

CS185C: Introduction to NoSQL

Instructor: Dr. Kim

Setup and deploy a replica set of three members on your local machine

Reference: The Definitive Guide to MongoDB, 3rd Edition, by David Howes, et al.

A replica set to configure

Service	Daemon	Address	Dbpath
Voting Member 1	mongod	[hostname]:27021	/db/active1/data
Voting Member 2	mongod	[hostname]:27022	/db/active2/data
Nonvoting Member 1	mongod	[hostname]:27023	/db/passive1/data

1. Create the necessary data directories for each member

```
vagrant@vagrant-ubuntu-trusty-64:~$ sudo mkdir -p /db/active1/data /db/active2/data /db/passive1/data
```

2. Start your [mongod](#) instances in their own shell windows



```
vagrant@vagrant-ubuntu-trusty-64:~$ sudo mongod --port 27021 -dbpath /db/active1/data --replSet testset --smallfiles --oplogSize 128
```

```
vagrant@vagrant-ubuntu-trusty-64:~$ sudo mongod --port 27022 -dbpath /db/active2/data --replSet testset --smallfiles --oplogSize 128
```

```
vagrant@vagrant-ubuntu-trusty-64:~$ sudo mongod --port 27023 -dbpath /db/passive1/data --replSet testset --smallfiles --oplogSize 128
```

3. Connect to one of your [mongod](#) instances(primary) through the [mongo](#) shell.

```
vagrant@vagrant-ubuntu-trusty-64:~$ mongo vagrant-ubuntu-trusty-64:27021
MongoDB shell version: 3.2.9
connecting to: vagrant-ubuntu-trusty-64:27021/test
Server has startup warnings:
2016-11-23T22:14:59.917+0000 I CONTROL [initandlisten] ** WARNING: You are
running this process as the root user, which is not recommended.
```



2016-11-23T22:14:59.920+0000 I CONTROL [initandlisten]

```
> rs.initiate()
{
  "info2" : "no configuration specified. Using a default configuration for the set",
  "me" : "vagrant-ubuntu-trusty-64:27021",
  "ok" : 1
}
```

```
rs.status()
{
  "set" : "testset",
  "date" : ISODate("2016-11-23T22:17:06.103Z"),
  "myState" : 1,
  "term" : NumberLong(1),
  "heartbeatIntervalMillis" : NumberLong(2000),
  "members" : [
    {
      "_id" : 0,
      "name" : "vagrant-ubuntu-trusty-64:27021",
      "health" : 1,
      "state" : 1,
      "stateStr" : "PRIMARY",
      "uptime" : 128,
      "optime" : {
        "ts" : Timestamp(1479939400, 1),
        "t" : NumberLong(1)
      },
      "optimeDate" : ISODate("2016-11-23T22:16:40Z"),
      "infoMessage" : "could not find member to sync from",
      "electionTime" : Timestamp(1479939399, 2),
      "electionDate" : ISODate("2016-11-23T22:16:39Z"),
      "configVersion" : 1,
      "self" : true
    }
  ],
  "ok" : 1
}
```

testset:PRIMARY>

testset:PRIMARY> rs.add("vagrant-ubuntu-trusty-64:27022")

```

{ "ok" : 1 }
testset:PRIMARY> rs.add("vagrant-ubuntu-trusty-64:27023")
{ "ok" : 1 }
testset:PRIMARY> rs.status()
{
  "set" : "testset",
  "date" : ISODate("2016-11-23T22:19:52.175Z"),
  "myState" : 1,
  "term" : NumberLong(1),
  "heartbeatIntervalMillis" : NumberLong(2000),
  "members" : [
    {
      "_id" : 0,
      "name" : "vagrant-ubuntu-trusty-64:27021",
      "health" : 1,
      "state" : 1,
      "stateStr" : "PRIMARY",
      "uptime" : 294,
      "optime" : {
        "ts" : Timestamp(1479939577, 1),
        "t" : NumberLong(1)
      },
      "optimeDate" : ISODate("2016-11-23T22:19:37Z"),
      "electionTime" : Timestamp(1479939399, 2),
      "electionDate" : ISODate("2016-11-23T22:16:39Z"),
      "configVersion" : 3,
      "self" : true
    },
    {
      "_id" : 1,
      "name" : "vagrant-ubuntu-trusty-64:27022",
      "health" : 1,
      "state" : 2,
      "stateStr" : "SECONDARY",
      "uptime" : 18,
      "optime" : {
        "ts" : Timestamp(1479939577, 1),
        "t" : NumberLong(1)
      },
      "optimeDate" : ISODate("2016-11-23T22:19:37Z"),
      "lastHeartbeat" : ISODate("2016-11-23T22:19:51.866Z"),

```

```

        "lastHeartbeatRecv" : ISODate("2016-11-23T22:19:50.905Z"),
        "pingMs" : NumberLong(0),
        "syncingTo" : "vagrant-ubuntu-trusty-64:27021",
        "configVersion" : 3
    },
    {
        "_id" : 2,
        "name" : "vagrant-ubuntu-trusty-64:27023",
        "health" : 1,
        "state" : 2,
        "stateStr" : "SECONDARY",
        "uptime" : 14,
        "optime" : {
            "ts" : Timestamp(1479939577, 1),
            "t" : NumberLong(1)
        },
        "optimeDate" : ISODate("2016-11-23T22:19:37Z"),
        "lastHeartbeat" : ISODate("2016-11-23T22:19:51.866Z"),
        "lastHeartbeatRecv" : ISODate("2016-11-23T22:19:50.953Z"),
        "pingMs" : NumberLong(2),
        "syncingTo" : "vagrant-ubuntu-trusty-64:27021",
        "configVersion" : 3
    }
],
"ok" : 1
}
testset:PRIMARY>

