**13\_project202升级网站运行平台+部署缓存服务+数据迁移+部署集群**

**一 升级网站运行平台-清除当前配置**

**1.1 停止服务**

[root@web33 ~]# systemctl stop httpd

[root@web33 ~]# systemctl disable httpd

**1.2 卸载共享存储**

[root@web33 ~]# umount /var/www/html/

[root@web33 ~]# df -h

[root@web33 ~]# vim /etc/fstab #注释掉nfs挂载的语句

**二 升级网站运行平台-部署LNMP**

**2.1 安装软件**

web33 ~]# cd lnmp\_soft/

web33 lnmp\_soft]# tar -xf nginx-1.12.2.tar.gz

web33 lnmp\_soft]# cd nginx-1.12.2/

web33 nginx-1.12.2]# yum -y install gcc pcre-devel zlib-devel

eb33 nginx-1.12.2]# ./configure

web33 nginx-1.12.2]# make

web33 nginx-1.12.2]# make install

web33 ~]# yum -y install php php-fpm php-mysql

web33 ~]# yum -y install mariadb mairadb-server mariadb-devel

**2.2 修改nginx配置文件,使nginx支持PHP**

web33 ~]# vim /usr/local/nginx/conf/nginx.conf

65 location ~ \.php$ {

66 root html;

67 fastcgi\_pass 127.0.0.1:9000;

68 fastcgi\_index index.php;

69 # fastc....\_name;

70 include fastcgi.conf;

71 }

**2.3 挂载共享存储**

web33 ~]# vim /etc/fstab #修改nfs挂载点为/usr/local/nginx/html

192.168.4.30:/sitedir /usr/local/nginx/html nfs defaults 0 0

web33 ~]# mount -a

web33 ~]# df -h

web33 ~]# systemctl enable remote-fs.target

#设置远程挂载服务开机运行

**2.4 启动服务**

web33 ~]# /usr/local/nginx/sbin/nginx

web33 ~]# systemctl start php-fpm

web33 ~]# systemctl start mysqld

web33 ~]# ss -antulp | grep :80

web33 ~]# ss -antulp | grep :9000

web33 ~]# ss -antulp | grep :3306

**2.5 测试nignx服务配置**

nfs30 ~]# vim /sitedir/test2.php

<?php

$school= "tarena";

echo $school;

?>

nfs30 ~]# curl http://192.168.4.33/test2.php

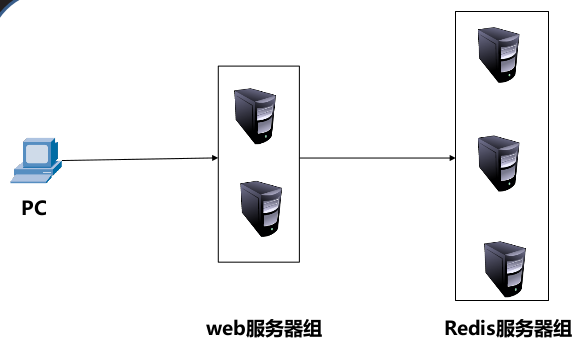
tarena

nfs30 ~]# curl http://192.168.4.44/test2.php

tarena

**三 部署缓存服务-环境准备**

**3.1 拓扑结构**



**3.2 IP规划**



**3.3 部署redis服务器(51 52 53 54 56 57操作一致)**

**3.3.1 真机传输软件**

room9pc01 ~]$ scp /linux-soft/03/redis/redis-4.0.8.tar.gz root@192.168.4.51:/root

