**分布式集群电商平台搭建方案**

|  |  |  |
| --- | --- | --- |
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| 注： | 本文档搭建为单机伪分布式集群 |

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# 环境约定

|  |  |  |
| --- | --- | --- |
| ISO | CentOS6.5X64 |  |
| JDK | jdk1.7.0\_80 |  |
| dubbo |  | 提供RPC远程调用 |
| rabitMQ |  | 消息中间件 |
| zookeeper | zookeeper-3.4.9 | dubbo注册中心 |
| redis | redis-3.2.8 |  |
| mysql | mysql-cluster-gpl-7.4.13-linux-glibc2.5-x86\_64 |  |
| nginx | nginx-1.10.3 | http层面的负载均衡 |
| tomcat | apache-tomcat-8.5.0 |  |

# 目录约定

根目录下创建app目录

[root@localhost /]# mkdir /app



最终目录结构效果

/app

├── base-data

│?? ├── nginx

│?? ├── tomcat-1

│?? └── tomcat-2

├── cms

│?? └── tomcat

├── oms

│?? └── tomcat

├── software

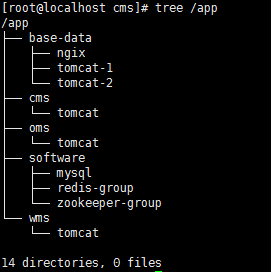
│?? ├── mysql

│?? ├── redis-group

│?? └── zookeeper-group

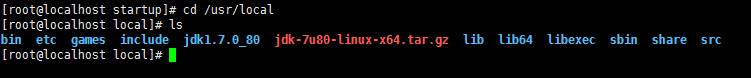
└── wms

└── tomcat



# Java环境搭建

[root@localhost local]# cd /usr/local;tar -zxvf jdk-7u80-linux-x64.tar.gz



[root@localhost local]# cd /etc/profile.d

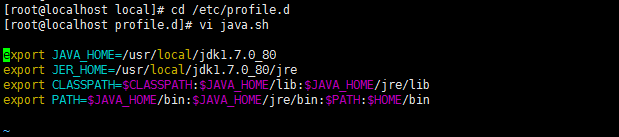
[root@localhost profile.d]# vi java.sh

export JAVA\_HOME=/usr/local/jdk1.7.0\_80

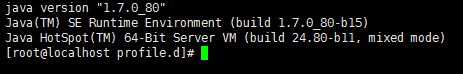
export JER\_HOME=/usr/local/jdk1.7.0\_80/jre

export CLASSPATH=$CLASSPATH:$JAVA\_HOME/lib:$JAVA\_HOME/jre/lib

export PATH=$JAVA\_HOME/bin:$JAVA\_HOME/jre/bin:$PATH:$HOME/bin



[root@localhost profile.d]# java -version



# Zookeeper集群搭建

server.A=B:C:D

A：myid（当前节点ID）

B：主机IP或域名

C：follower与leader通信端口

D：选举leader端口

## 集群参数约定（节点个数5）

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A** | **clientPort** | **C** | **D** | **role** |
| 1 | 2181 | 2881 | 3881 |  |
| 2 | 2182 | 2882 | 3882 |  |
| 3 | 2183 | 2883 | 3883 |  |
| 4 | 2184 | 2884 | 3884 | observer |
| 5 | 2185 | 2885 | 3885 | observer |

**节点1-3：**

随机产生一台leader，剩余的两台为follower，leader负责广播follower写请求并发起投票，follower进行投票，票数过半写请求成功

**节点4-5：**

观察者角色，处理读请求，不参与leader投票

## 搭建

[root@localhost zookeeper-group]# wget <http://apache.fayea.com/zookeeper/zookeeper-3.4.9/zookeeper-3.4.9.tar.gz>



[root@localhost zookeeper-group]# tar -zxvf zookeeper-3.4.9.tar.gz



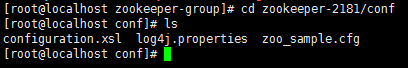
[root@localhost zookeeper-group]# mv zookeeper-3.4.9 zookeeper-2181

[root@localhost zookeeper-group]# ls



[root@localhost zookeeper-group]# cd zookeeper-2181/conf

[root@localhost conf]# ls



[root@localhost conf]# cp zoo\_sample.cfg zoo.cfg

[root@localhost conf]# ls



[root@localhost conf]# vi zoo.cfg



加入如下配置

注意dataDir 默认配置已经存在

dataDir=/app/software/zookeeper-group/zookeeper-2181/data

dataLogDir=/app/software/zookeeper-group/zookeeper-2181/logs

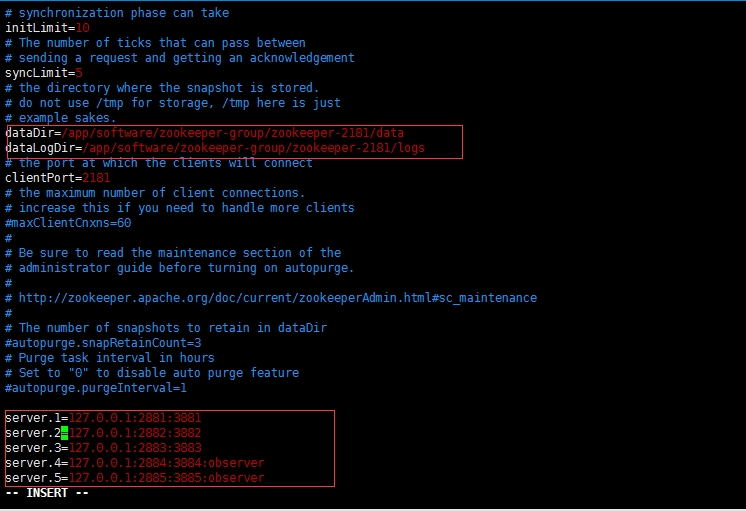
server.1=127.0.0.1:2881:3881

server.2=127.0.0.1:2882:3882

server.3=127.0.0.1:2883:3883

server.4=127.0.0.1:2884:3884:observer

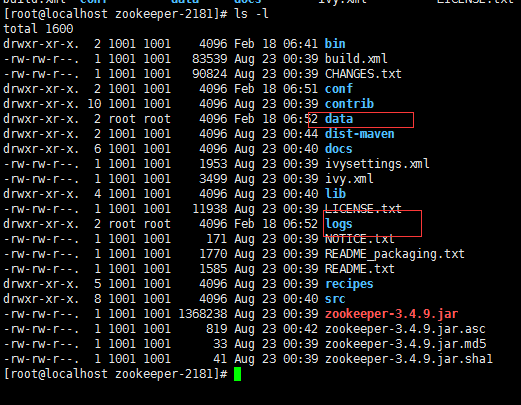
server.5=127.0.0.1:2885:3885:observer



[root@localhost conf]# cd ../;mkdir data logs



[root@localhost zookeeper-2181]# ls -l



[root@localhost zookeeper-2181]# cd ../



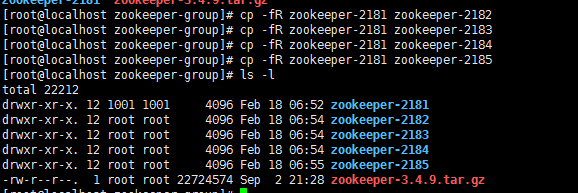
[root@localhost zookeeper-group]# cp -fR zookeeper-2181 zookeeper-2182

