

Mongo DB Administration & Upgrade

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Contents



- What is Mongo DB
- Mongo DB Administration
 - The Mongo DB Config File
 - Useful tools (Robo 3T & Mongo Compass)
 - Useful MongoDB commands
 - Inbuilt MongoDB Performance monitoring tools
- Backing up your Mongo DB
 - MongoDB Dump Vs Mongo Export
 - The backup Steps
- Upgrading Mongo DB
 - From MMAPV1 to Wired Tiger Storage engine
 - Sage X3 Prerequisites
 - The Upgrade Steps
- Demo a upgrade 4.0 to 4.2
- Q&A

What is mongoDB

- Mongo DB is a “no SQL” or “not only SQL” database. No SQL databases come in a variety of different types based on different data models. The main types being document, key-value, wide-column and graph. Mongo DB is an example of a document orientated database.
- Three Editions of Mongo DB are available
 - **Community** – Most commonly used version with Sage X3 it supports the basic features (engine, tools & replication) and is shipped with Sage Mongo DB Installer
 - **Enterprise** – Is a paid edition the same as the community edition but also has advanced authentication features like LDAP & Kerberos, as well as additional memory & auditing options.
 - **Atlas** - This is the cloud/hosted offering by MongoDB currently not supported by Sage X3
- In MongoDB, data is stored as documents. These documents are stored in MongoDB in JSON (JavaScript Object Notation) format. JSON documents support embedded fields, so related data and lists of data can be stored with the document instead of an external table.
- All or at least most of the Syracuse administration data in Sage X3 is stored and managed in Mongo DB like user preferences including passwords, endpoint definition , batch server preferences and others.

Mongo DB Administration

- **The Mongo DB Config File** (mongodb.conf)

The config file (mongodb.conf) is located in a folder called **config**, in the MongoDB install directory and uses the YAML Format. This is an example from Mongo 4.0 onwards.

```
# for documentation of all options, see:
# http://docs.mongodb.org/manual/reference/configuration-options/

systemLog:
  verbosity: 0
  quiet: false
  traceAllExceptions: false
  path: "D:\\Sage\\MongoDB\\logs\\mongodb.log"
  logAppend: true
  logRotate: rename
  destination: file
  timeStampFormat: iso8601-local

net:
  bindIpAll: true
  port: 27017
  wireObjectCheck: true
  ipv6: false
  ssl:
    mode: requireSSL
    CAFile: "D:\\Sage\\MongoDB\\certs\\ca.cacrt"
    certificateSelector : thumbprint=a826blf043f38e40df9419406ae4e123044e4103

security:
  authorization: disabled
  javascriptEnabled: true

operationProfiling:
  slowOpThresholdMs: 2500

storage:
  dbPath: "D:\\Sage\\MongoDB\\data"
  indexBuildRetry: true
  journal:
    enabled: true
  directoryPerDB: false
```

SystemLog: This section contains the path of the log file and verbosity level as well as the log append settings (you can have a new log file each time the service restarts)

Network: TCP Port settings as well as SSL/TLS options we can also see the path to the CA certificate & thumbprint of the cert

Security: Settings and profiling options (profiler collects data for operations that take longer than 2500ms only)

