

# Advanced Deployment to Heroku

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## 🔗 Introduction

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\*NOTE: This guide is a WIP and this alpha version of QMethod requires significantly more involvement that has been laid out here to fully deploy.

This article is based upon [this guide](#) and the following method is only applicable to deployment on Heroku.

In the final version of QMethod, there may be a less hands on approach to deploying/initialising a QMethod Heroku App entirely through the browser.

## Prerequisites

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First you will need to create a Heroku account, install `git`, `heroku-cli` and the MongoDB Compass application onto your local machine. Heroku provides an installation package that does this for you. Please follow the following guides on how to do so:

[Signup for Heroku](#)

[Download and install Heroku CLI](#)

[Download and install git](#)

[Download and install MongoDB Compass](#)

## Instructions to deploy QMethod App to Heroku

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### Creating Git Directory

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Open a new command line window (or terminal) and `cd` into a directory to temporarily hold the files for your QMethod app. Then run `git clone -b deploy-test`

`https://github.com/CITS3200GroupD/QMethod.git`

\*ALPHA: The following link is only accurate for alpha version

```
cd <path/to/your/directory>
git clone -b deploy-test https://github.com/CITS3200GroupD/QMethod.git
Cloning into 'QMethod'...
remote: Counting objects: 2302, done.
remote: Compressing objects: 100% (427/427), done.
remote: Total 2302 (delta 324), reused 177 (delta 32), pack-reused 1828
Receiving objects: 100% (2302/2302), 2.11 MiB | 1.19 MiB/s, done.
Resolving deltas: 100% (890/890), done.
Checking out files: 100% (76/76), done.
```

Now `cd QMethod` into the newly created QMethod folder for the next step.

```
path/to/dir> cd QMethod
path/to/dir/QMethod>
```

## Setting up Heroku CLI

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If you have not already, [sign up for a heroku account](#) and [install the heroku CLI](#). Then, in the same command line interface window you are already in, enter `heroku --version` to verify that you have `heroku-cli` installed.

```
heroku --version
heroku/7.0.0 (darwin-x64) node-v8.0.0
```

Next, enter `heroku login` and you will be prompted for your heroku account details.

```
heroku login
Enter your Heroku credentials.
Email: adam@example.com
Password (typing will be hidden):
Authentication successful.
```

(The CLI saves your email address and an API token to `~/.netrc` for future use. For more information, see [Heroku CLI Authentication](#).)

Now ensuring that your terminal window is open in the same path as the directory holding the QMethod source files, run `heroku create <APP NAME>`. (Replace APP NAME with the desired name of your application (will appear in url)).

You can use `git remote -v` to verify that this has been completed successfully.

```
heroku create qmethod-test1app
Creating app... done, ● thawing-inlet-61413
https://thawing-inlet-61413.herokuapp.com/ | https://git.heroku.com/qmethod-
```

```
testlapp.git
git remote -v
heroku https://git.heroku.com/qmethod-testlapp.git (fetch)
heroku https://git.heroku.com/qmethod-testlapp.git (push)
```

We are now almost done with the setup for Heroku, and all we have to do is call `git push heroku deploy-test:master` to setup the front-end application. \*ALPHA: This command is different for the release version.

If you do so you notice that the application will install and load as expected at first glance, however this will result in an error as we have yet to configure the remote mongoDB Database.

Thus before we push the files to Heroku we should create a remote database and link this to our heroku application.

## Setting up your database

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We will be hosting the data from our survey on a separate remote host. This can be done either through MongoDB Atlas or mLab.

### Mongo Atlas

First, go to [MongoDB Atlas](#) and sign up for a free account. MongoDB Atlas is a Database as a Service provider that provides encrypted remote mongoDB instances, which we will use to store the survey recipient data, with free and paid tiers of service. MongoDB Atlas clusters make use of the General Purpose SSD (gp2) EBS volumes, with [AES-256 encryption](#). All communication to and from the server is also encrypted from MOTM attacks through the use of TLS/SSL socket security.

## Get started free

No credit card required

Email Address

First Name

Last Name

Password

- ✓ 8 characters minimum
- ✓ One number
- ✓ One letter
- ✓ One special character

☒ I agree to the [terms of service](#).

