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Replication

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To create a replica set for one of the data centers(Netherlands), with 3 nodes.

1. For each node, launch a MongoDB instance:

On each node, launch the MongoDB server using the correct configuration files and ports. For instance:

mongod --replSet nlRepSet --port 27017 --dbpath /data/db1

mongod --replSet nlRepSet --port 27018 --dbpath /data/db2

mongod --replSet nlRepSet --port 27019 --dbpath /data/db3

2. Open a connection to a MongoDB instance:

Open new terminal, then use the MongoDB shell to connect to one of the MongoDB instances:

mongo --port 27017

3. Set up the replica collection:

Start the replica set inside the MongoDB shell.

rs.initiate()

4. The replica set should now include the remaining nodes:

Add the additional nodes to the replica set.

rs.add("localhost:27018")

rs.add("localhost:27019")

5. Dataset import into the main node:

The Nobel Prize dataset can be imported into the primary node of the replica set using the 'mongoimport' command.

mongoimport --jsonArray --db nobeldb --collection nobels --drop --file ~/downloads/nobel_prices.json --port 27017

explain how this replica set behaves in terms of automated failover and how to increase the size of each oplog to 25GB.

It is necessary to change the configuration file (mongod.conf) for each node if you want to increase the size of each oplog in the replica set to 25GB. Each configuration file should have the following line added under the replication section: oplogSize: 25000. After that, restart every MongoDB instance for the modifications to take effect.

How to verify and reconfigure the write operation so that it is completed on a majority of the voting members before returning?

Use the w option in write operations to confirm and adjust the write operation to guarantee it finishes on a majority of the voting members before returning. To guarantee that a write operation is acknowledged by the majority of the replica set members before returning, set the w value to the desired majority value (for example, majority or a specified number).

To generate replica sets with the appropriate nodes for the remaining data centers (France, Hungary, and the United Kingdom), we can use a similar process. Just change the port numbers and replica set name appropriately.

To create a replica set for one of the data centers(France), with 3 nodes.

1. For each node, launch a MongoDB instance:

On each node, launch the MongoDB server using the correct configuration files and ports. For instance:

mongod --replSet frRepSet --port 20017 --dbpath /data/db01

mongod --replSet frRepSet --port 20018 --dbpath /data/db02

mongod --replSet frRepSet --port 20019 --dbpath /data/db03

2. Open a connection to a MongoDB instance:

Open new terminal, then use the MongoDB shell to connect to one of the MongoDB instances:

mongo --port 20017

3. Set up the replica collection:

Start the replica set inside the MongoDB shell.

rs.initiate()

4. The replica set should now include the remaining nodes:

Add the additional nodes to the replica set.

rs.add("localhost:20018")

rs.add("localhost:20019")

5. Dataset import into the main node:

The Nobel Prize dataset can be imported into the primary node of the replica set using the 'mongoimport' command.

mongoimport --jsonArray --db nobeldb --collection nobels --drop --file ~/downloads/nobel_prices.json --port 20017

To verify the replica set status, run the rs.status() command in the MongoDB shell connected to the main node.

To create a replica set for one of the data centers(Uk), with 3 nodes.

1. For each node, launch a MongoDB instance:

On each node, launch the MongoDB server using the correct configuration files and ports. For instance:

mongod --replSet ukRepSet --port 29017 --dbpath /data/db10

mongod --replSet ukRepSet --port 29018 --dbpath /data/db20

mongod --replSet ukRepSet --port 29019 --dbpath /data/db30

2. Open a connection to a MongoDB instance:

Open new terminal, then use the MongoDB shell to connect to one of the MongoDB instances:

mongo --port 29017

3. Set up the replica collection:

Start the replica set inside the MongoDB shell.

rs.initiate()

4. The replica set should now include the remaining nodes:

Add the additional nodes to the replica set.

rs.add("localhost:29018")

rs.add("localhost:29019")

5. Dataset import into the main node:

The Nobel Prize dataset can be imported into the primary node of the replica set using the 'mongoimport' command.

mongoimport --jsonArray --db nobeldb --collection nobels --drop --file ~/downloads/nobel_prices.json --port 29017

To verify the replica set status, run the rs.status() command in the MongoDB shell connected to the main node.

To create a replica set for data centers(Hungary), with 3 nodes.

1. For each node, launch a MongoDB instance:

On each node, launch the MongoDB server using the correct configuration files and ports. For instance:

mongod --replSet huRepSet --port 21017 --dbpath /data/db11

mongod --replSet huRepSet --port 21018 --dbpath /data/db12

mongod --replSet huRepSet --port 21019 --dbpath /data/db13

2. Open a connection to a MongoDB instance:

Open new terminal, then use the MongoDB shell to connect to one of the MongoDB instances:

mongo --port 21017

3. Set up the replica collection:

Start the replica set inside the MongoDB shell.

rs.initiate()

4. The replica set should now include the remaining nodes:

Add the additional nodes to the replica set.

rs.add("localhost:21018")

rs.add("localhost:21019")

5. Dataset import into the main node:

The Nobel Prize dataset can be imported into the primary node of the replica set using the 'mongoimport' command.

mongoimport --jsonArray --db nobeldb --collection nobels --drop --file ~/downloads/nobel_prices.json --port 21017

To verify the replica set status, run the rs.status() command in the MongoDB shell connected to the main node.

1. Completely stop the replica set's MongoDB instances:

- To terminate the MongoDB server process, connect to each node in the replica set.
  1. Launch the Command Prompt window.
  2. Use the suitable remote access technique to establish connections to each node in the replica set.
  3. To halt the MongoDB server process, issue the following command:
     net stop MongoDB
  4. Each node in the replica set needs to perform this step again.

2. delete data directories:

- Find the node's data directories (/data/db) for the replica set.
- Remove all the data from each node's data directory. Since the data is permanently deleted at this stage, be caution.

3. Config the replica set to be removed:

- The MongoDB shell allows you to connect to any MongoDB instance.
- Switch to admin database:
  use admin
- The 'rs.remove()' command should be used for each member to remove the replica set configuration:
  rs.remove("<lasif:port>") port(27017,20017,etc)

4. Eliminate any remaining MongoDB configuration files:

- Any remaining replica set-specific MongoDB configuration files should be deleted. These files may be found in the /etc or /var directories, as well as the MongoDB installation directory.

The replica set setup and associated data will be fully deleted by carrying out these steps.