**Below is the plan to upgrade from Mlab to MongoDB Atlas. The document lists the current database objects (both encrypted and unencrypted) and the migration plan.**

* **List of total database entities used:**
* Athenacodes
* Blogs
* Clients
* Codes
* Countries
* Forms
* Formlists
* Formtypes
* Incrementrecords
* Insurance\_administrators
* Logfaxes
* Openreportinfos
* Patients
* Patientreports
* Practices
* Questions
* Reports
* Reportlogs
* Reportpricings
* Salespersons
* Specialities
* States
* Templates
* Testimonials
* Things
* Tokens
* Users
* Userlogs

**Total number of entities: 28**

* **Entities without encrypted data:**
* Athenacodes
* Blogs
* Clients
* Codes
* Countries
* Forms
* Formlists
* Formtypes
* Incrementrecords
* Insurance\_administrators
* Logfaxes
* Openreportinfos
* Practices
* Questions
* Reports
* Reportlogs
* Reportpricings
* Salespersons
* Specialities
* States
* Templates
* Testimonials
* Things
* Tokens
* Users
* Userlogs

**Total number of entities without encrypted data: 26**

* **Entities with encrypted data:**
* Patients
* Patientreports

**Total number of entities with encrypted data: 02**

**Encrypted fields in entitywise:**

1. **Patients:**

* Basicinformation:
* Firstname
* Middlename
* Lastname
* Gender
* Dateofbirth
* Dateofdeath
* Socialsecurityno
* Employeehandedness
* Medicalrecordno
* Contactinformation:
* Email
* Homephone
* Cellphone
* Workphone
* Extension
* Phonenumberselect
* Phonenumberselectsecond
* Phonenumberselectthird
* Voicemailthirdradio
* Voicemailsecondradio
* Voicemailradio
* Preferredcommunication
* Preferredcommunicationother
* Address
* Addressline1
* Addressline2
* City
* State
* Zipcode
* Demographics
* Preferredlanguage
* Preferredlanguageother
* Ethnicity
* Ethnicityother
* Race
* Raceother
* Occupation
* Currentoccupation
* Currentoccupationother
* Emergencycontactinfo
* Relationship
* Emergencyrelationother
* Firstname
* Lastname
* Email
* Homephone
* Cellphone
* Workphone
* Extension
* Address:
* Addressline1
* Addressline2
* City
* State
* Zipcode
* Injury
* Injurydata
* Injuryinformation
* Injuryinformationdetail
* Dateofinjury
* Dateoflastwork
* Dateofpermanent
* Timeofinjury
* Injuryplace
* Isinjurywitnes
* Other\_isinjurywitnes
* Other\_injuryplace
* Firstaid
* Other\_measure\_text
* Reportedemployer
* Afterworking
* Other\_afterworking
* Additionaldetail
* Evaluated\_prior
* Timeofpriorevaluation
* Dateofpriorevaluation
* Otherwitnes
* ReportedemployOther
* Locationaddressinjury
* Location\_address1
* Location\_address2
* Location\_city
* Location\_state
* Location\_zipcode
* Acceptedbodyparts
* Injuredbodypart
* Bodypart
* Bodypart\_mechanism
* Bodysystem
* OtherBodysystem
* OtherBodyparts
* Bodypartsides
* Otherbodypart\_mechanismshowmodel
* Employer
* Company
* Natureofbusiness
* Othernatureofbusiness
* Emp\_telephone
* Emp\_extension
* Emp\_fax
* Employment
* Jobtitle
* Durationofemployement
* Durationtype
* Employeraddress
* Emp\_address1
* Emp\_address2
* Emp\_city
* Emp\_zipcode
* Emp\_state
* Employercontact
* Employercontact\_firstname
* Employercontact\_lastname
* Employercontact\_telephoneno
* Employercontact\_extension
* Employercontact\_email
* Employercontact\_fax
* Employercontact\_address
* Employercontact\_city
* Employercontact\_state
* Employercontact\_zipcode
* Insurance
* Insurance\_claimsadministrator
* Insurance\_claimsnumber
* Insurancezipcode
* Insurancecity
* Insurancestate
* Insuranceaddressline1
* Insuranceaddressline2
* Claimsadjuster
* Claimsadjuster\_firstname
* Claimsadjuster\_lastname
* Claimsadjuster\_telephoneno
* Claimsadjuster\_extension
* Claimsadjuster\_email
* Claimsadjuster\_fax
* Claimsadjuster\_address
* Claimsadjuster\_city
* Claimsadjuster\_state
* Claimsadjuster\_zipcode
* Claimsadjuster\_company
* Billreview
* Billreview\_firstname
* Billreview\_lastname
* Billreview\_telephoneno
* Billreview\_extension
* Billreview\_email
* Billreview\_fax
* Billreview\_address
* Billreview\_city
* Billreview\_state
* Billreview\_zipcode
* Billreview\_company
* Utilizationreview
* Utilizationreview\_firstname
* Utilizationreview\_lastname
* Utilizationreview\_telephoneno
* Utilizationreview\_extension
* Utilizationreview\_email
* Utilizationreview\_fax
* Utilizationreview\_address
* Utilizationreview\_city
* Utilizationreview\_state
* Utilizationreview\_zipcode
* Utilizationreview\_company
* Applicantattorney
* Applicantattorney\_firstname
* Applicantattorney\_lastname
* Applicantattorney\_telephoneno
* Applicantattorney\_extension
* Applicantattorney\_email
* Applicantattorney\_fax
* Applicantattorney\_address
* Applicantattorney\_city
* Applicantattorney\_state
* Applicantattorney\_zipcode
* Applicantattorney\_company
* Defenseattorney
* Defenseattorney\_firstname
* Defenseattorney\_lastname
* Defenseattorney\_telephoneno
* Defenseattorney\_extension
* Defenseattorney\_email
* Defenseattorney\_fax
* Defenseattorney\_address
* Defenseattorney\_city
* Defenseattorney\_state
* Defenseattorney\_zipcode
* Defenseattorney\_company
* Rncasemanager
* Rncasemanager\_firstname
* Rncasemanager\_lastname
* Rncasemanager\_telephoneno
* Rncasemanager\_extension
* Rncasemanager\_email
* Rncasemanager\_fax
* Rncasemanager\_address
* Rncasemanager\_city
* Rncasemanager\_state
* Rncasemanager\_zipcode
* Rncasemanager\_company
* Provider
* Provider\_firstname
* Provider\_lastname
* Provider\_telephoneno
* Provider\_extension
* Provider\_email
* Provider\_company
* Medicalhistory
* Shgeneralpriorhealthradio
* Shgeneralhealthontritextother
* Shgeneralhealthpriorsurgeryradio
* Shgeneralhealthpriorsurgerytextother
* Shcurrentmedicationradio
* Shcurrentmedicationsothertext
* ShknownallergiesOthercheckTextarea
* Shknownallergiesothertext
* Shpriorillnessradio
* Shgeneralreviewpriorothertext
* Shgeneraleyesothertext
* Shgeneralthroatothertext
* Shgeneralcardiovascularothertext
* Shgeneralrespiratoryothertext
* Shgeneralgastrointestinalothertext
* Shgeneralgenitourinaryothertext
* Shgeneralmusculoskeletalothertext
* Shgeneralskinothertext
* Shgeneralneurologicalothertext
* Shgeneralpsychiatricothertext
* Shgeneralendocrineothertext
* Shgeneralhematologicalothertext
* Shgeneralallergicothertext

