Mongo Atlas QuarkLink Setup Procedure

Version V1.00

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1 Scope

Welcome to the ***Crypto Quantique (CQ) QuarkLink Database Direct Application Note***. This application note is designed to provide information for people who will use QuarkLink on a day-to-day basis and wishs to use the database direct feature. This document is designed to be read by any user of QuarkLink, as most users will have access to the features documented here.

2 What is QuarkLink Database Direct?

QuarkLink is Crypto Quantiques' universal IoT security platform that uses advanced cryptographic techniques to integrate with a hardware root of trust to provide provisioning, onboarding and monitoring for easy scalability and reliable security.

QuarkLink Database Direct is a feature that allows users to publish data to a hosted cloud service without the additional complexity of using a fully featured IoT hub such as AWS or Azure.

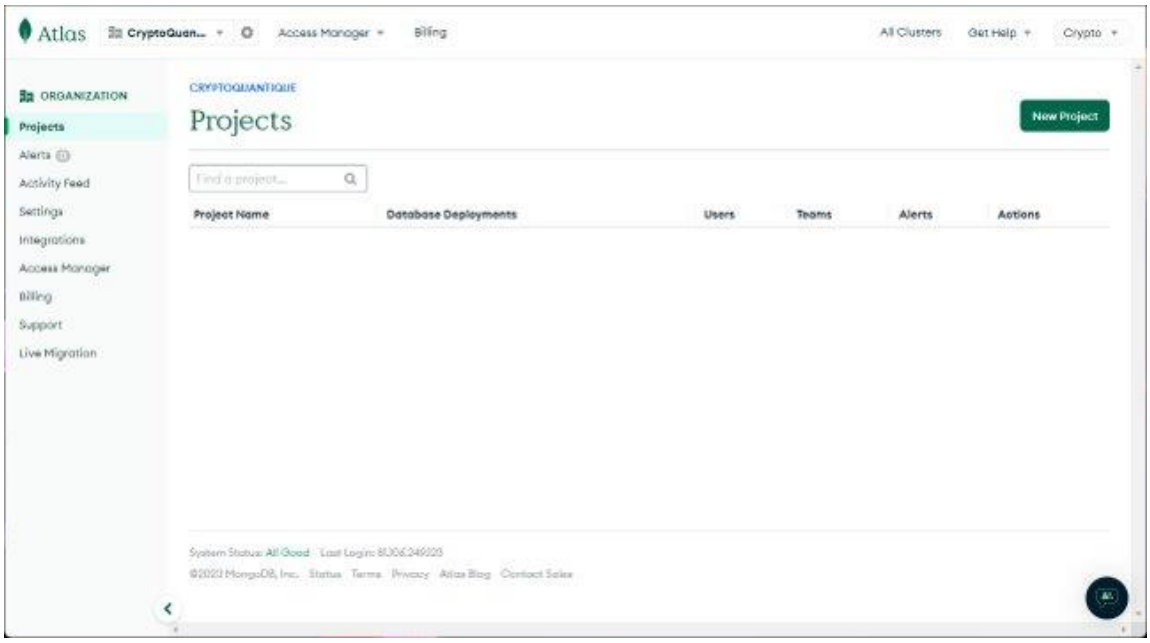
Traditional IoT hub services are typically based on MQTT which is good for streaming data – devices maintain an MQTT session and can quickly send data with little overhead. QuarkLink Database Direct, using HTTP and short lived JWT tokens is better suited for batch sending of sensor data on an adhoc basis – perhaps once or twice a day.

In this application note we will describe how to set up MongoDB Atlas – a third party cloud hosted database platform.

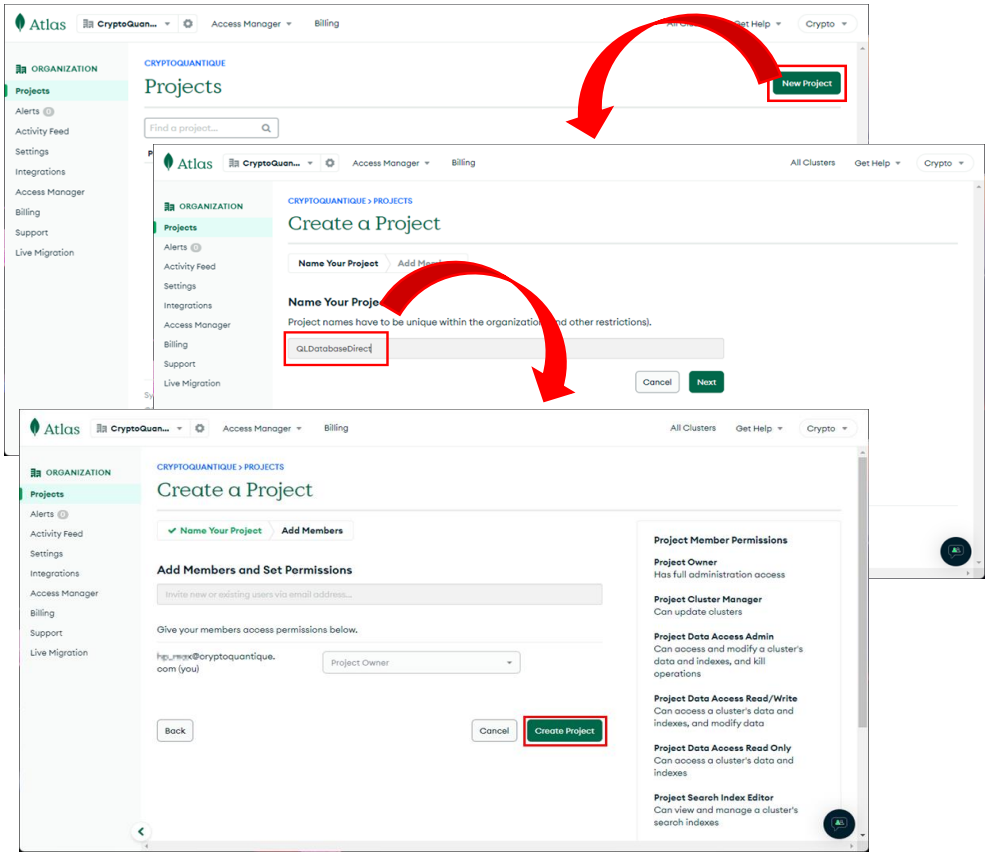
3 MongoDB Atlas set up

MongoDB Atlas is a third party cloud based database system. We are going to set up the free evaluation version for use with QuarkLink Database direct. Note that this is not a comprehensive user guide for MongoDB – please see their website for further help and documentation.

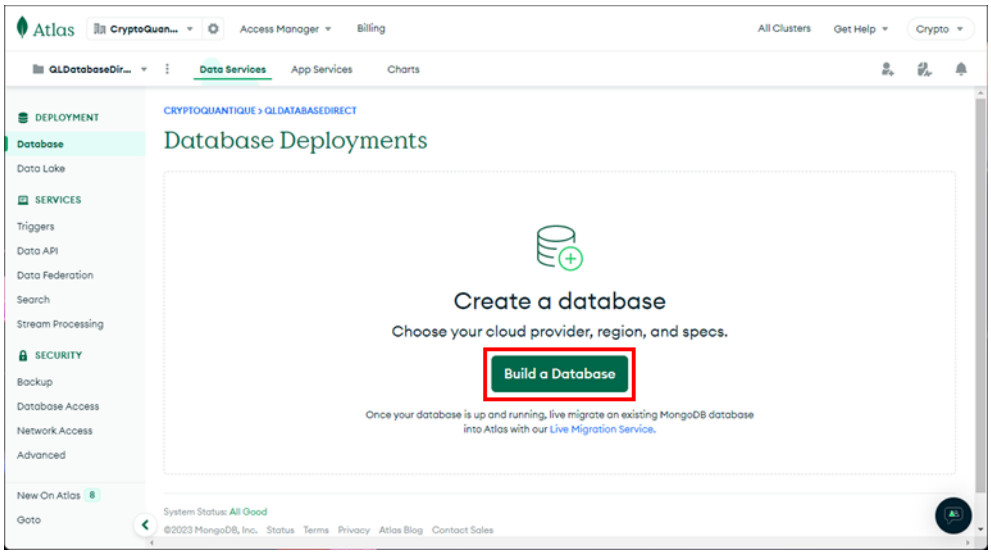
Once you have signed up to Mongo DB you will be presented with a screen similar to that shown below