Storage: Directory where the data is stored , journal settings

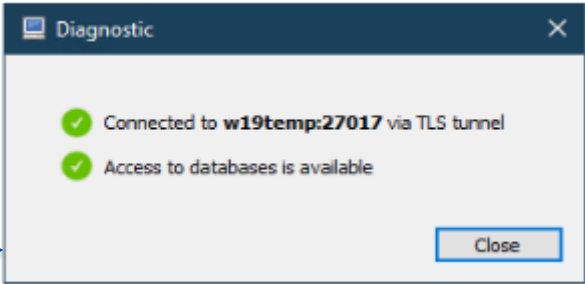
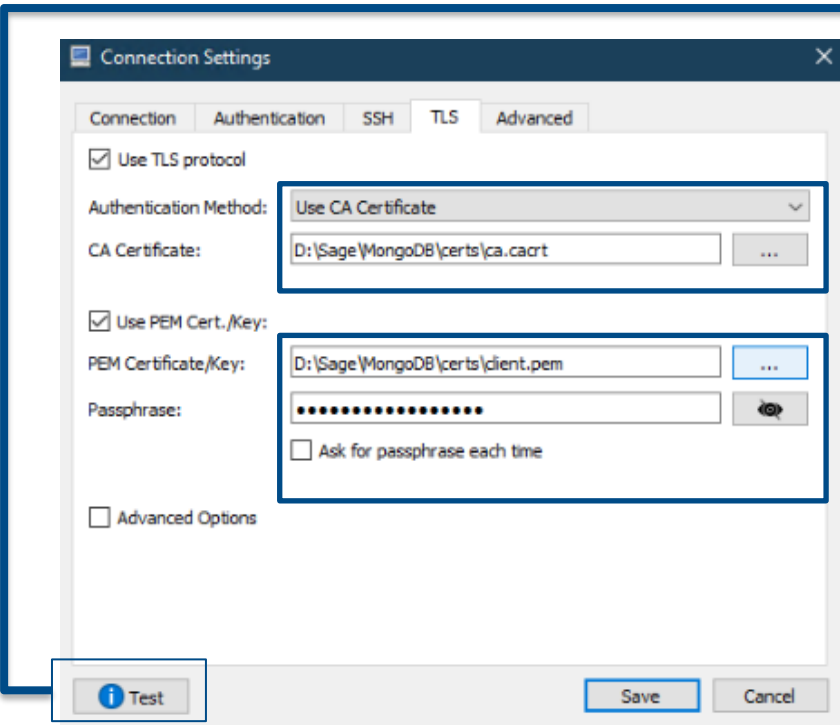
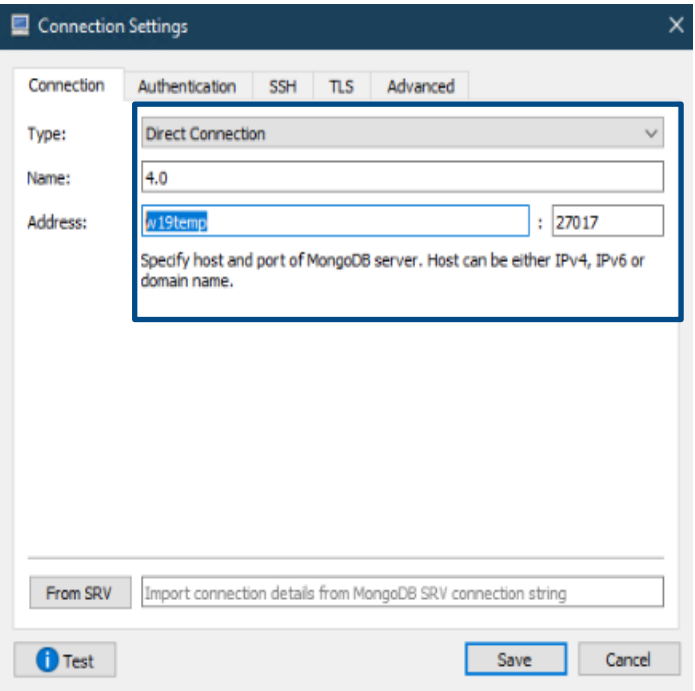
More detailed information about config file setting can be found at <https://docs.mongodb.com/manual/reference/configuration-options>

Useful tools for use with Mongo DB

Robo 3T formally known as Robo Mongo is a free tool available from <https://robomongo.org/download> there is also a paid version Studio 3T available that gives more features like allowing you to use traditional SQL queries it includes a drag and drop query builder and has inbuilt export features and more.

