**Building a Sharded Cluster as shown below Architecture:**



bash-3.2# pwd

/Users/dbversity

bash-3.2#

bash-3.2# mkdir -p sh1d1 sh1d2 sh1d3 sh2d1 sh2d2 sh2d3 c1 c2 c3 log

bash-3.2#

bash-3.2# mongod --configsvr --replSet cfg --dbpath c1/ --logpath log/cfg.log --port 36000 --fork

about to fork child process, waiting until server is ready for connections.

forked process: 5246

child process started successfully, parent exiting

bash-3.2#

bash-3.2# mongod --configsvr --replSet cfg --dbpath c2/ --logpath log/cfg.log --port 36001 --fork

about to fork child process, waiting until server is ready for connections.

forked process: 5253

child process started successfully, parent exiting

bash-3.2#

bash-3.2# mongod --configsvr --replSet cfg --dbpath c3/ --logpath log/cfg.log --port 36002 --fork

about to fork child process, waiting until server is ready for connections.

forked process: 5256

child process started successfully, parent exiting

bash-3.2#

bash-3.2# mongo --port 36000 --quiet

MongoDB shell version v4.0.2

connecting to: mongodb://127.0.0.1:36000/

MongoDB server version: 4.0.2

>

> rs.initiate()

{

 "info2" : "no configuration specified. Using a default configuration for the set",

 "me" : "localhost:36000",

 "ok" : 1,

 "operationTime" : Timestamp(1548445660, 1),

 "$gleStats" : {

 "lastOpTime" : Timestamp(1548445660, 1),

 "electionId" : ObjectId("000000000000000000000000")

 },

 "lastCommittedOpTime" : Timestamp(0, 0),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548445660, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

cfg:SECONDARY>

cfg:SECONDARY>

cfg:SECONDARY>

cfg:SECONDARY>

cfg:SECONDARY>

cfg:PRIMARY>

cfg:PRIMARY>

cfg:PRIMARY>

cfg:PRIMARY> rs.status()

{

 "set" : "cfg",

 "date" : ISODate("2019-01-25T19:47:50.062Z"),

 "myState" : 1,

 "term" : NumberLong(1),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "configsvr" : true,

 "heartbeatIntervalMillis" : NumberLong(2000),

 "optimes" : {

 "lastCommittedOpTime" : {

 "ts" : Timestamp(1548445666, 1),

 "t" : NumberLong(1)

 },

 "readConcernMajorityOpTime" : {

 "ts" : Timestamp(1548445666, 1),

 "t" : NumberLong(1)

 },

 "appliedOpTime" : {

 "ts" : Timestamp(1548445666, 1),

 "t" : NumberLong(1)

 },

 "durableOpTime" : {

 "ts" : Timestamp(1548445666, 1),

 "t" : NumberLong(1)

 }

 },

 "lastStableCheckpointTimestamp" : Timestamp(1548445663, 17),

 "members" : [

 {

 "\_id" : 0,

 "name" : "localhost:36000",

 "health" : 1,

 "state" : 1,

 "stateStr" : "PRIMARY",

 "uptime" : 125,

 "optime" : {

 "ts" : Timestamp(1548445666, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:47:46Z"),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "infoMessage" : "could not find member to sync from",

 "electionTime" : Timestamp(1548445660, 2),

 "electionDate" : ISODate("2019-01-25T19:47:40Z"),

 "configVersion" : 1,

 "self" : true,

 "lastHeartbeatMessage" : ""

 }

 ],

 "ok" : 1,

 "operationTime" : Timestamp(1548445666, 1),

 "$gleStats" : {

 "lastOpTime" : Timestamp(1548445660, 1),

 "electionId" : ObjectId("7fffffff0000000000000001")

 },

 "lastCommittedOpTime" : Timestamp(1548445666, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548445666, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

cfg:PRIMARY>

cfg:PRIMARY>

cfg:PRIMARY>

cfg:PRIMARY> rs.add("localhost:36001")

