Explore MongoDB Atlas

Learn about MongoDB Atlas and how to get started using it!

Introduction

We've decided to start a web-based business that sells used cameras and lenses called "Lenses for Less". Understanding the power and versatility of MongoDB, we want to use MongoDB to store the data related to purchases, inventory, and all the other data necessary for your new business. To store our data, we can purchase or rent a physical server (aka a powerful computer) and run an instance of MongoDB on it – occasionally upgrading or adding new servers as our business scales. This would be a large undertaking since we wouldn't only have to spend money on a server, but we would also have to maintain it over a long period of time. Nowadays, it makes more sense to use a cloud offering instead of building from scratch. Thankfully, MongoDB Atlas offers a fully managed solution that allows us to get up and running in minutes without worrying about the complexities of managing our own software infrastructure.

In this article, we will learn about what the MongoDB Atlas platform is and how it works. Specifically, we will:

- Examine the Atlas platform and the services it offers.
- Dive into how MongoDB stores our data in the cloud.
- Deploy our own MongoDB Atlas Custer and connect to it locally.

What is MongoDB Atlas?

MongoDB Atlas is a developer data platform. It includes a suite of cloud databases and data services. For the purposes of working with databases, Atlas hosts a variety of features that help us quickly set up, deploy, and maintain a MongoDB database. Atlas allows us to store and manage our data in the cloud through an easy-to-use website interface. With Atlas, we can have a MongoDB database set up and running in just a few clicks!

On top of simply storing our data, Atlas offers several different integrated features to help us make the most of our data. A few of these are:

- Atlas Search - which allows for quick and easy text-based queries of data stored in the cloud.

- Atlas Charts - provides data visualization, which is fully integrated with the data we store with Atlas.
- Atlas Data Lake - helps perform large-scale analytics on our data.

We get all this and more right out of the box with Atlas. This makes it a great solution for not just small businesses like "Lenses for Less" but also major corporations like Verizon or Toyota. Before we jump into how to set up our own Atlas instance, let's learn about how Atlas stores data!

Atlas Data Storage

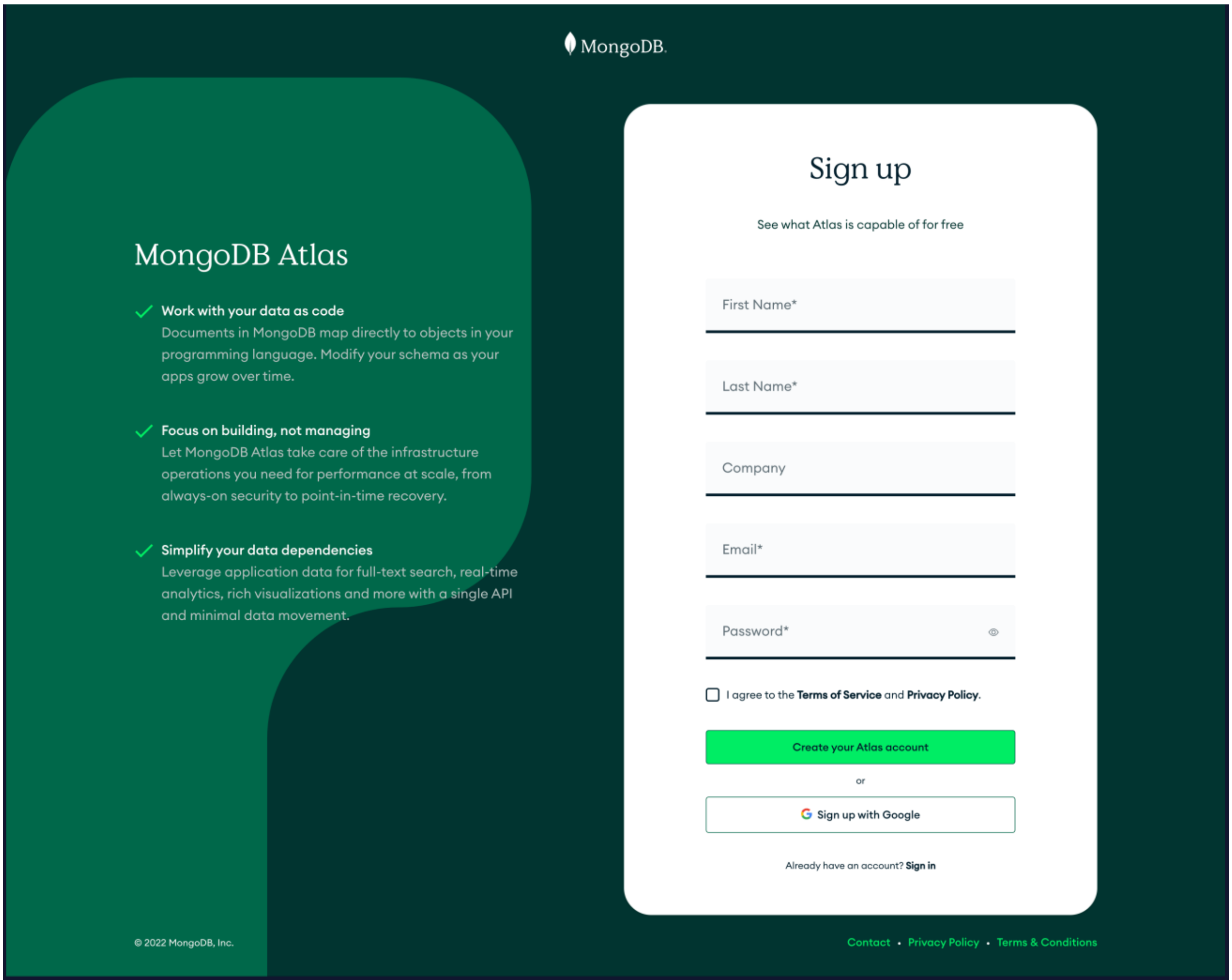
In Atlas, we interact with our data in what is known as a **cluster**. We can think of clusters as a unit of storage that MongoDB uses to house data. Depending on the plan we choose for our account, we can end up using clusters in a slightly different way. Atlas offers three different plan types:

- Free: Atlas offers a free plan that allows users to get started quickly without any worry of payments or budget. The free plan comes with 0.5GB of free storage and a set of basic configuration options. This plan is great for learning and exploring MongoDB in a cloud environment.
- Serverless: This plan is Atlas' serverless database offering, which means users can create a database for their application without having to worry about security, reliability, managing performance, or managing scale. Serverless offers operations-based pricing that charges based on reads, writes, and storage. It's a great option for applications that might have sparse or infrequent traffic.
- Dedicated: This plan is Atlas' dedicated multi-region cluster offering. Dedicated clusters can be customized and optimized for specific workload requirements (e.g. higher CPU speeds and more memory), and have predictable pricing. Advanced security and multi-region options make this a great option for individuals and businesses running critical applications.