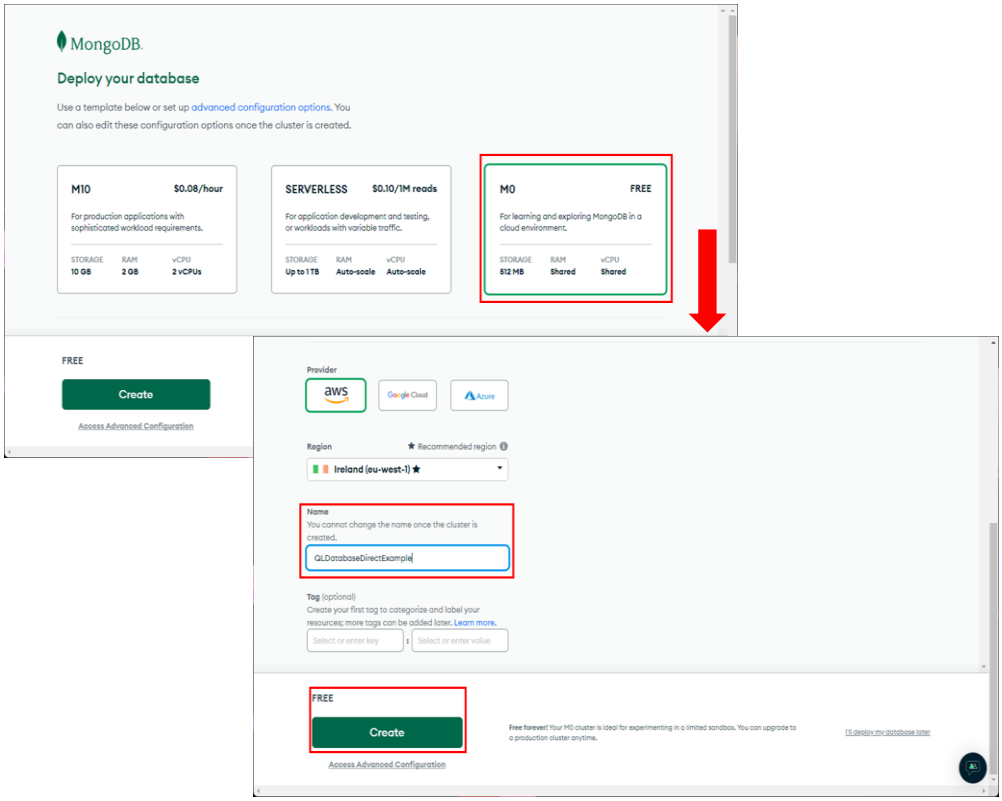
First we need to create a project to use with QuarkLink Database Direct. Select new project, name your project. The default members and permissions offered are sufficient – these are where you can create additional user credentials to enable access to your MongoBD Project. Select next then create project.



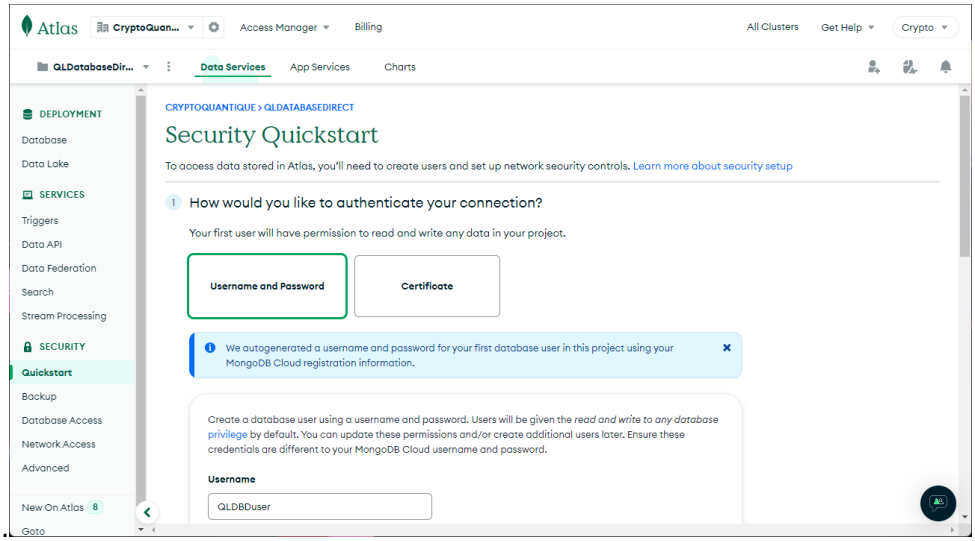
Now we have our project we need to create the database that our device with push data too. Select Build a Database.



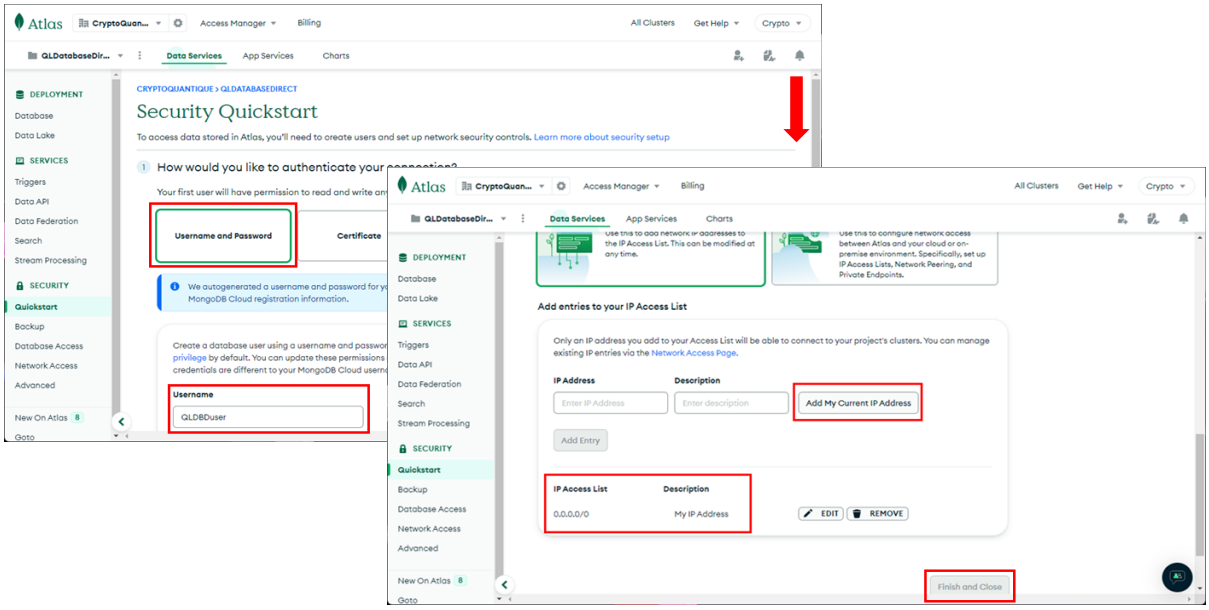
For evaluation purposes we can use the free option – M0, for production deployments you may wish to use a paid version.
Select M0 – Free, then select a cloud provider and region – for database direct we can use the defaults as these are not used with QuarkLink Database Direct. You can enter a cluster name here – you should note the name used here at it will be added to the QuarkLink set up to configure the device.



