusters

myProDev Atlas Realm Charts

DATA STORAGE Clusters

Clusters Triggers Data Lake SECURITY Database Access Network Access Advanced

MYORG > MYPRODEV > CLUSTERS

MainDBCluster

VERSION 4.2.11 REGION AWS N. Virginia (us-east-1)

OVERVIEW Real Time Metrics Collections Profiler Performance Advisor Online Archive Command Line Tools

DATABASES: 8 COLLECTIONS: 21

+ Create Database NAMESPACES

sample\_airbnb

listingsAndReviews

sample\_analytics sample\_geospatial sample\_mflix sample\_restaurants sample\_supplies sample\_training sample\_weatherdata

sample\_airbnb.listingsAndReviews

COLLECTION SIZE: 89.99MB TOTAL DOCUMENTS: 5556 INDEXES TOTAL SIZE: 480KB

Find Indexes Schema Anti-Patterns Aggregation Search Indexes

FILTER {"filter": "example"} Find Reset

QUERY RESULTS 1-20 OF MANY

```

_id: "10006546"
listing_url: "https://www.airbnb.com/rooms/10006546"
name: "Ribeira Charming Duplex"
summary: "Fantastic duplex apartment with three bedrooms, located in the histori..."
space: "Privileged views of the Douro River and Ribeira square, our apartment ..."
description: "Fantastic duplex apartment with three bedrooms, located in the histori..."
neighborhood_overview: "In the neighborhood of the river, you can find several restaurants as ..."
notes: "Lose yourself in the narrow streets and staircases zone, have lunch in..."
transit: "Transport: + Metro station and S. Bento Railway Station; + Bus stop a 50 ..."
access: "We are always available to help guests. The house is fully available t..."
interaction: "Cot - 18 € / night Dog - € 7,5 / night"
house_rules: "Make the house your home..."
property_type: "House"
room_type: "Entire home/apt"
bed_type: "Real Bed"
minimum_nights: "2"
maximum_nights: "30"
cancellation_policy: "moderate"
last_scraped: "2019-02-16T05:00:00.000+00:00"
calendar_last_scraped: "2019-02-16T05:00:00.000+00:00"
first_review: "2016-01-03T05:00:00.000+00:00"
last_review: "2019-01-28T05:00:00.000+00:00"
accommodates: 8
bedrooms: 3
beds: 5

```

SHOW 14 MORE FIELDS

Feature Requests

MainDBCluster Collection (simple\_airbnb database)

## Using MongoDB Compass

From the MongoDB Compass interface, we can simply select the necessary databases and collections and interact with documents as needed.

MongoDB Compass - maindbcluster.uc6po.mongodb.net:27017/sample\_mflix.theaters

Connect View Collection Help

Local

2 DBS 6 COLLECTIONS

HOSTS maindbcluster-shard-00-0... maindbcluster-shard-00-0... maindbcluster-shard-00-0...

CLUSTER Replica Set (atlas-4vzfdl-s... 3 Nodes

EDITION MongoDB 4.2.11 Enterprise

Filter your data

- > admin
- > local
- > sample\_airbnb
- > sample\_analytics
- > sample\_geospatial
- > sample\_mflix
  - comments
  - movies
  - sessions
  - theaters
  - users
- > sample\_restaurants
- > sample\_supplies

+ > \_MongoSH Beta

sample\_mflix.theaters

Documents Aggregations Schema Explain Plan Indexes Validation

ADD DATA FILTER VIEW

Displaying documents 1 - 20 of 1564

1.6k DOCUMENTS 341.6KB TOTAL SIZE 224B AVG. SIZE

2 INDEXES 68.0KB TOTAL SIZE 34.0KB AVG. SIZE

FIND RESET ...

...  
\_id: ObjectId("59a47286cfa9a3a73e51e72c")  
theaterId: 1000  
> location: Object

...  
\_id: ObjectId("59a47286cfa9a3a73e51e72d")  
theaterId: 1003  
> location: Object

...  
\_id: ObjectId("59a47286cfa9a3a73e51e72e")  
theaterId: 1008  
> location: Object

...  
\_id: ObjectId("59a47286cfa9a3a73e51e72f")  
theaterId: 1004  
> location: Object

...  
\_id: ObjectId("59a47286cfa9a3a73e51e730")  
theaterId: 1002  
> location: Object