**Get started free**

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

Next, select your server provider. It is recommended that you select the free AWS service tier (M0) with 512MB of storage. (This is in fact approximately enough for at least ~250,000 survey responses and thus should be sufficient even for live deployment.)

Cloud Provider & Region

AWS, Singapore (ap-southeast-1) ▾

aws

Google Cloud Platform

Azure

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	AUSTRALIA
<div>🇺🇸 N. Virginia (us-east-1) ★</div> <div>FREE TIER AVAILABLE</div>	<div>🇮🇪 Ireland (eu-west-1) ★</div>	<div>🇦🇺 Sydney (ap-southeast-2) ★</div>
<div>🇺🇸 Ohio (us-east-2) ★</div>	<div>🇬🇧 London (eu-west-2) ★</div>	<div>ASIA</div>
<div>🇺🇸 N. California (us-west-1)</div>	<div>🇫🇷 Paris (eu-west-3) ★</div>	<div>🇯🇵 Tokyo (ap-northeast-1) ★</div>
<div>🇺🇸 Oregon (us-west-2) ★</div>	<div>🇩🇪 Frankfurt (eu-central-1) ★</div> <div>FREE TIER AVAILABLE</div>	<div>🇰🇷 Seoul (ap-northeast-2)</div>
<div>🇨🇦 Montreal (ca-central-1)</div>	<div>SOUTH AMERICA</div>	<div>🇸🇬 Singapore (ap-southeast-1) ★</div> <div>FREE TIER AVAILABLE</div>
	<div>🇧🇷 Sao Paulo (sa-east-1)</div>	<div>🇮🇳 Mumbai (ap-south-1)</div> <div>FREE TIER AVAILABLE</div>

Configure clusters across multiple regions (M10 and up) ☐ NO

Better withstand data center outages and optimize for reads in selected service areas.

Cluster Tier

M0 (Shared RAM, 512 MB Storage) >

Encrypted

Additional Settings

MongoDB 3.6, No Backup >

Cluster Name

QMethod ▾

One time only: once your cluster is created, you won't be able to change its name.

QMethod

Cluster names can only contain ASCII letters, numbers, and hyphens.

Now, after your cluster has finished initialising, go to the Security > MongoDB Users Tab and add a new user.

<https://github.com/CITS3200GroupD/QMethod/wiki/Advanced-Deployment-to-Heroku>

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CONTEXT  
Project 0

PROJECT  
Clusters  
Stitch Apps  
Alerts 0  
Backup  
Users & Teams

## Clusters

Build a New Cluster

Overview **Security**

MongoDB Users IP Whitelist Peering Enterprise Security

+ ADD NEW USER

User Name Authentication Method MongoDB Roles

Enter a username (such as admin) and a password. This will be used by the application itself in a driver to access your database. Ensure that Read and Write access is checked. Please remember and copy down this password and save it for later, as you will need this information later.

## Add New User

### SCRAM Authentication

SCRAM is MongoDB's default authentication method.

Enter username

e.g. new-user\_31

Enter password

SHOW

Autogenerate Secure Password

### User Privileges

Atlas admin

Read and write to any database

Only read any database

Show Advanced Options

☐ Save as temporary user

Cancel

Add User

CONTEXT  
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## Clusters

Build a New Cluster

Overview **Security**

MongoDB Users IP Whitelist Peering Enterprise Security

+ ADD NEW USER

We are deploying your changes (current action: configuring MongoDB)

User Name	Authentication Method	MongoDB Roles	Actions
admin	SCRAM	readWriteAnyDatabase@admin	<a href="#">EDIT</a> <a href="#">DELETE</a>

Now go to the Security > IP Whitelist tab, and add a new IP Address.

Project 0

## Clusters

Build a New Cluster

PROJECT

- Clusters
- Stitch Apps
- Alerts 0
- Backup
- Users & Teams

Overview **Security** Peering Enterprise Security

MongoDB Users **IP Whitelist**

**+ ADD IP ADDRESS**

IP Address	Comment	Status
------------	---------	--------

You will want to repeat this process twice, as you will need to allow access firstly from your own IP address, as well as any IP address (for now). This is because the free version of the Heroku application uses a dynamic IP address which changes from time to time, whilst paid tiers of Heroku allow for a fixed static IP, which we can later add to the whitelist (whilst removing the 0.0.0.0/10 entry) for better security later on.

