若泽数据

CDH5.16.1集群企业真正离线部署(全网最细，配套视频，生产可实践)

视频:https://www.bilibili.com/video/av52167219
PS:建议先看课程视频1-2篇，再根据视频或文档部署，
如有问题，及时与@若泽数据J哥联系。

一.准备工作

1.离线部署主要分为三块:

a.MySQL离线部署
b.CM离线部署
c.Parcel文件离线源部署

2.规划:

节点	MySQL部署组件	Parcel文件离线源	CM服务进程	大数据组件
hadoop001	MySQL	Parcel	Activity Monitor	NN RM DN NM
hadoop002			Alert Publisher Event Server	DN NM
hadoop003			Host Monitor Service Monitor	DN NM

3.下载源:

- CM
  cloudera-manager-centos7-cm5.16.1*x86*64.tar.gz
- Parcel
  CDH-5.16.1-1.cdh5.16.1.p0.3-el7.parcel
  CDH-5.16.1-1.cdh5.16.1.p0.3-el7.parcel.sha1
  manifest.json
- JDK

https://www.oracle.com/technetwork/java/javase/downloads/java-archive-javase8-2177648.html
下载jdk-8u202-linux-x64.tar.gz

- MySQL https://dev.mysql.com/downloads/mysql/5.7.html#downloads
  下载mysql-5.7.26-el7-x86_64.tar.gz

- MySQL jdbc jar
  mysql-connector-java-5.1.47.jar
  下载完成后要重命名去掉版本号，
  mv mysql-connector-java-5.1.47.jar mysql-connector-java.jar

---

准备好百度云,下载安装包:

链接:https://pan.baidu.com/s/10s-NaFLfztKuWImZTiBMjA 密码:viqp

二.集群节点初始化

1.阿里云上海区购买3台，按量付费虚拟机

CentOS7.2操作系统，2核8G最低配置

2.当前笔记本或台式机配置hosts文件

- MAC: /etc/hosts
- Window: C:\windows\system32\drivers\etc\hosts

```
公网地址：
106.15.234.222 hadoop001
106.15.235.200 hadoop002
106.15.234.239 hadoop003
```

3.设置所有节点的hosts文件

```
私有地铁、内网地址：
echo "172.19.7.96 hadoop001">> /etc/hosts
echo "172.19.7.98 hadoop002">> /etc/hosts
echo "172.19.7.97 hadoop003">> /etc/hosts
```

4.关闭所有节点的防火墙及清空规则

```
systemctl stop firewalld
systemctl disable firewalld
iptables -F
```

5.关闭所有节点的selinux

```
vi /etc/selinux/config
将SELINUX=enforcing改为SELINUX=disabled
设置后需要重启才能生效
```

