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- 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.

<pre># for documentation of all options, see:</pre>	
# http://docs.mongodb.org/manual/reference/conf	iguration-options/
<pre>systemLog: verbosity: 0 quiet: false traceAllExceptions: false path: "D:\\Sage\\MongoDB\\logs\\mongodb.log" logAppend: true logRotate: rename destination: file timeStampFormat: iso8601-local</pre>	
<pre>net: bindIpAll: true port: 27017 wireObjectCheck: true ipv6: false ssl: mode: requireSSL CAFile: "D:\\Sage\\MongoDB\\certs\\ca.cac certificateSelector : thumbprint=a826b160</pre>	rt" 43f38e40df9419406ae4e123044e4103
security: authorization: disabled javascriptEnabled: true operationProfiling: slowOpThresholdMs: 2500	
storage: dbPath: "D:\\Sage\\MongoDB\\data" indexBuildRetry: true journal: enabled: true directoryPerDB: false	More detailed information a

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 <u>https://robomongo.org/download</u> 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



Connection	n Settings X	Connection Settings	~	
Connection	Authentication SSH TLS Advanced	Connection Authentication SSH TLS Advan	nced	
Type:	Direct Connection V	Use TLS protocol		
Name:	4.0	Authentication Method: Use CA Certificate	~	2. Populate the address of the server 8
Address:	w19temp : 27017	CA Certificate: D:\Sage\MongoDB\certs\ca.cac	t	the TCP port being used by MongoDB.
	Specify host and port of MongoDB server. Host can be either IPv4, IPv6 or domain name.	Use PEM Cert./Kev:		
		PEM Certificate/Key: D:\Sage\MongoDB\certs\client.p	em	3. On the TLS tab populate the CA cert
		Passphrase:	Ś	path together with the PEM certificate
		Ask for passphrase each time		and passphrase of the server.
		Advanced Options		
				4. Press test to see if your connection
From SRV	Import connection details from MongoDB SRV connection string			was successful
1 Test	Save Cancel	1 Test	Save Cancel	

Once connected with Robo 3T

4.0 (4)

System

> 📄 config

Collections (71)

> > Application > Badge

> BatchServer

> CaCertificate

> DashboardDef

> Certificate

> EdiCache

> EndPoint

> EventTime

> ExternalUrlSecurityPolicy > FiniteSchedulerSession

> FlamegraphSetting

> FrCrmRequest

S ErDenSubmitte

> FrCrmRequestSet

> EfatCallback

 ✓ ■ 4.0 (4) > ■ System > ■ config ✓ ■ syracuse 	 ▲ Welcome × ◆ db.getCollection(User).find(()) × ▲ 4.0 ■ wi9temp:27017 sigma syracuse db.getCollection('User').find(()) 	
 Collections (71) Application 	🛄 User 🕓 0.015 sec.	
> Badge	Key	Value
> BatchServer	> 🚨 (1) 1139c4ca-6779-4b77-aa65-decefb954620	{ 34 fields }
> CaCertificate	> 🖸 (2) 29dc4fa7-9ec3-477a-a8b5-c4b538cb1b9e	{ 35 fields }
> Certificate	> 💴 (3) 3a409316-458b-47c5-84c5-584853779158	(35 fields)
> DashboardDef	> 🖸 (4) 4c1bb3ca-89e4-4d88-b9ef-e73d14e4d93a	{ 35 fields }
> EdiCache	> (5) bddb9cb6-51b5-4c7a-ac83-a38f20ebc424	{ 35 fields }
> EfatCallback	> (6) d7f93950-2abd-4b1f-bffc-53db2e07f97d	{ 35 fields }
> EndPoint	> (7) fb73600f-960e-417f-a018-e739dfa8c432	{ 35 fields }
> EventTime		

() 0.001 sec.

Key

> 🖾 replSetFreeze

> 💷 replSetFresh

> Image: SetGetConfig

> I replSetGetRBID

> Image: Second Status

> 💷 replSetHeartbeat

> replSetMaintenance > 💷 replSetReconfig

> replSetRequestVotes

> III replSetResizeOplog

> 💷 replSetStepDown

> 💶 replSetStepUp

> C replSetSupcEropp

db.runCommand({ listCommands: 1

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.