**3.3.2 安装依赖包及redis,检查redis端口**

redisa51 ~]# yum -y install gcc pcre-devel

redisa51 ~]# tar -xf redis-4.0.8.tar.gz

redisa51 ~]# cd redis-4.0.8

redisa51 redis-4.0.8]# make && make install

redisa51 redis-4.0.8]# cd utils/

redisa51 utils]# ./install\_server.sh #一路回车

redisa51 ~]# ss -antulp | grep :6379 #只有6379端口

**3.3.3 修改配置文件,启用集群配置**

redisa51 ~]# /etc/init.d/redis\_6379 stop

redisa51 ~]# vim /etc/redis/6379.conf

70 bind 192.168.4.51 #修改ip

93 port 6351 #修改端口（可选配置）

815 cluster-enabled yes #解除注释,启用集群功能

823 cluster-config-file nodes-6379.conf #存储集群信息的配置文件

829 cluster-node-timeout 5000 #集群节点通信超时时间

**3.3.4 启动redis服务,检查端口**

redisa51 ~]# /etc/init.d/redis\_6379 start

redisa51 ~]# ss -antulp | grep redis-server #多个1万多的端口

**四 部署缓存服务-创建redis集群**

**4.1 配置管理主机**

room9pc01 ~]$ scp /linux-soft/03/redis/redis-3.2.1.gem [root@192.168.4.58:/root](mailto:root@192.168.4.58:/root)

mgm58 ~]# yum -y install ruby rubygems

mgm58 ~]# gem install redis-3.2.1.gem

**4.2 创建集群管理脚本**

mgm58 ~]# mkdir /root/bin

mgm58 ~]# cp redis-4.0.8/src/redis-trib.rb /root/bin/

mgm58 ~]# chmod +x /root/bin/redis-trib.rb

**4.3 创建集群**

mgm58 ~]# **redis-trib.rb create --replicas** 1 \

> 192.168.4.51:6379 192.168.4.52:6379 \

> 192.168.4.53:6379 192.168.4.54:6379 \

> 192.168.4.56:6379 192.168.4.57:6379

弹出信息输入yes

**4.4 查看集群信息**

mgm58 ~]# **redis-trib.rb info** 192.168.4.57:6379

mgm58 ~]# **redis-trib.rb check** 192.168.4.57:6379

**4.5 测试配置**

**命令格式: redis-cli -c -h IP地址 -p端口**

mgm58 ~]# redis-cli -c -h 192.168.4.57 -p 6379

192.168.4.57:6379> keys \*

(empty list or set)

**五 部署缓存服务-配置网站服务器**

**5.1 在33 44配置php支持redis集群(此步骤33和44操作一致)**

web33 ~]# php -m | grep redis #查看php支持的模块,无redis模块

room9pc01 13Project2]$ scp redis-cluster-4.3.0.tgz root@192.168.4.33:/root

**5.1.1 在33 44安装软件**

web33 ~]# yum -y install gcc php-devel

web33 ~]# tar -xf redis-cluster-4.3.0.tgz

web33 ~]# cd redis-4.3.0/

web33 redis-4.3.0]# phpize

web33 redis-4.3.0]# ./configure

--with-php-config=/usr/bin/php-config

web33 redis-4.3.0]# make && make install

Installing shared extensions: /usr/lib64/php/modules/

**5.1.2 修改配置文件/etc/php.ini,并重启php-fpm服务**

web33 ~]# vim /etc/php.ini

728 extension\_dir = "/usr/lib64/php/modules/"

730 extension = "redis.so"

web33 ~]# systemctl restart php-fpm

**5.2 测试配置**

**5.2.1 在存储服务器30共享目录/sitedir下,创建连接集群PHP脚本**

room9pc01 13Project2]$ scp phplinkrediscluster.php [root@192.168.4.30:/root](mailto:root@192.168.4.30:/root)

phplinkrediscluster.php 为 rediscluster.php 的说明

nfs30 ~]# cd /sitedir/

nfs30 sitedir]# vim rediscluster.php

<?php

$redis\_list =

['192.168.4.51:6379','192.168.4.52:6379','192.168.4.53:6379','192.168.4.54:6379','192.168.4.56:6379','192.168.4.57:6379'];

$client = new RedisCluster(NUll,$redis\_list);

$client->set("i","tarenaA ");

$client->set("j","tarenaB ");

$client->set("k","tarenaC ");

echo $client->get("i");

echo $client->get("j");

echo $client->get("k");