6.设置所有节点的时区一致及时钟同步

```
6.1.时区
[root@hadoop001 ~]# date
Sat May 11 10:07:53 CST 2019
[root@hadoop001 ~]# timedatectl
      Local time: Sat 2019-05-11 10:10:31 CST
  Universal time: Sat 2019-05-11 02:10:31 UTC
        RTC time: Sat 2019-05-11 10:10:29
       Time zone: Asia/Shanghai (CST, +0800)
     NTP enabled: yes
NTP synchronized: yes
 RTC in local TZ: yes
      DST active: n/a

#查看命令帮助，学习至关重要，无需百度，太👎
[root@hadoop001 ~]# timedatectl --help
timedatectl [OPTIONS...] COMMAND ...

Query or change system time and date settings.

  -h --help                Show this help message
     --version             Show package version
     --no-pager            Do not pipe output into a pager
     --no-ask-password     Do not prompt for password
  -H --host=[USER@]HOST    Operate on remote host
  -M --machine=CONTAINER   Operate on local container
     --adjust-system-clock Adjust system clock when changing local RTC mode

Commands:
  status                   Show current time settings
  set-time TIME            Set system time
  set-timezone ZONE        Set system time zone
  list-timezones           Show known time zones
  set-local-rtc BOOL       Control whether RTC is in local time
  set-ntp BOOL             Control whether NTP is enabled

#查看哪些时区
[root@hadoop001 ~]# timedatectl list-timezones
Africa/Abidjan
Africa/Accra
Africa/Addis_Ababa
Africa/Algiers
Africa/Asmara
Africa/Bamako

#所有节点设置亚洲上海时区
[root@hadoop001 ~]# timedatectl set-timezone Asia/Shanghai
[root@hadoop002 ~]# timedatectl set-timezone Asia/Shanghai
[root@hadoop003 ~]# timedatectl set-timezone Asia/Shanghai
```

```
6.2.时间
#所有节点安装ntp
[root@hadoop001 ~]# yum install -y ntp

#选取hadoop001为ntp的主节点
[root@hadoop001 ~]# vi /etc/ntp.conf

#time
server 0.asia.pool.ntp.org
server 1.asia.pool.ntp.org
server 2.asia.pool.ntp.org
server 3.asia.pool.ntp.org
#当外部时间不可用时，可使用本地硬件时间
server 127.127.1.0 iburst local clock
#允许哪些网段的机器来同步时间
restrict 172.19.7.0 mask 255.255.255.0 nomodify notrap

#开启ntpd及查看状态
[root@hadoop001 ~]# systemctl start ntpd
[root@hadoop001 ~]# systemctl status ntpd
● ntpd.service - Network Time Service
   Loaded: loaded (/usr/lib/systemd/system/ntpd.service; enabled; vendor preset: d
isabled)
   Active: active (running) since Sat 2019-05-11 10:15:00 CST; 11min ago
 Main PID: 18518 (ntpd)
   CGroup: /system.slice/ntpd.service
           └─18518 /usr/sbin/ntpd -u ntp:ntp -g

May 11 10:15:00 hadoop001 systemd[1]: Starting Network Time Service...
May 11 10:15:00 hadoop001 ntpd[18518]: proto: precision = 0.088 usec
May 11 10:15:00 hadoop001 ntpd[18518]: 0.0.0.0 c01d 0d kern kernel time sync enabl
ed
May 11 10:15:00 hadoop001 systemd[1]: Started Network Time Service.

#验证
[root@hadoop001 ~]# ntpq -p
     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
 LOCAL(0)        .LOCL.          10 l  726   64    0    0.000    0.000   0.000

#其他从节点停止禁用ntpd服务
[root@hadoop002 ~]# systemctl stop ntpd
[root@hadoop002 ~]# systemctl disable ntpd
Removed symlink /etc/systemd/system/multi-user.target.wants/ntpd.service.
[root@hadoop002 ~]# /usr/sbin/ntpdate hadoop001
11 May 10:29:22 ntpdate[9370]: adjust time server 172.19.7.96 offset 0.000867 sec
#每天凌晨同步hadoop001节点时间
```

```
[root@hadoop002 ~]# crontab -e
00 00 * * * /usr/sbin/ntpdate hadoop001

[root@hadoop003 ~]# systemctl stop ntpd
[root@hadoop004 ~]# systemctl disable ntpd
Removed symlink /etc/systemd/system/multi-user.target.wants/ntpd.service.
[root@hadoop005 ~]# /usr/sbin/ntpdate hadoop001
11 May 10:29:22 ntpdate[9370]: adjust time server 172.19.7.96 offset 0.000867 sec
#每天凌晨同步hadoop001节点时间
[root@hadoop003 ~]# crontab -e
00 00 * * * /usr/sbin/ntpdate hadoop001
```

7.部署集群的JDK

```
mkdir /usr/java
tar -xzvf jdk-8u45-linux-x64.tar.gz -C /usr/java/
#切记必须修正所属用户及用户组
chown -R root:root /usr/java/jdk1.8.0_45

echo "export JAVA_HOME=/usr/java/jdk1.8.0_45" >> /etc/profile
echo "export PATH=${JAVA_HOME}/bin:${PATH}" >> /etc/profile
source /etc/profile
which java
```

8.hadoop001节点离线部署MySQL5.7(假如觉得困难哟，就自行百度RPM部署，因为该部署文档是我司生产文档)

- 文档链接:https://github.com/Hackeruncle/MySQL
- 视频链接:https://pan.baidu.com/s/1jdM8WeIg8syU0evL1-tDOQ 密码:whic

9.创建CDH的元数据库和用户、amon服务的数据库及用户

```
create database cmf DEFAULT CHARACTER SET utf8;
create database amon DEFAULT CHARACTER SET utf8;
grant all on cmf.* TO 'cmf'@'%' IDENTIFIED BY 'Ruozedata123456!';
grant all on amon.* TO 'amon'@'%' IDENTIFIED BY 'Ruozedata123456!';
flush privileges;
```

10.hadoop001节点部署mysql jdbc jar

```
mkdir -p /usr/share/java/
cp mysql-connector-java.jar /usr/share/java/
```

三.CDH部署

1.离线部署cm server及agent

```
1.1.所有节点创建目录及解压
mkdir /opt/cloudera-manager
tar -zxvf cloudera-manager-centos7-cm5.16.1_x86_64.tar.gz -C /opt/cloudera-manager
/

1.2.所有节点修改agent的配置，指向server的节点hadoop001
sed -i "s/server_host=localhost/server_host=hadoop001/g" /opt/cloudera-manager/cm-
5.16.1/etc/cloudera-scm-agent/config.ini

1.3.主节点修改server的配置：
vi /opt/cloudera-manager/cm-5.16.1/etc/cloudera-scm-server/db.properties
com.cloudera.cmf.db.type=mysql
com.cloudera.cmf.db.host=hadoop001
com.cloudera.cmf.db.name=cmf
com.cloudera.cmf.db.user=cmf
com.cloudera.cmf.db.password=Ruozedata123456!
com.cloudera.cmf.db.setupType=EXTERNAL

1.4.所有节点创建用户
useradd --system --home=/opt/cloudera-manager/cm-5.16.1/run/cloudera-scm-server/ -
-no-create-home --shell=/bin/false --comment "Cloudera SCM User" cloudera-scm

1.5.目录修改用户及用户组
chown -R cloudera-scm:cloudera-scm /opt/cloudera-manager
```