{

 "ok" : 1,

 "operationTime" : Timestamp(1548445686, 1),

 "$gleStats" : {

 "lastOpTime" : {

 "ts" : Timestamp(1548445686, 1),

 "t" : NumberLong(1)

 },

 "electionId" : ObjectId("7fffffff0000000000000001")

 },

 "lastCommittedOpTime" : Timestamp(1548445683, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548445686, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

cfg:PRIMARY> rs.add("localhost:36002")

{

 "ok" : 1,

 "operationTime" : Timestamp(1548445689, 1),

 "$gleStats" : {

 "lastOpTime" : {

 "ts" : Timestamp(1548445689, 1),

 "t" : NumberLong(1)

 },

 "electionId" : ObjectId("7fffffff0000000000000001")

 },

 "lastCommittedOpTime" : Timestamp(1548445683, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548445689, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

cfg:PRIMARY>

cfg:PRIMARY>

cfg:PRIMARY> rs.status()

{

 "set" : "cfg",

 "date" : ISODate("2019-01-25T19:48:12.349Z"),

 "myState" : 1,

 "term" : NumberLong(1),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "configsvr" : true,

 "heartbeatIntervalMillis" : NumberLong(2000),

 "optimes" : {

 "lastCommittedOpTime" : {

 "ts" : Timestamp(1548445689, 1),

 "t" : NumberLong(1)

 },

 "readConcernMajorityOpTime" : {

 "ts" : Timestamp(1548445689, 1),

 "t" : NumberLong(1)

 },

 "appliedOpTime" : {

 "ts" : Timestamp(1548445689, 1),

 "t" : NumberLong(1)

 },

 "durableOpTime" : {

 "ts" : Timestamp(1548445689, 1),

 "t" : NumberLong(1)

 }

 },

 "lastStableCheckpointTimestamp" : Timestamp(1548445663, 17),

 "members" : [

 {

 "\_id" : 0,

 "name" : "localhost:36000",

 "health" : 1,

 "state" : 1,

 "stateStr" : "PRIMARY",

 "uptime" : 147,

 "optime" : {

 "ts" : Timestamp(1548445689, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:48:09Z"),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "infoMessage" : "could not find member to sync from",

 "electionTime" : Timestamp(1548445660, 2),

 "electionDate" : ISODate("2019-01-25T19:47:40Z"),

 "configVersion" : 3,

 "self" : true,

 "lastHeartbeatMessage" : ""

 },

 {

 "\_id" : 1,

 "name" : "localhost:36001",

 "health" : 1,

 "state" : 2,

 "stateStr" : "SECONDARY",

 "uptime" : 5,

 "optime" : {

 "ts" : Timestamp(1548445689, 1),

 "t" : NumberLong(1)

 },

 "optimeDurable" : {

 "ts" : Timestamp(1548445689, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:48:09Z"),

 "optimeDurableDate" : ISODate("2019-01-25T19:48:09Z"),

 "lastHeartbeat" : ISODate("2019-01-25T19:48:11.862Z"),

 "lastHeartbeatRecv" : ISODate("2019-01-25T19:48:10.379Z"),

 "pingMs" : NumberLong(0),

 "lastHeartbeatMessage" : "",

 "syncingTo" : "localhost:36000",

 "syncSourceHost" : "localhost:36000",

 "syncSourceId" : 0,

 "infoMessage" : "",

 "configVersion" : 3

 },

 {

 "\_id" : 2,

 "name" : "localhost:36002",

 "health" : 1,

 "state" : 5,

 "stateStr" : "STARTUP2",

 "uptime" : 2,

 "optime" : {

 "ts" : Timestamp(0, 0),

 "t" : NumberLong(-1)

 },

 "optimeDurable" : {

 "ts" : Timestamp(0, 0),

 "t" : NumberLong(-1)