?>

**5.2.2 php网页测试**

nfs30 ~]# curl http://192.168.4.33/rediscluster.php

tarenaA tarenaB tarenaC

nfs30 ~]# curl http://192.168.4.44/rediscluster.php

tarenaA tarenaB tarenaC

**5.2.3 缓存服务验证**

redisa51 ~]# redis-cli -c -h 192.168.4.51 -p 6379

192.168.4.51:6379> keys \*

1) "age"

2) "j"

edisa51 ~]# redis-cli -c -h 192.168.4.52 -p 6379

192.168.4.52:6379> keys \*

1) "k"

redisa51 ~]# redis-cli -c -h 192.168.4.53 -p 6379

192.168.4.53:6379> keys \*

1) "i"

**5.2.4 测试缓存服务高可用(把51 52redis服务停止)**

**5.2.4.1 复制30上/sitedir/rediscluster.php为/etc/test4.php,修改内部参数值**

nfs30 ~]# cd /sitedir/

nfs30 sitedir]# cp rediscluster.php test4.php

nfs30 sitedir]# vim test4.php

<?php

$redis\_list =

['192.168.4.51:6379','192.168.4.52:6379','192.168.4.53:6379','192.168.4.54:6379','192.168.4.56:6379','192.168.4.57:6379'];

$client = new RedisCluster(NUll,$redis\_list);

$client->set("a","tarenaAa ");

$client->set("b","tarenaBb ");

$client->set("c","tarenaCc ");

echo $client->get("a");

echo $client->get("b");

echo $client->get("c");

?>

**5.2.4.2 停止51 52上的redis服务**

redisa51/52 ~]# /etc/init.d/redis\_6379 stop

redisa51 ~]# killall -9 redis-server #上一步停不了就用这步

**5.2.4.3 在两个主服务器51 52down后,在30上能正常访问33 44网页**

nfs30 ~]# curl http://192.168.4.33/test4.php

tarenaAa tarenaBb tarenaCc #33网页正常

nfs30 ~]# curl http://192.168.4.44/test4.php

tarenaAa tarenaBb tarenaCc #33网页正常

**5.2.4.4 查看集群信息:**此时51 52消失,56 67变成了主服务器

mgm58 ~]# redis-trib.rb info 192.168.4.57:6379

192.168.4.57:6379 (5e5e2c09...) -> 4 keys | 5462 slots | 0 slaves.

192.168.4.56:6379 (62b16da7...) -> 3 keys | 5461 slots | 0 slaves.

192.168.4.53:6379 (7d205be1...) -> 2 keys | 5461 slots | 1 slaves.

**5.2.4.5查看缓存数据库中a b c变量的写入,在两个主服务器down的情况下,数据写入正常**

gm58 ~]# redis-cli -h 192.168.4.53 -p 6379

192.168.4.53:6379> keys \*

2) "a"

192.168.4.53:6379> get a

"tarenaAa "

mgm58 ~]# redis-cli -h 192.168.4.56 -p 6379

192.168.4.56:6379> keys \*

3) "b"

192.168.4.56:6379> get b

"tarenaBb "

mgm58 ~]# redis-cli -h 192.168.4.57 -p 6379

192.168.4.57:6379> keys \*

4) "c"

192.168.4.57:6379> get c

"tarenaCc "

**5.2.4.6 再次启动51 52上的redis服务,在58上查看集群状态**

redisa51\52 ~]# /etc/init.d/redis\_6379 start

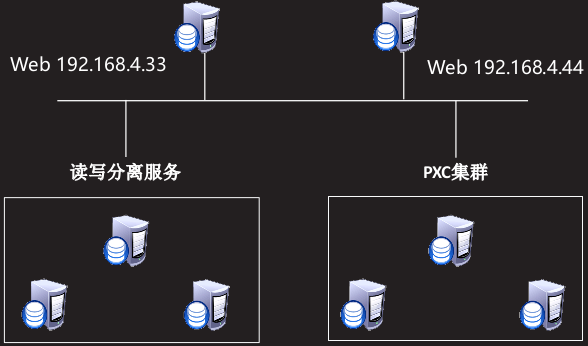
mgm58 ~]# redis-trib.rb info 192.168.4.57:6379

mgm58 ~]# redis-trib.rb check 192.168.4.57:6379

此时,51 52不再是主服务器,而是从服务器了.