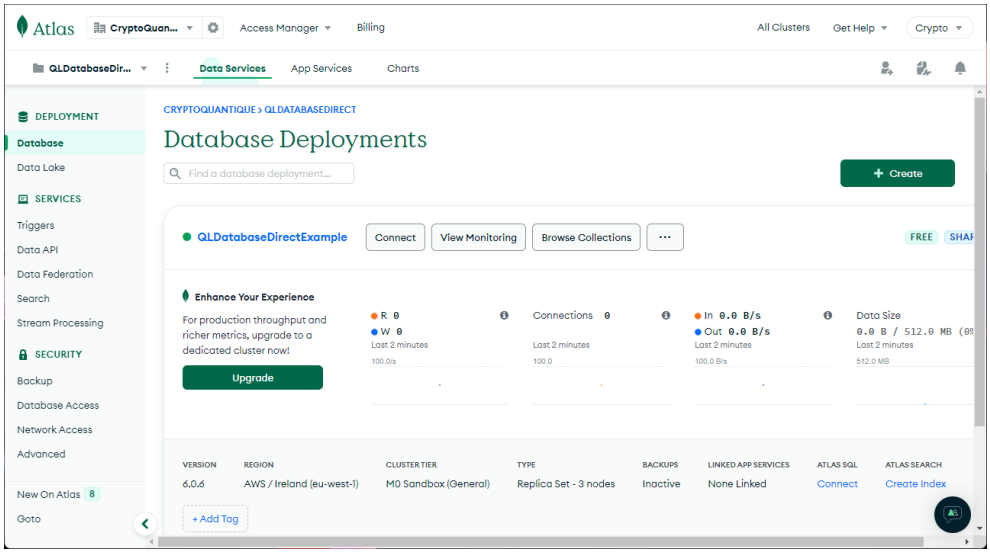
Next we can selected a username and password for use with Mongo Compass – an additional, optional Mongo supplied tool to present the data collected. Mongo Compass is not used in this user guide. The username and password created here are not used by the IoT device you are building or QuarkLink to access your data.
You should make a note of the username and password if you wish to use Mongo Compass later



Once you have created the user we can review the IP access address list. By default, only your current public IP address is listed. You may wish to add additional IP address' if for example your IoT device will connect to MongoDB Atlas from a different IP source - perhaps over a VPN connection. You can enter 0.0.0.0/0 which will allow any public IP address to attempt to access your database. Not recommend for production deployments.
Now you can hit finish and close.

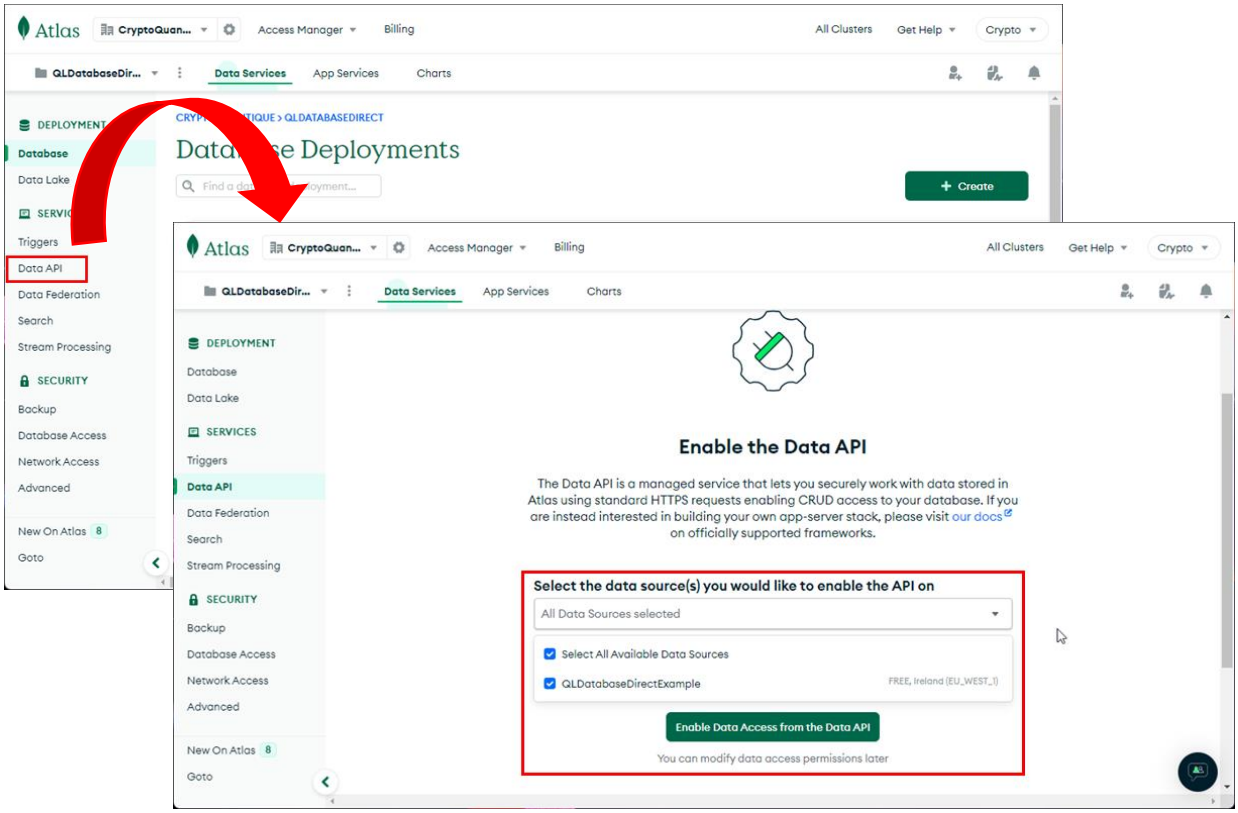


Here we can we see our new database that we're going to publish too.

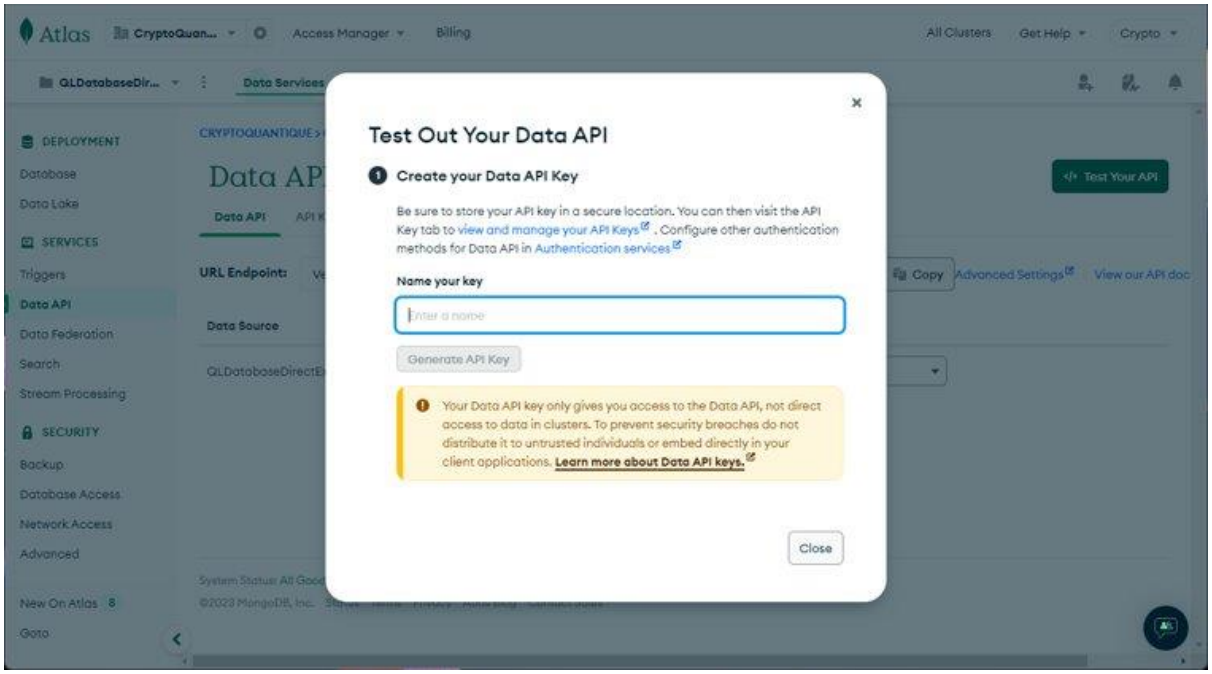


Now we need to enable the Data API so that our device can publish the data to Mongo.