 },

 "optimeDate" : ISODate("1970-01-01T00:00:00Z"),

 "optimeDurableDate" : ISODate("1970-01-01T00:00:00Z"),

 "lastHeartbeat" : ISODate("2019-01-25T19:48:11.860Z"),

 "lastHeartbeatRecv" : ISODate("2019-01-25T19:48:10.481Z"),

 "pingMs" : NumberLong(0),

 "lastHeartbeatMessage" : "",

 "syncingTo" : "localhost:36001",

 "syncSourceHost" : "localhost:36001",

 "syncSourceId" : 1,

 "infoMessage" : "",

 "configVersion" : 3

 }

 ],

 "ok" : 1,

 "operationTime" : Timestamp(1548445689, 1),

 "$gleStats" : {

 "lastOpTime" : {

 "ts" : Timestamp(1548445689, 1),

 "t" : NumberLong(1)

 },

 "electionId" : ObjectId("7fffffff0000000000000001")

 },

 "lastCommittedOpTime" : Timestamp(1548445689, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548445689, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

cfg:PRIMARY>

cfg:PRIMARY>

cfg:PRIMARY> rs.status()

{

 "set" : "cfg",

 "date" : ISODate("2019-01-25T19:48:22.372Z"),

 "myState" : 1,

 "term" : NumberLong(1),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "configsvr" : true,

 "heartbeatIntervalMillis" : NumberLong(2000),

 "optimes" : {

 "lastCommittedOpTime" : {

 "ts" : Timestamp(1548445696, 1),

 "t" : NumberLong(1)

 },

 "readConcernMajorityOpTime" : {

 "ts" : Timestamp(1548445696, 1),

 "t" : NumberLong(1)

 },

 "appliedOpTime" : {

 "ts" : Timestamp(1548445696, 1),

 "t" : NumberLong(1)

 },

 "durableOpTime" : {

 "ts" : Timestamp(1548445696, 1),

 "t" : NumberLong(1)

 }

 },

 "lastStableCheckpointTimestamp" : Timestamp(1548445663, 17),

 "members" : [

 {

 "\_id" : 0,

 "name" : "localhost:36000",

 "health" : 1,

 "state" : 1,

 "stateStr" : "PRIMARY",

 "uptime" : 157,

 "optime" : {

 "ts" : Timestamp(1548445696, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:48:16Z"),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "infoMessage" : "could not find member to sync from",

 "electionTime" : Timestamp(1548445660, 2),

 "electionDate" : ISODate("2019-01-25T19:47:40Z"),

 "configVersion" : 3,

 "self" : true,

 "lastHeartbeatMessage" : ""

 },

 {

 "\_id" : 1,

 "name" : "localhost:36001",

 "health" : 1,

 "state" : 2,

 "stateStr" : "SECONDARY",

 "uptime" : 15,

 "optime" : {

 "ts" : Timestamp(1548445696, 1),

 "t" : NumberLong(1)

 },

 "optimeDurable" : {

 "ts" : Timestamp(1548445696, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:48:16Z"),

 "optimeDurableDate" : ISODate("2019-01-25T19:48:16Z"),

 "lastHeartbeat" : ISODate("2019-01-25T19:48:21.882Z"),

 "lastHeartbeatRecv" : ISODate("2019-01-25T19:48:20.397Z"),

 "pingMs" : NumberLong(0),

 "lastHeartbeatMessage" : "",

 "syncingTo" : "localhost:36000",

 "syncSourceHost" : "localhost:36000",

 "syncSourceId" : 0,

 "infoMessage" : "",

 "configVersion" : 3

 },

 {

 "\_id" : 2,

 "name" : "localhost:36002",

 "health" : 1,

 "state" : 2,

 "stateStr" : "SECONDARY",

 "uptime" : 12,

 "optime" : {

 "ts" : Timestamp(1548445696, 1),

 "t" : NumberLong(1)

 },

 "optimeDurable" : {

 "ts" : Timestamp(1548445696, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:48:16Z"),