**六 数据迁移-PXC集群环境准备**

**6.1 拓扑结构**



6.2 IP规划



**将77改为10**

**6.3 配置从服务器:把pxcnode66主机配置为mysql11的从服务器**

room9pc01 ~]$ scp /linux-soft/03/mysql/mysql-5.7.17.tar [root@192.168.4.66:/root](mailto:root@192.168.4.66:/root)

room9pc01 ~]$ scp -r /linux-soft/03/PXC/ root@192.168.4.66\88\10:/root/

**6.3.1 安装软件mysql-5.7.17.tar**

pxcnode66 ~]# tar -xf mysql-5.7.17.tar

pxcnode66 ~]# yum -y install mysql-community-\*

**6.3.2 修改配置文件(指定server\_id)**

pxcnode66 ~]# vim /etc/my.cnf

[mysqld]

server\_id=66

**6.3.3 启动mysqld服务**

pxcnode66 ~]# systemctl restart mysqld

pxcnode66 ~]# systemctl status mysqld

pxcnode66 ~]# grep password /var/log/mysqld.log

pxcnode66 ~]# mysql -uroot -p初始密码

66 mysql> alter user user() identified by "123qqq...A";

**6.3.4确保数据一致**

**a 配置数据库服务器mysql11,并备份数据,传给66**

room9pc01 ~]$ scp /linux-soft/03/mysql/libev-4.15-1.el6.r

f.x86\_64.rpm [root@192.168.4.11:/root](mailto:root@192.168.4.11:/root)

room9pc01 ~]$ scp /linux-soft/03/mysql/percona-xtrabackup-2

4-2.4.7-1.el7.x86\_64.rpm [root@192.168.4.11:/root](mailto:root@192.168.4.11:/root)

mysql11 ~]# rpm -ivh libev-4.15-1.el6.rf.x86\_64.rpm

ysql11 ~]# yum -y localinstall

percona-xtrabackup-24-2.4.7-1.el7.x86\_64.rpm

mysql11 ~]# innobackupex --user root --password 123qqq...A

/allbak --no-timestamp #备份数据

mysql11 ~]# scp -r /allbak/ [root@192.168.4.66:/root](mailto:root@192.168.4.66:/root) #传给66

**b 从服务器66恢复备份数据**

**停止数据库服务**

pxcnode66 ~]# systemctl stop mysqld

**清空数据库目录**

pxcnode66 ~]# rm -rf /var/lib/mysql/\*

**安装软件**

pxcnode66 ~]# cd PXC/

pxcnode66 PXC]# rpm -ivh libev-4.15-1.el6.rf.x86\_64.rpm

pxcnode66 PXC]# yum -y localinstall

percona-xtrabackup-24-2.4.13-1.el7.x86\_64.rpm

**准备恢复数据**

pxcnode66 ~]# cat /root/allbak/xtrabackup\_checkpoints

backup\_type = full-backuped #未准备恢复时状态

pxcnode66 ~]# innobackupex --apply-log /root/allbak/ #准备恢复

pxcnode66 ~]# cat /root/allbak/xtrabackup\_checkpoints

backup\_type = full-prepared #准备恢复完成

**恢复数据**

pxcnode66 ~]# innobackupex --copy-back /root/allbak/ #恢复

**修改目录的归属为mysql**

xcnode66 ~]# chown -R mysql:mysql /var/lib/mysql

**启动服务**

pxcnode66 ~]# systemctl restart mysqld

pxcnode66 ~]# grep master11 /root/allbak/xtrabackup\_info

inlog\_pos = filename 'master11.000002', position '154'

**6.3.5 指定主服务器**

将66配置为11的从服务器

pxcnode66 ~]# mysql -uroot -p123qqq...A

66 mysql> change master to

-> master\_host="192.168.4.11",

-> master\_user="repluser",

-> master\_password="123qqq...A",

-> master\_log\_file="master11.000002",

-> master\_log\_pos=154;

