MongoDB分片集群

MongoDB分片群集主要有如下三个组件：

 Shard：分片服务器，用于存储实际的数据块

 Config Server：配置服务器，存储了整个分片群集的配置信息，其中包括chunk信息。

 Routers：前端路由，客户端由此接入，且让整个群集看上去像单一数据库。路由服务器不存储数据

规划：

192.168.1.48

 27017 mongo-routes

 27018 mongo-config

 27019 mongo-shard11

192.168.1.185

 27019 mongo-shard12

27021 mongo-shard21

 27022 mongo-shard22

**1. 配置yum源、安装(1.48、1.185)**

1.1 配置yum.repo、安装

# vim /etc/yum.repos.d/mongo.repo

[mongodb-org-4.0]

name=MongoDB Repository

baseurl=https://repo.mongodb.org/yum/redhat/$releasever/mongodb-org/4.0/x86\_64/

gpgcheck=0

enabled=1

gpgkey=https://www.mongodb.org/static/pgp/server-4.0.asc

1.2 安装mongo

# yum -y install mongodb-org

**2.创建秘钥、目录、修改权限**

2.1 创建秘钥、拷贝到两台机器、修改权限

*//192.168.10.48*

# openssl rand -base64 756 >/etc/mongo.key

# chown -R mongod.mongod /etc/mongo.key

# chmod -R 600 /etc/mongo.key

# scp -r /etc/mongo.key root@192.168.1.185:/etc/

*//192.168.1.185*

# chown -R mongod.mongod /etc/mongo.key

# chmod -R 600 /etc/mongo.key

2.1 创建目录、修改权限

*//192.168.1.48*

# mkdir -p /opt/mongodb/logs

# mkdir -p /opt/mongodb/mongo-config

# mkdir -p /opt/mongodb/mongo-shard11

# chown -R mongod.mongod mongodb/

*//192.168.1.185*

# mkdir -p mongodb/logs

# mkdir -p mongodb/mongo-shard12

# mkdir -p mongodb/mongo-shard21

# mkdir -p mongodb/mongo-shard22

# chown -R mongod.mongod mongodb/

3.部署配置服务器

3.1修改配置文件

*//192.168.1.48*

# vim /etc/mongo-config.conf

systemLog:

 destination: file

 logAppend: true

 path: /opt/mongodb/logs/mongo-config.log

storage:

 dbPath: /opt/mongodb/mongo-config

 journal:

 enabled: true

 wiredTiger:

 engineConfig:

 directoryForIndexes: true

processManagement:

 fork: true

 pidFilePath: /var/run/mongodb/mongod-config.pid

 timeZoneInfo: /usr/share/zoneinfo

net:

 port: 27018

 bindIpAll: true

 maxIncomingConnections: 50

 unixDomainSocket:

 enabled: true

 pathPrefix: /tmp/

 filePermissions: 0700

security:

 keyFile: /etc/mongo.key

 authorization: enabled

replication:

 replSetName: ych

sharding:

 clusterRole: configsvr

3. *2 启动配置服务器*

# mongod -f /etc/mongo-config.conf

# mongo --port 27018

3.3*初始化配置服务器*

> rs.initiate(

 {

 \_id: "ych",

 version: 1,

 protocolVersion: 1,

 writeConcernMajorityJournalDefault: true,

 configsvr: true,

 members: [

 {

 \_id: 0,

 host: "192.168.1.48:27018",

 arbiterOnly: false,

 buildIndexes: true,

 hidden: false,

 priority: 66,

 tags: {

 ych: "YES"

 },

 slaveDelay: 0,

 votes: 1

 },

 ],

 settings: {

 chainingAllowed : true,

 }

 }

 )

3.4 *查看副本集状态*

mongo> rs.status()

**4.部署分片集shard1**

*4.1配置shard11*

//192.168.1.48

# vim /etc/mongo-shard11.conf

systemLog:

 destination: file

 logAppend: true

 path: /opt/mongodb/logs/mongo-shard11.log

storage:

 dbPath: /opt/mongodb/mongo-shard11

 journal:

 enabled: true

 wiredTiger:

 engineConfig:

 directoryForIndexes: true

processManagement:

 fork: true

 pidFilePath: /var/run/mongodb/mongo-shard11.pid

 timeZoneInfo: /usr/share/zoneinfo

net:

 port: 27019

 bindIpAll: true

 maxIncomingConnections: 50

 unixDomainSocket:

 enabled: true

 pathPrefix: /tmp

filePermissions: 0700

security:

 keyFile: /etc/mongo.key

 authorization: enabled

replication:

 replSetName: shard1

sharding:

 clusterRole: shardsvr

*4.2 启动shard11*

# mongod -f /etc/mongo-shard11.conf

*4.3配置shard12*

//192.168.10.185

# vim /etc/mongo-shard12.conf

systemLog:

 destination: file

 logAppend: true

 path: /opt/mongodb/logs/mongo-shard12.log

storage:

 dbPath: /opt/mongodb/mongo-shard12

 journal:

 enabled: true

 wiredTiger:

 engineConfig:

 directoryForIndexes: true

processManagement:

 fork: true

 pidFilePath: /var/run/mongodb/mongo-shard12.pid

 timeZoneInfo: /usr/share/zoneinfo

net:

 port: 27019

 bindIpAll: true

 maxIncomingConnections: 50

 unixDomainSocket:

 enabled: true

 pathPrefix: /tmp

filePermissions: 0700

security:

 keyFile: /etc/mongo.key

 authorization: enabled

replication:

 replSetName: shard1

sharding:

 clusterRole: shardsvr

*4.4启动shard12*

# mongod -f /etc/mongo-shard12.conf

*4.5 初始化shard1集群*

//192.168.10.48

# mongo --port 27019

> rs.initiate(

 {

 \_id: "shard1",

 version: 1,

 protocolVersion: 1,

 writeConcernMajorityJournalDefault: true,

 members: [

 {

 \_id: 0,

 host: "192.168.1.48:27019",

 arbiterOnly: false,

 buildIndexes: true,

 hidden: false,

 priority: 66,

 tags: {

 ych: "YES"