 "optimeDurableDate" : ISODate("2019-01-25T19:48:16Z"),

 "lastHeartbeat" : ISODate("2019-01-25T19:48:21.882Z"),

 "lastHeartbeatRecv" : ISODate("2019-01-25T19:48:21.625Z"),

 "pingMs" : NumberLong(0),

 "lastHeartbeatMessage" : "",

 "syncingTo" : "localhost:36001",

 "syncSourceHost" : "localhost:36001",

 "syncSourceId" : 1,

 "infoMessage" : "",

 "configVersion" : 3

 }

 ],

 "ok" : 1,

 "operationTime" : Timestamp(1548445696, 1),

 "$gleStats" : {

 "lastOpTime" : {

 "ts" : Timestamp(1548445689, 1),

 "t" : NumberLong(1)

 },

 "electionId" : ObjectId("7fffffff0000000000000001")

 },

 "lastCommittedOpTime" : Timestamp(1548445696, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548445696, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

cfg:PRIMARY>

cfg:PRIMARY>

cfg:PRIMARY> exit

bye

bash-3.2#

bash-3.2#

bash-3.2# mongos --help | grep config

 --setParameter arg Set a configurable parameter

 -f [ --config ] arg configuration file specifying

 --configdb arg Connection string for communicating

 with config servers:

 <config replset name>/<host1:port>,<hos

 --sslOnNormalPorts use ssl on configured ports

bash-3.2#

bash-3.2#

bash-3.2# mongos --configdb "cfg/localhost:36000,localhost:36001,localhost:36002" --port 10000 --logpath log/mongos.log --fork

about to fork child process, waiting until server is ready for connections.

forked process: 5266

child process started successfully, parent exiting

bash-3.2#

bash-3.2#

bash-3.2# ps -ef | grep mongo | grep -v grep | grep -v 27017

 0 5246 1 0 1:15AM ?? 0:03.42 mongod --configsvr --replSet cfg --dbpath c1/ --logpath log/cfg.log --port 36000 --fork

 0 5253 1 0 1:16AM ?? 0:03.31 mongod --configsvr --replSet cfg --dbpath c2/ --logpath log/cfg.log --port 36001 --fork

 0 5256 1 0 1:16AM ?? 0:03.12 mongod --configsvr --replSet cfg --dbpath c3/ --logpath log/cfg.log --port 36002 --fork

 0 5266 1 0 1:20AM ?? 0:00.11 mongos --configdb cfg/localhost:36000,localhost:36001,localhost:36002 --port 10000 --logpath log/mongos.log --fork

bash-3.2#

bash-3.2#

bash-3.2#

bash-3.2#

bash-3.2#

bash-3.2#

bash-3.2# mongod --help | grep shard

 --shardsvr declare this is a shard db of a

bash-3.2#

bash-3.2#

bash-3.2# mongod --replSet rs1 --shardsvr --dbpath sh1d1/ --logpath log/mongod.log --port 27010 --fork

about to fork child process, waiting until server is ready for connections.

forked process: 5276

child process started successfully, parent exiting

bash-3.2#

bash-3.2# mongod --replSet rs1 --shardsvr --dbpath sh1d2/ --logpath log/mongod.log --port 27011 --fork

about to fork child process, waiting until server is ready for connections.

forked process: 5280

child process started successfully, parent exiting

bash-3.2#

bash-3.2# mongod --replSet rs1 --shardsvr --dbpath sh1d3/ --logpath log/mongod.log --port 27012 --fork

about to fork child process, waiting until server is ready for connections.

forked process: 5283

child process started successfully, parent exiting

bash-3.2#

bash-3.2#

bash-3.2# mongo --port 27010 --quiet

> rs.initiate()

{

 "info2" : "no configuration specified. Using a default configuration for the set",

 "me" : "localhost:27010",

 "ok" : 1,

 "operationTime" : Timestamp(1548446052, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548446052, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

rs1:SECONDARY>

rs1:SECONDARY>

rs1:SECONDARY>

rs1:SECONDARY>

rs1:PRIMARY>

rs1:PRIMARY>

rs1:PRIMARY> rs.status()

{

 "set" : "rs1",

 "date" : ISODate("2019-01-25T19:54:19.908Z"),

 "myState" : 1,

 "term" : NumberLong(1),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "heartbeatIntervalMillis" : NumberLong(2000),

