Centos7离线安装CDH6.3.1

安装操作需有root权限

1. 概述

1.1 简介

Cloudera Manager(简称CM)是Cloudera公司开发的一款大数据集群安装部署利器,这款利器具有集群自动化安装、中心化管理、集群监控、报警等功能,使得安装集群从几天的时间缩短在几小时以内,运维人员从数十人降低到几人以内,极大的提高集群管理的效率。

CDH (Cloudera's Distribution, including Apache Hadoop),是Hadoop众多分支中的一种,由Cloudera维护,基于稳定版本的Apache Hadoop构建,并集成了很多补丁,可直接用于生产环境。

1.2 安装环境

主机名	操作系统	角色	IP地址
master(server)	CentOS 7 64位	Server	10.0.0.1
agent01(datanode01)	CentOS 7 64位	Agent	10.0.0.2
agent02(datanode02)	CentOS 7 64位	Agent	10.0.0.3

1.3 官网教程

文档地址: 官网安装教程

2. 安装包准备

2.1 下载 CM 安装包

下载地址: <u>CM 安装包下载</u>

```
https://archive.cloudera.com/cm6/6.3.1/redhat7/yum/RPMS/x86_64/cloudera-manager-agent-6.3.1-1466458.el7.x86_64.rpm

https://archive.cloudera.com/cm6/6.3.1/redhat7/yum/RPMS/x86_64/cloudera-manager-daemons-6.3.1-1466458.el7.x86_64.rpm

https://archive.cloudera.com/cm6/6.3.1/redhat7/yum/RPMS/x86_64/cloudera-manager-server-6.3.1-1466458.el7.x86_64.rpm

https://archive.cloudera.com/cm6/6.3.1/redhat7/yum/RPMS/x86_64/cloudera-manager-server-db-2-6.3.1-1466458.el7.x86_64.rpm

https://archive.cloudera.com/cm6/6.3.1/redhat7/yum/RPMS/x86_64/enterprise-debuginfo-6.3.1-1466458.el7.x86_64.rpm

https://archive.cloudera.com/cm6/6.3.1/redhat7/yum/RPMS/x86_64/oracle-j2sdk1.8-1.8.0+update181-1.x86_64.rpm
```

另外需要下载 allkeys.asc

https://archive.cloudera.com/cm6/6.3.1/allkeys.asc

2.2 下载 CDH 安装包

下载地址: CDH 安装包下载

```
https://archive.cloudera.com/cdh6/6.3.2/parcels/CDH-6.3.2-
1.cdh6.3.2.p0.1605554-el7.parcel.sha1

https://archive.cloudera.com/cdh6/6.3.2/parcels/CDH-6.3.2-
1.cdh6.3.2.p0.1605554-el7.parcel.sha256

https://archive.cloudera.com/cdh6/6.3.2/parcels/manifest.json
```

2.3 下载 MySQL JDBC Driver

注意:默认位置 /usr/share/java/ ,默认驱动名 mysql-connector-java.jar

```
# 创建文件夹
mkdir -p /usr/share/java/
```

```
# 进入 MySQL 驱动文件目录
cd /usr/share/java/

# 下载 MySQL 驱动
wget https://dev.mysql.com/get/Downloads/Connector-J/mysql-connector-java-
5.1.46.tar.gz

# -bash: wget: 未找到命令
yum -y install wget

# 解压压缩包
tar zxvf mysql-connector-java-5.1.46.tar.gz

# 复制并且重命名
cp /usr/share/java/mysql-connector-java-5.1.46/mysql-connector-java-5.1.46-
bin.jar /usr/share/java/mysql-connector-java.jar
```

3. 安装前环境配置

```
# 所有机器都需要修改主机名称
# master 机器
hostnamectl set-hostname master
# agent01 机器
hostnamectl set-hostname agent01
# agent02 机器
hostnamectl set-hostname agent02
```