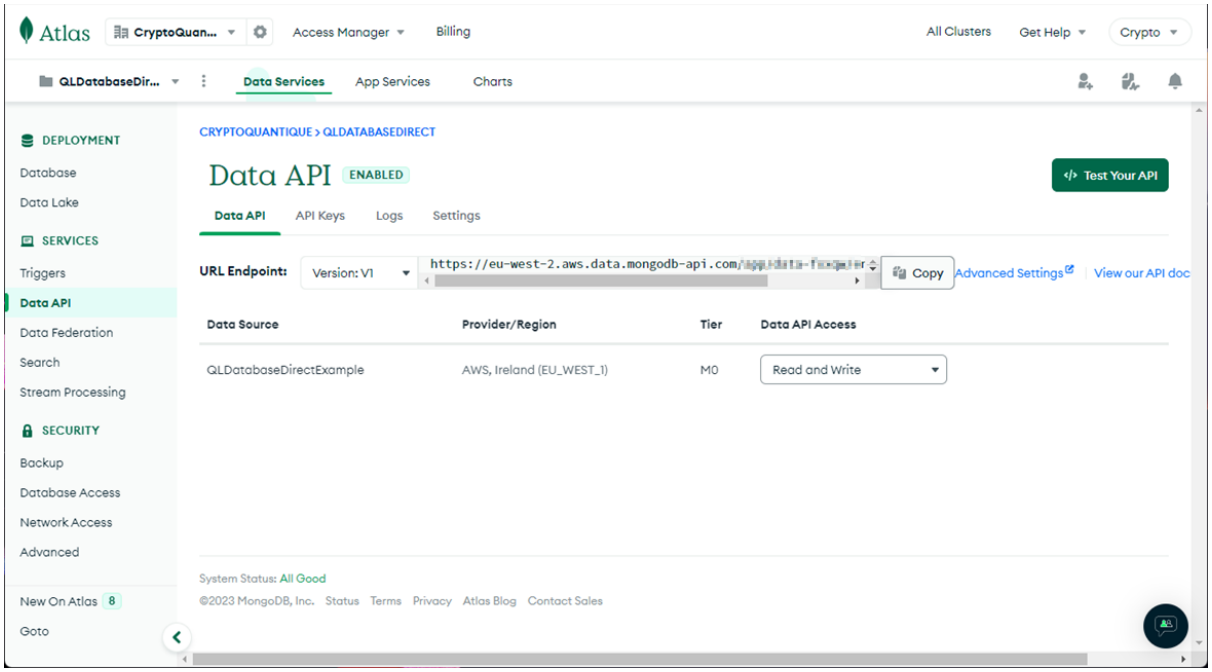
Select Data API from the side menu – then from the drop down menu select the newly created database. Select Enable Data Access from the Data API



We won't use the Mongo generated Data API key so when prompted we can simply close the pop up window.

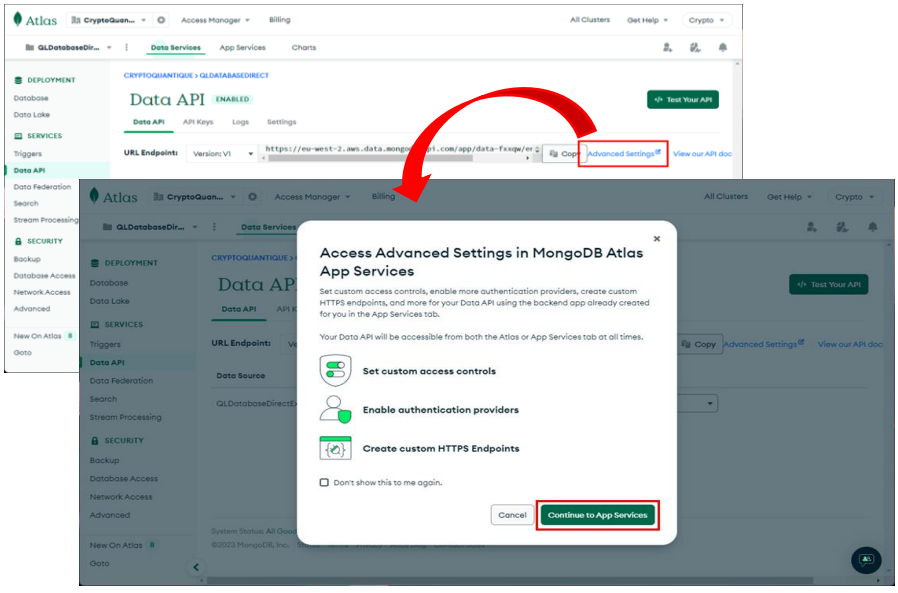


Now Mongo will display the URL Endpoint details – we will need to note this URL as we need to provide this to our QuarkLink Database Direct connection to use when onboarding the IoT device. Now would be a good time to switch to QuarkLink and set up the Database Direct connection.

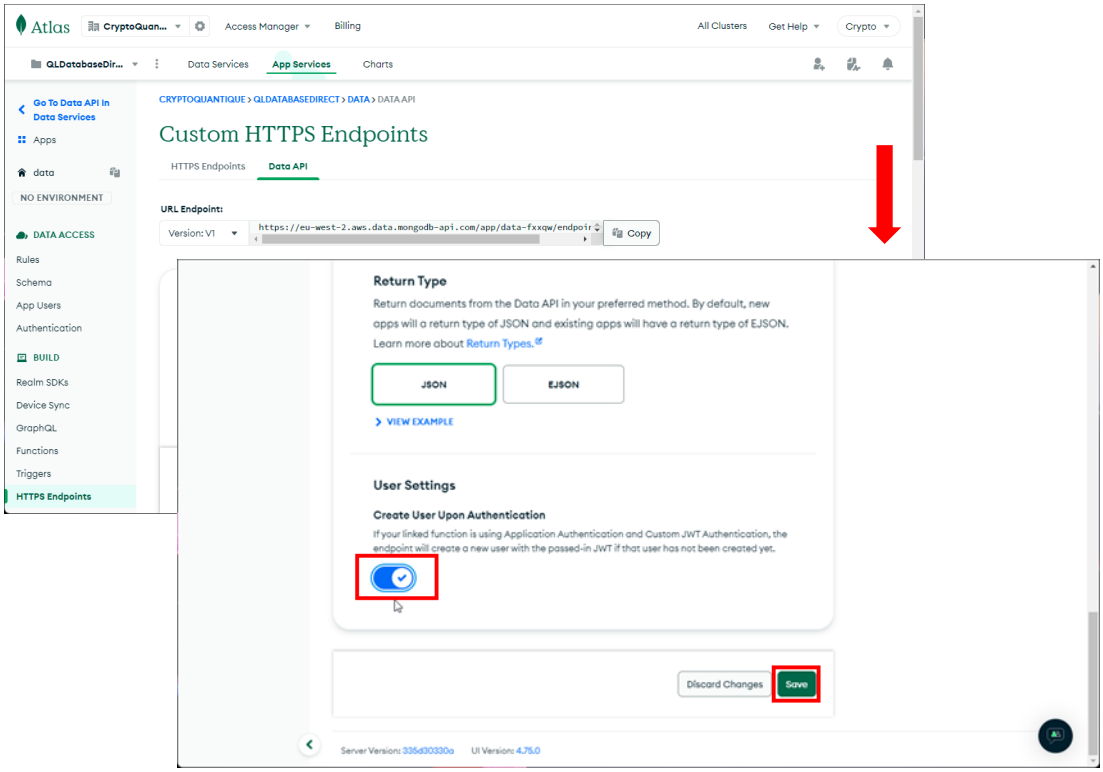


QuarkLink Database Direct set up details can be found below in section 4 and in the QuarkLink user guide