For the purposes of this article, we will be using the free plan. Now that we know how Atlas stores our data, let's go through the basic setup of a free Atlas cluster!

Setting Up an Atlas Deployment

To start setting up our own Atlas cluster, we will need to register for an account. Get started by visiting the MongoDB MongoDB registration page page and signing up for an account:



MongoDB.

MongoDB Atlas

✓ **Work with your data as code**
Documents in MongoDB map directly to objects in your programming language. Modify your schema as your apps grow over time.

✓ **Focus on building, not managing**
Let MongoDB Atlas take care of the infrastructure operations you need for performance at scale, from always-on security to point-in-time recovery.

✓ **Simplify your data dependencies**
Leverage application data for full-text search, real-time analytics, rich visualizations and more with a single API and minimal data movement.

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Sign up

See what Atlas is capable of for free

First Name*

Last Name*

Company

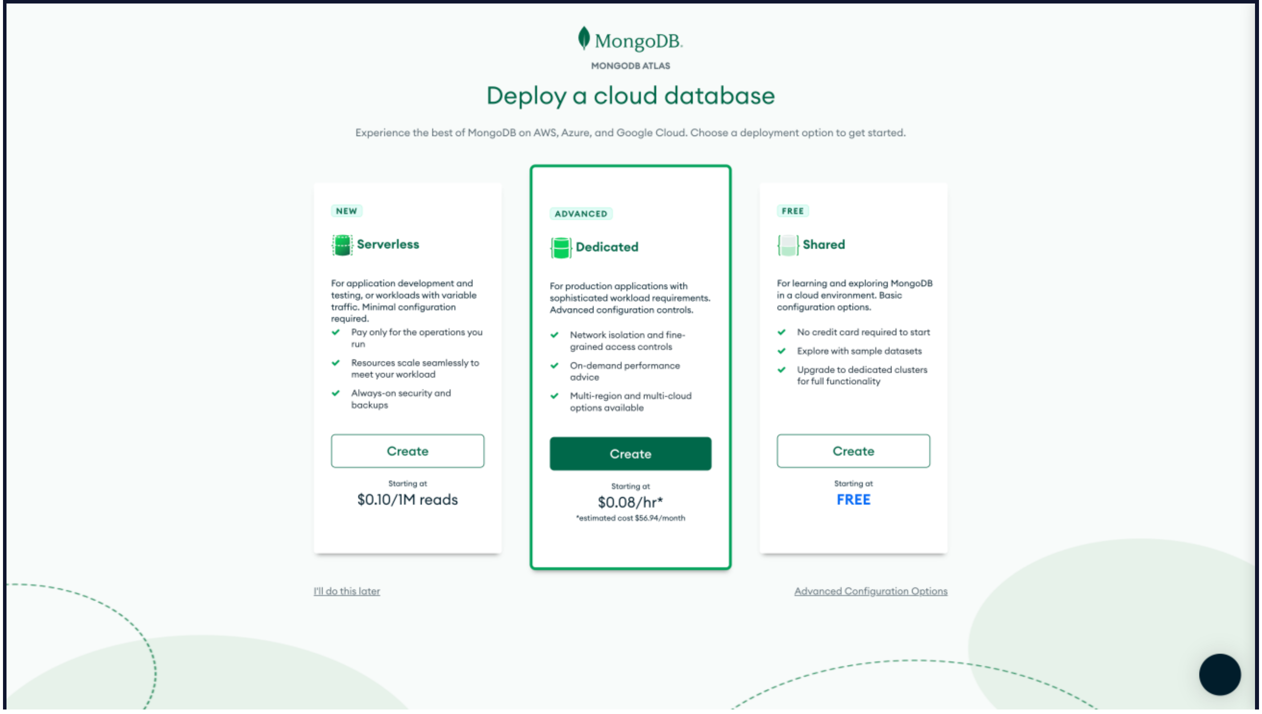
Email*

Password*

□ I agree to the **Terms of Service** and **Privacy Policy**.

Already have an account? **Sign in**

Now that we have an account, after a few more minor steps (e.g., privacy policy, onboarding form), we should be directed to our deployment setup page. For the purposes of this article, we can use the free plan. It should look like this:



MongoDB.

MONGODB ATLAS

Deploy a cloud database

Experience the best of MongoDB on AWS, Azure, and Google Cloud. Choose a deployment option to get started.

NEW

Serverless

For application development and testing, or workloads with variable traffic. Minimal configuration required.

- ✓ Pay only for the operations you run
- ✓ Resources scale seamlessly to meet your workload
- ✓ Always-on security and backups

Starting at
$0.10/1M reads

ADVANCED

Dedicated

For production applications with sophisticated workload requirements. Advanced configuration controls.

- ✓ Network isolation and fine-grained access controls
- ✓ On-demand performance advice
- ✓ Multi-region and multi-cloud options available

