MongoDB Replica Set Setup

Prerequisites:

github url - https://github.com/srahul0502/MongoDB-Replica-Set-Setup

Hashnode url - https://srdev.hashnode.dev/mongodb-replica-set-setup

Before running this script, ensure you have the following prerequisites met:

1. **Linux Environment:** This script is designed for a Linux-based operating system. It's been tested on Ubuntu but should work on other Debian-based distributions.
2. **Root or Sudo Access:** You need root or sudo privileges to execute the installation and configuration steps.
3. **Internet Connection:** Make sure your server has access to the internet to download required packages and MongoDB.

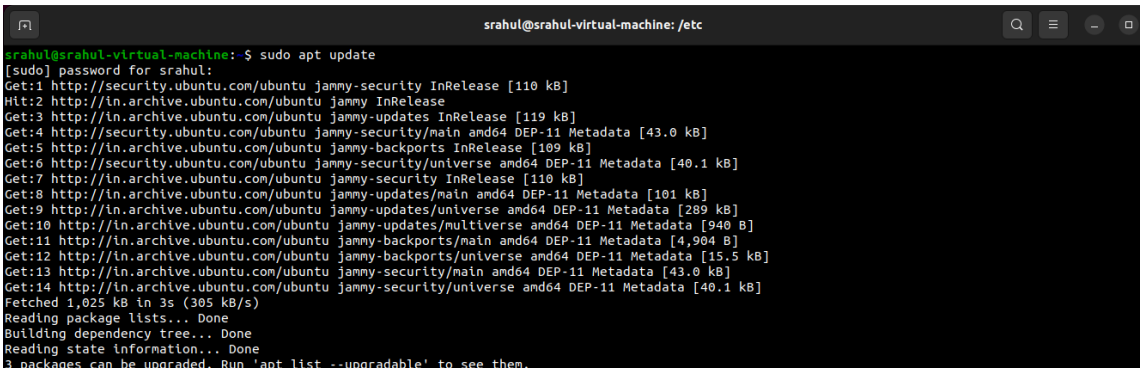
Script Explanation:

Now, let's break down the script into clear steps:

Step 1: Update System Packages

```
sudo apt update
```

- **Purpose**: Update the list of available software packages on your system.



Step 2: Install Required Packages

```
sudo apt-get install -y gnupg curl
```

- **Purpose**: Install necessary packages `gnupg` and `curl` for handling MongoDB setup.

Step 3: Add MongoDB GPG Key

```
curl -fsSL https://www.mongodb.org/static/pgp/server-5.0.asc | sudo gpg --dearmor -o /usr/share/keyrings/mongodb-archive-keyring.gpg
```

- **Purpose**: Download MongoDB's GPG key and store it in a secure location.

Step 4: Add MongoDB Repository

```
echo "deb [signed-by=/usr/share/keyrings/mongodb-archive-keyring.gpg] https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0 multiverse" | sudo tee /etc/apt/sources.list.d/mongodb-org-5.0.list
```

- **Purpose**: Add the MongoDB repository to your list of trusted software sources.

Step 5: Update System Packages Again

```
sudo apt-get update
```

- **Purpose**: Update the package list with the MongoDB repository included.

Step 6: Install libssl1.1 Package (Dependency for MongoDB)

```
wget http://archive.ubuntu.com/ubuntu/pool/main/o/openssl/libssl1.1_1.1.1f-1ubuntu2_amd64.deb
sudo dpkg -i libssl1.1_1.1.1f-1ubuntu2_amd64.deb
```