 "optimes" : {

 "lastCommittedOpTime" : {

 "ts" : Timestamp(1548446054, 2),

 "t" : NumberLong(1)

 },

 "readConcernMajorityOpTime" : {

 "ts" : Timestamp(1548446054, 2),

 "t" : NumberLong(1)

 },

 "appliedOpTime" : {

 "ts" : Timestamp(1548446054, 2),

 "t" : NumberLong(1)

 },

 "durableOpTime" : {

 "ts" : Timestamp(1548446054, 2),

 "t" : NumberLong(1)

 }

 },

 "lastStableCheckpointTimestamp" : Timestamp(1548446054, 1),

 "members" : [

 {

 "\_id" : 0,

 "name" : "localhost:27010",

 "health" : 1,

 "state" : 1,

 "stateStr" : "PRIMARY",

 "uptime" : 75,

 "optime" : {

 "ts" : Timestamp(1548446054, 2),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:54:14Z"),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "infoMessage" : "could not find member to sync from",

 "electionTime" : Timestamp(1548446052, 2),

 "electionDate" : ISODate("2019-01-25T19:54:12Z"),

 "configVersion" : 1,

 "self" : true,

 "lastHeartbeatMessage" : ""

 }

 ],

 "ok" : 1,

 "operationTime" : Timestamp(1548446054, 2),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548446054, 2),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

rs1:PRIMARY>

rs1:PRIMARY>

rs1:PRIMARY> rs.add("localhost:27011")

{

 "ok" : 1,

 "operationTime" : Timestamp(1548446078, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548446078, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

rs1:PRIMARY> rs.add("localhost:27012")

{

 "ok" : 1,

 "operationTime" : Timestamp(1548446081, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548446081, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

rs1:PRIMARY>

rs1:PRIMARY> rs.status()

{

 "set" : "rs1",

 "date" : ISODate("2019-01-25T19:54:48.033Z"),

 "myState" : 1,

 "term" : NumberLong(1),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "heartbeatIntervalMillis" : NumberLong(2000),

 "optimes" : {

 "lastCommittedOpTime" : {

 "ts" : Timestamp(1548446081, 1),

 "t" : NumberLong(1)

 },

 "readConcernMajorityOpTime" : {

 "ts" : Timestamp(1548446081, 1),

 "t" : NumberLong(1)

 },

 "appliedOpTime" : {

 "ts" : Timestamp(1548446081, 1),

 "t" : NumberLong(1)

 },

 "durableOpTime" : {

 "ts" : Timestamp(1548446081, 1),

 "t" : NumberLong(1)

 }

 },

 "lastStableCheckpointTimestamp" : Timestamp(1548446054, 1),

 "members" : [

 {

 "\_id" : 0,

 "name" : "localhost:27010",

 "health" : 1,

 "state" : 1,

 "stateStr" : "PRIMARY",

 "uptime" : 104,

 "optime" : {

 "ts" : Timestamp(1548446081, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:54:41Z"),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "infoMessage" : "could not find member to sync from",

 "electionTime" : Timestamp(1548446052, 2),

 "electionDate" : ISODate("2019-01-25T19:54:12Z"),

 "configVersion" : 3,

 "self" : true,

 "lastHeartbeatMessage" : ""

 },

 {

 "\_id" : 1,

 "name" : "localhost:27011",

 "health" : 1,

 "state" : 2,

 "stateStr" : "SECONDARY",

 "uptime" : 9,

 "optime" : {

 "ts" : Timestamp(1548446081, 1),

 "t" : NumberLong(1)

 },

 "optimeDurable" : {

 "ts" : Timestamp(1548446081, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:54:41Z"),