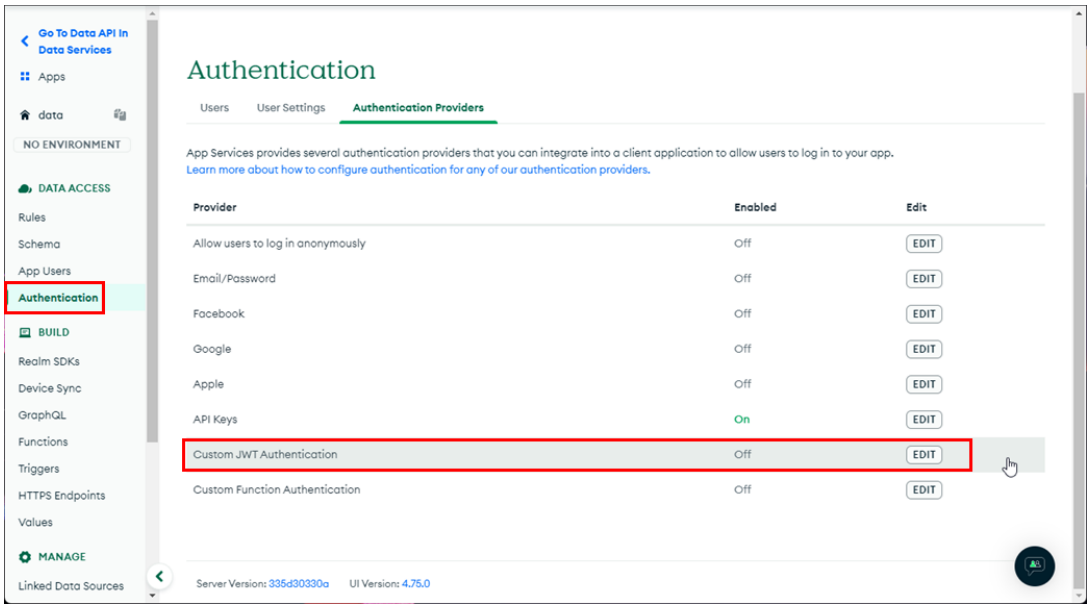
Once the QuarkLink Database Direct connection has been set up, we need to set up some advanced security feaures to allow our devices to connect using the JWS secure token credentials generated by QuarkLink.
Select Advanced Settings then Continue to App Services which will open a new browser page.



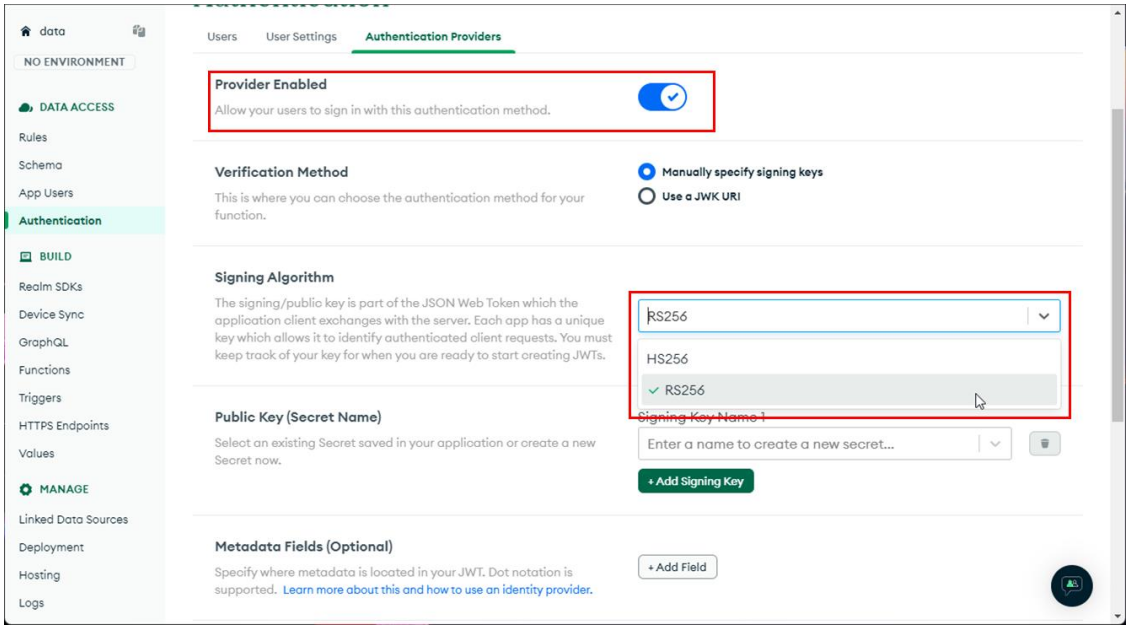
Scroll to the bottom of the page and enable Create User Upon Authentication in the User Settings block. This will allow the IoT device to connect and authenticate using the JWT token provided by QuarkLink.
Hit Save.



Once this as been done we need to scroll back up and select Authentication from the side menu.
On this page we need to enable Custom JWT Authentication. Hit EDIT.

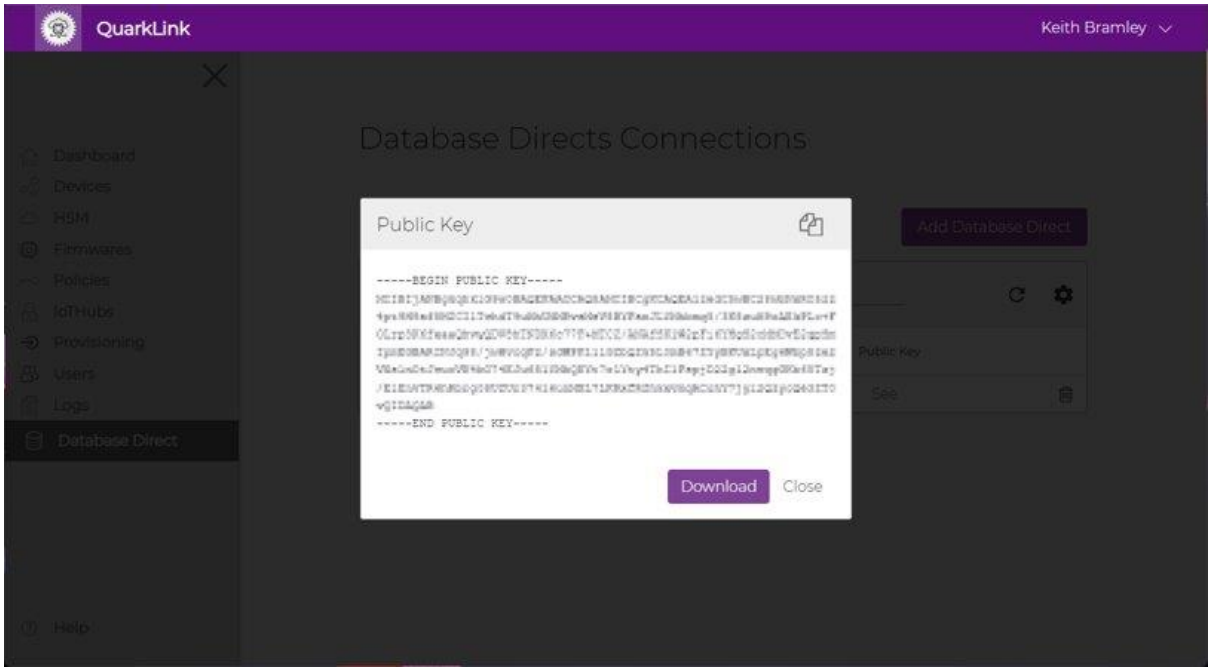


We need to enable ‘Provider Enabled’, select RS256 as the Signing Algorithm and retrieve our public key from the QuarkLink instance.
HS256 are symmetric keys where as RS256 are asymmetric keys which are more secure.