How to connect to a standard install of MongoDB with Sage X3

1. Launch Robo 3T File > Connect and create your connection

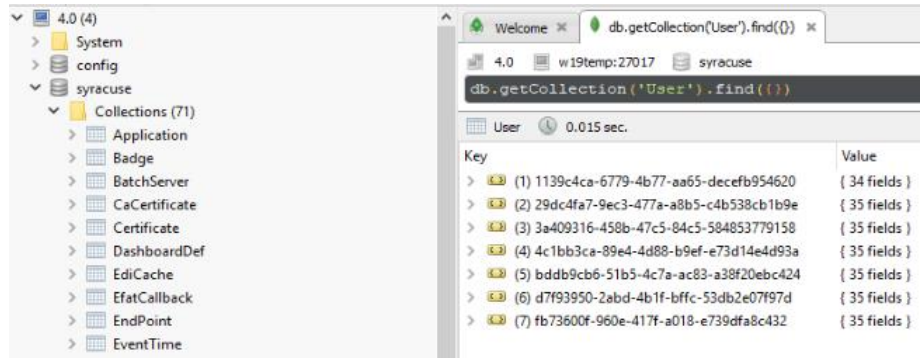


2. Populate the address of the server & the TCP port being used by MongoDB.

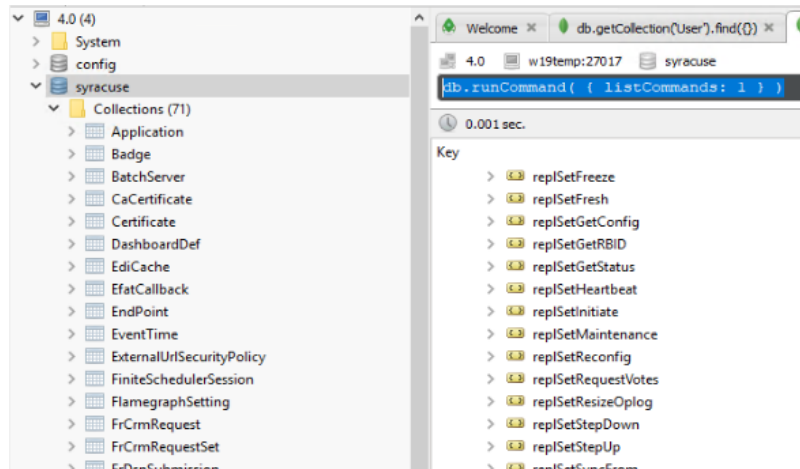
3. On the TLS tab populate the CA cert path together with the PEM certificate and passphrase of the server.