 "optimeDurableDate" : ISODate("2019-01-25T19:54:41Z"),

 "lastHeartbeat" : ISODate("2019-01-25T19:54:47.201Z"),

 "lastHeartbeatRecv" : ISODate("2019-01-25T19:54:47.711Z"),

 "pingMs" : NumberLong(0),

 "lastHeartbeatMessage" : "",

 "syncingTo" : "localhost:27010",

 "syncSourceHost" : "localhost:27010",

 "syncSourceId" : 0,

 "infoMessage" : "",

 "configVersion" : 3

 },

 {

 "\_id" : 2,

 "name" : "localhost:27012",

 "health" : 1,

 "state" : 2,

 "stateStr" : "SECONDARY",

 "uptime" : 6,

 "optime" : {

 "ts" : Timestamp(1548446081, 1),

 "t" : NumberLong(1)

 },

 "optimeDurable" : {

 "ts" : Timestamp(1548446081, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:54:41Z"),

 "optimeDurableDate" : ISODate("2019-01-25T19:54:41Z"),

 "lastHeartbeat" : ISODate("2019-01-25T19:54:47.201Z"),

 "lastHeartbeatRecv" : ISODate("2019-01-25T19:54:47.805Z"),

 "pingMs" : NumberLong(0),

 "lastHeartbeatMessage" : "",

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "infoMessage" : "",

 "configVersion" : 3

 }

 ],

 "ok" : 1,

 "operationTime" : Timestamp(1548446081, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548446081, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

rs1:PRIMARY>

rs1:PRIMARY>

rs1:PRIMARY> exit

bye

bash-3.2#

bash-3.2#

bash-3.2#

bash-3.2# mongod --replSet rs2 --shardsvr --dbpath sh2d1/ --logpath log/mongod.log --port 37010 --fork

about to fork child process, waiting until server is ready for connections.

forked process: 5289

child process started successfully, parent exiting

bash-3.2#

bash-3.2# mongod --replSet rs2 --shardsvr --dbpath sh2d2/ --logpath log/mongod.log --port 37011 --fork

about to fork child process, waiting until server is ready for connections.

forked process: 5292

child process started successfully, parent exiting

bash-3.2#

bash-3.2#

bash-3.2# mongod --replSet rs2 --shardsvr --dbpath sh2d3/ --logpath log/mongod.log --port 37012 --fork

about to fork child process, waiting until server is ready for connections.

forked process: 5295

child process started successfully, parent exiting

bash-3.2#

bash-3.2#

bash-3.2#

bash-3.2# mongo --port 37010 --quiet

> rs.initiate()

{

 "info2" : "no configuration specified. Using a default configuration for the set",

 "me" : "localhost:37010",

 "ok" : 1,

 "operationTime" : Timestamp(1548446172, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548446172, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

rs2:SECONDARY>

rs2:SECONDARY>

rs2:SECONDARY>

rs2:SECONDARY>

rs2:PRIMARY>

rs2:PRIMARY>

rs2:PRIMARY>

rs2:PRIMARY>

rs2:PRIMARY> rs.add("localhost:37011")

{

 "ok" : 1,

 "operationTime" : Timestamp(1548446188, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548446188, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

rs2:PRIMARY> rs.add("localhost:37012")

{

 "ok" : 1,

 "operationTime" : Timestamp(1548446191, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548446191, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

rs2:PRIMARY>

rs2:PRIMARY> rs.status()

{

 "set" : "rs2",

 "date" : ISODate("2019-01-25T19:56:35.357Z"),

 "myState" : 1,

 "term" : NumberLong(1),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "heartbeatIntervalMillis" : NumberLong(2000),

 "optimes" : {

 "lastCommittedOpTime" : {

 "ts" : Timestamp(1548446191, 1),

 "t" : NumberLong(1)

 },

 "readConcernMajorityOpTime" : {

 "ts" : Timestamp(1548446191, 1),

 "t" : NumberLong(1)

 },

 "appliedOpTime" : {

 "ts" : Timestamp(1548446191, 1),

 "t" : NumberLong(1)

 },

 "durableOpTime" : {

 "ts" : Timestamp(1548446191, 1),

 "t" : NumberLong(1)