3.1 配置主机名跟 IP 地址映射

```
# 所有机器都需编辑 hosts 文件
vi /etc/hosts

# 添加如下内容

10.0.0.1 master server

10.0.0.2 agent01 agent1 hdfs01 hdfs1 datanode01 datanode1

10.0.0.3 agent02 agent2 hdfs02 hdfs2 datanode02 datanode2
```

3.2 关闭防火墙

```
# 所有机器都需要关闭防火墙
systemctl stop firewalld.service

# 禁止开机启动
systemctl disable firewalld.service
```

3.3 设置 selinux

```
# 临时关闭 selinux
setenforce 0

# 永久关闭 selinux
sed -i "s/^SELINUX=enforcing/SELINUX=disabled/g" /etc/selinux/config
```

3.4 设置 SSH 免密码登录

```
# 生成秘钥,无需指定口令密码,直接回车
ssh-keygen -t rsa

# 将公钥导入到认证文件
cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys

# 认证文件合并,输入 yes 回车再输入服务器密码
ssh-copy-id -i ~/.ssh/id_rsa.pub root@agent1
ssh-copy-id -i ~/.ssh/id_rsa.pub root@agent2
```

3.5 部署 NTP 服务器进行时间同步

```
# 安装 ntp
yum install -y ntp

# 启动ntp
systemctl start ntpd

# 开机自动启动
systemctl enable ntpd

# 查看ntp状态
systemctl status ntpd
```

服务端配置

```
# 编辑文件
vi /etc/ntp.conf
# 日志配置
logfile /var/log/ntpd.log
# 允许网段内客户端连接此服务器同步时间,但是拒绝让他们修改服务器上的时间
restrict 10.0.0.0 mask 10.0.0.255 nomodify notrap
# 配置时间服务器 (阿里云)
https://www.ntppool.org/zone/asia
server ntpl.aliyun.com
server ntp2.aliyun.com
server ntp3.aliyun.com
# 在 /ntp.conf 中定义的 server 都不可用时,将使用 local 时间作为 ntp 服务提供给 ntp
客户端。
# 建议配置,否则 ntp 服务器无法与公网 ntp 服务器同步时,其客户端也会无法同步
server 127.0.0.1
fudge 127.0.0.1 stratum 10
```

客户端配置

```
# 编辑文件
vi /etc/ntp.conf

# 日志配置
logfile /var/log/ntpd.log

# 配置时间服务器
server 10.0.0.1
```

3.6 安装 JDK8

下载地址: https://www.oracle.com/technetwork/java/javase/archive-139210.html

```
# 创建文件夹
mkdir -p /usr/java/

# 上传 JDK8 压缩文件

# 解压
tar -zxvf jdk-8u231-linux-x64.tar.gz

# 配置当前用户环境变量
vi ~/.bash_profile

# 在文件中添加如下命令,记得切换自己文件路径
export JAVA_HOME=/usr/java/jdk1.8.0_231
export PATH=$JAVA_HOME/bin:$PATH

# 立即生效
source ~/.bash_profile
```

3.7 调整Linux系统参数

```
# 1、修改swappiness, 最大限度地使用物理内存, 然后是swap交换分区
echo "vm.swappiness = 0 " >> /etc/sysctl.conf
sysctl -p
# 2、禁用hugepage透明大页
echo never > /sys/kernel/mm/transparent_hugepage/enabled
echo never > /sys/kernel/mm/transparent_hugepage/defrag
# 确保重启生效
```

```
echo "echo never > /sys/kernel/mm/transparent_hugepage/enabled" >> /etc/rc.local
echo "echo never > /sys/kernel/mm/transparent_hugepage/defrag" >> /etc/rc.local
# 3、修改用户可打开的最大文件描述符和最大进程数
ulimit -SHn 100000
ulimit -SHu 100000
# 确保重启生效
echo "* soft nofile 100000" >> /etc/security/limits.conf
echo "* hard nofile 100000" >> /etc/security/limits.conf
echo "* soft nproc 100000" >> /etc/security/limits.conf
echo "* hard nproc 100000" >> /etc/security/limits.conf
```