4. Press test to see if your connection was successful

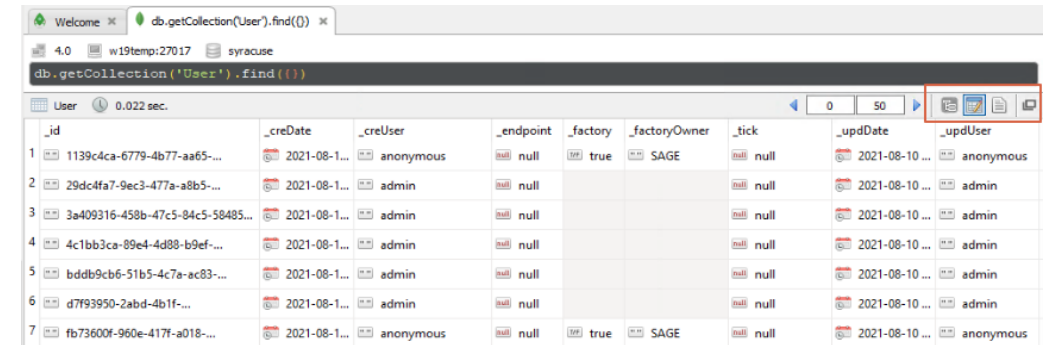
Once connected with Robo 3T



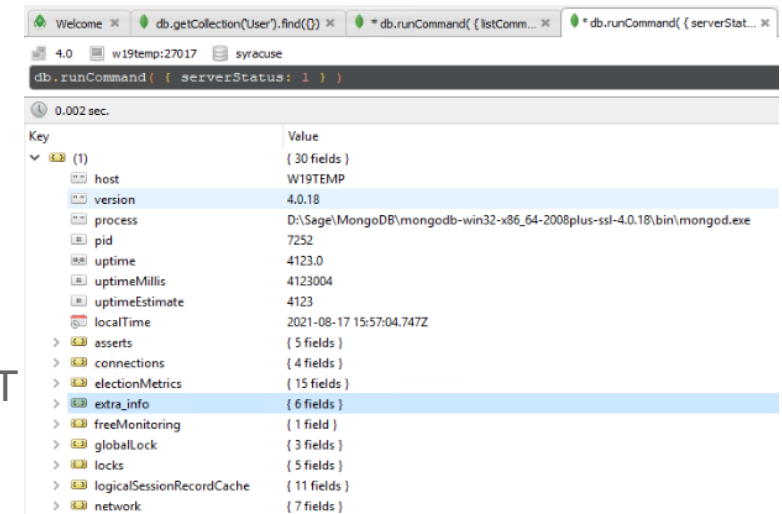
We can view results in different modes tree, text, table



We can see our Syracuse database and all 77 collections (note the collections will vary according to the version. Here we can see the user collection output and you can perform CRUD operations.



We can run Mongo shell commands for example `db.runCommand({ listCommands: 1 })` gives a list of all the commands supported in this instance of Mongo



We can retrieve server information. In the list of commands was `serverStatus`. Executing this gives us the server uptime, engine version etc within the Robo 3T application `db.runCommand({ serverStatus: 1 })`

MongoDB Compass

Is a GUI for MongoDB Instances available from <https://www.mongodb.com/try/download/compass>, it will allow you to query and explore your MongoDB data in a visual environment. You can interact with your data with full CRUD functionality, without having advanced knowledge of the MongoDB query language. Connecting to Mongo DB Compass in essence is the same as Robo 3T you need to provide the authentication type and the certificate information.

Overview of Total DBS & Collections

Overview of the collections, with Robo 3T you would have to query your instance to get this info.