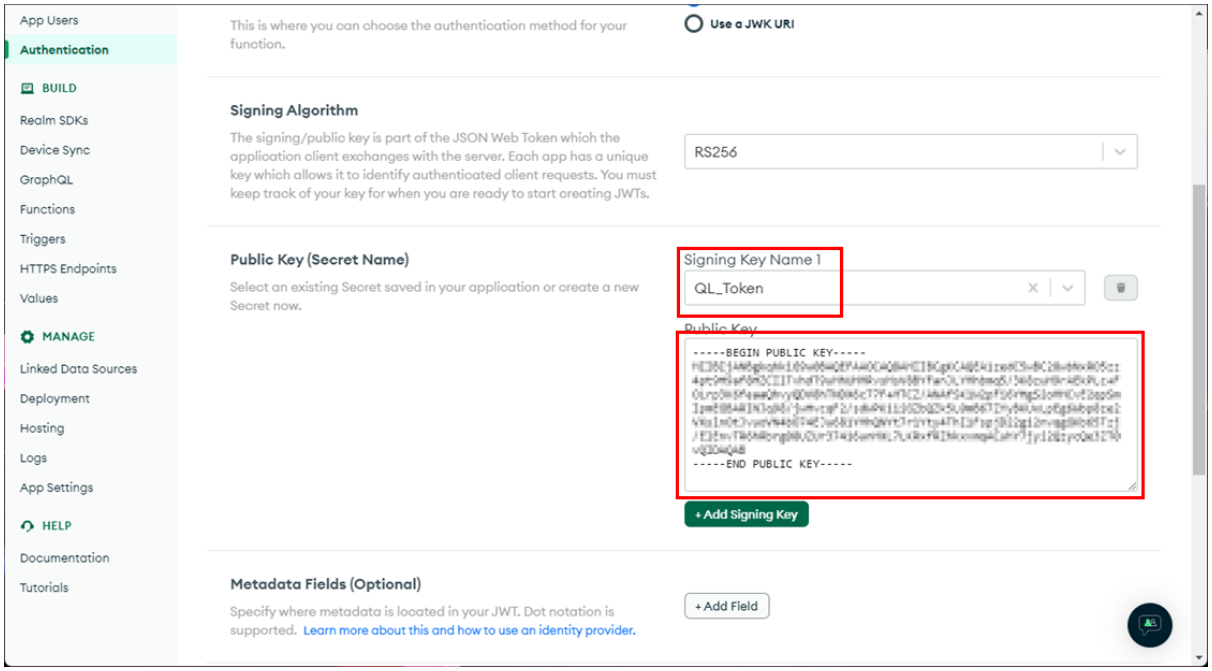


We need to go to the QuarkLink instance and get the Public Key.

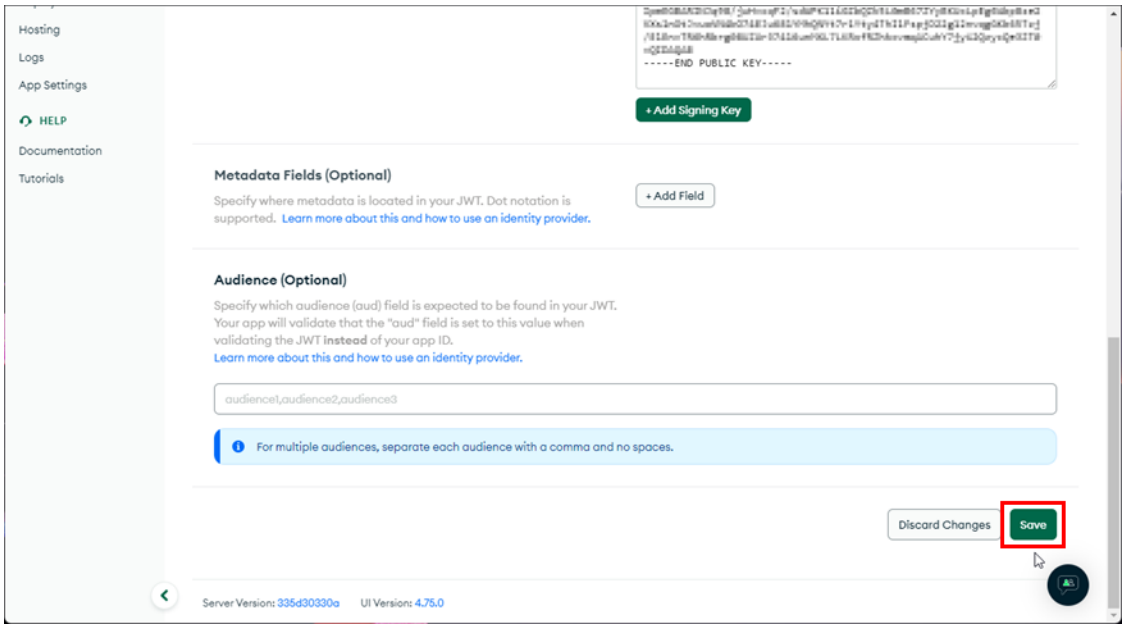
Head to the QuarkLink Database Direct tab. We can access the public key for a partucular Database Direct connection – hit the See text under the Public key column. Click the 2 page icon to copy the key to the clipboard.



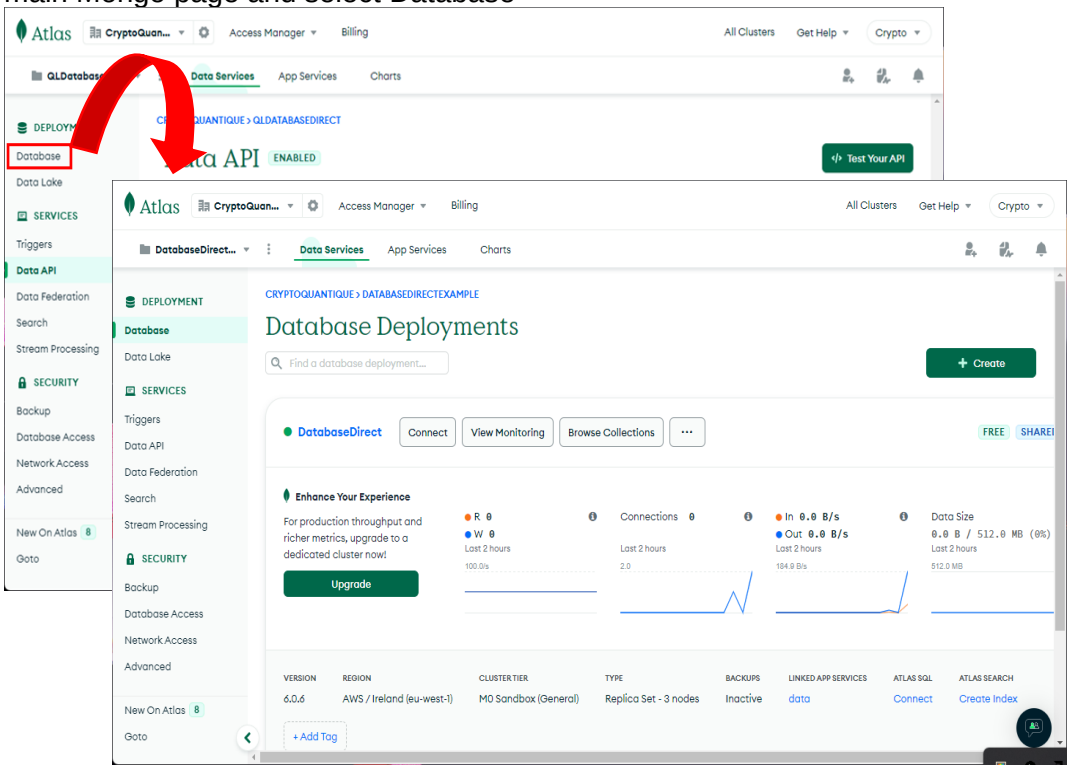
Back to Mongo and name the signing key and paste the public key into the box.