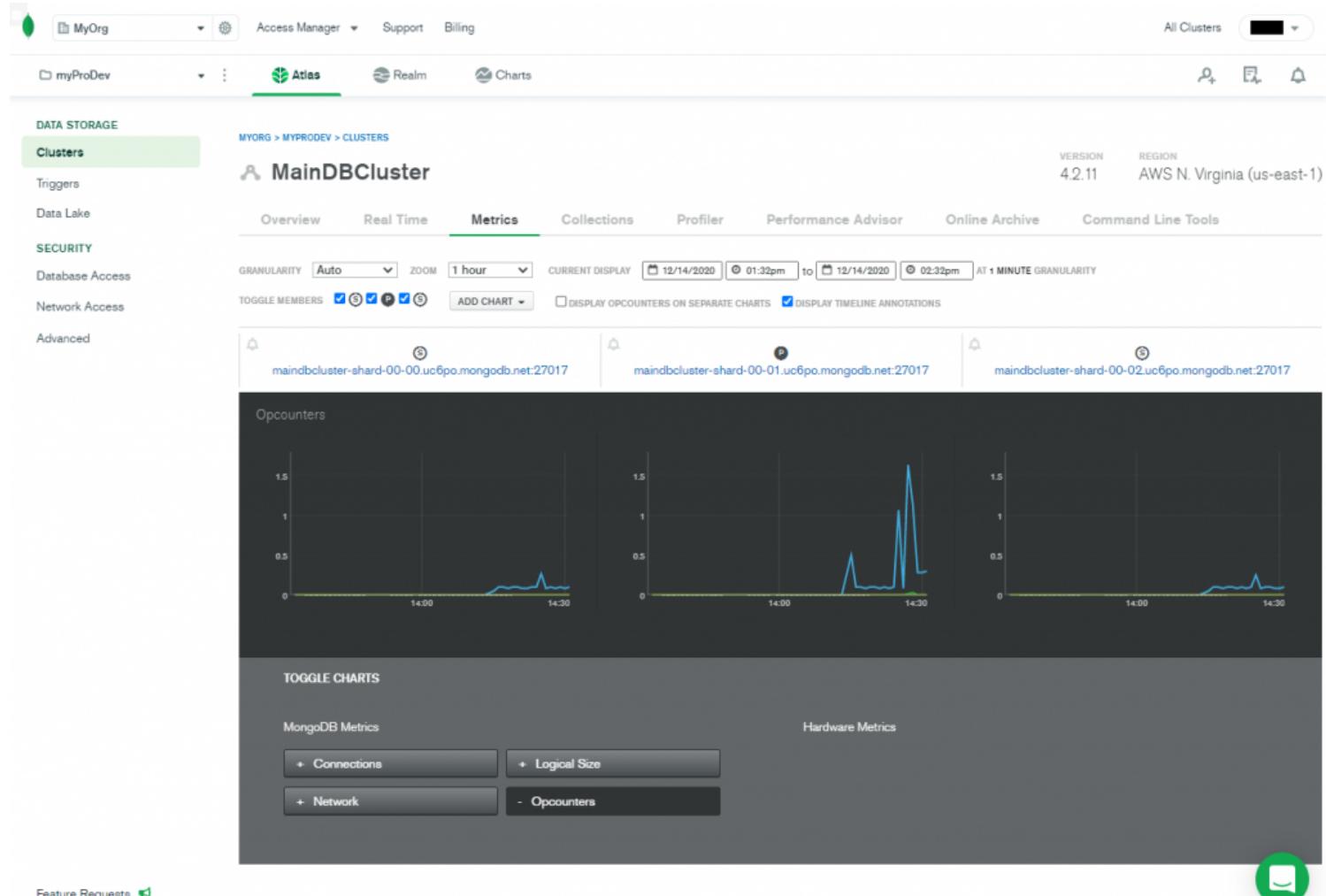
...  
\_id: ObjectId("59a47286cfa9a3a73e51e731")  
theaterId: 1010  
> location: Object

Collection view (simple\_mflix database)

Both methods allow you to carry out all the necessary database functions without a command-line interface.

## Monitoring the cluster

MongoDB Atlas provides metrics to monitor the cluster performance from the admin interface. Simply click on the **Metrics** button in the MainDBCluster, and you'll be redirected to the metrics page:



Atlas cluster metrics

That concludes this tutorial on MongoDB Atlas.

## Related reading

- [BMC Machine Learning & Big Data Blog](#)
- [MongoDB Guide](#), a series of tutorials
- [Snowflake Guide](#)
- [MongoDB vs Cassandra: NoSQL Databases Compared](#)
- [CAP Theorem for Databases: Consistency, Availability & Partition Tolerance](#)