[root@localhost zookeeper-group]# cp -fR zookeeper-2181 zookeeper-2183

[root@localhost zookeeper-group]# cp -fR zookeeper-2181 zookeeper-2184

[root@localhost zookeeper-group]# cp -fR zookeeper-2181 zookeeper-2185

[root@localhost zookeeper-group]# ls -l



依次修改各个目录下的zoo.cfg文件

[root@localhost zookeeper-group]# cd zookeeper-2182/conf



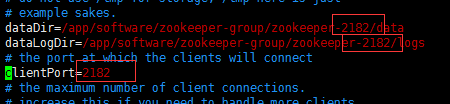
[root@localhost zookeeper-group]# vi zoo.cfg



:%s/2181/2182/g

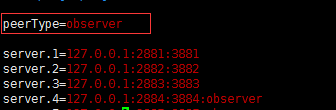






2184和2185为观察者角色

需要添加peerType=observer



[root@localhost zookeeper-group]# cd zookeeper-2181/data/

[root@localhost data]# vi myid





其他4个目录依次创建，分别为2,3,4,5

## 编写zookeeper集群启动脚本

[root@localhost zookeeper-group]# cd /app/startup/



[root@localhost startup]# vi zookeeper.sh



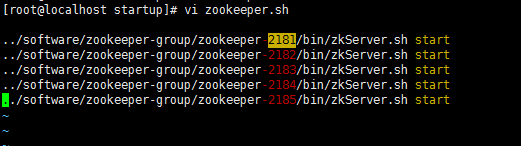
../software/zookeeper-group/zookeeper-2181/bin/zkServer.sh start

../software/zookeeper-group/zookeeper-2182/bin/zkServer.sh start

../software/zookeeper-group/zookeeper-2183/bin/zkServer.sh start

../software/zookeeper-group/zookeeper-2184/bin/zkServer.sh start

../software/zookeeper-group/zookeeper-2185/bin/zkServer.sh start



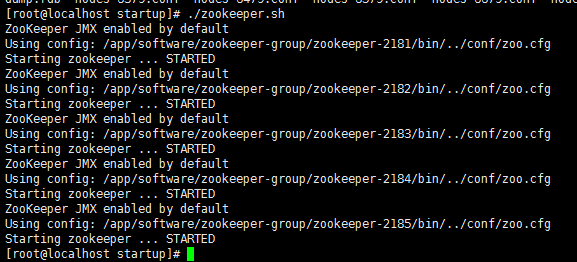
赋予脚本启动权限

[root@localhost startup]# chmod 777 zookeeper.sh

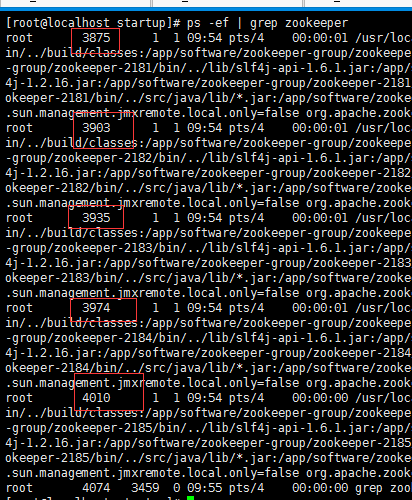




[root@localhost startup]# ./zookeeper.sh



[root@localhost startup]# ps -ef | grep zookeeper



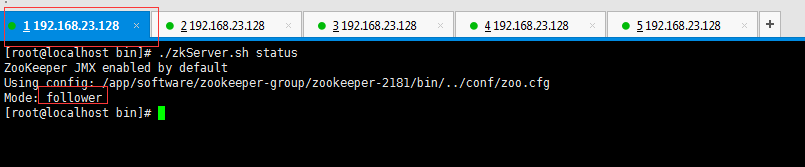
5个zookeeper进程，集群启动成功

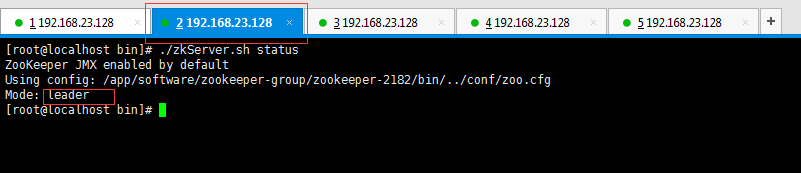
[root@localhost startup]# cd /app/software/zookeeper-group/zookeeper-2181/bin

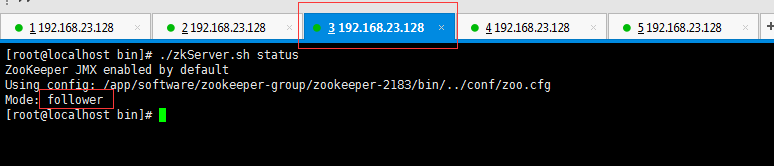


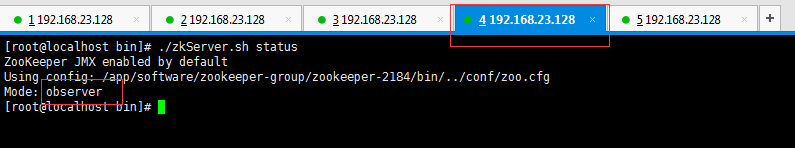


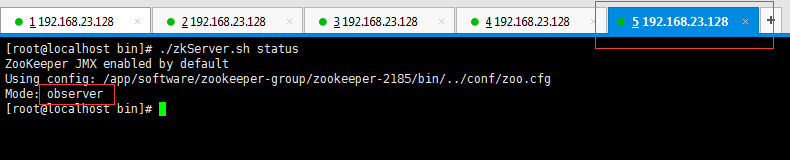
查看集群角色状态，跟设置一样，节点1-3一台leader两台follow，节点4-5observer