2.hadoop001节点部署离线parcel源

```
2.1.部署离线parcel源
$ mkdir -p /opt/cloudera/parcel-repo
$ ll
total 3081664
-rw-r--r-- 1 root root 2127506677 May  9 18:04 CDH-5.16.1-1.cdh5.16.1.p0.3-el7.par
cel
-rw-r--r-- 1 root root         41 May  9 18:03 CDH-5.16.1-1.cdh5.16.1.p0.3-el7.par
cel.sha1
-rw-r--r-- 1 root root  841524318 May  9 18:03 cloudera-manager-centos7-cm5.16.1_x
86_64.tar.gz
-rw-r--r-- 1 root root  185515842 Aug 10  2017 jdk-8u144-linux-x64.tar.gz
-rw-r--r-- 1 root root      66538 May  9 18:03 manifest.json
-rw-r--r-- 1 root root     989495 May 25  2017 mysql-connector-java.jar
$ cp CDH-5.16.1-1.cdh5.16.1.p0.3-el7.parcel /opt/cloudera/parcel-repo/

#切记cp时，重命名去掉1，不然在部署过程CM认为如上文件下载未完整，会持续下载
$ cp CDH-5.16.1-1.cdh5.16.1.p0.3-el7.parcel.sha1 /opt/cloudera/parcel-repo/CDH-5.1
6.1-1.cdh5.16.1.p0.3-el7.parcel.sha
$ cp manifest.json /opt/cloudera/parcel-repo/

2.2.目录修改用户及用户组
$ chown -R cloudera-scm:cloudera-scm /opt/cloudera/
```

3.所有节点创建软件安装目录、用户及用户组权限

mkdir -p /opt/cloudera/parcels chown -R cloudera-scm:cloudera-scm /opt/cloudera/

4.hadoop001节点启动Server

```
4.1.启动server
/opt/cloudera-manager/cm-5.16.1/etc/init.d/cloudera-scm-server start

4.2.阿里云web界面，设置该hadoop001节点防火墙放开7180端口
4.3.等待1min，打开 http://hadoop001:7180 账号密码:admin/admin
4.4.假如打不开，去看server的log，根据错误仔细排查错误
```

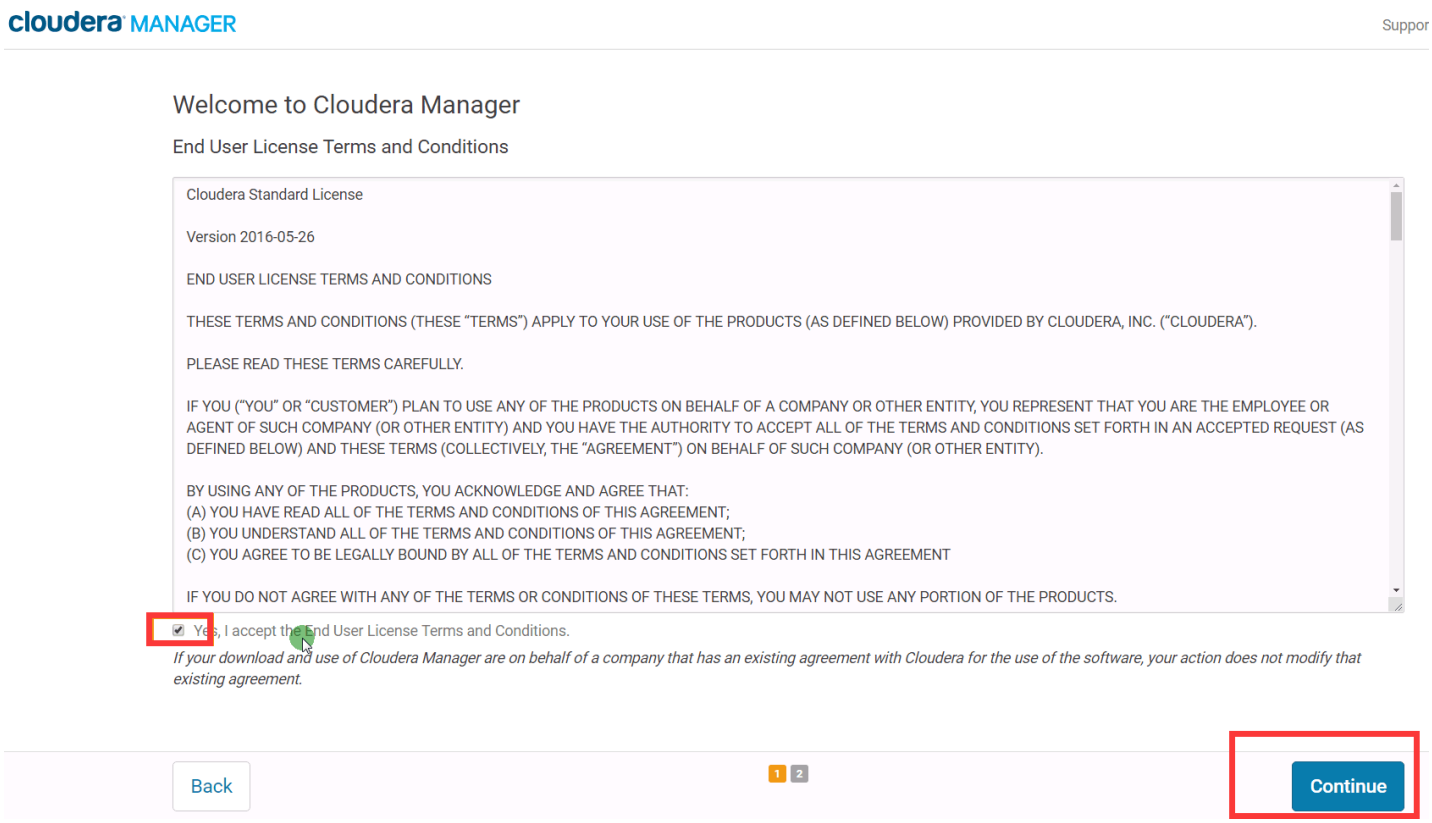
5.所有节点启动Agent

```
/opt/cloudera-manager/cm-5.16.1/etc/init.d/cloudera-scm-agent start
```