Edition and version info

Local

4 DBS 72 COLLECTIONS

☆ FAVORITE

HOST w19temp:27017

CLUSTER Standalone

EDITION MongoDB 4.0.18 Community

Filter your data

admin

config

local

syracuse

Application

Badge

BatchServer

CaCertificate

Certificate

DashboardDef

EdiCache

EfatCallback

EndPoint

Collections

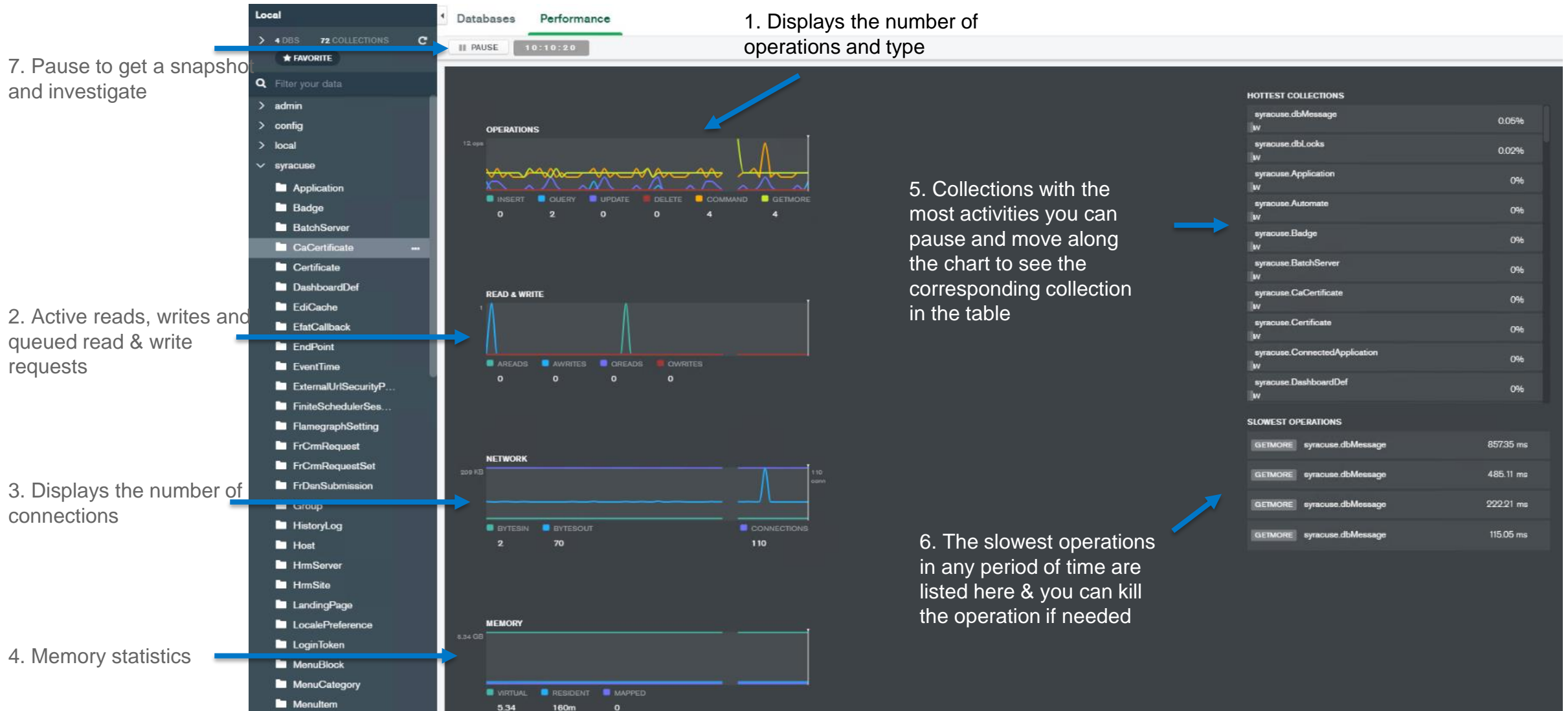
CREATE COLLECTION

Collection Name ^	Documents	Avg. Document Size	Total Document Size	Num. Indexes	Total Index Size
Application	4	567.0 B	2.2 KB	3	48.0 KB
Badge	17	746.3 B	12.4 KB	2	32.0 KB
BatchServer	1	540.0 B	540.0 B	1	16.0 KB
CaCertificate	1	555.0 B	555.0 B	1	16.0 KB
Certificate	1	710.0 B	710.0 B	1	16.0 KB
DashboardDef	8	2.0 KB	15.6 KB	1	16.0 KB
EdiCache	0	-	0.0 B	2	8.0 KB
EfatCallback	0	-	0.0 B	2	8.0 KB
EndPoint	3	716.3 B	2.1 KB	1	16.0 KB