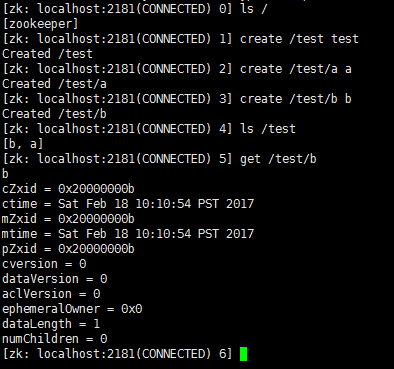




客户端登陆zookeeper

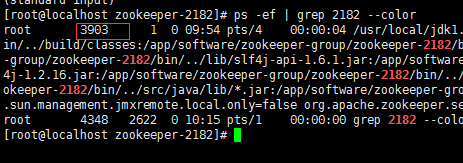


测试



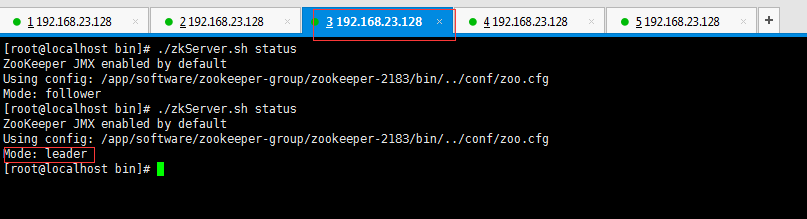
模拟节点宕机，杀死leader

[root@localhost zookeeper-2182]# ps -ef | grep 2182 --color



[root@localhost zookeeper-2182]# kill -9 3903

杀死leader后，节点3选举为leader



# Redis集群搭建

## 集群参数约定（节点个数6，三主每主一从）

|  |  |
| --- | --- |
| **port** | **role** |
| **6379** |  |
| **6479** |  |
| **6579** |  |
| **6679** |  |
| **6779** |  |
| **6879** |  |

## 搭建

### 获取redis包，安装redis

[root@localhost redis-group]# wget <http://download.redis.io/releases/redis-3.2.8.tar.gz>

[root@localhost redis-group]# tar xzf redis-3.2.8.tar.gz



[root@localhost redis-group]# mv redis-3.2.8 redis-6379

[root@localhost redis-group]# ls

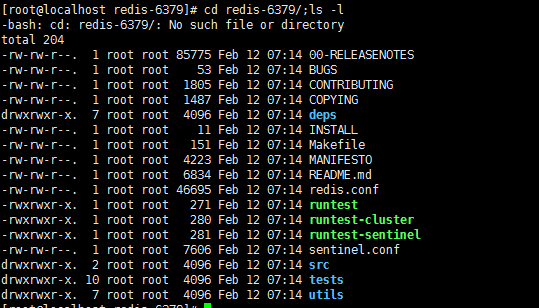


[root@localhost redis-group]# mkdir redis-6479 redis-6579 redis-6679 redis-6779 redis-6879

[root@localhost redis-group]# ls



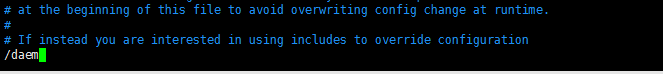
[root@localhost redis-6379]# cd redis-6379/;ls -l



[root@localhost redis-6379]# vi redis.conf

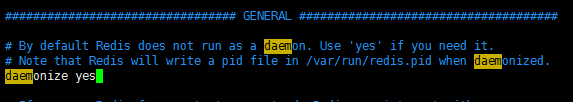


vi 中搜索daem关键字



vi 键盘a

修改daemonize no--> daemonize yes（开启后台启动）

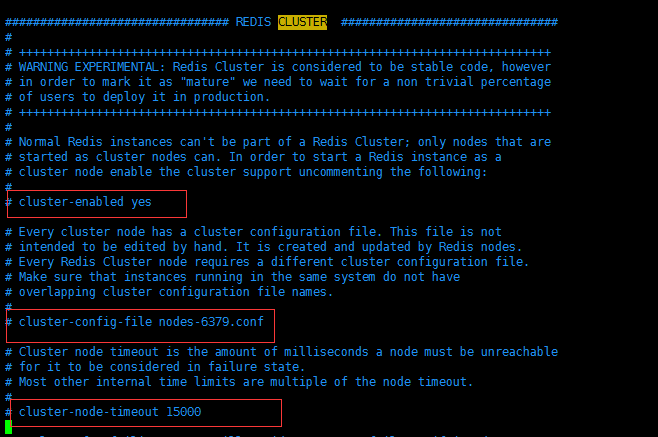


vi 键盘ESC

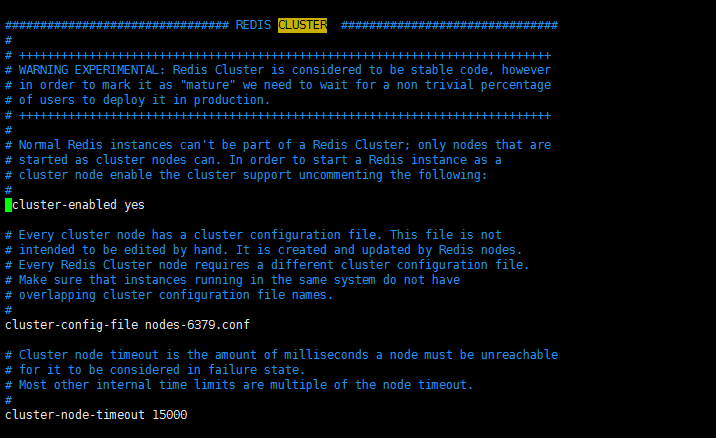
vi 中搜索CLUSTER



vi 键盘a



开启集群模式



vi 键盘ESC

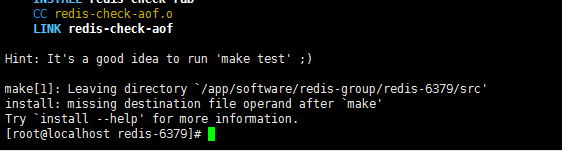
vi 键盘 shift+zz(大写ZZ)保存并退出



[root@localhost redis-6379]# make;install make



安装完成



拷贝配置到另外5个节点

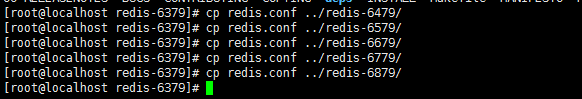
[root@localhost redis-6379]# cp redis.conf ../redis-6479/

[root@localhost redis-6379]# cp redis.conf ../redis-6579/

[root@localhost redis-6379]# cp redis.conf ../redis-6679/

[root@localhost redis-6379]# cp redis.conf ../redis-6779/

[root@localhost redis-6379]# cp redis.conf ../redis-6879/



[root@localhost redis-6379]# tree -L 2 /app/software/redis-group/





[root@localhost redis-6379]# cd ../redis-6479/

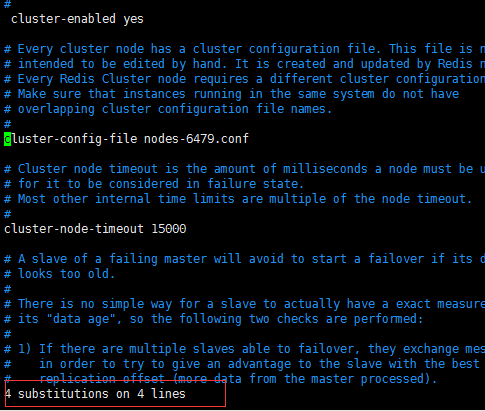
[root@localhost redis-6479]# vi redis.conf