## Add Whitelist Entry

Add a whitelist entry using either CIDR notation or a single IP address. [Learn more.](#)

**ADD CURRENT IP ADDRESS** **ALLOW ACCESS FROM ANYWHERE**

**Whitelist Entry:**

**Comment:**

☐ Save as temporary whitelist

PROJECT

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## Clusters

Build a New Cluster

Overview **Security** Peering Enterprise Security

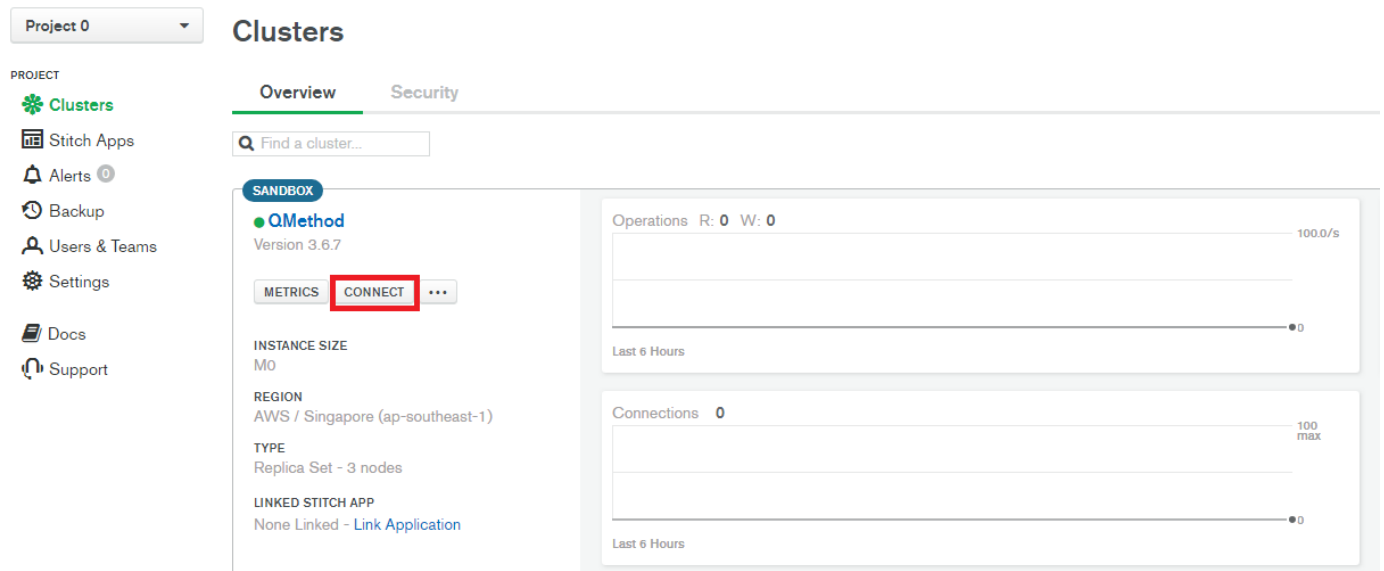
MongoDB Users **IP Whitelist**

**+ 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
[Redacted] (includes your current IP address)		Inactive	<input type="button" value="EDIT"/> <input type="button" value="DELETE"/>
0.0.0.0/0 (includes your current IP address)		Inactive	<input type="button" value="EDIT"/> <input type="button" value="DELETE"/>

Now, go back to the Clusters > Overview page and click connect.



The screenshot shows the MongoDB Clusters Overview page for Project 0. The page is divided into two tabs: Overview and Security. The Overview tab is active. On the left sidebar, there are links to Clusters, Stitch Apps, Alerts, Backup, Users & Teams, Settings, Docs, and Support. The main content area shows a cluster named 'QMethod' in a sandbox environment. The cluster is version 3.6.7. Below the cluster name, there are buttons for METRICS, CONNECT (highlighted with a red box), and a menu icon. The cluster details include: INSTANCE SIZE: M0, REGION: AWS / Singapore (ap-southeast-1), TYPE: Replica Set - 3 nodes, and LINKED STITCH APP: None Linked - [Link Application](#). On the right, there are two performance graphs: Operations (R: 0, W: 0) and Connections (0). Both graphs show a scale from 0 to 100.0/s for operations and 0 to 100 max for connections. The graphs are labeled 'Last 6 Hours'.