You can drill into the collection data by clicking the name

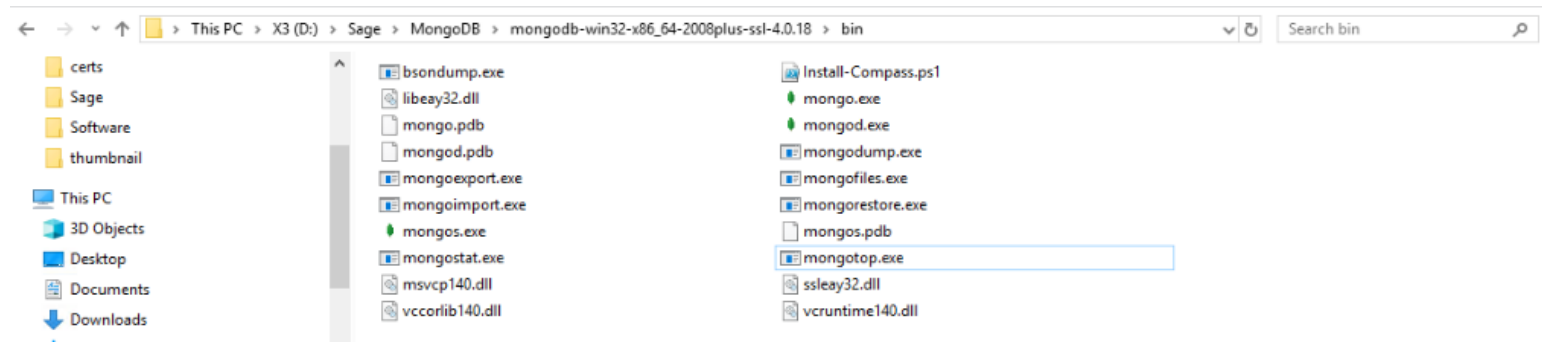
Mongo DB Compass Performance

Mongo DB Compass can also provide you with a graphical real-time overview of your database server



MongoDB Performance Monitoring tools

MongoDB has its own command line performance monitoring tools you can use for monitoring performance or investigating poor MongoDB performance. These are all located in the MongoDB BIN directory.



- **MongoTop** - Allows you to track the amount of time an instance spends reading and writing data, the results are per collection

```
D:\Sage\MongoDB\mongodb-win32-x86_64-2008plus-ssl-4.0.18\bin>mongotop.exe --host w19temp --port 27017 --ssl --sslPEMKeyFile
"D:\Sage\MongoDB\certs\client.pem" --sslPEMKeyPassword " " --sslCAFile "D:\Sage\MongoDB\certs\ca.cacrt"
2021-08-17T17:51:02.417+0100    connected to: w19temp:27017

ns      total  read  write  2021-08-17T17:51:03+01:00
syracuse.dbMessage      1ms    1ms    0ms
admin.system.roles      0ms    0ms    0ms
admin.system.version    0ms    0ms    0ms
config.system.sessions  0ms    0ms    0ms
config.transactions     0ms    0ms    0ms
  local.oplog.rs        0ms    0ms    0ms
  local.startup_log     0ms    0ms    0ms
local.system.replset     0ms    0ms    0ms
syracuse.Application     0ms    0ms    0ms
syracuse.Badge          0ms    0ms    0ms
```

Mongo DB Compass application uses these the MongoTop database tool and gives you a graphical representation

MongoDB Performance Monitoring tools

- MongoStat – Provides an overview of the currently running instance

```
D:\Sage\MongoDB\mongodb-win32-x86_64-2008plus-ssl-4.0.18\bin>mongostat.exe --host w19temp --port 27017 --ssl --sslPEMKeyFile
"D:\Sage\MongoDB\certs\client.pem" --sslPEMKeyPassword " " --sslCAFile "D:\Sage\MongoDB\certs\ca.cacrt"
insert query update delete getmore command dirty used flushes vsize res qrw arw net_in net_out conn time
*0 *0 *0 *0 0 333|0 0.0% 0.0% 0 5.10G 141M 0|0 1|0 26.3k 11.5m 26 Aug 17 17:41:04.859
*0 *0 2 *0 2 4|0 0.0% 0.0% 0 5.10G 141M 0|0 1|0 1.26k 77.2k 26 Aug 17 17:41:05.761
*0 *0 1 *0 4 2|0 0.0% 0.0% 0 5.10G 141M 0|0 1|0 1.04k 69.5k 26 Aug 17 17:41:06.759
*0 *0 *0 *0 3 1|0 0.0% 0.0% 0 5.10G 141M 0|0 1|0 709b 69.3k 26 Aug 17 17:41:07.759
*0 *0 *0 *0 3 1|0 0.0% 0.0% 0 5.10G 141M 0|0 1|0 1.04k 69.2k 26 Aug 17 17:41:08.762
*0 *0 *0 *0 4 2|0 0.0% 0.0% 0 5.10G 141M 0|0 1|0 711b 69.4k 26 Aug 17 17:41:09.760
*0 *0 *0 *0 4 2|0 0.0% 0.0% 0 5.10G 141M 0|0 1|0 711b 69.4k 26 Aug 17 17:41:10.758
*0 1 *0 *0 3 1|0 0.0% 0.0% 0 5.10G 141M 0|0 1|0 1.02k 69.7k 26 Aug 17 17:41:11.760
*0 *0 *0 *0 3 1|0 0.0% 0.0% 0 5.10G 141M 0|0 1|0 709b 69.3k 26 Aug 17 17:41:12.760
*0 *0 *0 *0 4 2|0 0.0% 0.0% 0 5.10G 141M 0|0 1|0 711b 69.4k 26 Aug 17 17:41:13.758
```