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

FREE

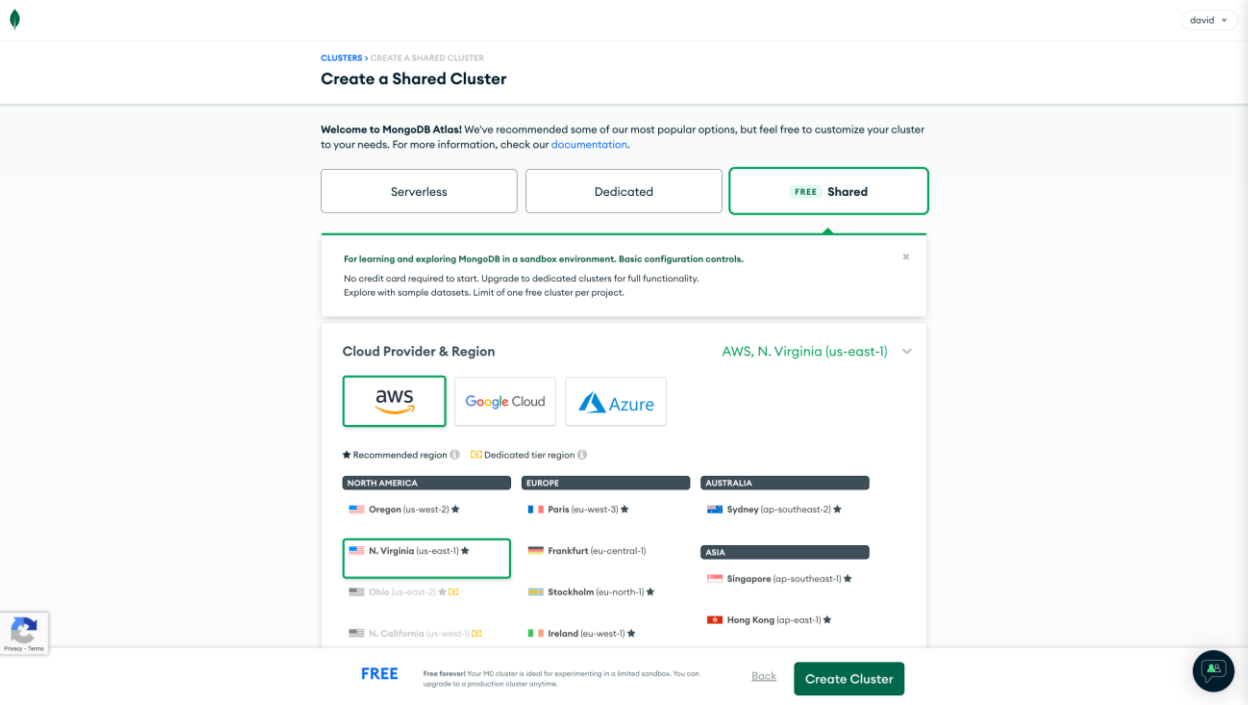
Shared

For learning and exploring MongoDB in a cloud environment. Basic configuration options.

- ✓ No credit card required to start
- ✓ Explore with sample datasets
- ✓ Upgrade to dedicated clusters for full functionality

Starting at
FREE

Then, we can select some settings for our cluster:



CLUSTERS > CREATE A SHARED CLUSTER

Create a Shared 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.

For learning and exploring MongoDB in a sandbox environment. Basic configuration controls.

No credit card required to start. Upgrade to dedicated clusters for full functionality.
Explore with sample datasets. Limit of one free cluster per project.

Cloud Provider & Region: AWS, N. Virginia (us-east-1)

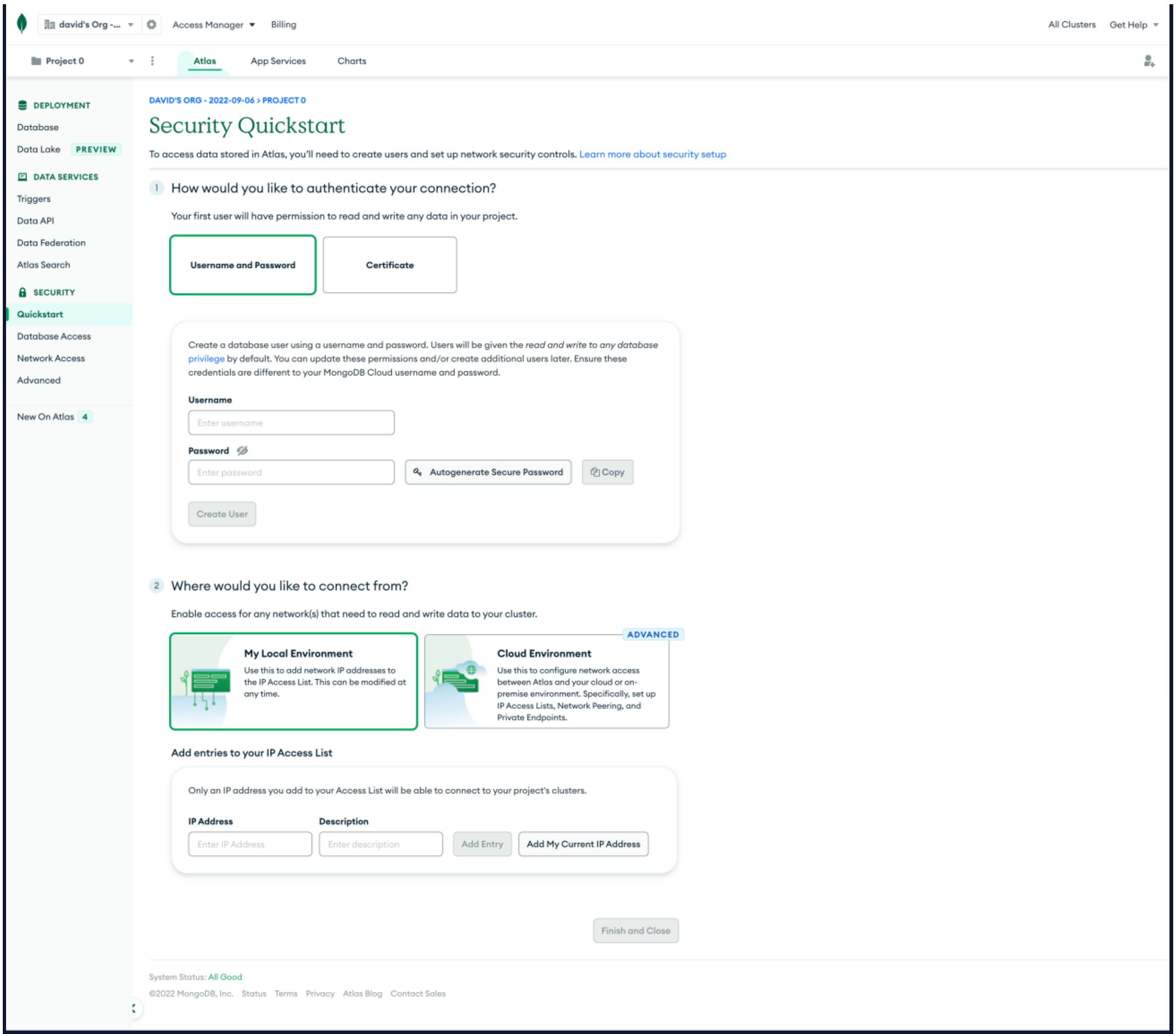
★ Recommended region · Dedicated tier region

NORTH AMERICA	EUROPE	AUSTRALIA
Oregon (us-west-2) ★	Paris (eu-west-3) ★	Sydney (ap-southeast-2) ★
N. Virginia (us-east-1) ★	Frankfurt (eu-central-1)	**ASIA**
Ohio (us-east-2) ★	Stockholm (eu-north-1) ★	Singapore (ap-southeast-1) ★
N. California (us-west-1)	Ireland (eu-west-1) ★	Hong Kong (ap-east-1) ★

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

We can leave the settings as their default. Note that Atlas automatically picks the closest regions for you, depending on your location. While we are using the default settings here, it’s worth noting that in the future, we will have the choice to host our database on a variety of cloud platforms such as AWS, Azure, Google Cloud, or several other options.

Click the “Create Cluster” button on the right side of the bottom of the page to choose a cluster. MongoDB will begin building a cluster for us (there will be a small notification on the bottom left side of the screen showing its progress) and redirect us to a security setup page:



DAVID'S ORG - 2022-09-06 > PROJECT 0

Security Quickstart

To access data stored in Atlas, you'll need to create users and set up network security controls. Learn more about security setup

1 How would you like to authenticate your connection?

Your first user will have permission to read and write any data in your project.