3.8 下载第三方依赖(需要联网)

#每个节点都要安装

yum install net-tools lsof sysstat lrzsz rsync cyrus-sasl-plain cyrus-sasl-devel cyrus-sasl-gssapi psmisc dstat openssh-server openssl -y yum install python-psycopg2 mod_ssl openssl-devel fuse-libs portmap fuse bind-utils libxslt perl lsb MySQL-python -y

4. Cloudera Manager 安装

4.1 配置本地 Cloudera Manager 仓库

```
# 创建本地 CM 仓库文件夹
mkdir -p /var/www/html/cm6/

# 上传下载好的 CM 安装包放入 /var/www/html/cm6/ 目录

# 安装 httpd 和 createrepo
yum -y install httpd createrepo

# 启动 httpd 服务并设置为开机自启动
systemctl start httpd && systemctl enable httpd

# 生成 RPM, 注意最后必须有 .
cd /var/www/html/cloudera-repos/cm6/ && createrepo .
```

```
# 通过浏览器访问了: 默认端口 80
http://master/cm6/
```

4.2 配置本地 CDH 仓库

```
# 创建本地 CDH 仓库文件夹
mkdir -p /var/www/html/cdh6/

# 上传下载好的 CDH 安装包放入 /var/www/html/cdh6/ 目录

# 生成 RPM, 注意最后必须有 .
cd /var/www/html/cdh6/ && createrepo .

# 通过浏览器访问了: 默认端口80
http://massster/cdh6/
```

4.3 构建 yum 源

```
# 所有机器都需要配置
vi /etc/yum.repos.d/cloudera-repo.repo

# 拷贝如下内容
[cloudera-repo]
name=cloudera-repo
baseurl=http://master/cm6/
enabled=1
gpgcheck=0

# 清理
yum clean all
yum makecache
```

4.4 MySQL安装

1. 参考地址: <u>官网 MySQL 安装</u>教程

```
# 创建 mysql 文件夹
mkdir -p /var/www/html/mysql5/
# 进入目录
```

```
cd /var/www/html/mysql5/

# 下载
wget http://repo.mysql.com/mysql-community-release-el7-5.noarch.rpm

rpm -ivh mysql-community-release-el7-5.noarch.rpm

# 更新
yum update

# 安装 mysql
yum install mysql-server

# 启动 mysql
systemctl start mysqld

# 开机自启动
systemctl enable mysqld
```

2. 初始化数据库

```
# 初始化数据库
/usr/bin/mysql_secure_installation
```

3. 备份数据库配置文件

```
cp /etc/my.cnf{,.bak}
```

4. 官网推荐配置

```
[mysqld]
datadir=/var/lib/mysql
socket=/var/lib/mysql/mysql.sock
transaction-isolation = READ-COMMITTED
# Disabling symbolic-links is recommended to prevent assorted security
risks;
# to do so, uncomment this line:
symbolic-links = 0

key_buffer_size = 32M
max_allowed_packet = 32M
thread_stack = 256K
```

```
thread cache size = 64
query cache limit = 8M
query_cache_size = 64M
query_cache_type = 1
max connections = 550
#expire logs days = 10
#max binlog size = 100M
#log_bin should be on a disk with enough free space.
#Replace '/var/lib/mysql/mysql_binary_log' with an appropriate path for
your
#system and chown the specified folder to the mysql user.
log bin=/var/lib/mysql/mysql binary log
#In later versions of MySQL, if you enable the binary log and do not set
#a server id, MySQL will not start. The server id must be unique within
#the replicating group.
server id=1
binlog format = mixed
read buffer size = 2M
read rnd buffer size = 16M
sort_buffer_size = 8M
join buffer size = 8M
# InnoDB settings
innodb file per table = 1
innodb flush log at trx commit = 2
innodb_log_buffer_size = 64M
innodb_buffer_pool_size = 4G
innodb thread concurrency = 8
innodb flush method = O DIRECT
innodb_log_file_size = 512M
[mysqld safe]
log-error=/var/log/mysqld.log
pid-file=/var/run/mysqld/mysqld.pid
sql mode=STRICT ALL TABLES
```