6.接下来，全部Web界面操作

http://hadoop001:7180/
账号密码:admin/admin

7.欢迎使用Cloudera Manager--最终用户许可条款与条件。勾选



8.欢迎使用Cloudera Manager--您想要部署哪个版本？选择Cloudera Express免费版本

Upgrading to **Cloudera Enterprise** provides important features that help you manage and monitor your Hadoop clusters in mission-critical environments.

	Cloudera Express ✔	Cloudera Enterprise Cloudera Enterprise Trial	Cloudera Enterprise
License	**Free**	**60 Days** After the trial period, the product will continue to function as **Cloudera Express**. Your cluster and your data will remain unaffected.	**Annual Subscription** **Upload License Key** Select License File Upload Cloudera Enterprise is available in three editions: • Basic Edition • Flex Edition • Cloudera Enterprise
Node Limit	**Unlimited**	**Unlimited**	**Unlimited**
CDH	✔	✔	✔
Core Cloudera Manager Features	✔	✔	✔
Advanced Cloudera Manager Features		✔	✔
Cloudera Navigator		✔	✔
Cloudera Navigator Key Trustee			✔
Cloudera Support			✔

See full list of features available in **Cloudera Express** and **Cloudera Enterprise**.

Back 1 2 Continue

9.感谢您选择Cloudera Manager和CDH

Thank you for choosing Cloudera Manager and CDH.

This installer will install **Cloudera Express 5.16.1** and enable you to later choose packages for the services below (there may be some license implications).

- Apache Hadoop (Common, HDFS, MapReduce, YARN)
- Apache HBase
- Apache ZooKeeper
- Apache Oozie
- Apache Hive
- Hue (Apache licensed)
- Apache Flume
- Apache Impala
- Apache Sentry
- Apache Sqoop
- Cloudera Search (Apache licensed)
- Apache Spark