将redis.conf中6379文本替换成6479

:%s/6379/6479/g



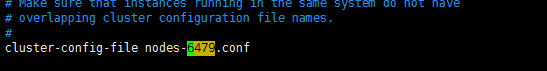


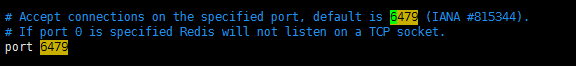
检查是否替换成功

vi 搜索6479



vi 键盘n搜索下一行







同样的方式分别修改以下目录的redis.conf配置，端口为目录端口



### 编写redis集群启动脚本

[root@localhost redis-6879]# cd /app/startup/



[root@localhost startup]# vi redis.sh



../software/redis-group/redis-6379/src/redis-server ../software/redis-group/redis-6379/redis.conf

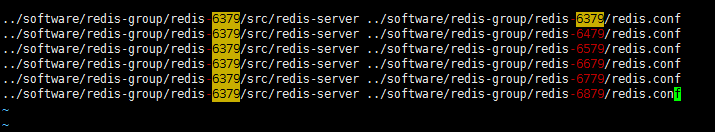
../software/redis-group/redis-6379/src/redis-server ../software/redis-group/redis-6479/redis.conf

../software/redis-group/redis-6379/src/redis-server ../software/redis-group/redis-6579/redis.conf

../software/redis-group/redis-6379/src/redis-server ../software/redis-group/redis-6679/redis.conf

../software/redis-group/redis-6379/src/redis-server ../software/redis-group/redis-6779/redis.conf

../software/redis-group/redis-6379/src/redis-server ../software/redis-group/redis-6879/redis.conf



赋予脚本启动权限

[root@localhost startup]# chmod 777 redis.sh

[root@localhost startup]# ls



[root@localhost startup]# ./redis.sh

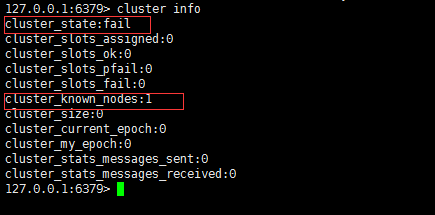


查看redis进程，看集群是否启动成功

[root@localhost startup]# ps -ef| grep redis



此时的redis集群还不可用



### 安装ruby环境（redis-trib.rb工具的相关依赖）

[root@localhost redis-group]# yum -y install ruby

[root@localhost redis-group]# yum -y install rubygems

[root@localhost redis-group]# gem install redis

### 使用redis-trib.rb工具关联集群

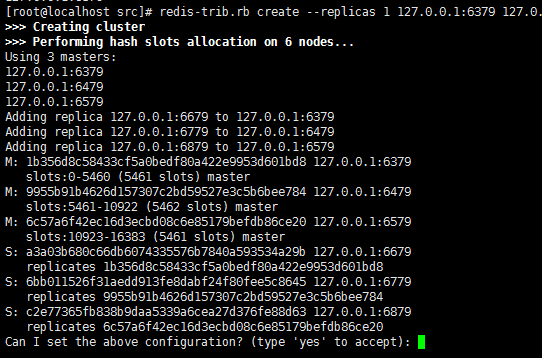
[root@localhost startup]# cd /app/software/redis-group/redis-6379/src



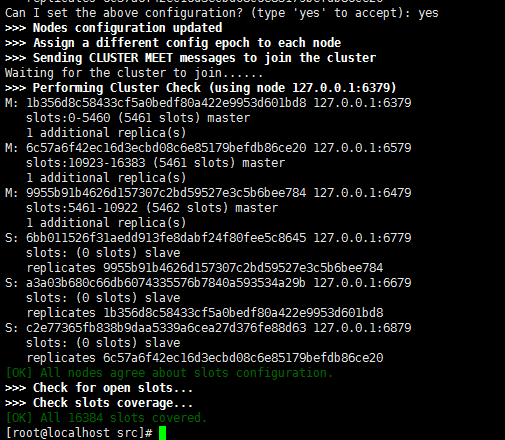
[root@localhost src]# redis-trib.rb create --replicas 1 127.0.0.1:6379 127.0.0.1:6479 127.0.0.1:6579 127.0.0.1:6679 127.0.0.1:6779 127.0.0.1:6879

参数解释：replicas 为每个master创建一个slave





yes



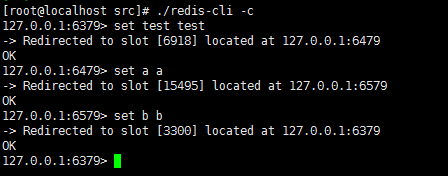
成功！

以集群的方式登陆redis

[root@localhost src]# ./redis-cli -c



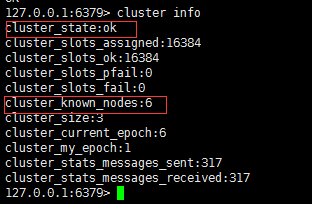
测试redis集群



查看集群状态

127.0.0.1:6379> cluster info

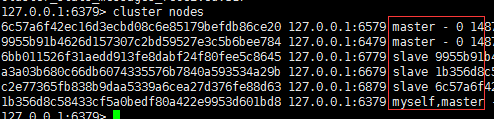
集群状态ok，节点数量6



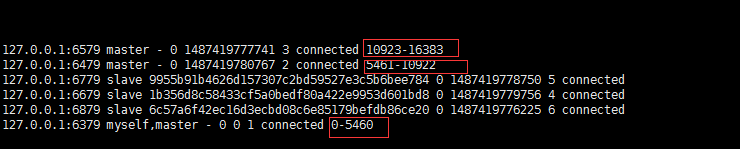
查看集群节点

127.0.0.1:6379> cluster nodes

三主，三从



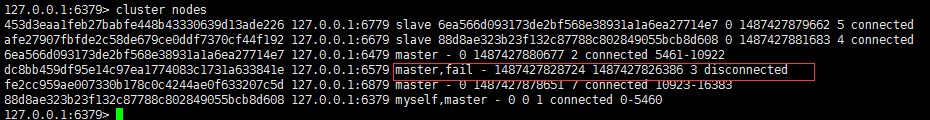
Slot的分配



模拟节点宕机，杀死master

例如本文档杀死端口为6579的master进程

kill -9 进程id



变化：原master的slave变master

保证3个master不宕机，集群正常使用，也就是说本集群允许最多挂掉3个节点

# Rabbitmq集群搭建

## 集群参数约定

## 搭建

### 安装erlang依赖

[root@bogon rabbitmq-group]# wget <http://www.rabbitmq.com/releases/erlang/erlang-18.1-1.el6.x86_64.rpm>