	(1) 1139c4ca-6779-4b77-aa65-decefb954620	(34 fields)	A Welcome M A antiColection()	and find(D) v							
	> (2) 29dc4fa7-9ec3-477a-a8b5-c4b538cb1b9e	{ 35 fields }	4.0 w19temp:27017 syra	ser).ind(()) ×							
	 (3) 3a409316-4586-47c5-84c5-584853779158 (4) 4r1bb3ra-89e4-4488-b9ef-e73d14e4d93a 	(35 fields) / 35 fields)	db.getCollection('User').f	ind({})						ļ.,	
	 (a) 4c10b3c4 05c4 4660 55c1 c13614c4556 (b) 6d6b9cb6-51b5-4c7a-ac83-a38f20ebc424 	{ 35 fields }	🔲 User 🕕 0.022 sec.						4	0 50 🕨	6 🔽 🗎 🗖
	> (6) d7f93950-2abd-4b1f-bffc-53db2e07f97d	{ 35 fields }	_id	_creDate	_creUser	_endpoint	_factory	_factoryOwner	_tick	_updDate	_updUser
	> 🔕 (7) fb73600f-960e-417f-a018-e739dfa8c432	{ 35 fields }	1 📰 1139c4ca-6779-4b77-aa65	觉 2021-08-1	anonymous	null	11 true	SAGE	mull	觉 2021-08-10	anonymous
			2 🔤 29dc4fa7-9ec3-477a-a8b5	2021-08-1	💷 admin	null			null	👼 2021-08-10	📟 admin
	w requite in different r	madaa traa taxt tabla	3 📰 3a409316-458b-47c5-84c5-58485.	😇 2021-08-1	💷 admin	💷 null			💷 null	宽 2021-08-10	💷 admin
we can view	v results in different r	nodes tree, text, table	4 📰 4c1bb3ca-89e4-4d88-b9ef	2021-08-1	💷 admin	💷 null			🖮 null	👼 2021-08-10	💷 admin
			5 😁 bddb9cb6-51b5-4c7a-ac83	2021-08-1	💷 admin	📖 null			mil null	👼 2021-08-10	🚥 admin
	Welcome × Ø db.getCollection(User').find({}) × Ø		6 📰 d7f93950-2abd-4b1f	2021-08-1	📰 admin	null			null	👼 2021-08-10	💷 admin
	🛃 4.0 📃 w19temp:27017 📄 syracuse		7 m fb73600f-960e-417f-a018	觉 2021-08-1	anonymous	iul null	me true	SAGE	null	👼 2021-08-10	···· anonymous

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 })

Welcome × Ø db.getCollection(Use	r).find({}) × 🕴 * db.runCommand({ listComm × 🚺 * db.runCommand({ serverStat ×
🛃 4.0 📃 w19temp:27017 📄 syraci	JSE
db.runCommand({ serverStat	us: 1 })
① 0.002 sec.	
Key	Value
✓ €3 (1)	{ 30 fields }
m host	W19TEMP
· version	4.0.18
== process	D:\Sage\MongoDB\mongodb-win32-x86_64-2008plus-ssl-4.0.18\bin\mongod.exe
III pid	7252
uptime	4123.0
uptimeMillis	4123004
uptimeEstimate	4123
🗊 localTime	2021-08-17 15:57:04.747Z
> 💶 asserts	{ 5 fields }
> 😂 connections	{ 4 fields }
> 🖾 electionMetrics	{ 15 fields }
> 💷 extra_info	{ 6 fields }
> 🖾 freeMonitoring	{ 1 field }
> 💶 globalLock	{ 3 fields }
> 🖾 locks	{ 5 fields }
IogicalSessionRecordCache	{ 11 fields }
> 💷 network	{ 7 fields }

MongoDB Compass

Is a GUI for MongoDB Instances available from <u>https://www.mongodb.com/try/download/compass</u>, 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 T Collections	otal DBS &				Overview with Robo to query y this info.	of the collections, 3T you would have our instance to get
	✓ 4 DBS 72 COLLECTIONS C ☆ FAVORITE	CREATE COLLECTION					
	HOST	Collection Name [▲]	Documents	Avg. Document Size	Total Document Size	Num. Indexes	Total Index Size
Edition and	CLUSTER Standalone	Application	4	567.0 B	2.2 KB	3	48.0 KB
version info	EDITION MongoDB 4.0.18 Community	Badge	17	746.3 B	12.4 KB	2	32.0 KB
	Q Filter your data> admin	BatchServer	1	540.0 B	540.0 B	1	16.0 KB
	> config > local	CaCertificate	1	555.0 B	555.0 B	1	16.0 KB
	✓ syracuse ⊕	Certificate	1	710.0 B	710.0 B	1	16.0 KB
	Badge	DashboardDef	8	2.0 KB	15.6 KB	1	16.0 KB
	CaCertificate	EdiCache	0	-	0.0 B	2	8.0 KB
	 DashboardDef EdiCache 	EfatCallback	0	_	0.0 B	2	8.0 KB
	EfatCallback	EndPoint	3	718.3 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.