 },

 slaveDelay: 0,

 votes: 1

 },

 {

 \_id: 1,

 host: "192.168.1.185:27019",

 arbiterOnly: false,

 buildIndexes: true,

 hidden: false,

 priority: 55,

 tags: {

 ych: "NO"

 },

 slaveDelay: 0,

 votes: 1

 },

 ],

 settings: {

 chainingAllowed : true,

 }

 }

 )

*4.6 查看状态*

mongo> rs.status()

**5.部署分片集shard2**

*5.1配置shard21*

//192.168.1.185

# vim /etc/mongo-shard21.conf

systemLog:

 destination: file

 logAppend: true

 path: /opt/mongodb/logs/mongo-shard21.log

storage:

 dbPath: /opt/mongodb/mongo-shard21

 journal:

 enabled: true

 wiredTiger:

 engineConfig:

 directoryForIndexes: true

processManagement:

 fork: true

 pidFilePath: /var/run/mongodb/mongo-shard21.pid

 timeZoneInfo: /usr/share/zoneinfo

net:

 port: 27021

 bindIpAll: true

 maxIncomingConnections: 50

 unixDomainSocket:

 enabled: true

 pathPrefix: /tmp

 filePermissions: 0700

security:

 keyFile: /etc/mongo.key

 authorization: enabled

replication:

 replSetName: shard2

sharding:

 clusterRole: shardsvr

*5.2 启动shard21*

# mongod -f /etc/mongo-shard21.conf

*5.3 配置shard22*

//192.168.1.185

# vim /etc/mongo-shard22.conf

systemLog:

 destination: file

 logAppend: true

 path: /opt/mongodb/logs/mongo-shard22.log

storage:

 dbPath: /opt/mongodb/mongo-shard22

 journal:

 enabled: true

 wiredTiger:

 engineConfig:

 directoryForIndexes: true

processManagement:

 fork: true

 pidFilePath: /var/run/mongodb/mongo-shard22.pid

 timeZoneInfo: /usr/share/zoneinfo

net:

 port: 27022

 bindIpAll: true

 maxIncomingConnections: 50

 unixDomainSocket:

 enabled: true

 pathPrefix: /tmp

 filePermissions: 0700

security:

 keyFile: /etc/mongo.key

 authorization: enabled

replication:

 replSetName: shard2

sharding:

 clusterRole: shardsvr

*5.4启动shard22*

# mongod -f /etc/mongo-shard22.conf

*5.5 初始化shard2*

> rs.initiate(

 {

 \_id: "shard2",

 version: 1,

 protocolVersion: 1,

 writeConcernMajorityJournalDefault: true,

 members: [

 {

 \_id: 0,

 host: "192.168.1.185:27021",

 arbiterOnly: false,

 buildIndexes: true,

 hidden: false,

 priority: 66,

 tags: {

 ych: "YES"

 },

 slaveDelay: 0,

 votes: 1

 },

 {

 \_id: 1,

 host: "192.168.1.185:27022",

 arbiterOnly: false,

 buildIndexes: true,

 hidden: false,

 priority: 55,

 tags: {

 ych: "NO"

 },

 slaveDelay: 0,

 votes: 1

 },

 ],

 settings: {

 chainingAllowed : true,

 }

 }

)

*5.6 查看状态*

mongo> rs.status()

6.部署路由服务器

*6.1 配置路由服务器*

//192.168.1.48

# vim /etc/mongo-routes.conf

systemLog:

 destination: file

 logAppend: true

 path: /opt/mongodb/logs/mongo-routes.log

processManagement:

 fork: true

 pidFilePath: /var/run/mongodb/mongo-routes.pid

 timeZoneInfo: /usr/share/zoneinfo

net:

 port: 27017

 bindIpAll: true

 maxIncomingConnections: 500

 unixDomainSocket:

 enabled: true

 pathPrefix: /tmp/

 filePermissions: 0700

security:

 keyFile: /etc/mongo.key

sharding:

 configDB: ych/192.168.1.48:27018

*6.2启动、配置管理账号*

# mongo

mongos> use admin

mongos> db.createUser(

{

 user: "root",

 pwd: "ych.123.mongo",

 roles: [ { role: "\_\_system", db: "admin" } ]

 }

)

*6.3添加分片集群*

# mongo admin -u root -p ych.123.mongo

mongos> sh.addShard("shard1/192.168.1.48:27019,192.168.1.185:27019")

mongos> sh.addShard("shard2/192.168.1.185:27021,192.168.1.185:27022")

7.测试

*7.1 设置chunksize的大小为1M*

mongos> use config

mongos> db.settings.save( { \_id:"chunksize", value: 1 } )

*7.2 为test数据库开启分片，根据age对mycoll表进行分片*

mongos> sh.enableSharding("test")

mongos> sh.shardCollection("test.mycoll", {"age": 1})

*7.3 查看是否开启分片*

mongos> use test

mongos> db.mycoll.stats().sharded

true

*7.4 测试分片，写入数据到数据库中*

mongos> use test

mongos> for (i = 1; i <= 10000; i++) db.mycoll.insert({age:(i%100), name:"bigboss\_user"+i, address:i+", Some Road, Zhengzhou, Henan", country:"China", course:"cousre"+"(i%12)"})

*7.5 查看分片信息了*

mongos> sh.status()

mongos> printShardingStatus(db.getSisterDB("config"),1);