```

```

conf = rs.conf()
{
    "_id" : "testset",
    "version" : 3,
    "protocolVersion" : NumberLong(1),
    "members" : [
        {
            "_id" : 0,
            "host" : "vagrant-ubuntu-trusty-64:27021",
            "arbiterOnly" : false,
            "buildIndexes" : true,
            "hidden" : false,
            "priority" : 1,

```

```

    "tags" : {

    },
    "slaveDelay" : NumberLong(0),
    "votes" : 1
  },
  {
    "_id" : 1,
    "host" : "vagrant-ubuntu-trusty-64:27022",
    "arbiterOnly" : false,
    "buildIndexes" : true,
    "hidden" : false,
    "priority" : 1,
    "tags" : {

    },
    "slaveDelay" : NumberLong(0),
    "votes" : 1
  },
  {
    "_id" : 2,
    "host" : "vagrant-ubuntu-trusty-64:27023",
    "arbiterOnly" : false,
    "buildIndexes" : true,
    "hidden" : false,
    "priority" : 1,
    "tags" : {

    },
    "slaveDelay" : NumberLong(0),
    "votes" : 1
  }
],
"settings" : {
  "chainingAllowed" : true,
  "heartbeatIntervalMillis" : 2000,
  "heartbeatTimeoutSecs" : 10,
  "electionTimeoutMillis" : 10000,
  "getLastErrorModes" : {

  },

```

```

        "getLastErrorDefaults" : {
            "w" : 1,
            "wtimeout" : 0
        },
        "replicaSetId" : ObjectId("5836154760fdf140381201f1")
    }
}

```

```

testset:PRIMARY> conf.members[2].hidden = true
true
testset:PRIMARY> conf.members[2].priority = 0
0

```

```

testset:PRIMARY> conf
{
  "_id" : "testset",
  "version" : 3,
  "protocolVersion" : NumberLong(1),
  "members" : [
    {
      "_id" : 0,
      "host" : "vagrant-ubuntu-trusty-64:27021",
      "arbiterOnly" : false,
      "buildIndexes" : true,
      "hidden" : false,
      "priority" : 1,
      "tags" : {

      },
      "slaveDelay" : NumberLong(0),
      "votes" : 1
    },
    {
      "_id" : 1,
      "host" : "vagrant-ubuntu-trusty-64:27022",
      "arbiterOnly" : false,
      "buildIndexes" : true,
      "hidden" : false,
      "priority" : 1,
      "tags" : {

```

```

        },
        "slaveDelay" : NumberLong(0),
        "votes" : 1
    },
    {
        "_id" : 2,
        "host" : "vagrant-ubuntu-trusty-64:27023",
        "arbiterOnly" : false,
        "buildIndexes" : true,
        "hidden" : true,
        "priority" : 0,
        "tags" : {

        },
        "slaveDelay" : NumberLong(0),
        "votes" : 1
    }
],
"settings" : {
    "chainingAllowed" : true,
    "heartbeatIntervalMillis" : 2000,
    "heartbeatTimeoutSecs" : 10,
    "electionTimeoutMillis" : 10000,
    "getLastErrorModes" : {

    },
    "getLastErrorDefaults" : {
        "w" : 1,
        "wtimeout" : 0
    },
    "replicaSetId" : ObjectId("5836154760fdf140381201f1")
}
}
testset:PRIMARY>
testset:PRIMARY> rs.reconfig(conf)
{ "ok" : 1 }

```

4. Add arbiter.

Note: adding arbiter should be done in primary.

```
vagrant@vagrant-ubuntu-trusty-64:~$ sudo mkdir -p /db/arbiter1/data
```

```
vagrant@vagrant-ubuntu-trusty-64:~$ sudo mongod --dbpath /db/arbiter1/data --port 27024 --replSet testset -rest
```



```
vagrant@vagrant-ubuntu-trusty-64:~$ mongo vagrant-ubuntu-trusty-64:27022
MongoDB shell version: 3.2.9
connecting to: vagrant-ubuntu-trusty-64:27022/test
Server has startup warnings:
2016-11-23T22:15:09.158+0000 I CONTROL [initandlisten] ** WARNING: You are
running this process as the root user, which is not recommended.
2016-11-23T22:15:09.159+0000 I CONTROL [initandlisten]
testset:PRIMARY> rs.addArb("vagrant-ubuntu-trusty-64:27024")
{ "ok" : 1 }
```

```
testset:PRIMARY>rs.status() will include the following
```



...

```
{
  {
    "_id" : 3,
    "name" : "vagrant-ubuntu-trusty-64:27024",
    "health" : 1,
    "state" : 7,
    "stateStr" : "ARBITER",
    "uptime" : 44,
    "lastHeartbeat" : ISODate("2016-11-23T22:45:15.708Z"),
    "lastHeartbeatRecv" : ISODate("2016-11-23T22:45:11.821Z"),
    "pingMs" : NumberLong(0),
    "configVersion" : 5
  },
  "ok" : 1
}
```

Note: adding arbiter to three member replica set makes even number of members in this replica set.

Solution: remove the arbiter (recommended, do not add arbiter to a replica set with even voting members.)Or setting votes to 0 for the hidden secondary

```
conf = rs.conf()
```



```
conf.members[2].votes = 0  
rs.conf(conf)
```