[root@bogon rabbitmq-group]# rpm -ivh erlang-18.1-1.el6.x86\_64.rpm



### 安装socat依赖

wget ?no-cache http://www.convirture.com/repos/definitionsrhel/6.x/convirt.repo -O /etc/yum.repos.d/convirt.repo



[root@bogon rabbitmq-group]# yum install socat



### 获取rabbitmq包，安装

[root@bogon rabbitmq-group]#

wget http://www.rabbitmq.com/releases/rabbitmq-server/v3.6.6/rabbitmq-server-3.6.6-1.el6.noarch.rpm



[root@bogon rabbitmq-group]# rpm -ivh rabbitmq-server-3.6.6-1.el6.noarch.rpm



# Tomcat参数约定

|  |  |  |  |
| --- | --- | --- | --- |
| **Server name** | **Tomcat port** | **HTTP/1.1 port** | **AJP/1.3 port** |
| base-data-web-8010 | 8001 | 8010 | 8100 |
| base-data-web-8020 | 8002 | 8020 | 8200 |
| cms-web-8030 | 8003 | 8030 | 8300 |
| oms-web-8040 | 8004 | 8040 | 8400 |
| wms-web-8050 | 8005 | 8050 | 8500 |

## 获取tomcat包，配置tomcat

[root@localhost /]# cd /app/tomcat/



[root@localhost tomcat]# wget http://archive.apache.org/dist/tomcat/tomcat-8/v8.5.0/bin/apache-tomcat-8.5.0.tar.gz





[root@localhost tomcat]# tar -zxvf apache-tomcat-8.5.0.tar.gz



[root@localhost tomcat]# mv apache-tomcat-8.5.0 base-data-web-8010

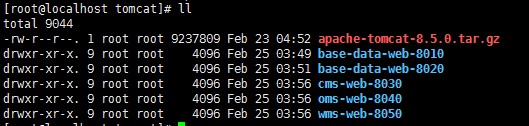


[root@localhost tomcat]# cp -fR base-data-web-8010/ base-data-web-8020/

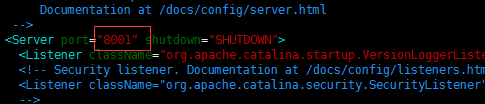
[root@localhost tomcat]# cp -fR base-data-web-8010/ cms-web-8030/

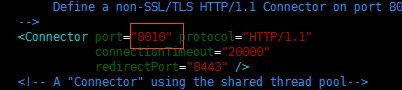
[root@localhost tomcat]# cp -fR base-data-web-8010/ oms-web-8040/

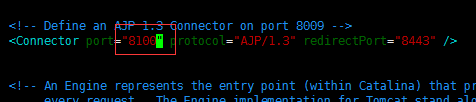
[root@localhost tomcat]# cp -fR base-data-web-8010/ wms-web-8050/



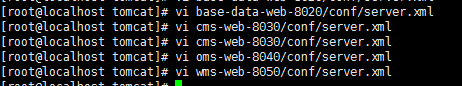
[root@localhost tomcat]# vi base-data-web-8010/conf/server.xml







分别编辑剩余五个，端口参数见上表



## 编写tomcat启动脚本

[root@localhost tomcat]# cd /app/startup/



[root@localhost startup]# vi tomcat.sh



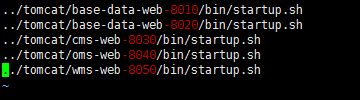
../tomcat/base-data-web-8010/bin/startup.sh

../tomcat/base-data-web-8020/bin/startup.sh

../tomcat/cms-web-8030/bin/startup.sh

../tomcat/oms-web-8040/bin/startup.sh

../tomcat/wms-web-8050/bin/startup.sh



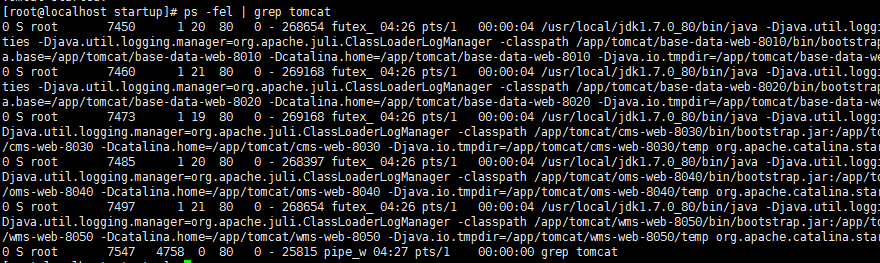
[root@localhost startup]# chmod 777 tomcat.sh







[root@localhost startup]# ps -fel | grep tomcat



启动成功！

# Nginx安装

## 获取nginx包，安装nginx

[root@bogon nginx]# wget <http://nginx.org/download/nginx-1.10.3.tar.gz>





[root@bogon nginx]# tar -zxvf nginx-1.10.3.tar.gz



[root@localhost nginx]# mkdir base-data-80





[root@localhost nginx]# cd nginx-1.10.3



[root@localhost nginx-1.10.3]# yum -y install pcre-devel



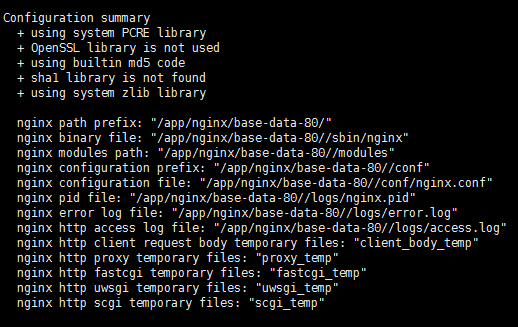
[root@localhost nginx-1.10.3]# yum -y install zlib-devel



[root@localhost nginx-1.10.3]# ./configure --prefix=/app/nginx/base-data-80/

（可用--prefix=path指定安装目录，默认  /usr/local/nginx）





[root@localhost nginx-1.10.3]# make ;make install

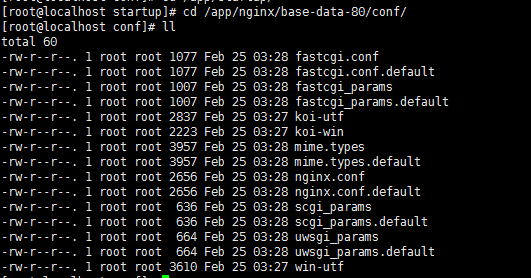




安装成功！

## 配置base-data项目的负载均衡

[root@localhost startup]# cd /app/nginx/base-data-80/conf/



[root@localhost conf]# vi nginx.conf



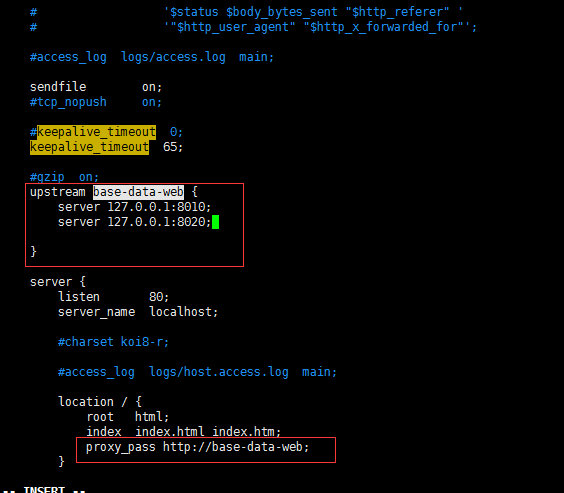
upstream base-data-web {

server 127.0.0.1:8010;

server 127.0.0.1:8020;