Create a database user using a username and password. Users will be given the *read and write to any database privilege* by default. You can update these permissions and/or create additional users later. Ensure these credentials are different to your MongoDB Cloud username and password.

Username: Enter username

Password: Enter password

2 Where would you like to connect from?

Enable access for any network(s) that need to read and write data to your cluster.

My Local Environment
Use this to add network IP addresses to the IP Access List. This can be modified at any time.

ADVANCED
Cloud Environment
Use this to configure network access between Atlas and your cloud or on-premise environment. Specifically, set up IP Access Lists, Network Peering, and Private Endpoints.

Add entries to your IP Access List

Only an IP address you add to your Access List will be able to connect to your project's clusters.

IP Address: Enter IP Address

Description: Enter description

System Status: All Good

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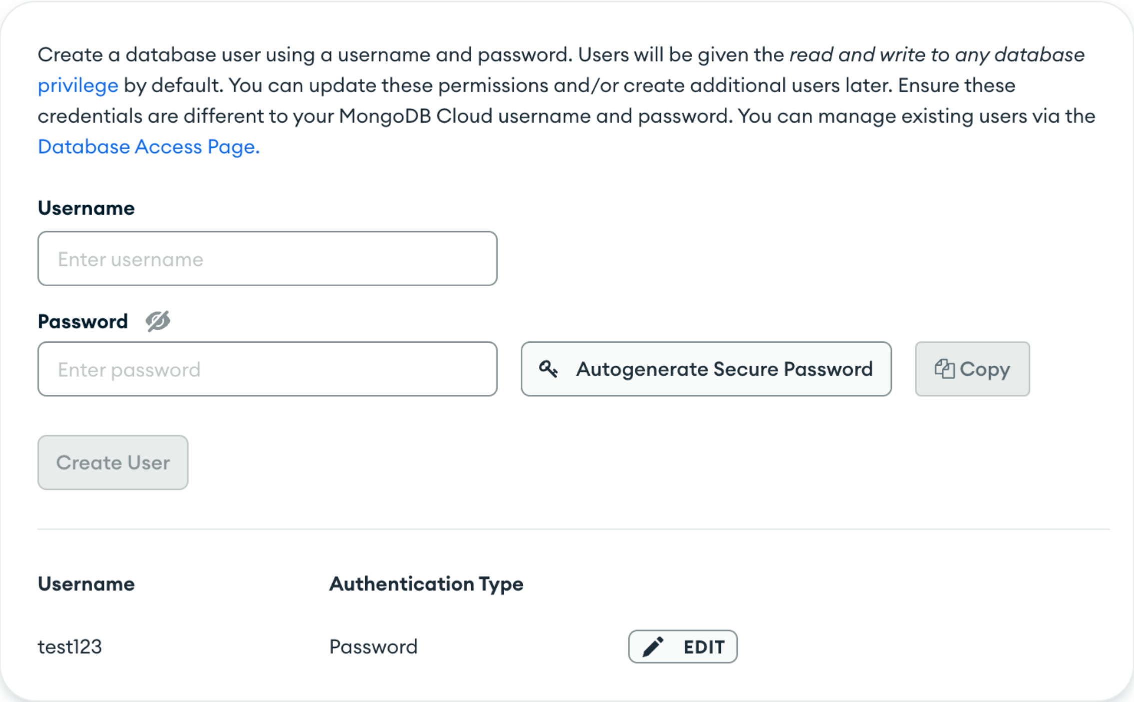
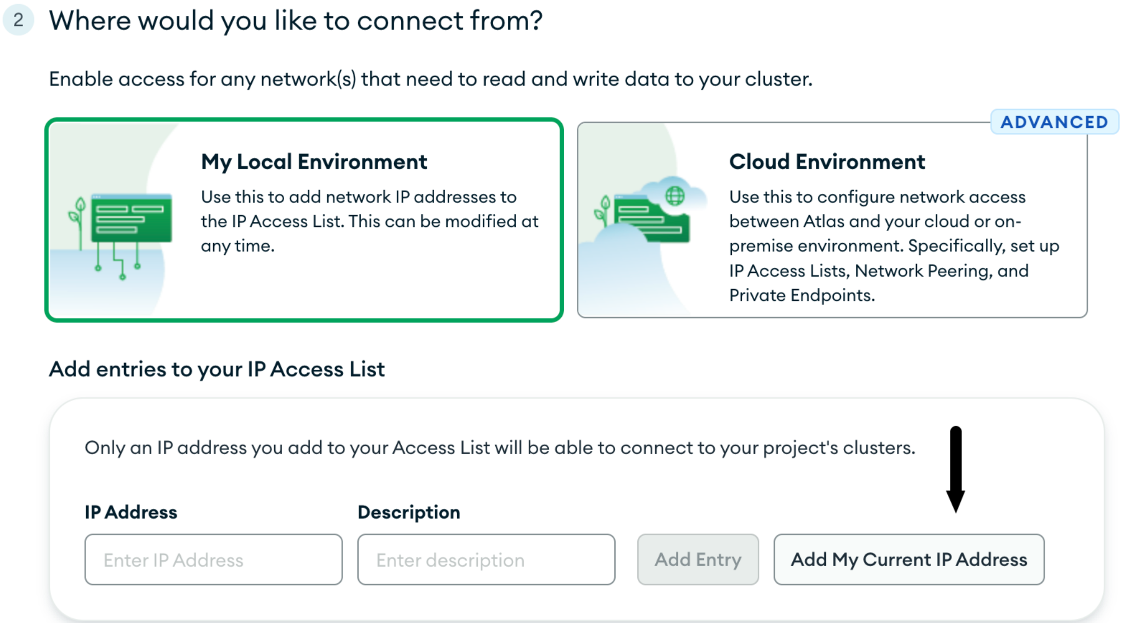
For us to access our MongoDB cluster, we will need to set up proper access. On this security page, set up a user by entering a username and password. We can also have MongoDB autogenerate a password for us. Click the "Create User" to add the user to our database. When we are finished, it should look like this (note the user "test123"):



Create a database user using a username and password. Users will be given the *read and write to any database* privilege by default. You can update these permissions and/or create additional users later. Ensure these credentials are different to your MongoDB Cloud username and password. You can manage existing users via the Database Access Page.