Scroll to the bottom of the page and hit Save.

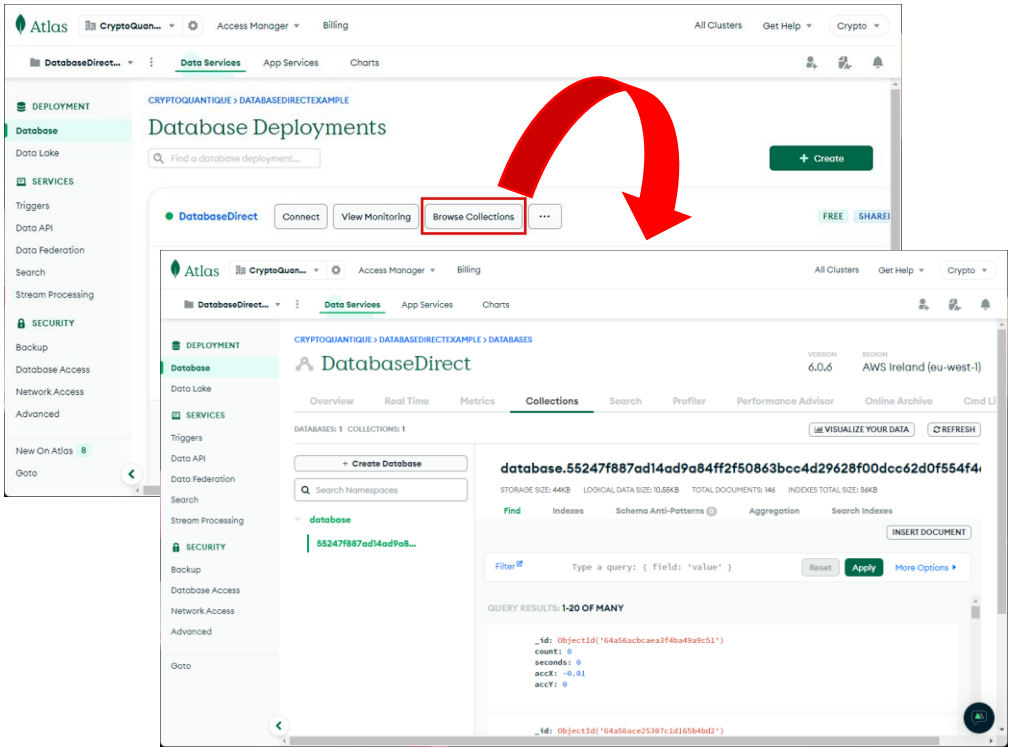


Now we have set the security parameters we can close this page and switch back to the main Mongo page and select Database

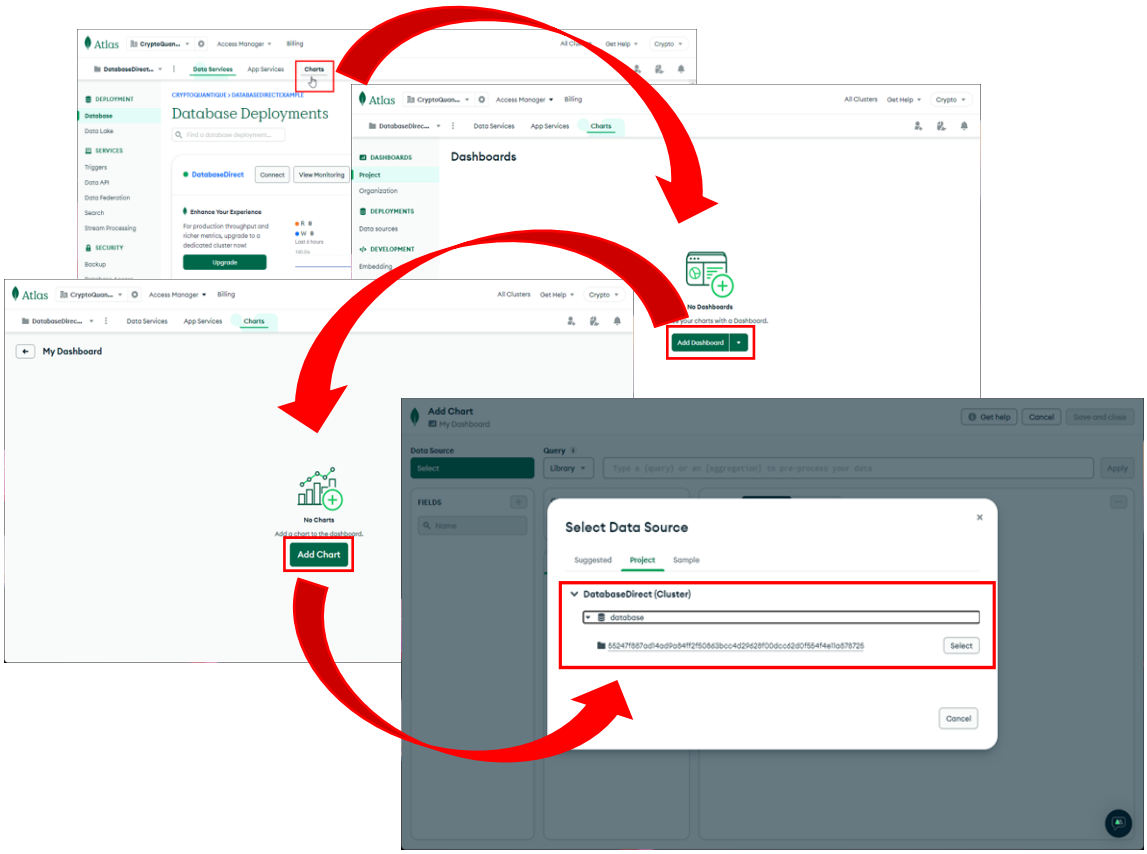


Now we can see our database but there is no data published to it yet.