First, we want to setup our MongoDB Compass application on our local machine, which will allow us to monitor, export and import raw database data. If you have not already installed Compass, please do so.





## Connect to QMethod

### 1 Check the IP Whitelist

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

**60.225.45.108/32** (includes your current IP address)

● Active

**0.0.0.0/0** (includes your current IP address)

● Active

+ ADD ENTRY

### 2 Choose a connection method:

**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



See methods to add data and diagnostics in the [Command Line Tools](#) shortcut from within your cluster.

Close

[< BACK](#)

## Connect to Compass

1 If you have not already, click below to download Compass

Windows

Mac OS X

Other Operating Systems ▾

2 Copy the URI Connection String

[View detailed instructions](#)

I am using Compass 1.12 or later

I am using Compass 1.11 or earlier

```
mongodb+srv://admin:<PASSWORD>@/admin
```

COPY

Replace **PASSWORD** with the password for the *admin* user.

When you open Compass, it should detect the URI string from your clipboard and auto-populate the form.

Close

Copy the string that is created and open MongoDB Compass application on your local machine. You will be prompted and then you will see the connect to server form. Input the password you saved from earlier when creating the admin database user and connect.

MongoDB Compass Community - Connect

Connect View Help

**CREATE FREE ATLAS CLUSTER**  
Includes 512 MB of data storage.  
[Learn more](#)

**New Connection**

**Favorites**

SEP 12, 2018 10:07 AM  
CITS3200 Group D DB

**RECENTS**

SEP 11, 2018 10:59 AM  
localhost:27017

SEP 2, 2018 6:25 PM  
cluster0-91f3x.mongo...

SEP 1, 2018 6:33 PM  
localhost:27017

Hostname

SRV Record ☒

Authentication Username / Password

Username admin

Password

Authentication Database admin

Replica Set Name

Read Preference Primary

SSL System CA / Atlas Deployment

SSH Tunnel None

Favorite Name e.g. Shared Dev, QA Box, PRODUCTION

**CONNECT**

For now the database will be empty, but the application will fill it with the relevant survey data.

Databases				
<b>CREATE DATABASE</b>				
Database Name	Storage Size	Collections	Indexes	
admin	0.0B	0	0	
local	0.0B	7	0	

Go back to your web browser, to the clusters > overview page and connect once again.

Project 0

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OverviewSecurity

Find a cluster...

SANDBOX

QMethod

Version 3.6.7

METRICS

CONNECT

...

INSTANCE SIZE  
M0

REGION  
AWS / Singapore (ap-southeast-1)

TYPE  
Replica Set - 3 nodes

LINKED STITCH APP  
None Linked - [Link Application](#)

Operations R: 0 W: 0

100.0/s

Last 6 Hours

Connections 0

100 max

Last 6 Hours



## Connect to QMethod

### 1 Check the IP Whitelist

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

60.225.45.108/32 (includes your current IP address)

● Active

0.0.0.0/0 (includes your current IP address)

● Active

+ ADD ENTRY

### 2 Choose a connection method:

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



See methods to add data and diagnostics in the [Command Line Tools](#) shortcut from within your cluster.

Close

We will now need to generate the string for our application's mongoDB driver.

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## Connect Your Application

### 1 Copy a connection string:

[See documentation on how to check the version of your driver](#)

I am using driver 3.6 or later

I am using driver 3.4 or earlier

Copy the SRV address:

```
mongodb+srv://admin:<PASSWORD>@qmethod-bf5ut.mongodb.net/test?
retryWrites=true
```

COPY

Note: If using the node.js driver make sure you specify the name of your database after making your connection ([example](#)), otherwise your collections will all appear in a database called "test". Alternatively you can replace "test" in the connection string with a different default database name.

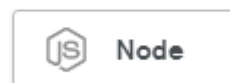
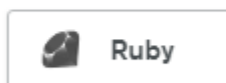
### 2 Replace **PASSWORD** with the password for the *admin* user

Replace **PASSWORD** with the password for the *admin* user. Please note that any special characters in your password (% , @ , and : ) will need to be URL encoded.