5. 创建数据库

Service	Database	User	Password
Cloudera Manager Server	scm	scm	webuy@cdh@scm
Activity Monitor	amon	amon	webuy@cdh@amon
Reports Manager	rman	rman	webuy@cdh@rman
Hue	hue	hue	webuy@cdh@hue
Hive Metastore Server	hive	hive	webuy@cdh@hive
Sentry Server	sentry	sentry	webuy@cdh@sentry

```
# 登录 MySQL 数据库
mysql -uroot -p
# 初始化
CREATE DATABASE scm DEFAULT CHARACTER SET utf8 DEFAULT COLLATE
utf8 general ci;
GRANT ALL ON scm.* TO 'scm'@'%' IDENTIFIED BY 'webuy@cdh@scm';
CREATE DATABASE amon DEFAULT CHARACTER SET utf8 DEFAULT COLLATE
utf8 general ci;
GRANT ALL ON amon.* TO 'amon'@'%' IDENTIFIED BY 'webuy@cdh@amon';
CREATE DATABASE rman DEFAULT CHARACTER SET utf8 DEFAULT COLLATE
utf8 general ci;
GRANT ALL ON rman.* TO 'rman'@'%' IDENTIFIED BY 'webuy@cdh@rman';
CREATE DATABASE hue DEFAULT CHARACTER SET utf8 DEFAULT COLLATE
utf8 general ci;
GRANT ALL ON hue.* TO 'hue'@'%' IDENTIFIED BY 'webuy@cdh@hue';
CREATE DATABASE metastore DEFAULT CHARACTER SET utf8 DEFAULT COLLATE
utf8 general ci;
GRANT ALL ON metastore.* TO 'metastore'@'%' IDENTIFIED BY 'webuy@cdh@hive';
CREATE DATABASE sentry DEFAULT CHARACTER SET utf8 DEFAULT COLLATE
utf8_general_ci;
GRANT ALL ON sentry.* TO 'sentry'@'%' IDENTIFIED BY 'webuy@cdh@sentry';
```

```
flush privileges;

# 删除
# drop database scm;
# drop database amon;
# drop database rman;
# drop database hue;
# drop database metastore;
# drop database sentry;

# flush privileges;
```

4.5 安装 CM Server 和 Agent

• 主节点

```
yum install cloudera-manager-daemons cloudera-manager-agent cloudera-manager-server
```

• 所有从节点

```
yum install cloudera-manager-daemons cloudera-manager-agent
```

4.6 建立CM的数据库

参考文档: <u>官网创建 CM 数据库教</u>程

/opt/cloudera/cm/schema/scm_prepare_database.sh mysql scm scm webuy@cdh@scm

4.7 启动 CM Server

```
# 启动服务
systemctl start cloudera-scm-server

# 查看服务的状态
systemctl status cloudera-scm-server

# 查看系统日志
journalctl -xe

# 默认日志存放地方
/var/log/cloudera-scm-server
```

4.8 访问服务

• http://master:7180

5. CDH优化

5.1 禁用透明大页面压缩

```
echo never>/sys/kernel/mm/transparent_hugepage/defrag
echo never>/sys/kernel/mm/transparent_hugepage/enabled
```