- **Purpose**: Download and install `libssl1.1`, a library MongoDB depends on.

```
srahul@srahul-virtual-machine:~$ wget http://archive.ubuntu.com/ubuntu/pool/main/o/openssl/libssl1.1_1.1.1f-1ubuntu2_amd64.deb
--2023-09-01 18:32:14--  http://archive.ubuntu.com/ubuntu/pool/main/o/openssl/libssl1.1_1.1.1f-1ubuntu2_amd64.deb
Resolving archive.ubuntu.com (archive.ubuntu.com)... 185.125.190.39, 185.125.190.36, 91.189.91.83, ...
Connecting to archive.ubuntu.com (archive.ubuntu.com)|185.125.190.39|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1318204 (1.3M) [application/x-debian-package]
Saving to: 'libssl1.1_1.1.1f-1ubuntu2_amd64.deb'

libssl1.1_1.1.1f-1u 100%[===================>]   1.26M   987KB/s    in 1.3s

2023-09-01 18:32:16 (987 KB/s) - 'libssl1.1_1.1.1f-1ubuntu2_amd64.deb' saved [1318204/1318204]

srahul@srahul-virtual-machine:~$ sudo dpkg -i libssl1.1_1.1.1f-1ubuntu2_amd64.deb
Selecting previously unselected package libssl1.1:amd64.
(Reading database ... 202170 files and directories currently installed.)
Preparing to unpack libssl1.1_1.1.1f-1ubuntu2_amd64.deb ...
Unpacking libssl1.1:amd64 (1.1.1f-1ubuntu2) ...
Setting up libssl1.1:amd64 (1.1.1f-1ubuntu2) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
```

Step 7: Install MongoDB and Configure

```
sudo apt-get install -y mongodb-org
sudo systemctl start mongod
sudo systemctl daemon-reload
sudo systemctl enable mongod
```

- **Purpose**: Install MongoDB, start its service, reload the configuration, and enable it to start automatically.

```
srahul@srahul-virtual-machine:~$ sudo systemctl start mongod
srahul@srahul-virtual-machine:~$ sudo systemctl daemon-reload
srahul@srahul-virtual-machine:~$ sudo systemctl status mongod
● mongod.service - MongoDB Database Server
     Loaded: loaded (/lib/systemd/system/mongod.service; disabled; vendor prese>
     Active: active (running) since Fri 2023-09-01 18:41:29 IST; 21s ago
       Docs: https://docs.mongodb.org/manual
   Main PID: 4605 (mongod)
     Memory: 65.8M
        CPU: 294ms
     CGroup: /system.slice/mongod.service
             └─4605 /usr/bin/mongod --config /etc/mongod.conf

Sep 01 18:41:29 srahul-virtual-machine systemd[1]: Started MongoDB Database Ser>
Sep 01 18:41:29 srahul-virtual-machine mongod[4605]: {"t":{"$date":"2023-09-01T>
 ^X
[1]+  Stopped                 sudo systemctl status mongod
srahul@srahul-virtual-machine:~$ sudo systemctl enable mongod
Created symlink /etc/systemd/system/multi-user.target.wants/mongod.service → /lib/systemd/system/mongod.service.
```

```
srahul@srahul-virtual-machine:~$ sudo apt-get install -y mongodb-org
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  mongodb-database-tools mongodb-mongosh mongodb-org-database
  mongodb-org-database-tools-extra mongodb-org-mongos mongodb-org-server
  mongodb-org-shell mongodb-org-tools
The following NEW packages will be installed:
  mongodb-database-tools mongodb-mongosh mongodb-org mongodb-org-database
  mongodb-org-database-tools-extra mongodb-org-mongos mongodb-org-server
  mongodb-org-shell mongodb-org-tools
0 upgraded, 9 newly installed, 0 to remove and 3 not upgraded.
Need to get 156 MB of archives.
After this operation, 449 MB of additional disk space will be used.
Get:1 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0/multiverse amd64 mongodb-database-tools amd64 100.8.0 [50.8 MB]
Get:2 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0/multiverse amd64 mongodb-mongosh amd64 1.10.6 [44.7 MB]
Get:3 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0/multiverse amd64 mongodb-org-shell amd64 5.0.20 [14.8 MB]
Get:4 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0/multiverse amd64 mongodb-org-server amd64 5.0.20 [26.6 MB]
Get:5 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0/multiverse amd64 mongodb-org-mongos amd64 5.0.20 [18.8 MB]
Get:6 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0/multiverse amd64 mongodb-org-database-tools-extra amd64 5.0.20 [7,756 B]
Get:7 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0/multiverse amd64 mongodb-org-database amd64 5.0.20 [3,544 B]
Get:8 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0/multiverse amd64 mongodb-org-tools amd64 5.0.20 [2,900 B]
Get:9 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/5.0/multiverse amd64 mongodb-org amd64 5.0.20 [2,932 B]
Fetched 156 MB in 29s (5,290 kB/s)
Selecting previously unselected package mongodb-database-tools.
(Reading database ... 202180 files and directories currently installed.)
Preparing to unpack .../0-mongodb-database-tools_100.8.0_amd64.deb ...
Unpacking mongodb-database-tools (100.8.0) ...
Selecting previously unselected package mongodb-mongosh.
Preparing to unpack .../1-mongodb-mongosh_1.10.6_amd64.deb ...
Unpacking mongodb-mongosh (1.10.6) ...
Selecting previously unselected package mongodb-org-shell.
```