The Investigation scripts can be used to output these results to file and schedule as appropriate for your investigations

Example Syntax

```
mongotop.exe --host w19temp --port 27017 --ssl --sslPEMKeyFile "D:\Sage\MongoDB\certs\client.pem" --
sslCAFile "D:\Sage\MongoDB\certs\ca.cacrt"
```

```
mongostat.exe --host w19temp --port 27017 --ssl --sslPEMKeyFile "D:\Sage\MongoDB\certs\client.pem" -
-sslCAFile "D:\Sage\MongoDB\certs\ca.cacrt"
```

More detailed information about MongoDB database tools can be found at <https://docs.mongodb.com/database-tools/>

Useful Mongo Commands & Queries

Check our Mongo DB Compatibility level

```
db.adminCommand( { getParameter: 1, featureCompatibilityVersion: 1 } )
```

- You can check your database compatibility level some features in version 4.0 may not be compatible with a compatibility level of 3.0

Check the storage engine used by your instance

```
db.serverStatus().storageEngine
```

- Check your storage engine version MMAP is depreciated in 4.2

Rotate your MongoDB Log File

```
db.adminCommand( { logRotate : 1 } )
```

- Enables you to rotate your MongoDB log without having to restart Mongo

Lists all the available commands in current version

```
db.runCommand( { listCommands: 1 } )
```

- Useful if you want to check if a particular command is supported in your currant version

Lists the server information

```
db.runCommand( { serverStatus: 1 } )
```

- Like uptime , connections , network info , version info , security status and more

You can find more detailed information about MongoDB Commands from <https://docs.mongodb.com/manual/reference/command/>

We can also query Mongo DB documents some basics to get you started (all methods are case sensitive)

This is the equivalent of select * from user table in SQL

```
db.getCollection('User').find({})
```

Select * from user table where login like admin in SQL

```
db.getCollection('User').find({'login':'admin'})
```

Select * from user where _factoryowner like SAGE

```
db.getCollection('User').find({'_factoryOwner':'SAGE'})
```

Backing up your MongoDB Instance

There are two tools available to backup your Mongo DB databases MongoDB & MongoExport.

- MongoDB – Creates a Binary export of the database contents, data in BSON format
- MongoExport – Produces JSON or CSV Export of data stored in your instance

For backup purposes we should avoid using the MongoExport and MongoImport Method. MongoExport does not reliably preserve all rich BSON data types, because JSON can only represent a subset of the types supported by BSON

Backup Steps

- Stop Sage X3 Agent Syracuse Server Service and make sure all node.exe processes have stopped
- Extract database using MongoDBump you can use the investigation scripts
- Alternatively, you can use the command line, execute

```
mongodump.exe --host w19temp --port 27017 --ssl --sslPEMKeyFile  
"D:\Sage\MongoDB\certs\client.pem" --sslCAFile "D:\Sage\MongoDB\certs\ca.cacrt" --db  
syracuse --out C:\MongoDump
```

Upgrading Mongo DB

From V4.2 MongoDB uses the WiredTiger storage engine and MMAPv1 engine is deprecated . This means if your existing Mongo DB instance is using MMAPV1 then you will need to convert this data to the new format by exporting & importing your database, to an instance that already uses the WiredTiger format. The data is converted on import.