5.2 虚拟内存设置

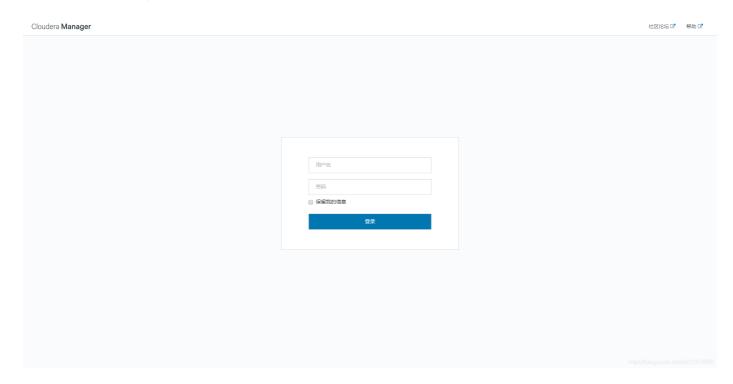
```
# 查看虚拟内存需求率 默认60
cat /proc/sys/vm/swappiness

# Cloudera 建议将 vm.swappiness 修改为 0
sysctl -w vm.swappiness=0
echo "vm.swappiness = 0" >> /etc/sysctl.conf
```

6. Cloudera Manager 初始化集群配置

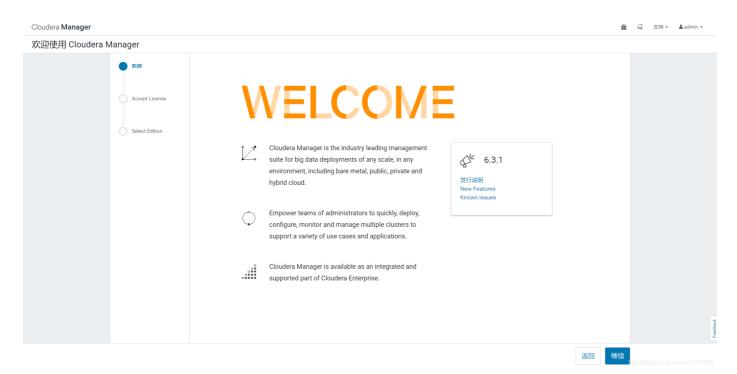
6.1 用户登录

用户名: admin, 密码: admin

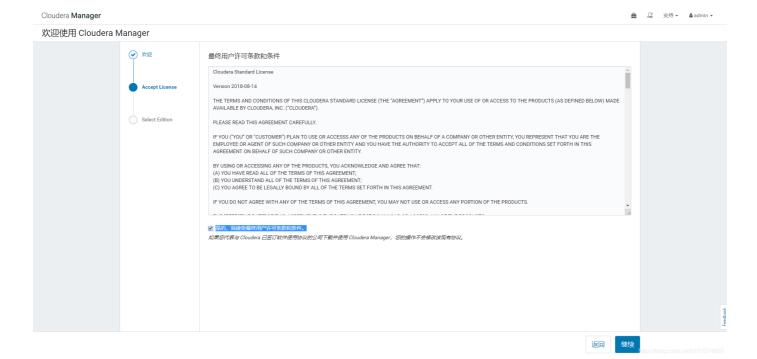


6.2 选择版本

1. 欢迎页面



2. 接受最终用户许可条款和条件。