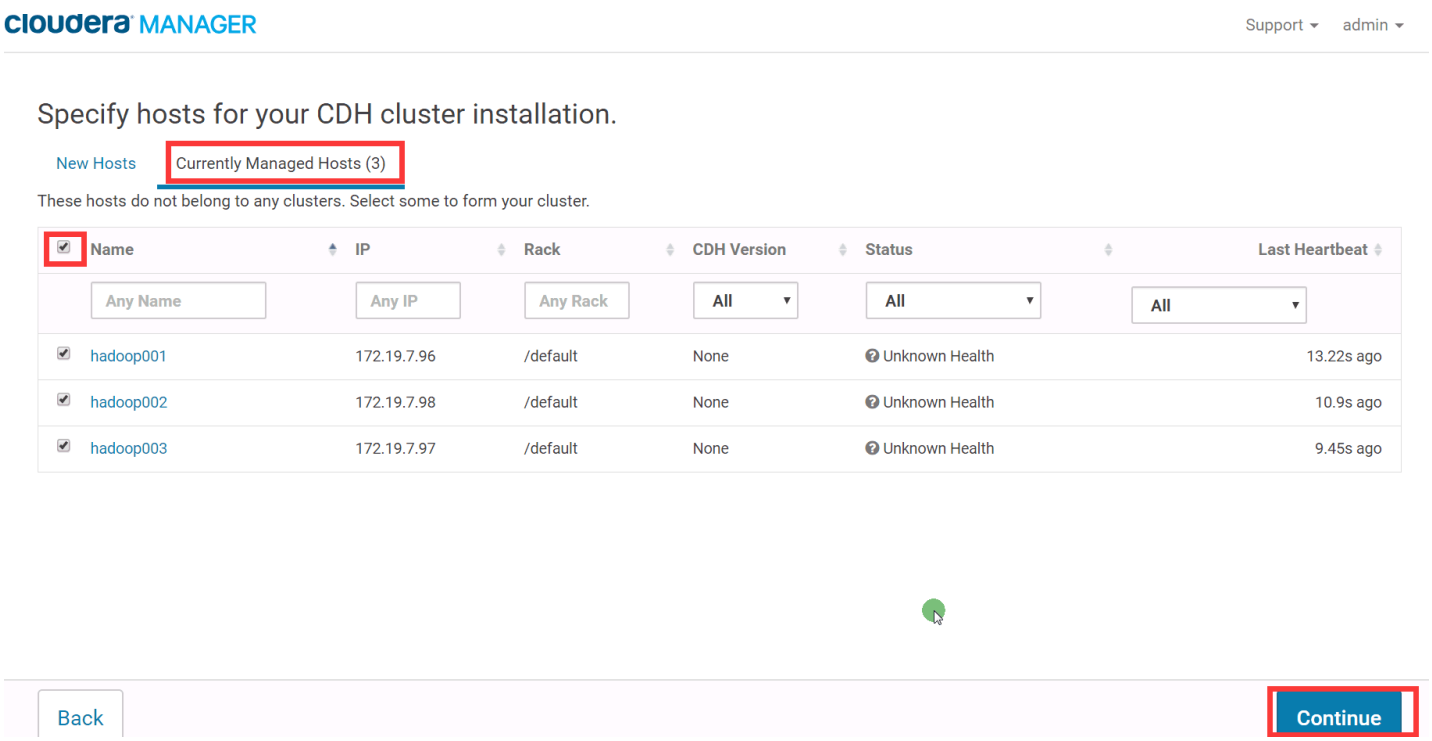
You are using Cloudera Manager to install and configure your system. You can learn more about Cloudera Manager by clicking on the **Support** menu above.

Before you proceed, be sure to checkout the CDH and Cloudera Manager Requirements and Supported Versions

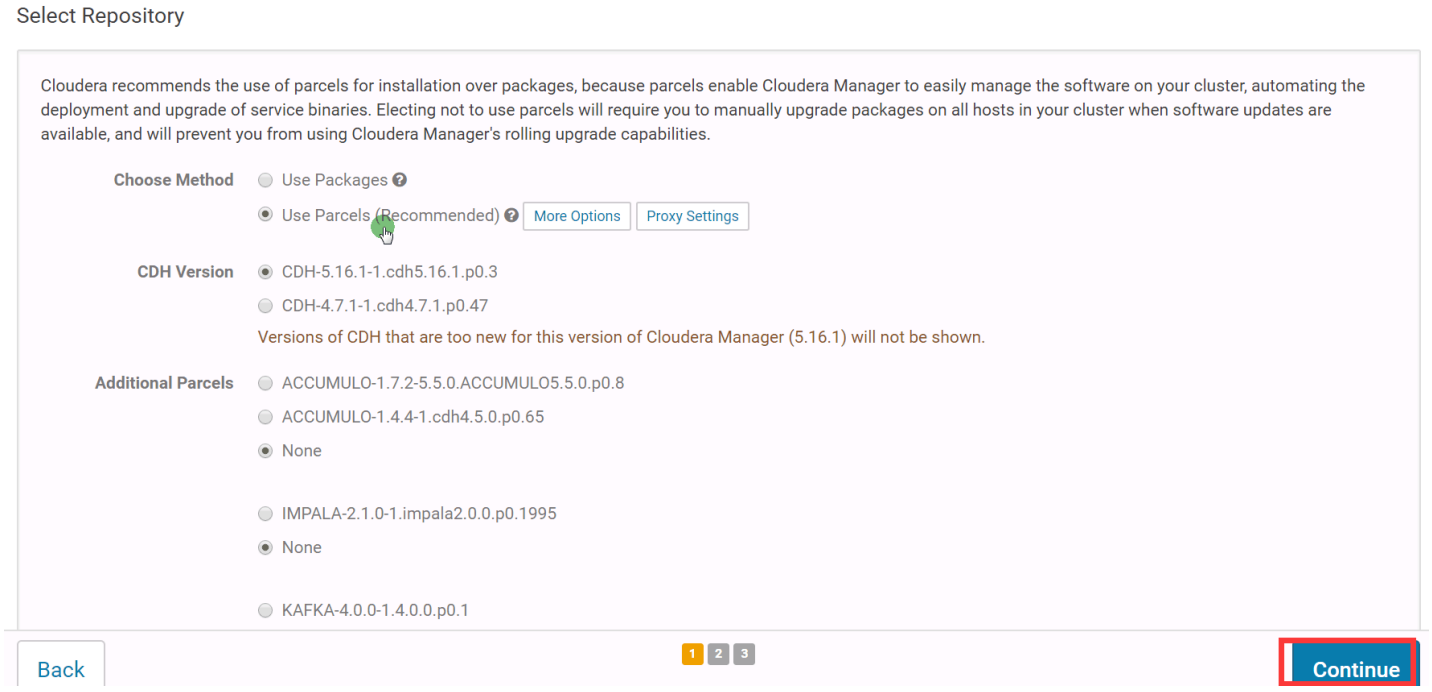
- Supported Operating Systems
- Supported Databases
- Supported JDK Versions