}

proxy\_pass http://base-data-web;



## 编写nginx启动脚本

[root@localhost nginx-1.10.3]# cd /app/startup/



[root@bogon startup]# vi nginx.sh



/app/nginx/base-data-80/sbin/nginx



[root@bogon startup]# chmod 777 nginx

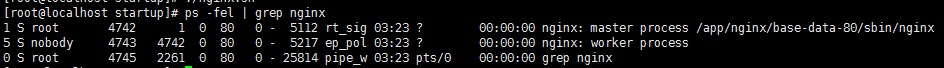




[root@bogon startup]# ./nginx.sh



[root@localhost startup]# ps -fel | grep nginx



测试，为了看清nginx具体将请求转发到哪个服务器，在base-data-web-8010和base-data-web-8020的index.jsp加入标识

[root@localhost ROOT]# vi /app/tomcat/base-data-web-8010/webapps/ROOT/index.jsp

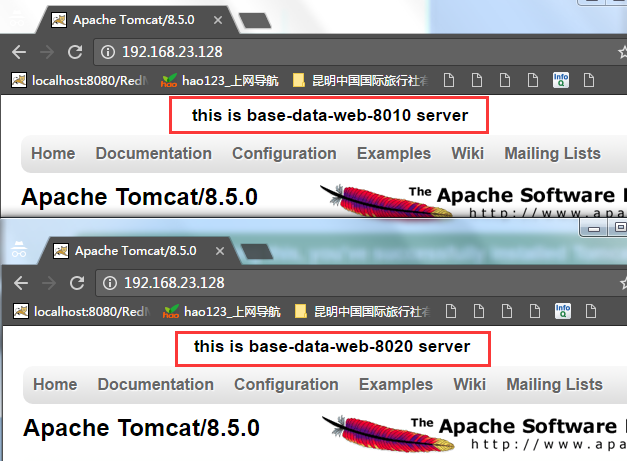
[root@localhost ROOT]# vi /app/tomcat/base-data-web-8020/webapps/ROOT/index.jsp





两次访问，发现，每次访问的tomcat服务器都不一致

（如果出现127.0.0.1可以访问，外部无法访问的情况，请关闭虚拟机防火墙，关闭方法参照附录）



# Dubbo控制台

# Mysql集群搭建

## 集群参数约定

|  |  |  |
| --- | --- | --- |
|  | **port** | **role** |
| NDB\_MGMD |  | 管理节点 |
| NDBD-7001 | 7001 | 数据节点-1 |
| NDBD-7002 | 7002 | 数据节点-2 |
| MYSQLD-8001 | 8001 | Sql节点-2 |
| MYSQLD-8002 | 8002 | Sql节点-2 |

## 查看系统默认安装版本，卸载

CentOS6.5X64默认安装了mysql服务，查看系统自带的mysql服务版本，并卸载

查看服务

[root@localhost /]# rpm -qa|grep mysql



卸载服务

[root@localhost /]# rpm -e mysql-libs --nodeps



## 搭建

### 安装mysql

[root@localhost mysql-group]# wget https://cdn.mysql.com/archives/mysql-cluster-gpl-7.4/mysql-cluster-gpl-7.4.13-linux-glibc2.5-x86\_64.tar.gz





[root@bogon mysql-group]# tar -zxvf mysql-cluster-gpl-7.4.13-linux-glibc2.5-x86\_64.tar.gz





[root@bogon mysql-group]# mv mysql-cluster-gpl-7.4.13-linux-glibc2.5-x86\_64 MYSQLD-8001

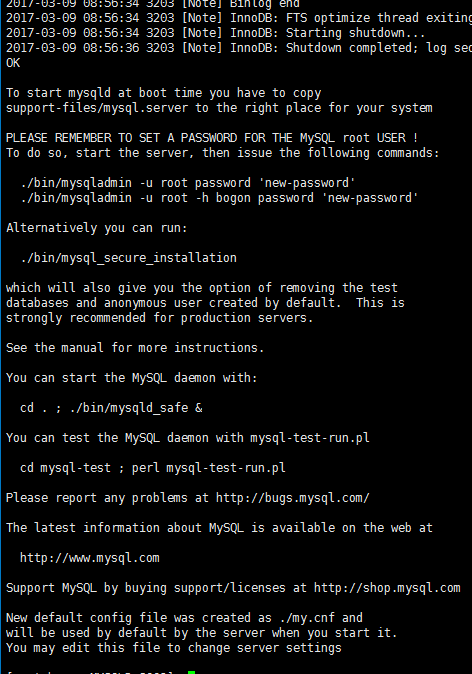


[root@bogon mysql-group]# cd MYSQLD-8001



[root@bogon MYSQLD-8001]# scripts/mysql\_install\_db --user=mysql





安装成功！



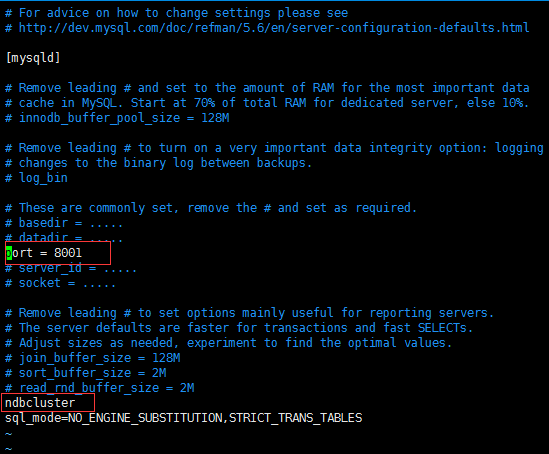
### 配置sql节点

[root@bogon MYSQLD-8001]# vi my.cnf



port = 8001 修改端口

ndbcluster 开启集群模式



[root@bogon MYSQLD-8001]# cd support-files/



[root@bogon support-files]# vi mysql.server



basedir=/app/software/mysql-group/MYSQLD-8001/

datadir=/app/software/mysql-group/MYSQLD-8001/data/



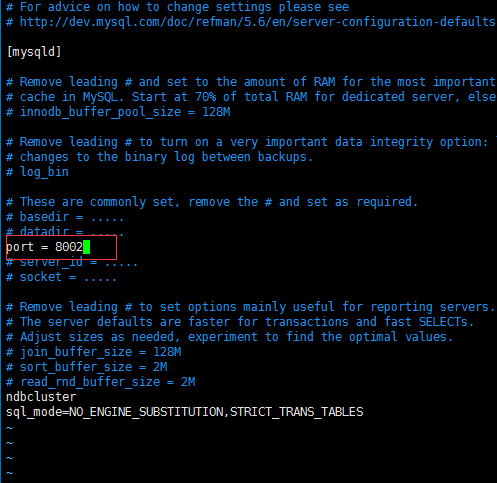
重复上面步骤 安装MYSQLD-8002

修改配置

port = 8001

basedir=/app/software/mysql-group/MYSQLD-8002/

datadir=/app/software/mysql-group/MYSQLD-8002/data/





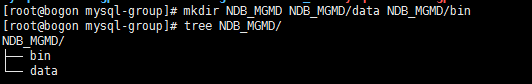
[root@bogon mysql-group]# ls MYSQLD-800\* -d