Step 8: Create MongoDB Configuration for Replica Set

```
# ... (Configuration Details) ...
replication:
  replSetName: "rs0"
```

- **Purpose**: Create a configuration file specifying data path, port, and replication settings.

```
# for documentation of all options, see:
# Where and how to store data.
storage:
  dbPath: /var/lib/mongodb
  journal:
    enabled: true
  wiredTiger:
    engineConfig:
      cacheSizeGB: 1

# where to write logging data.
systemLog:
  destination: file
  logAppend: true
  path: /var/log/mongodb/mongod.log

# network interfaces
net:
  port: 27017
  bindIp: 127.0.0.1

# how the process runs
processManagement:
  timeZoneInfo: /usr/share/zoneinfo

# The following lines disable JavaScript execution.
security:
  javascriptEnabled: false
#operationProfiling:

replication:
  replSetName: "rs0"
```

Step 9: Start MongoDB with the New Configuration

```
sudo mongod --config /etc/mongod.conf
```

- **Purpose**: Start MongoDB using the newly created configuration file.

Step 10: Restart MongoDB

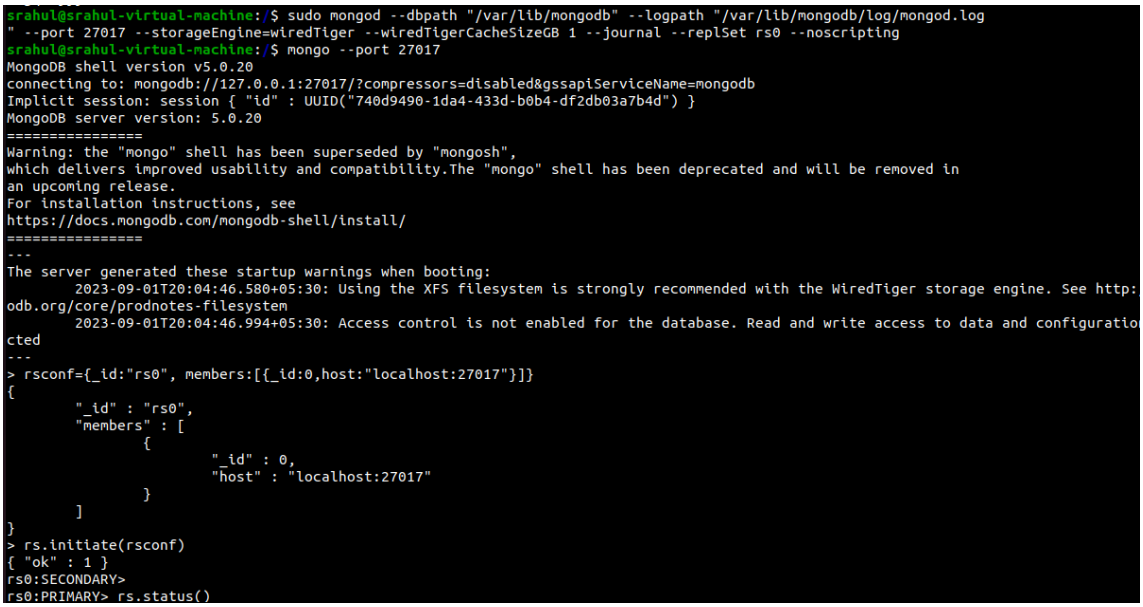
```
sudo systemctl restart mongod
```

- **Purpose**: Restart MongoDB to apply the changes.