You can find out more information on this method of upgrading to the WiredTiger engine from the KB article additional notes when upgrading to MongoDB 3.6 from 3.4.

Mongo DB Prerequisites can be found on Sage City in the Sage X3 latest patches pages for V11 & V12

<https://www.sagecity.com/gb/sage-x3-uk/f/sage-x3-uk-announcements-news-and-alerts/147993/sage-x3-latest-patches>

Upgrading from 3.4 to 3.6 Follow KB article 103072

<https://support.na.sage.com/selfservice/viewdocument.do?noCount=true&externalId=103072>

Upgrading from 4.0 to 4.2 Follow KB article 107620

<https://support.na.sage.com/selfservice/viewdocument.do?noCount=true&externalId=107620>

Keep in Mind

- To upgrade from a version earlier than the 3.6-series, you must successively upgrade major releases until you reach the required version
example path 3.4.16 -> 3.6.18 -> 4.0 -> 4.2
- To upgrade an existing MongoDB deployment to 4.0, you must be running a 3.6-series release.
- Check your storage engine before upgrading to 4.2 where MMAPv1 is deprecated
- You must know the server passphrase as the installer does not validate this when upgrading

Upgrading MongoDB the steps 4.0 to 4.2

1. Stop Sage X3 Agent Syracuse Server Service using Services.msc
2. Using Windows Task manager make sure all node.exe processes have stopped
3. Backup database using Mongo dump tool
4. Check the out directory specified to confirm that you have extracted JSON & BSON files for each collection these will be created in a folder named Syracuse (the MongoDB name (Syracuse) in the case of Sage X3
5. Take backup of the Mongo config file
6. Check the Storage Engine used by your instance and convert if necessary, using `db.serverStatus().storageEngine`
7. If not WiredTiger already follow this article to convert (<https://support.na.sage.com/selfservice/viewdocument.do?noCount=true&externalId=103072>)
8. Check your feature compatibility version The 4.0 instance must have featureCompatibilityVersion set to 4.0. To check `db.adminCommand({ getParameter: 1, featureCompatibilityVersion: 1 })` when upgrading from 4.0 to 4.2, the 4.0 instance must have "featureCompatibilityVersion" set to 4.0.
9. Update Mongo DB to 4.2, Execute the installer mongo-db-4.2.12.10.jar follow the same steps as the original install
10. Make sure to enter the correct passphrase when prompted.
11. Once the upgrade is complete start the Agent Syracuse service and perform your tests.

DEMO Upgrade of 4.0 to 4.2

Useful Links

Mongo DB Links

[Mongo DB configuration file options](#)

[Rotate Log Files](#)

[Mongo Top](#)

[Mongo Compass](#)

[MongoDB database tool documentation](#)

[Upgrade a Standalone to 4.2 \(feature compatibility\)](#)

Help Links

[How to upgrade to MongoDB 4.2](#)

[How to upgrade to MongoDB 3.4.16.22](#)

[Strategies for transferring MongoDB data between environments](#)

Sage City Links

[Blog : A Basic Backup and Restore of MongoDB](#)

[Blog: How to find stuff in MongoDB](#)

[Blog: A Guide for Upgrading MongoDB to 4.2 for Sage X3](#)

Sage knowledgebase links

[How to duplicate or clone a Syracuse environment from a server to another server](#)

[Error: "Checking MongoDB connection parameters failed !"](#)

[Additional notes when upgrading to MongoDB 3.6](#)

[Additional notes when upgrading to MongoDB 4.x](#)

[MongoDB Service will not Start after Upgrade to 3.6.14](#)

Make sure to search the Sage City & the Sage Knowledgebase for more useful links and all the latest articles

Thank you Q&A