1. Patientreports:

* Data <Object>

**STEPS FOR MIGRATION ACTIVITY**

1. Run the migration script on local data first. Once done, run all the test cases against the data and make sure data is migrated properly.

2. Once point #1 is verified, take backup of production application before starting the migration activity.

3. Take dump of the MLAB database (using mongodump utility). This would be done on Azure “CMD” under the Kudu options.

4. Disconnect production application from database so that no data is updated to the database. We would disconnect it until the migration operation completes successfully.

5. Restore the non-encrypted collections (26 out of 28) directly to Atlas from Azure itself using “mongorestore” utility on Azure.

6. Run a NodeJS script on Azure that reads the documents in the encrypted collections one at a time, decrypts it, and pushes to Atlas.

7. Compare the record count in each collection on MLab with that on the new server (Atlas). If the counts match, it means all records have been migrated successfully. Repeat above steps for collections where there is a count mismatch or take appropriate steps.

8. After comparing the record count, we compare the actual data of the source with the destination. We would run a script that compares a data from the source object with that of the destination object, one record at a time. This script returns the result in a text file. After the script has finished execution, we get a list of records where there is a mismatch. Our current runs on the staging database after multiple attempts revealed that the mismatch rate was just around 1%, which is okay even if we manually want to make corrections in those records.

9. After step 8, connect the local instance of the app with the new atlas database and run the test cases against them. If all test cases succeed, it means migration was successful. If a few of them fail, look into them and resolve them.

10. After migration operation is completed connect the production application to the ATLAS database.

11. Upload the new build (which has encryption code removed) to Health Care Blocks (HCB).

12. Take backup of the new production database (unencrypted) and restore it to HCB.

13. Verify that the HCB app is up and running with the new code and database.

**NOTE: The production application would also be updated. The updated code would include code changes where we would remove encryption/decryption logic from the code. The encryption/decryption logic would be removed from the following schemas:**

1. **Patients**
2. **Patientreports**