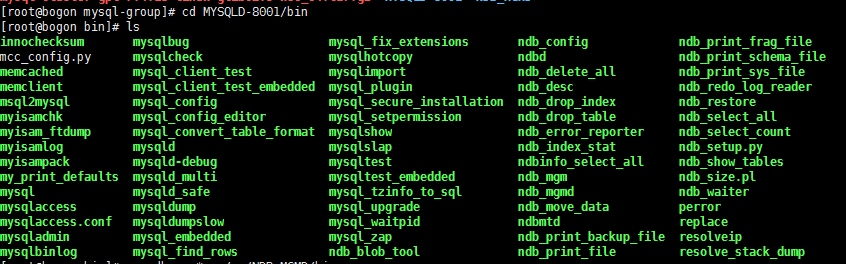
### 安装管理节点

mysql-group目录创建如下目录结构

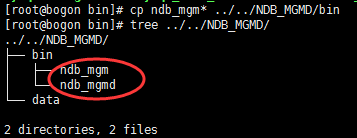
[root@bogon mysql-group]# mkdir NDB\_MGMD NDB\_MGMD/data NDB\_MGMD/bin



[root@bogon mysql-group]# cd MYSQLD-8001/bin



[root@bogon bin]# cp ndb\_mgm\* ../../NDB\_MGMD/bin



[root@bogon bin]# cd ../../NDB\_MGMD/



编写config.ini 配置

[NDBD DEFAULT]

NoOfReplicas=1

[NDB\_MGMD]

#设置管理节点服务器

HostName=127.0.0.1

DataDir=/app/software/mysql-group/NDB\_MGMD/data

[NDBD]

#设置存储节点服务器 节点1

HostName=127.0.0.1

DataDir=/app/software/mysql-group/NDBD-1

[NDBD]

#设置存储节点服务器 节点2

HostName=127.0.0.1

DataDir=/app/software/mysql-group/NDBD-2

[MYSQLD]

#设置SQL节点服务器 节点1

HostName=127.0.0.1

[MYSQLD]

#设置SQL节点服务器 节点2

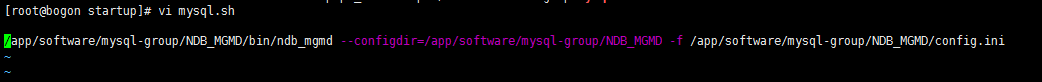
HostName=127.0.0.1





### 编写启动脚本

/app/software/mysql-group/NDB\_MGMD/bin/ndb\_mgmd --configdir=/app/software/mysql-group/NDB\_MGMD -f /app/software/mysql-group/NDB\_MGMD/config.ini





[root@bogon startup]# ./mysql.sh



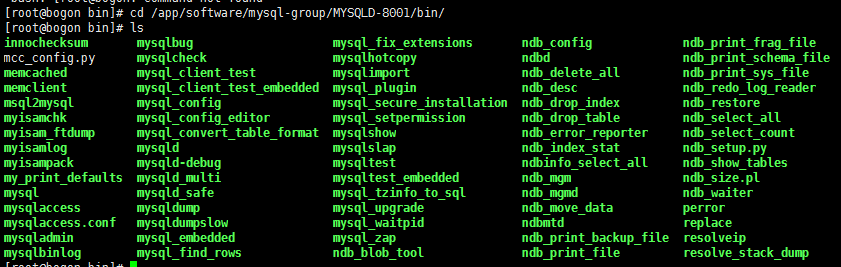
查询管理节点进程

[root@bogon startup]# ps -fel | grep mysql --color



### 登录mysql终端

[root@bogon bin]# cd /app/software/mysql-group/MYSQLD-8001/bin/

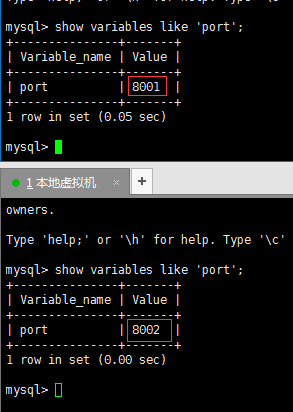


[root@bogon bin]# ./mysql -h 127.0.0.1 -P 8001 -u root

[root@bogon bin]# ./mysql -h 127.0.0.1 -P 8002 -u root

查看当前mysql端口号，检查是否登录不同的终端

mysql> show variables like 'port';

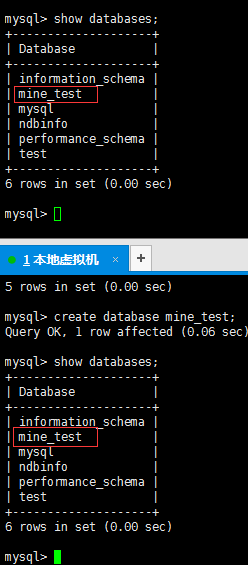


### 数据同步测试

以下命令只在一个终端执行

创建数据库 mine\_test

create database mine\_test;



创建表

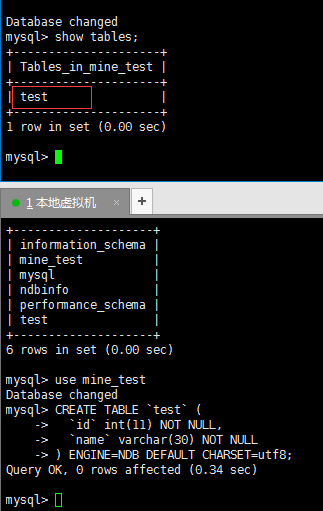
必须指定表引擎为NDB

CREATE TABLE `test` (

`id` int(11) NOT NULL,

`name` varchar(30) NOT NULL

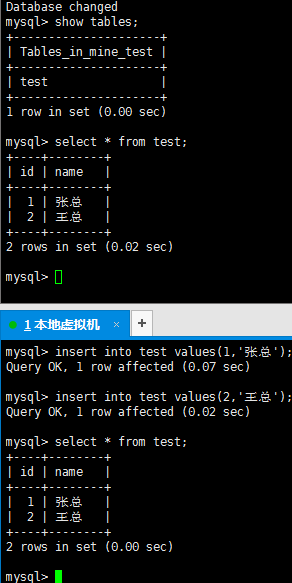
) ENGINE=NDB DEFAULT CHARSET=utf8;