Continue

10.为CDH集群安装指导主机。选择[当前管理的主机]，全部勾选



11.选择存储库

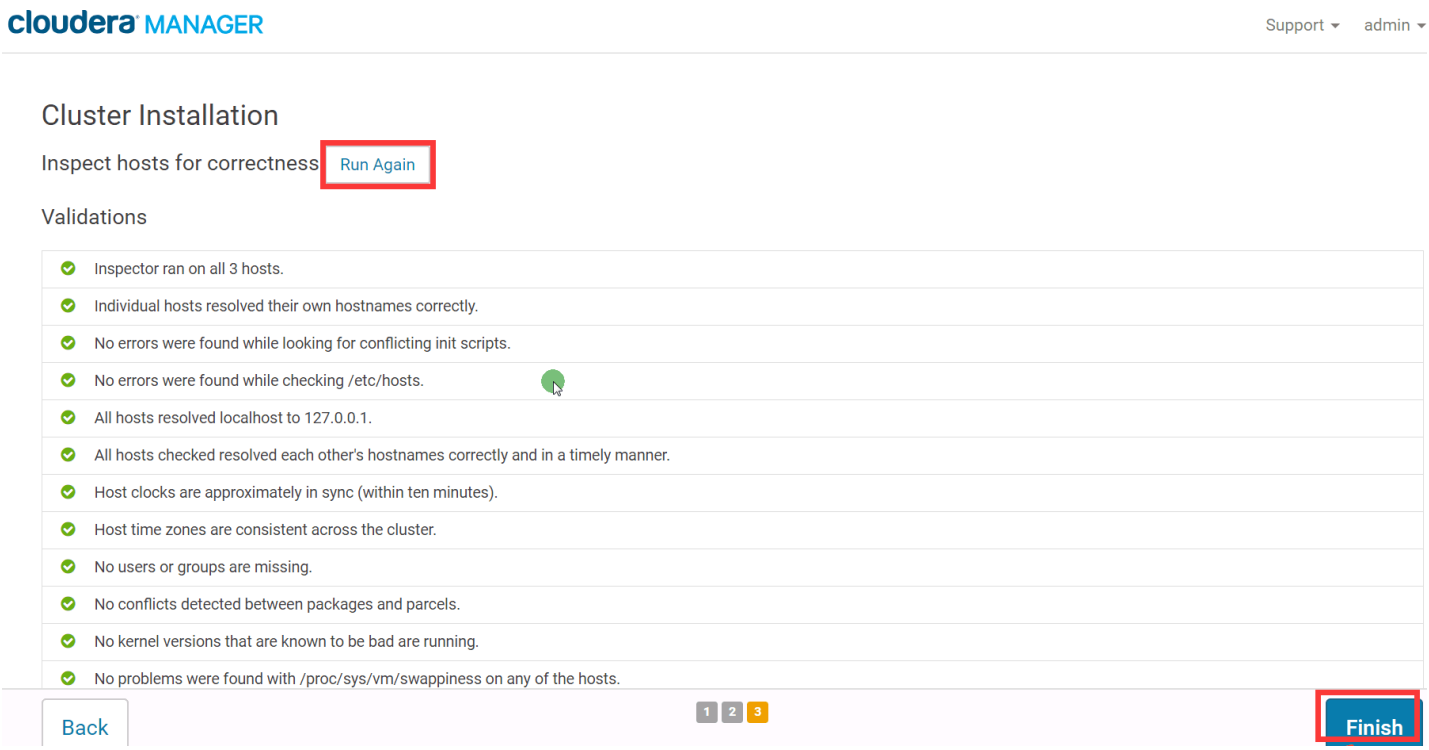


12.集群安装--正在安装选定Parcel假如

本地parcel离线源配置正确，则"下载"阶段瞬间完成，其余阶段视节点数与内部网络情况决定。

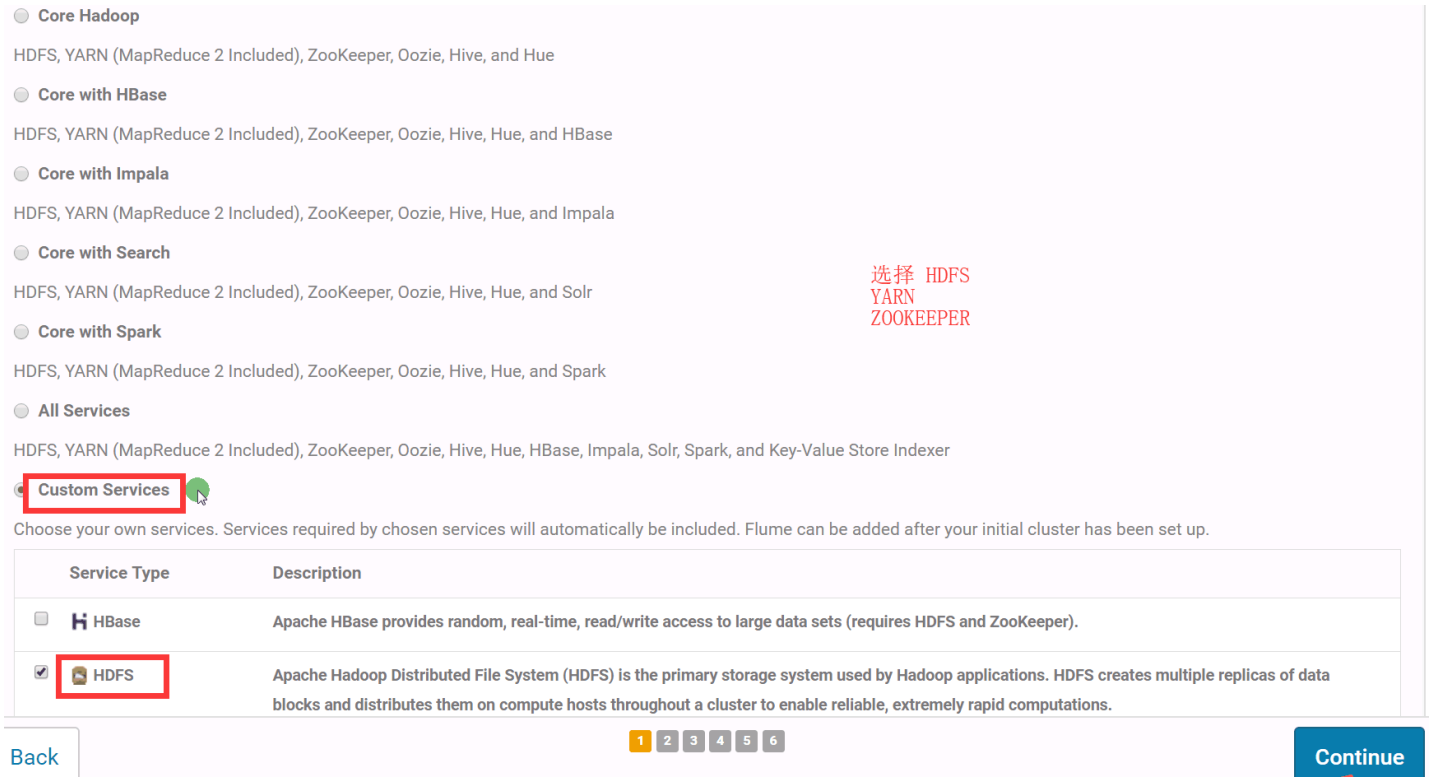

cloudera MANAGER
Support
admin
Cluster Installation
Install Parcels
The selected parcels are being downloaded and installed on all the hosts in the cluster.
CDH 5.16.1-1.cdh5.16.1.p0.3
Downloaded: 100%
Distributed: 3/3 (59.1 MiB/s)
Unpacked: 3/3
Activated: 3/3
Back
1 2 3
Continue