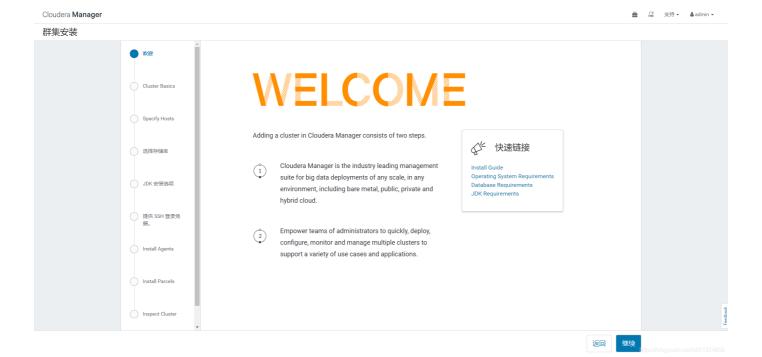


3. 选择免费版本

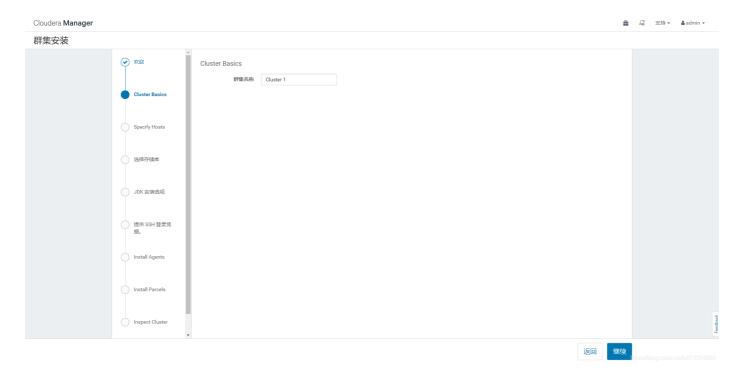


6.3、群集安装

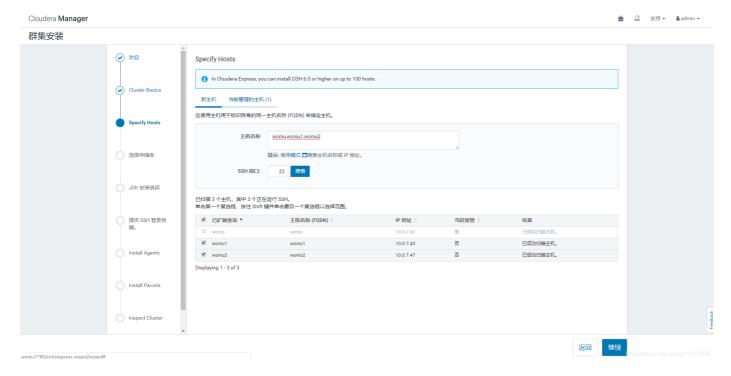
1. 欢迎页面



2. 群集名称



3. 扫描主机,输入主机名称点击搜索

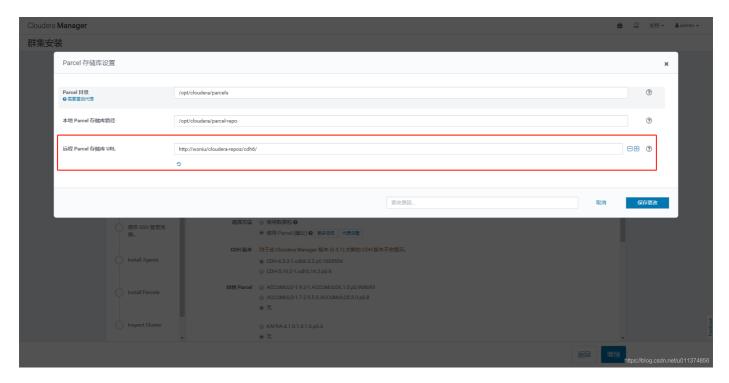


4. 选择存储库

自定义存储库: http://master/cloudera-repos/cm6/



远程 Parcel 存储库 URL: http://master/cloudera-repos/cdh6/



保存更改



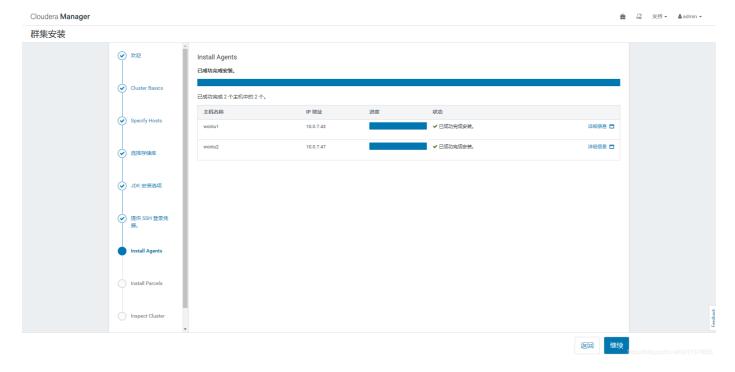
5. JDK 安装选项(不需要勾选)