Username	Authentication Type
test123	Password

Next, we will need to enable access for connecting to the MongoDB database via our computer. We can do so by adding our IP address to the Atlas security settings to allow us to access our cluster from our computer. Click the "Add My Current IP Address" button:



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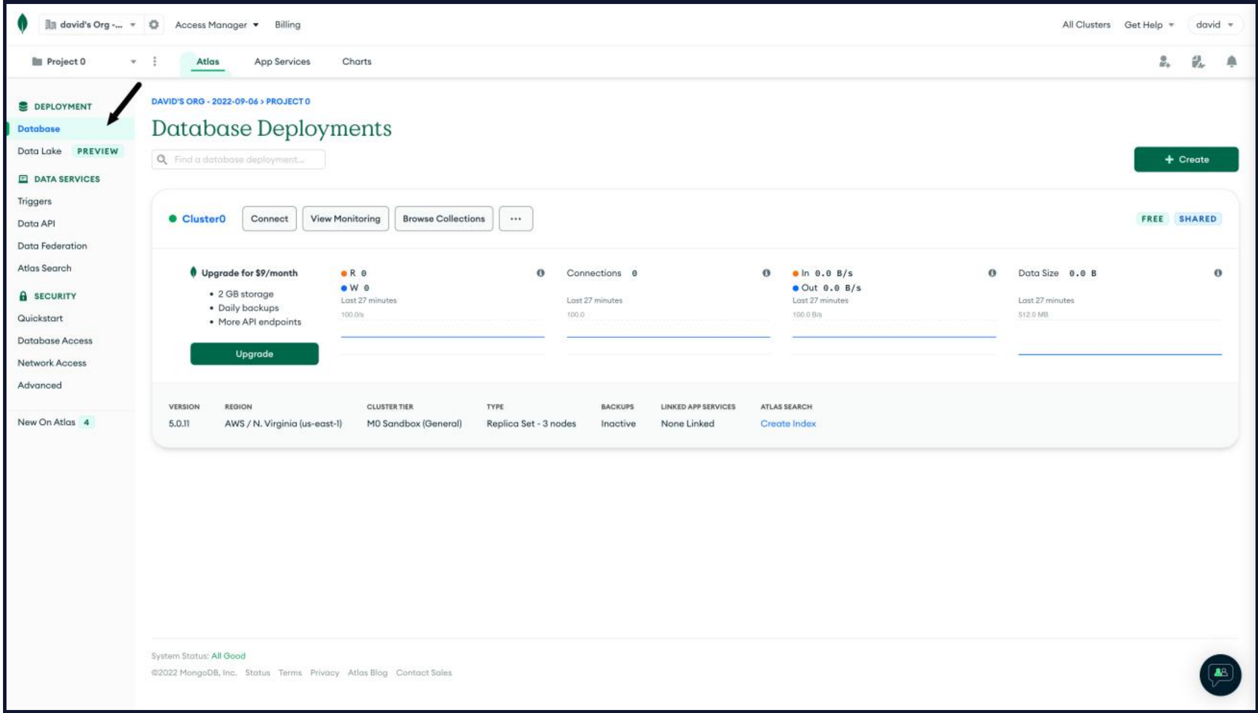
Add entries to your IP Access List

Only an IP address you add to your Access List will be able to connect to your project's clusters.

MongoDB will pull our current IP address and add it to an IP access list. That wraps up our initial setup. Now, the fun part, accessing our database!

Set Up an Atlas Database

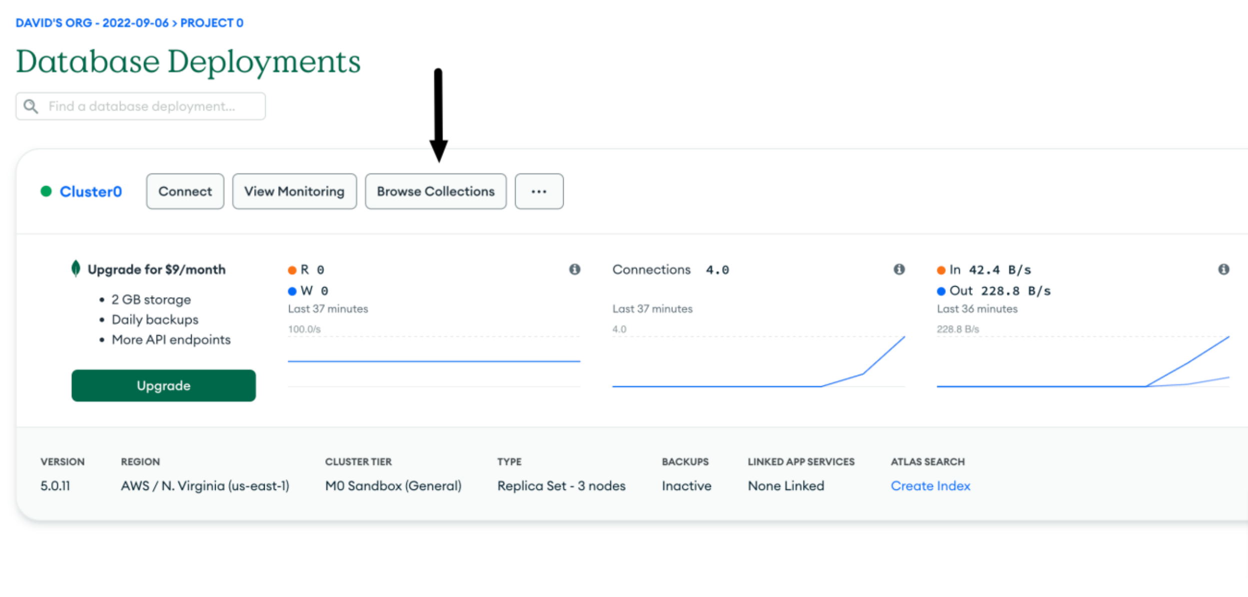
It’s time to start navigating and working with our Atlas cluster. Let’s start by navigating to our database dashboard. Click the “Database” tab under the “Deployment” header on the left-hand side:



VERSION	REGION	CLUSTER TIER	TYPE	BACKUPS	LINKED APP SERVICES	ATLAS SEARCH
5.0.11	AWS / N. Virginia (us-east-1)	M0 Sandbox (General)	Replica Set - 3 nodes	Inactive	None Linked	Create Index