Step 11: Start the First MongoDB Instance

```
sudo mongod --dbpath "/var/lib/mongodb" --logpath "/var/lib/mongodb/log/mongod.log" --port 27017 --storageEngine=wiredTiger --wiredTigerCacheSizeGB 1 --journal --replSet rs0 --noScripting
```

- **Purpose**: Launch the initial MongoDB instance with specific settings.



Step 12: MongoDB Shell and Initialize Replica Set

```
mongo --port 27017 --eval "..."
```

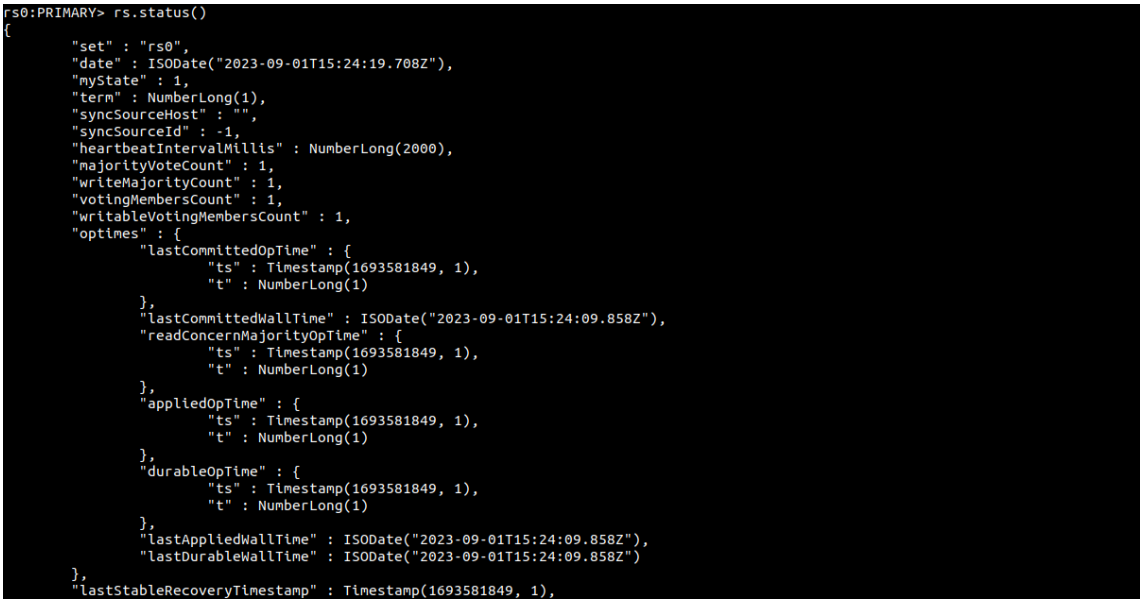
- **Purpose**: Use the MongoDB shell to set up the replica set configuration, add members, and an arbiter.

Step 13: Display Replica Set Status and Setup Completion Message

```
mongo --port 27017 --eval "rs.status()"
echo "MongoDB replica set setup is complete."
```

- **Purpose**: Check and display the status

  of the replica set and confirm the setup's completion.



This script automates the setup of a MongoDB replica set, ensuring MongoDB version 5.0, specific configurations, and multiple members, including an arbiter. It also disables JavaScript execution for enhanced security.

Ensure that you meet the prerequisites and run each step sequentially. This script simplifies the process of configuring MongoDB for replica sets, making it easier to manage and maintain a MongoDB cluster. Feel free to save this explanation as a PDF document for future reference

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Created By- SR