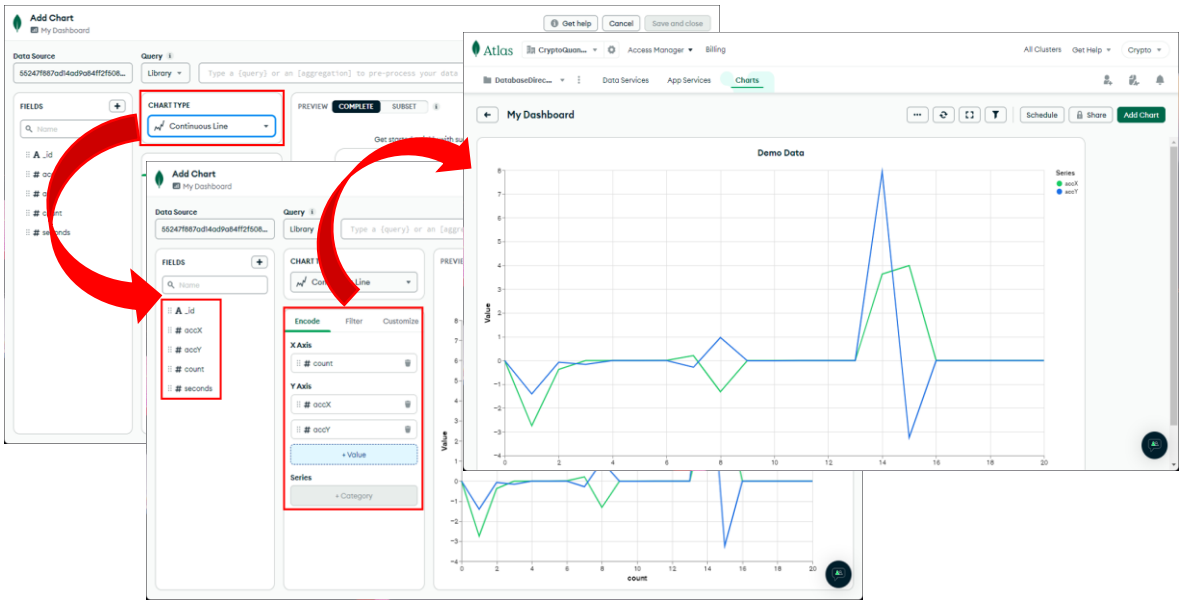
Once your device is connected, successfully on boarded with QL and publishing data you can browse collections – here you will see a list of databases – subdivided with the device ID and a preview of the data.



Select Charts and then add a dashboard – provide a name, then add a chart, Select the data source

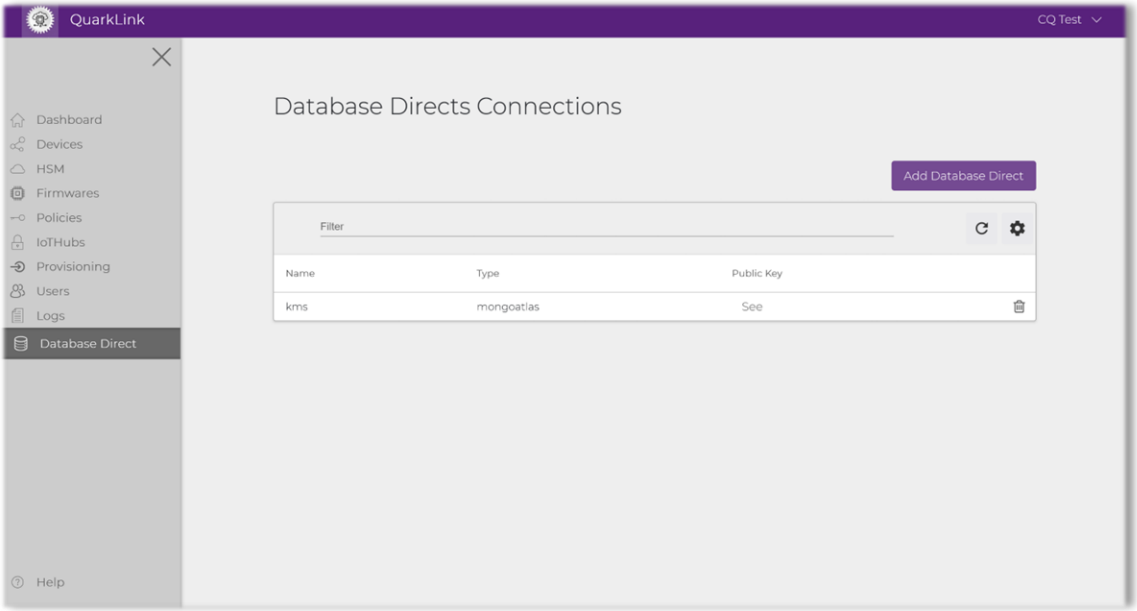


Choose the chart type and drag and drop the fields on the axis you wish
Select save and close to view your new dashboard and chart.

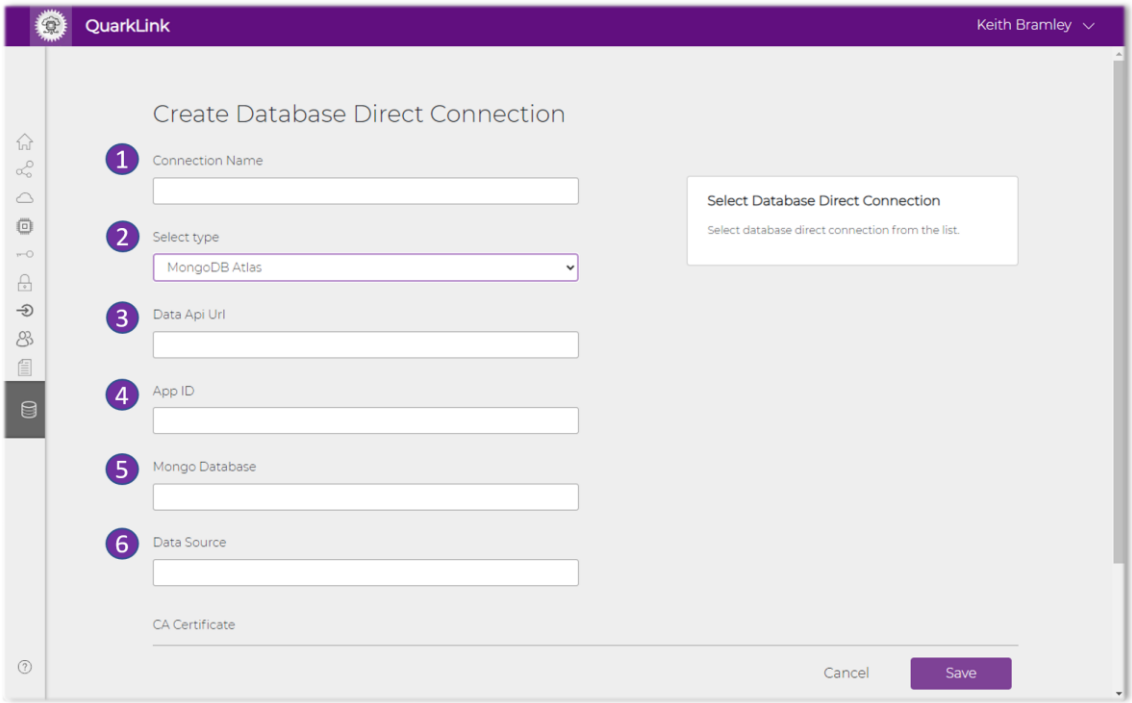


4 QuarkLink Database Direct

This section describes the Database Direct set up process within QuarkLink.
The database direct tab shows the connections which have been configured for the instance.



You can create a database direct connection by clicking on "***Add Database Direct***".



The relevant fields can be seen below:-

1. **Connection Name** – The name of the database direct connection. This allows the user to give the connection a unique name to link it to a policy
2. **Select type** – A dropdown to allow you to select the type of database you wish to connect to. For the moment the only option is MongoDB Atlas
3. **App ID** – The ID of the MongoDB Atlas data api connection. This field is automatically completed from the Data API URL field
4. **Data Api Url** – The URL provided by mongo atlas when you create a Data API application – in the format of https://eu-west-2.aws.data.mongodb-api.com/app/data-vwxyz/endpoint/data/v1
5. **Database** – The mongo database the user wishes to write their data to - free text
6. **Data Source** – The name of the mongo instance which data will be written to – this is the mongo cluster name when the mongo database was created.

Once the information has been added, press "***Save***".

5 Revision History

Mongo Atlas QuarkLink Setup Procedure

Rev.	Date	Owner	Description
1.00	3.7.2023	KJB	Original document

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