[View your list of users or reset a password](#)

### 3 View driver connection examples

Failed connections can result from old versions of drivers. Check your driver version and view connection examples for your platform:



[View all MongoDB Driver Connection Examples](#)

Close

Copy this string to your clipboard. We will now be going back to our Heroku CLI terminal window and inputting this to link our database to our heroku application.

## Back to Heroku

Now that our database has been fully setup, including a compass client for monitoring and viewing raw database data, we can now link our application to the mongoDB database.

\*ALPHA:

```
heroku config:set MONGODB_URI=mongodb://<link you copied from above>
```

Now that the database has been linked, we can run `git push heroku deploy-test:master`. This will push the files to Heroku and deploy the application at the given URL. Open the URL in your browser. It may take some time to load as the server has to "wake up" first (free Heroku apps go to sleep after 30 minutes).

## Custom Domain Names

---

<https://devcenter.heroku.com/articles/custom-domains>

By default, a Heroku app is available at its Heroku domain, which has the form [name of app].herokuapp.com. For example, an app named serene-example-4269 is hosted at serene-example-4269.herokuapp.com.

To make your app available at a non-Heroku domain (for example, [www.yourcustomdomain.com](http://www.yourcustomdomain.com)), you add a custom domain to it.

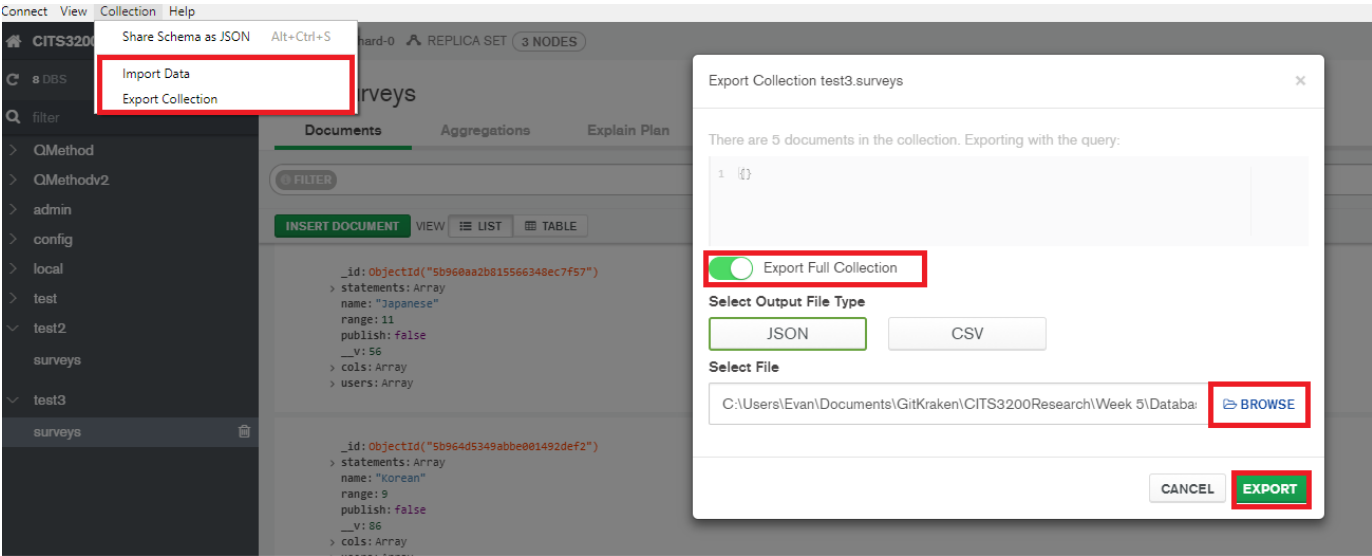
You can add custom domains to any Heroku app for free (however the domain name itself will have to be paid for). For security purposes, you must verify your Heroku account to add domains to apps.

Heroku does not provide a domain registration service (for registering a custom domain name) or a DNS provider service (for hosting the DNS servers that point your custom domain name to your app).

## Exporting Raw JSON data from Database

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Compass allows you to export and import raw database information as a json. This may be useful to store data on your local machine instead of a remote instance.



+ Add a custom footer

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[Fast Basic Deployment Heroku](#)

+ Add a custom sidebar

Clone this wiki locally

https://github.com/CITS3200GroupD/QMethod.wiki.git