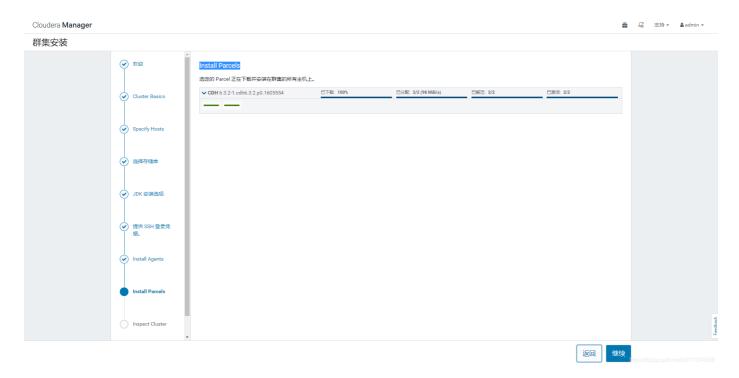
6. 提供 SSH 登录凭据



7. Install Agents ,自动安装

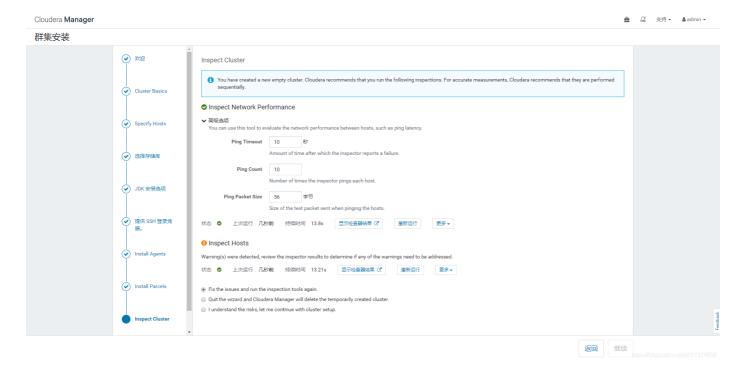


8. Install Parcels, 自动安装

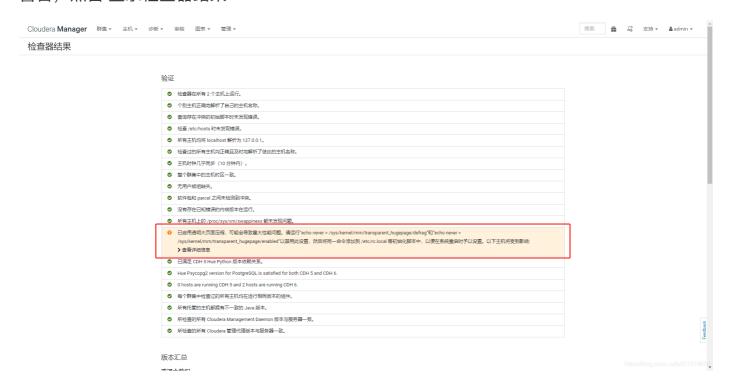


9. Inspect Cluster

先点击 Inspect Network Performance 再点击 Inspect Hosts



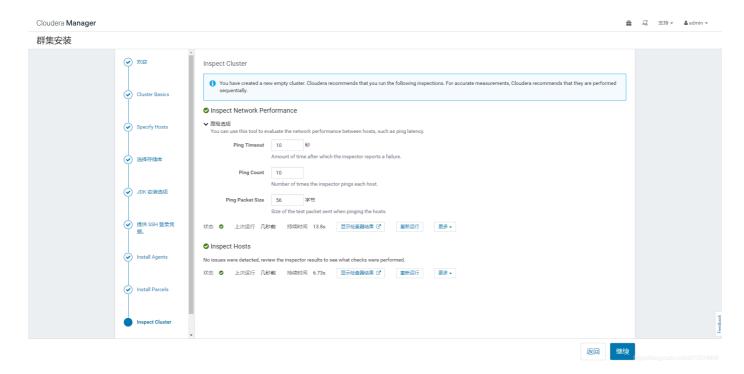
警告,点击显示检查器结果



已启用透明大页面压缩,可能会导致重大性能问题。请运行"echo never > /sys/kernel/mm/transparent_hugepage/defrag"和"echo never > /sys/kernel/mm/transparent_hugepage/enabled"以禁用此设置,然后将同一命令添加到 /etc/rc.local 等初始化脚本中,以便在系统重启时予以设置

echo never>/sys/kernel/mm/transparent_hugepage/defrag
echo never>/sys/kernel/mm/transparent_hugepage/enabled

点击重新运行

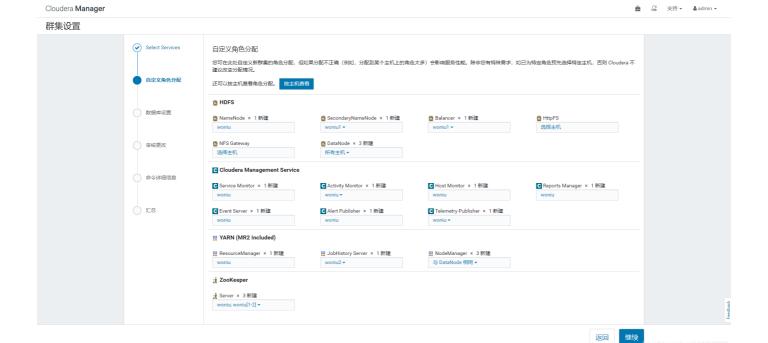


6.4 群集设置

1. Select Services



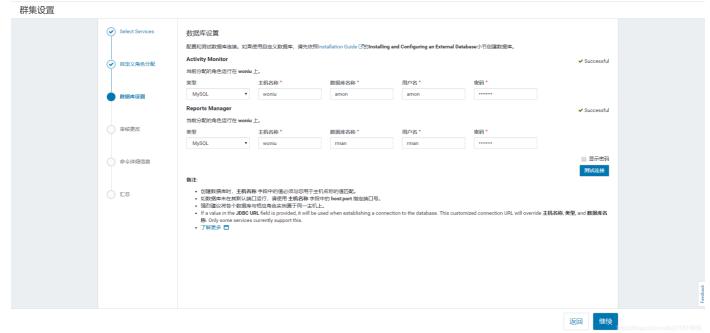
2. 自定义角色分配



3. 数据库设置



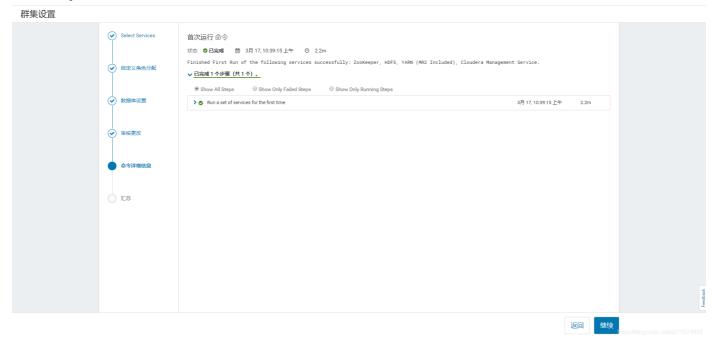
点击测试连接



4. 审核更改, 默认设置

5. 命令详细信息





6、汇总