**6.3.6 查看从服务器66的状态信息:show slave status\G;**

66 mysql> start slave;

66 mysql> show slave status\G;

七 数据迁移-创建PXC集群

room9pc01 ~]$ scp -r /linux-soft/03/PXC/ root@192.168.4.66\88\10:/root/

**7.1 配置第1台PXC服务器(192.168.4.66)**

**7.1.1 停止mysqld服务,卸载mysqld服务软件**

pxcnode66 ~]# ss -antulp | grep 3306

pxcnode66 ~]# systemctl stop mysqld

pxcnode66 ~]# rpm -qa | grep -i mysql

pxcnode66 ~]# **rpm -e --nodeps** \ #不删除依赖卸载mysqld

mysql-community-server mysql-community-embedded-compat \

mysql-community-common mysql-community-client \

mysql-community-devel mysql-community-test \

mysql-community-libs-compat mysql-community-minimal-debuginfo \

mysql-community-libs mysql-community-embedded \

mysql-community-embedded-devel

警告：/etc/my.cnf 已另存为 /etc/my.cnf.rpmsave

**7.1.2 安装PXC软件,修改配置文件,启动mysql服务(不是mysqld服务)**

pxcnode66 ~]# cd PXC/

pxcnode66 PXC]# rpm -ivh libev-4.15-1.el6.rf.x86\_64.rpm

pxcnode66 PXC]# rpm -ivh qpress-1.1-14.11.x86\_64.rpm

pxcnode66 PXC]# tar -xf

Percona-XtraDB-Cluster-5.7.25-31.35-r463-el7-x86\_64-bundle.tar

pxcnode66 PXC]# yum -y install Percona-XtraDB-Cluster-\*

pxcnode66 ~]# vim /etc/percona-xtradb-cluster.conf.d/mysqld.cnf

[mysqld]

server-id=66

pxcnode66 ~]# vim /etc/percona-xtradb-cluster.conf.d/wsrep.cnf

8 wsrep\_cluster\_address=gcomm://

25 wsrep\_node\_address=192.168.4.66

27 wsrep\_cluster\_name=pxc-cluster

30 wsrep\_node\_name=pxcnode66

39 wsrep\_sst\_auth="sstuser:123qqq...A" #定义全量同步用户及密码

pxcnode66 ~]# systemctl start mysql

pxcnode66 ~]# ss -antulp | grep :3306

pxcnode66 ~]# ss -antulp | grep :4567

**7.1.3 数据库管理员登录,查看状态信息,PXC配置文件内定义的全量同步用户授权**

pxcnode66 ~]# mysql -uroot -p123qqq...A

mysql> show status like "%wsrep%";

mysql> show slave status\G;

mysql> grant all on \*.\* to sstuser@”localhost” identified by

“123qqq...A”

**7.2 配置第2台PXC服务器(192.168.4.10)**

**7.2.1 安装PXC软件**

pxcnode10 ~]# cd PXC/

pxcnode10 PXC]# rpm -ivh libev-4.15-1.el6.rf.x86\_64.rpm

pxcnode10 PXC]# rpm -ivh qpress-1.1-14.11.x86\_64.rpm

pxcnode10 PXC]# yum -y install

percona-xtrabackup-24-2.4.13-1.el7.x86\_64.rpm

pxcnode10 PXC]# tar -xf

Percona-XtraDB-Cluster-5.7.25-31.35-r463-el7-x86\_64-bundle.tar

pxcnode10 PXC]# yum -y install Percona-XtraDB-Cluster-\*

**7.2.2 修改配置文件**

pxcnode10 ~]# vim /etc/percona-xtradb-cluster.conf.d/mysqld.cnf

[mysqld]

server-id=10

pxcnode10 ~]# vim /etc/percona-xtradb-cluster.conf.d/wsrep.cnf

8 wsrep\_cluster\_address=gcomm://192.168.4.66

25 wsrep\_node\_address=192.168.4.10

27 wsrep\_cluster\_name=pxc-cluster

30 wsrep\_node\_name=pxcnode10

39 wsrep\_sst\_auth="sstuser:123qqq...A"