$\leftarrow \rightarrow \neg \uparrow $ his PC \rightarrow X3 (D:)	> Sa	ge > MongoDB > mongodb-win32-x86_64-2008plus-ssl-	4.0.18 > bin	νõ	Search bin	,o
certs	^	📧 bsondump.exe	👜 Install-Compass.ps1			
Sage		🚳 libeay32.dll	mongo.exe			
Software		📄 mongo.pdb	mongod.exe			
thumbnail		i mongod.pdb	📧 mongodump.exe			
_		📧 mongoexport.exe	🐨 mongofiles.exe			
This PC		📧 mongoimport.exe	i mongorestore.exe			
3D Objects		mongos.exe	mongos.pdb			
E. Desktop		📧 mongostat.exe	F mongotop.exe			
Documents		🚳 msvcp140.dll	🚳 ssleay32.dll			
Downloads		🗟 vccorlib140.dll	🗟 vcruntime140.dll			

 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.exehost w19tempport 27017sslsslPEMKeyFile "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	Øms				
admin.system.roles	Oms	0ms	Oms				
admin.system.version	Øms	Øms	Oms				
config.system.sessions	Oms	Oms	Oms				
config.transactions	Øms	Øms	Øms				
local.oplog.rs	Øms	0ms	Øms				
local.startup_log	Øms	Oms	Øms				
local.system.replset	Oms	Oms	Oms				
syracuse.Application	Øms	Oms	Øms				
syracuse.Badge	Øms	Øms	Øms				

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:\Sag	e\Mong	oDB\mon	godb-wi	n32-x86	64-2008p	lus-ss	1-4.0	.18\bin>	mongos	tat.e	xe -	-hos	t w19ter	p por	t 270	17 55	1sslPEM	KeyFile
"D:\Sa	ge\Mon	goD8\ce	rts\cli	ent.pem"	sslPE	MKeyPa	sswor	d " "	SSICAF	ile "	D:\S	age	MongoDB	\certs\c	a.caci	rt"		-
insert	query	update	delete	getmore	command	dirty	used	flushes	vsize	res	grw	arw	net_in	net_out	conn			time
*0	*0	*0	*0	0	333 0	0.0%	0.0%	0	5.10G	141M	0 0	10	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	00	10	1.26k	77.2k	26	Aug 17	17:41:05	.761
*0	*0	1	*0	4	2 0	0.0%	0.0%	e	5.10G	141M	00	10	1.04k	69.5k	26	Aug 17	17:41:06	.759
*0	*0	*0	*0	3	10	0.0%	0.0%	6	5.10G	141M	0 0	10	709b	69.3k	26	Aug 17	17:41:07	759
*0	*0	*0	*0	3	10	0.0%	0.0%	0	5.10G	141M	0 0	10	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	00	10	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	00	10	711b	69.4k	26	Aug 17	17:41:10	758
*0	1	*0	*0	3	10	0.0%	0.0%	0	5.10G	141M	0 0	10	1.02k	69.7k	26	Aug 17	17:41:11.	760
*0	*0	*0	*0	3	10	0.0%	0.0%	0	5.10G	141M	00	10	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	00	10	711b	69.4k	26	Aug 17	17:41:13	758
								the second se										

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 <u>https://docs.mongodb.com/database-tools/</u>

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

• Check your storage engine version MMAP is depreciated in 4.2

Rotate your MongoDB Log File

db.adminCommand({ logRotate : 1 })

db.serverStatus().storageEngine

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

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'})

You can find more detailed

Commands from

eference/command/

information about MongoDB

https://docs.mongodb.com/manual/r

Backing up your MongoDB Instance

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

- MongoDump 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 MongoDump 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
- If not WiredTiger already follow this article to convert (<u>https://support.na.sage.com/selfservice/viewdocument.do?noCount=true&externalId=103072</u>)
- 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	Sage knowledgebase links
Mongo DB configuration file options	How to duplicate or clone a Syracuse environment from a server to another server
Rotate Log Files	Error: "Checking MongoDB connection parameters failed !"
Mongo Top	Additional notes when upgrading to MongoDB 3.6
Mongo Compass	Additional notes when upgrading to MongoDB 4.x
MongoDB database tool documentation	MongoDB Service will not Start after Upgrade to 3.6.14
Upgrade a Standalone to 4.2 (feature compatibility)	
Help Links	Make sure to search the Sage City & the Sage Knowledgebase for more useful links and all the latest articles
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	

Thank you Q&A



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