 }

 },

 "lastStableCheckpointTimestamp" : Timestamp(1548446174, 1),

 "members" : [

 {

 "\_id" : 0,

 "name" : "localhost:37010",

 "health" : 1,

 "state" : 1,

 "stateStr" : "PRIMARY",

 "uptime" : 62,

 "optime" : {

 "ts" : Timestamp(1548446191, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:56:31Z"),

 "syncingTo" : "",

 "syncSourceHost" : "",

 "syncSourceId" : -1,

 "infoMessage" : "could not find member to sync from",

 "electionTime" : Timestamp(1548446172, 2),

 "electionDate" : ISODate("2019-01-25T19:56:12Z"),

 "configVersion" : 3,

 "self" : true,

 "lastHeartbeatMessage" : ""

 },

 {

 "\_id" : 1,

 "name" : "localhost:37011",

 "health" : 1,

 "state" : 2,

 "stateStr" : "SECONDARY",

 "uptime" : 6,

 "optime" : {

 "ts" : Timestamp(1548446191, 1),

 "t" : NumberLong(1)

 },

 "optimeDurable" : {

 "ts" : Timestamp(1548446191, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:56:31Z"),

 "optimeDurableDate" : ISODate("2019-01-25T19:56:31Z"),

 "lastHeartbeat" : ISODate("2019-01-25T19:56:34.020Z"),

 "lastHeartbeatRecv" : ISODate("2019-01-25T19:56:34.111Z"),

 "pingMs" : NumberLong(2),

 "lastHeartbeatMessage" : "",

 "syncingTo" : "localhost:37010",

 "syncSourceHost" : "localhost:37010",

 "syncSourceId" : 0,

 "infoMessage" : "",

 "configVersion" : 3

 },

 {

 "\_id" : 2,

 "name" : "localhost:37012",

 "health" : 1,

 "state" : 2,

 "stateStr" : "SECONDARY",

 "uptime" : 3,

 "optime" : {

 "ts" : Timestamp(1548446191, 1),

 "t" : NumberLong(1)

 },

 "optimeDurable" : {

 "ts" : Timestamp(1548446191, 1),

 "t" : NumberLong(1)

 },

 "optimeDate" : ISODate("2019-01-25T19:56:31Z"),

 "optimeDurableDate" : ISODate("2019-01-25T19:56:31Z"),

 "lastHeartbeat" : ISODate("2019-01-25T19:56:34.093Z"),

 "lastHeartbeatRecv" : ISODate("2019-01-25T19:56:34.782Z"),

 "pingMs" : NumberLong(1),

 "lastHeartbeatMessage" : "",

 "syncingTo" : "localhost:37010",

 "syncSourceHost" : "localhost:37010",

 "syncSourceId" : 0,

 "infoMessage" : "",

 "configVersion" : 3

 }

 ],

 "ok" : 1,

 "operationTime" : Timestamp(1548446191, 1),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548446191, 1),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

rs2:PRIMARY> exit

bye

bash-3.2#

bash-3.2#

bash-3.2#

bash-3.2# ps -ef | grep mongo | grep -v grep | grep -v 27017

 0 5246 1 0 1:15AM ?? 0:06.73 mongod --configsvr --replSet cfg --dbpath c1/ --logpath log/cfg.log --port 36000 --fork

 0 5253 1 0 1:16AM ?? 0:06.86 mongod --configsvr --replSet cfg --dbpath c2/ --logpath log/cfg.log --port 36001 --fork

 0 5256 1 0 1:16AM ?? 0:06.51 mongod --configsvr --replSet cfg --dbpath c3/ --logpath log/cfg.log --port 36002 --fork

 0 5266 1 0 1:20AM ?? 0:00.60 mongos --configdb cfg/localhost:36000,localhost:36001,localhost:36002 --port 10000 --logpath log/mongos.log --fork

 0 5276 1 0 1:23AM ?? 0:02.40 mongod --replSet rs1 --shardsvr --dbpath sh1d1/ --logpath log/mongod.log --port 27010 --fork

 0 5280 1 0 1:23AM ?? 0:02.36 mongod --replSet rs1 --shardsvr --dbpath sh1d2/ --logpath log/mongod.log --port 27011 --fork