**7.2.3 启动服务**

pxcnode10 ~]# systemctl start mysql

pxcnode10 ~]# systemctl enable mysql

pxcnode10 ~]# ss -antulp | grep :3306

pxcnode10 ~]# ss -antulp | grep :4567

pxcnode10 ~]# mysql -uroot -p123qqq...A

mysql> show status like "%wsrep%";

**7.3 配置第3台PXC服务器(192.168.4.88)**

**7.2.1 安装PXC软件**

pxcnode88 ~]# cd PXC/

pxcnode88 PXC]# rpm -ivh libev-4.15-1.el6.rf.x86\_64.rpm

pxcnode88 PXC]# rpm -ivh qpress-1.1-14.11.x86\_64.rpm

pxcnode88 PXC]# yum -y install

percona-xtrabackup-24-2.4.13-1.el7.x86\_64.rpm

pxcnode88 PXC]# tar -xf

Percona-XtraDB-Cluster-5.7.25-31.35-r463-el7-x86\_64-bundle.tar

pxcnode88 PXC]# yum -y localinstall Percona-XtraDB-Cluster-\*

**7.2.2 修改配置文件**

pxcnode88 PXC]# vim

/etc/percona-xtradb-cluster.conf.d/mysqld.cnf

[mysqld]

server-id=88

pxcnode88 PXC]# vim /etc/percona-xtradb-cluster.conf.d/wsrep.cnf

8 wsrep\_cluster\_address=gcomm://192.168.4.66,192.168.4.10

25 wsrep\_node\_address=192.168.4.88

27 wsrep\_cluster\_name=pxc-cluster

30 wsrep\_node\_name=pxcnode88

39 wsrep\_sst\_auth="sstuser:123qqq...A"

**7.2.3 启动服务**

pxcnode88 PXC]# systemctl start mysql

pxcnode88 PXC]# systemctl enable mysql

pxcnode88 PXC]# ss -antulp | grep :3306

pxcnode88 PXC]# ss -antulp | grep :4567

pxcnode88 PXC]# mysql -uroot -p123qqq...A

mysql> show status like "%wsrep%";

**7.4 公共配置(10 66 88 一样操作):修改配置文件**

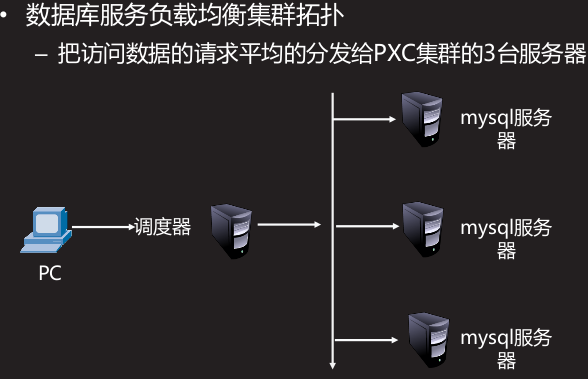
pxcnode66 ~]# vim /etc/percona-xtradb-cluster.conf.d/wsrep.cnf