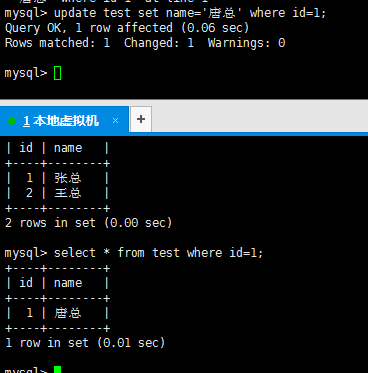
插入测试数据

insert into test values(1,'张总');

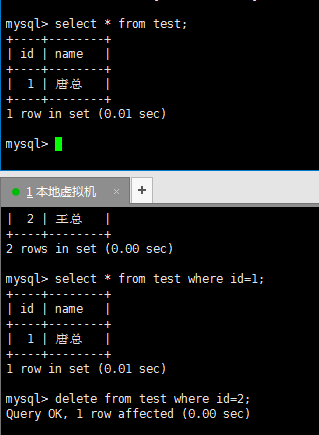
insert into test values(2,'王总');



修改测试数据

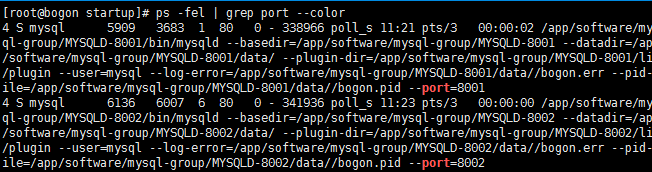


删除测试数据



### 模拟节点宕机

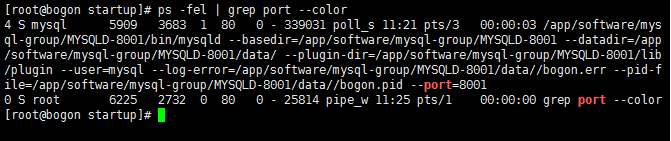
[root@bogon startup]# ps -fel | grep port --color

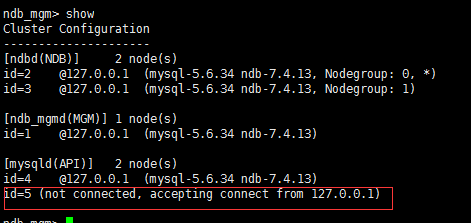


停止8002端口数据节点

[root@bogon support-files]# ./mysql.server stop







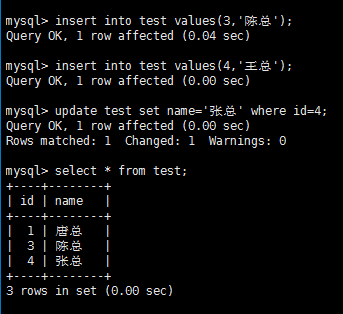
8002数据节点已关闭

### 宕机后数据同步测试

insert into test values(3,'陈总');

insert into test values(4,'王总');

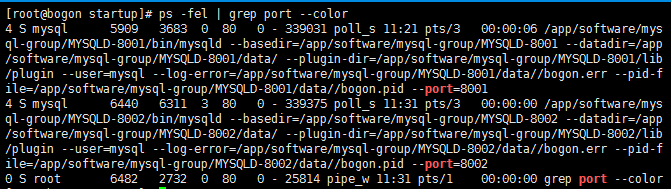
update test set name='张总' where id=4;

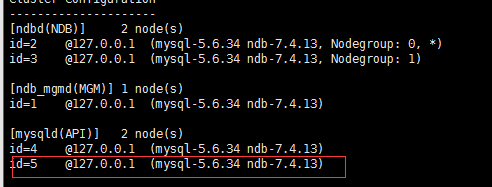


开启8002端口数据节点

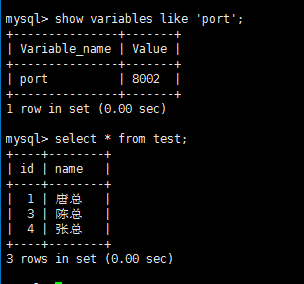
[root@bogon support-files]# ./mysql.server start







登录终端，查看数据，已经同步过来



# 项目模型搭建

# 附录

## vi编辑器没有颜色

[root@mail test]#rpm -qa|grep vim  
vim-minimal-6.1-29  
vim-common-6.1-29  
vim-enhanced-6.1-29  
  
直接用yum升级安装就ok了，  
[root@mail test]#yum -y install vim-enhanced  
  
安装完毕后，vi个文件试试，还是不行，原来是链接文件也要修改，ok，因为如下：  
[root@mail test]# ll /bin/vi  
lrwxrwxrwx  1 root root 12 Dec  9 10:52 /bin/vi -> /usr/bin/vim  
  
那就修改下吧：  
[root@mail test]#mv /bin/vi /bin/vi.bak  
[root@mail test]#ln -s /usr/bin/vim /bin/vi  
  
顺便修改下vi的设置，对编写perl代码更方便：  
[root@mail test]# vi /etc/vimrc  
  
  syntax on  
  set hlsearch  
  set nu  
  set tabstop=4  
  set shiftwidth=4  
  set expandtab  
  set shiftround  
  
OK，这样就可以很爽的用perl了

## Rz命令安装

## tree显示目录树

安装

[root@localhost software]# yum -y install tree

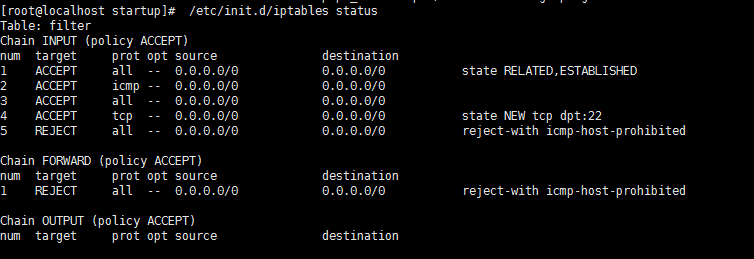


## 关闭防火墙

### 临时关闭防火墙命令

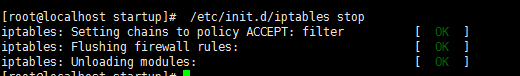
查看状态

[root@localhost startup]# /etc/init.d/iptables status



临时关闭

[root@localhost startup]# /etc/init.d/iptables stop



### 永久关闭防火墙命令

[root@localhost startup]# chkconfig iptables off

（重启电脑生效）



## 查看系统位数命令

[root@localhost ~]# getconf LONG\_BIT



## 查看隐藏文件命令

[root@bogon support-files]# ls -a