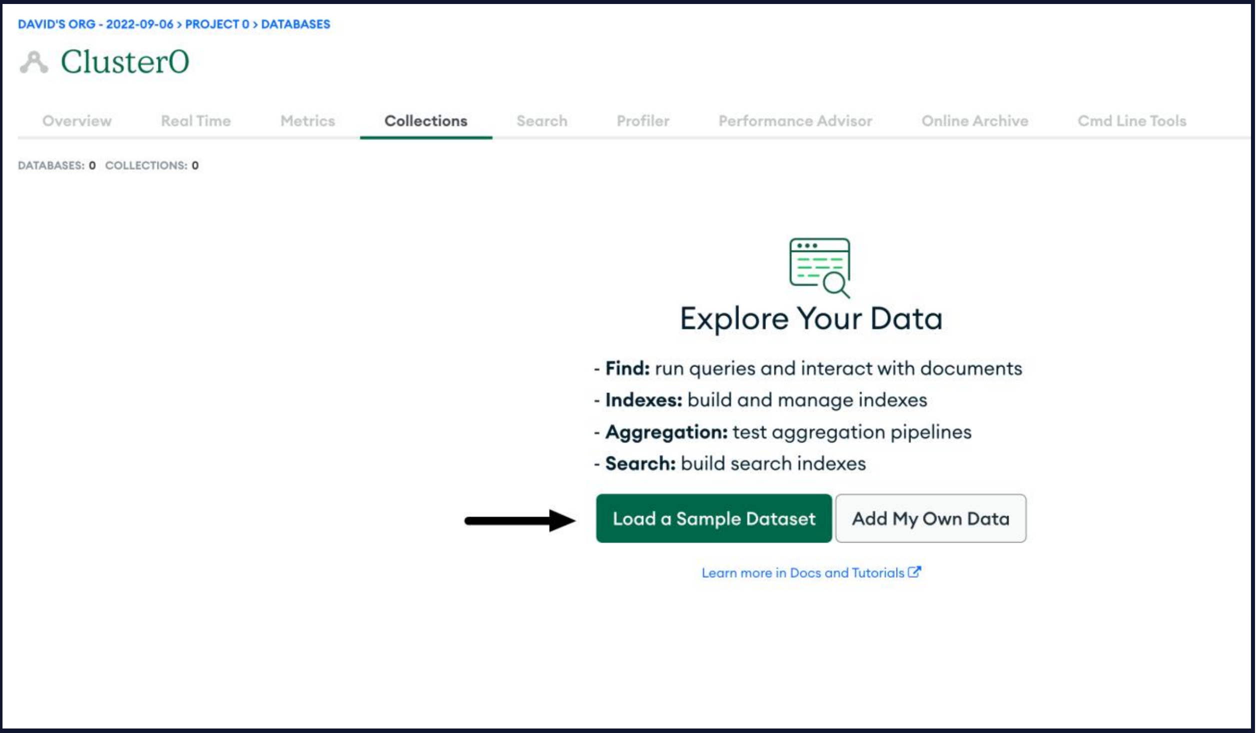
This dashboard is a central location for managing the database component of our cluster. This dashboard shows important information about our database, such as its size and connections.

Our database will start off empty, but MongoDB allows us to fill it with a sample dataset (or even our own data). To do so, click the “Browse Collection” button on the database cluster section:



VERSION	REGION	CLUSTER TIER	TYPE	BACKUPS	LINKED APP SERVICES	ATLAS SEARCH
5.0.11	AWS / N. Virginia (us-east-1)	M0 Sandbox (General)	Replica Set - 3 nodes	Inactive	None Linked	Create Index

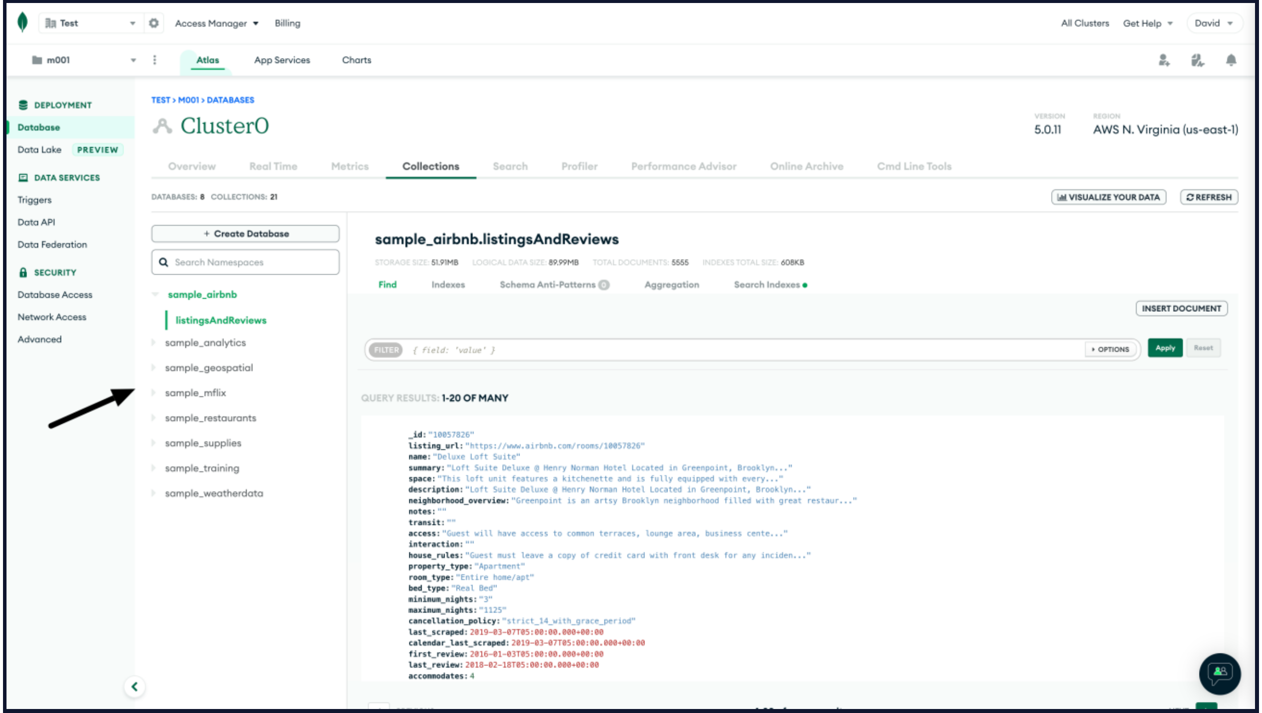
From here, we will be able to load a sample dataset by clicking the "Load Sample Dataset" button:



Explore Your Data

- **Find:** run queries and interact with documents
- **Indexes:** build and manage indexes
- **Aggregation:** test aggregation pipelines
- **Search:** build search indexes

It may take several minutes for the data to load, but it will exist inside the cluster once the process is complete. Notice that there is a number of databases that MongoDB creates for us:

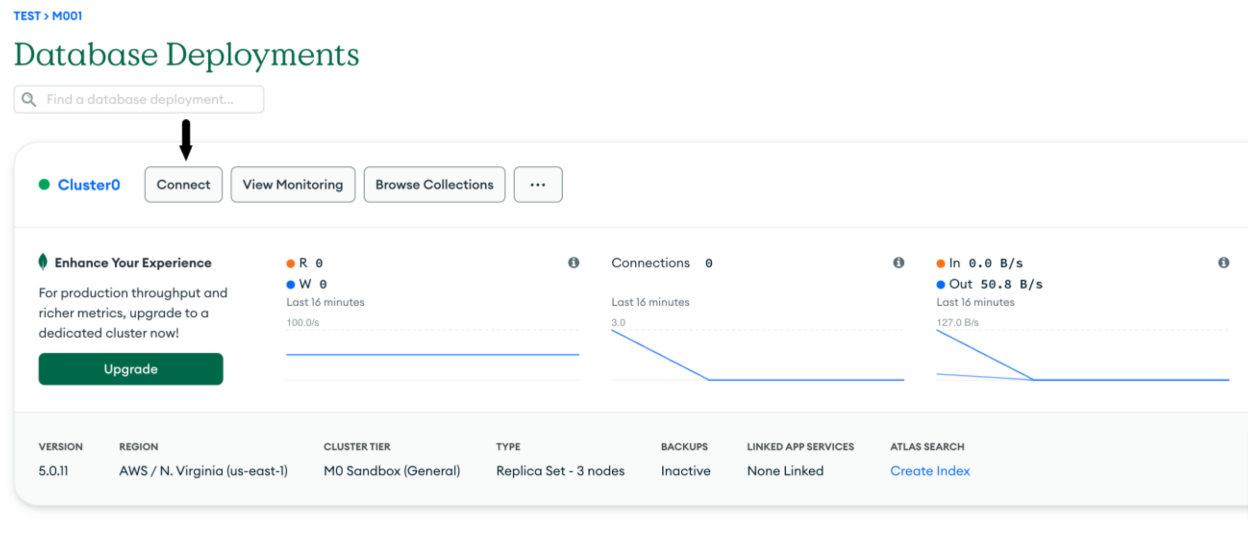


```
_id: "10057826"
listing_url: "https://www.airbnb.com/rooms/10057826"
name: "Deluxe Loft Suite"
summary: "Loft Suite Deluxe @ Henry Norman Hotel Located in Greenpoint, Brooklyn..."
space: "This loft unit features a kitchenette and is fully equipped with every..."
description: "Loft Suite Deluxe @ Henry Norman Hotel Located in Greenpoint, Brooklyn..."
neighborhood_overview: "Greenpoint is an artsy Brooklyn neighborhood filled with great restaur..."
notes: ""
transit: ""
access: "Guest will have access to common terraces, lounge area, business cente..."
interaction: ""
house_rules: "Guest must leave a copy of credit card with front desk for any inciden..."
property_type: "Apartment"
room_type: "Entire home/apt"
bed_type: "Real Bed"
minimum_nights: "3"
maximum_nights: "1125"
cancellation_policy: "strict_14_with_grace_period"
last_scraped: 2019-03-07T05:00:00.000+00:00
calendar_last_scraped: 2019-03-07T05:00:00.000+00:00
first_review: 2016-01-03T05:00:00.000+00:00
last_review: 2018-02-18T05:00:00.000+00:00
accommodates: 4
```

From our dashboard, we can browse our databases and their respective collections and query those collections for specific data. There are a number of other features the dashboard offers. We won't cover them in this article, but we encourage you to explore!

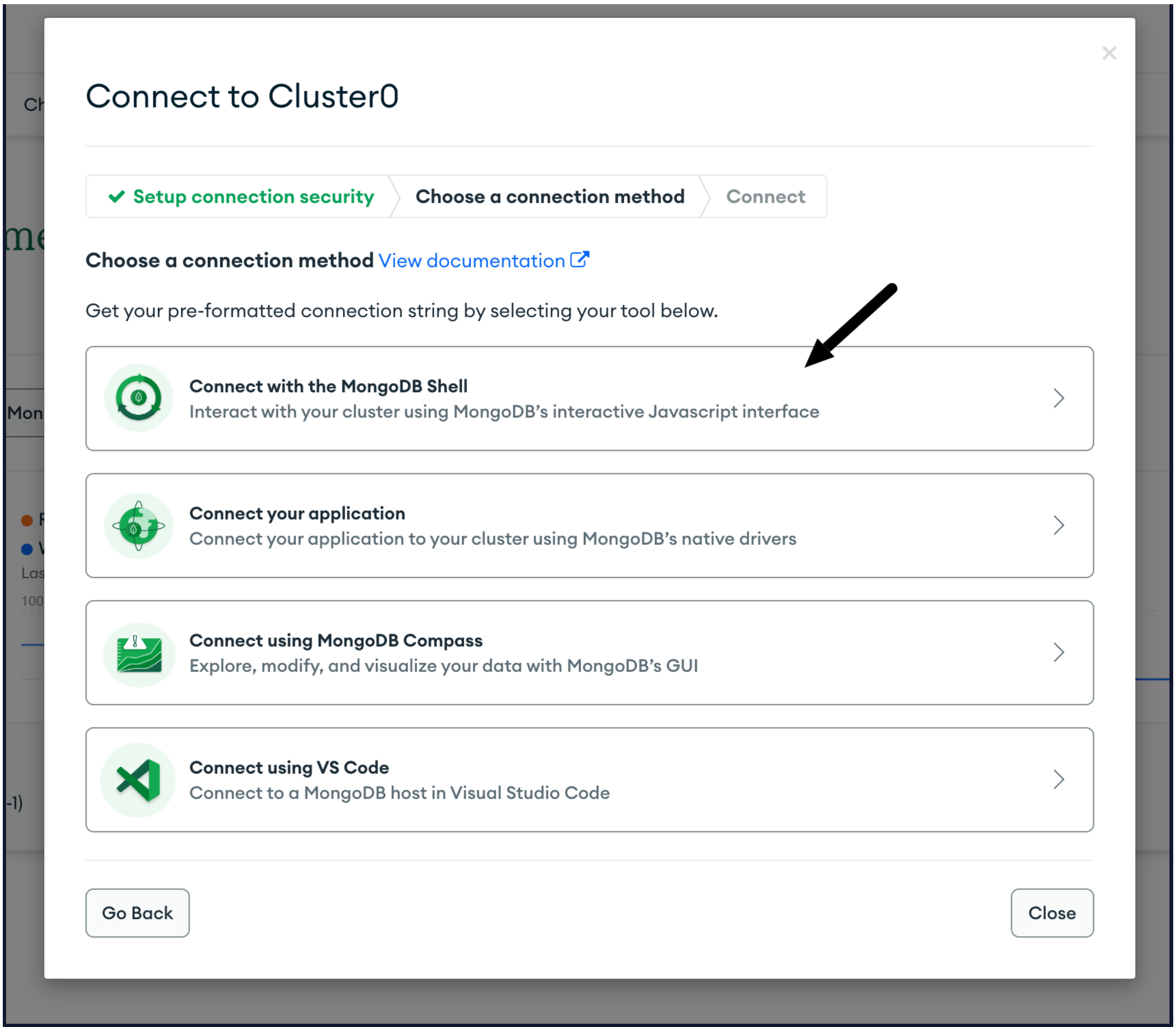
Connecting to Atlas

Now that we have an Atlas cluster setup with some databases, let's see how we can connect to it via our local machine (computer). Navigate back to the main dashboard for the database by clicking the database tab on the left-hand side again. From here, we have the option to connect to the Atlas cluster by clicking the "Connect" button:



VERSION	REGION	CLUSTER TIER	TYPE	BACKUPS	LINKED APP SERVICES	ATLAS SEARCH
5.0.11	AWS / N. Virginia (us-east-1)	M0 Sandbox (General)	Replica Set - 3 nodes	Inactive	None Linked	Create Index

The menu for the connection offers us several options to connect to Atlas. For this article, and since we are most familiar with the MongoDB shell, let's select the "Connect with MongoDB Shell" option:



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

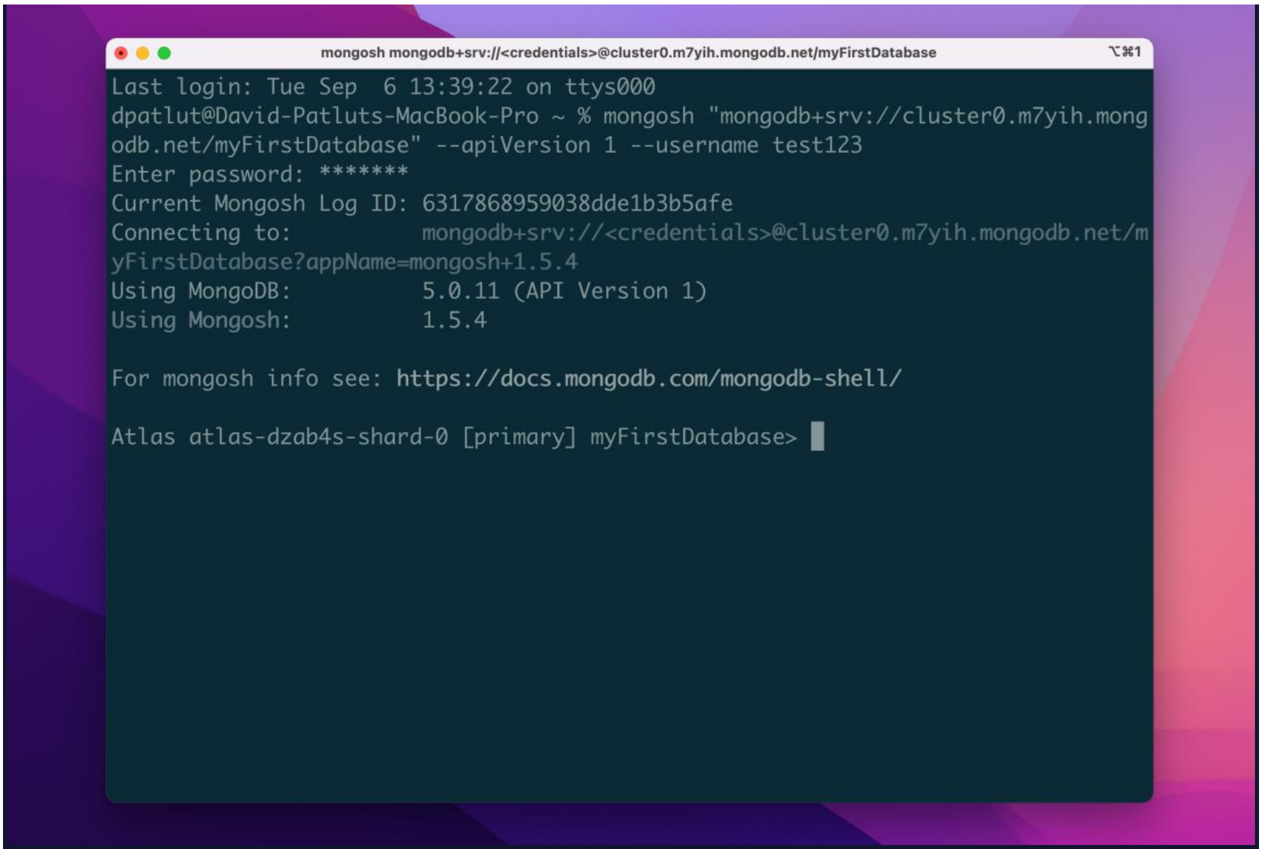
Connect your application
Connect your application to your cluster using MongoDB's native drivers

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

Connect using VS Code
Connect to a MongoDB host in Visual Studio Code

MongoDB will provide us with setup instructions for installing the MongoDB Shell and connecting to our cluster on our computer. Select the operating system you are using (e.g., macOS, Windows) and follow the directions to connect via a command line.

Connecting to the cluster should look similar to this:



mongosh mongodb+srv://<credentials>@cluster0.m7yih.mongodb.net/myFirstDatabase

```
Last login: Tue Sep  6 13:39:22 on ttys000
dpatlut@David-Patluts-MacBook-Pro ~ % mongosh "mongodb+srv://cluster0.m7yih.mong
odb.net/myFirstDatabase" --apiVersion 1 --username test123
Enter password: *******
Current Mongosh Log ID: 6317868959038dde1b3b5afe
Connecting to:          mongodb+srv://<credentials>@cluster0.m7yih.mongodb.net/m
yFirstDatabase?appName=mongosh+1.5.4
Using MongoDB:          5.0.11 (API Version 1)
Using Mongosh:          1.5.4

For mongosh info see: https://docs.mongodb.com/mongodb-shell/

Atlas atlas-dzab4s-shard-0 [primary] myFirstDatabase>
```

Note: Replace the `<username>` *in the string that MongoDB provides with the username we created earlier.*

We are now connected to our MongoDB Atlas cluster and can navigate our collections using the mongosh syntax we learned throughout this course!

Wrap Up

In this article, we learned about MongoDB Atlas and the tools it offers us to build production-ready databases with just a few clicks. Let’s take a moment to go over some key takeaways:

- MongoDB Atlas is MongoDB’s cloud toolset offering that allows us to store our data in MongoDB databases that run in the cloud.
- MongoDB Atlas provides various other solutions on top of a cloud database, including tools to perform analytics, visualization, and efficient searching.
- MongoDB Atlas manages our data within clusters.
- MongoDB Atlas allows us to connect to our cloud database on our local machine via a command line.

Using MongoDB Atlas will open new doors to how we can work with our databases. To learn more about MongoDB Atlas, check out these helpful resources:

- MongoDB: Clusters
- MongoDB University: A300 Atlas Security Course