 0 5283 1 0 1:23AM ?? 0:02.25 mongod --replSet rs1 --shardsvr --dbpath sh1d3/ --logpath log/mongod.log --port 27012 --fork

 0 5289 1 0 1:25AM ?? 0:01.46 mongod --replSet rs2 --shardsvr --dbpath sh2d1/ --logpath log/mongod.log --port 37010 --fork

 0 5292 1 0 1:25AM ?? 0:01.39 mongod --replSet rs2 --shardsvr --dbpath sh2d2/ --logpath log/mongod.log --port 37011 --fork

 0 5295 1 0 1:25AM ?? 0:01.29 mongod --replSet rs2 --shardsvr --dbpath sh2d3/ --logpath log/mongod.log --port 37012 --fork

bash-3.2#

bash-3.2#

bash-3.2#

bash-3.2#

bash-3.2#

bash-3.2# mongo --port 10000 --quiet

mongos>

mongos> sh.status()

--- Sharding Status ---

 sharding version: {

 "\_id" : 1,

 "minCompatibleVersion" : 5,

 "currentVersion" : 6,

 "clusterId" : ObjectId("5c4b67dfcc6b5ac561840e39")

 }

 shards:

 active mongoses:

 autosplit:

 Currently enabled: yes

 balancer:

 Currently enabled: yes

 Currently running: no

 Failed balancer rounds in last 5 attempts: 0

 Migration Results for the last 24 hours:

 No recent migrations

 databases:

 { "\_id" : "config", "primary" : "config", "partitioned" : true }

mongos>

mongos>

mongos> sh.addShard("rs1/localhost:27010,localhost:27011,localhost:27012")

{

 "shardAdded" : "rs1",

 "ok" : 1,

 "operationTime" : Timestamp(1548446319, 7),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548446319, 7),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

mongos>

mongos> sh.status()

--- Sharding Status ---

 sharding version: {

 "\_id" : 1,

 "minCompatibleVersion" : 5,

 "currentVersion" : 6,

 "clusterId" : ObjectId("5c4b67dfcc6b5ac561840e39")

 }

 shards:

 { "\_id" : "rs1", "host" : "rs1/localhost:27010,localhost:27011,localhost:27012", "state" : 1 }

 active mongoses:

 "4.0.2" : 1

 autosplit:

 Currently enabled: yes

 balancer:

 Currently enabled: yes

 Currently running: no

 Failed balancer rounds in last 5 attempts: 0

 Migration Results for the last 24 hours:

 No recent migrations

 databases:

 { "\_id" : "config", "primary" : "config", "partitioned" : true }

mongos>

mongos> sh.addShard("rs2/localhost:37010,localhost:37011,localhost:37012")

{

 "shardAdded" : "rs2",

 "ok" : 1,

 "operationTime" : Timestamp(1548446356, 6),

 "$clusterTime" : {

 "clusterTime" : Timestamp(1548446356, 6),

 "signature" : {

 "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),

 "keyId" : NumberLong(0)

 }

 }

}

mongos> sh.status()

--- Sharding Status ---

 sharding version: {

 "\_id" : 1,

 "minCompatibleVersion" : 5,

 "currentVersion" : 6,

 "clusterId" : ObjectId("5c4b67dfcc6b5ac561840e39")

 }

 shards:

 { "\_id" : "rs1", "host" : "rs1/localhost:27010,localhost:27011,localhost:27012", "state" : 1 }

 { "\_id" : "rs2", "host" : "rs2/localhost:37010,localhost:37011,localhost:37012", "state" : 1 }

 active mongoses:

 "4.0.2" : 1

 autosplit:

 Currently enabled: yes

 balancer:

 Currently enabled: yes

 Currently running: no

 Failed balancer rounds in last 5 attempts: 0

 Migration Results for the last 24 hours:

 No recent migrations

 databases:

 { "\_id" : "config", "primary" : "config", "partitioned" : true }

mongos>

mongos>

mongos>