8 wsrep\_cluster\_address=gcomm://192.168.4.10,192.168.4.88,192.168.4.66

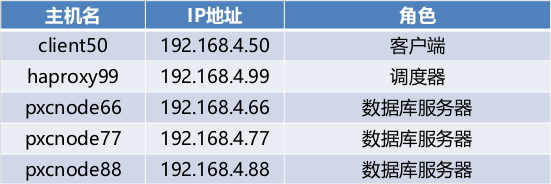
第8行添加3台主机的IP,本机IP写最后

**八 部署集群-LB集群**

**8.1 拓扑结构**



**8.2 IP规划(77改为10)**



**8.3 安装软件**

haproxy99 ~]# yum -y install haproxy

haproxy99 ~]# rpm -qa haproxy

**8.4 修改配置文件**

haproxy99 ~]# sed -i '/#/d' /etc/haproxy/haproxy.cfg

haproxy99 ~]# vim /etc/haproxy/haproxy.cfg

删除31行及以下内容,添加以下内容

31 listen status

32 mode http

33 bind \*:80

34 stats enable

35 stats uri /admin #查看监控新目录名

36 stats auth admin:admin #登录监控页面的用户名和密码

37

38 listen mysql\_3306 \*:3306

39 mode tcp #mysql使用tcp协议

40 option tcpka #使用长连接: 一次连接请求连接后,可执行多次命令

41 balance roundrobin #调度算法

42 server mysql\_01 192.168.4.66:3306 check

43 server mysql\_02 192.168.4.10:3306 check

44 server mysql\_03 192.168.4.88:3306 check

**8.5 启动服务**

haproxy99 ~]# systemctl status haproxy.service

haproxy99 ~]# systemctl start haproxy

haproxy99 ~]# systemctl status haproxy.service

**8.6 测试配置**

firefox <http://192.168.4.99/>admin

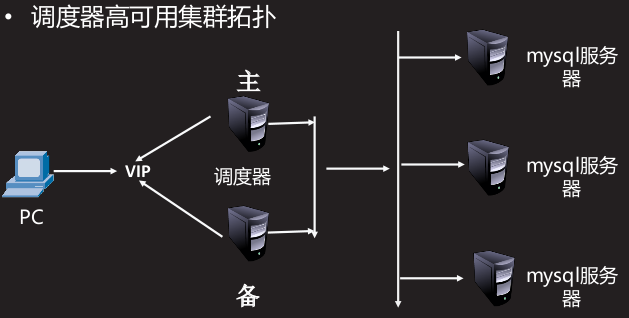
账号和密码输入admin

33或44命令行多次执行以下命令,显示主机名:

mysql -h192.168.4.99 -uadmin -p123qqq...A -e “select @@hostname”

**九 部署集群-HA集群**

**9.1 拓扑结构**



**9.2 IP规划**



**9.3 准备备用调用器主机**

proxy98 ~]# yum -y install haproxy

aproxy99 ~]# scp /etc/haproxy/haproxy.cfg

[root@192.168.4.98:/etc/haproxy/haproxy.cfg](mailto:root@192.168.4.98:/etc/haproxy/haproxy.cfg)

#两主机haproxy配置文件相同

启动服务,测试配置

**9.4 安装软件**

haproxy98 ~]# yum -y install keepalived

haproxy99 ~]# yum -y install keepalived

**9.5 修改配置文件,设置99为主,98为备**

haproxy99 ~]# vim /etc/keepalived/keepalived.conf

删除36行及以下内容

16行下添加

17 vrrp\_iptables #禁用iptables

30 virtual\_ipaddress { #vip段修改为192.168.4.100

31 192.168.4.100

32 }

haproxy99 ~]# scp /etc/keepalived/keepalived.conf

root@192.168.4.98:/etc/keepalived/keepalived.conf

proxy98 ~]# vim /etc/keepalived/keepalived.conf

21 state BACKUP #修改为BACKUP

24 priority 90 #调整值小于99主机上设置的值

**9.6 启动服务**

haproxy99\98 ~]# systemctl start keepalived

haproxy99\98 ~]# systemctl enable keepalived

**9.7 测试配置**

haproxy99 ~]# ip addr show | grep 192.168.4.100

inet 192.168.4.100/32 scope global eth0

33或44命令行多次执行以下命令,显示主机名:

mysql -h192.168.4.100 -uadmin -p123qqq...A -e “select @@hostname”

mysql -h192.168.4.100 -uadmin -p123qqq...A -e “alter table projectdb.user add id int primary key auto\_increment first”

增加主键,再往表中写入数据,主键id会根据PXC服务器台数自增加

web33 ~]# mysql -h192.168.4.100 -uadmin -p123qqq...A -e "insert into projectdb.user(name) values('abc');"