13.检查主机正确性

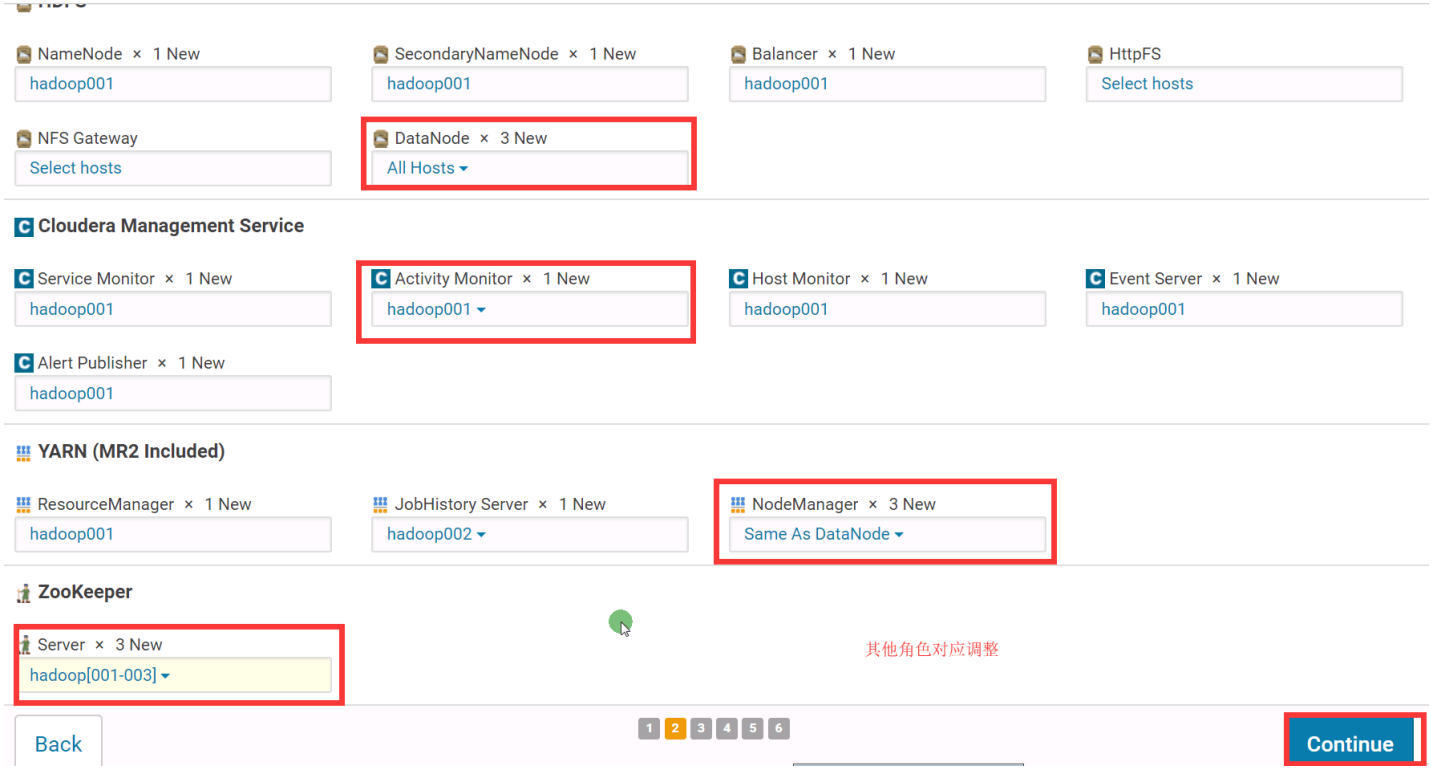

cloudera MANAGER
Support
admin
Cluster Installation
Inspect hosts for correctness
Run Again
Validations
Inspector ran on all 3 hosts.
Individual hosts resolved their own hostnames correctly.
No errors were found while looking for conflicting init scripts.
No errors were found while checking /etc/hosts.
All hosts resolved localhost to 127.0.0.1.
All hosts checked resolved each other's hostnames correctly and in a timely manner.
Host clocks are approximately in sync (within ten minutes).
Host time zones are consistent across the cluster.
No users or groups are missing.
No conflicts detected between packages and parcels.
No kernel versions that are known to be bad are running.
No problems were found with /proc/sys/vm/swappiness on any of the hosts.
Back
1 2 3
Finish

```
13.1.建议将/proc/sys/vm/swappiness设置为最大值10。
swappiness值控制操作系统尝试交换内存的积极；
swappiness=0：表示最大限度使用物理内存，之后才是swap空间；
swappiness=100：表示积极使用swap分区，并且把内存上的数据及时搬迁到swap空间；
如果是混合服务器，不建议完全禁用swap，可以尝试降低swappiness。

临时调整：
sysctl vm.swappiness=10

永久调整：
cat << EOF >> /etc/sysctl.conf
# Adjust swappiness value
vm.swappiness=10
EOF

13.2.已启用透明大页面压缩，可能会导致重大性能问题，建议禁用此设置。
临时调整：
echo never > /sys/kernel/mm/transparent_hugepage/defrag
echo never > /sys/kernel/mm/transparent_hugepage/enabled

永久调整：
cat << EOF >> /etc/rc.d/rc.local
# Disable transparent_hugepage
echo never > /sys/kernel/mm/transparent_hugepage/defrag
echo never > /sys/kernel/mm/transparent_hugepage/enabled
EOF

# centos7.x系统，需要为"/etc/rc.d/rc.local"文件赋予执行权限
chmod +x /etc/rc.d/rc.local
```

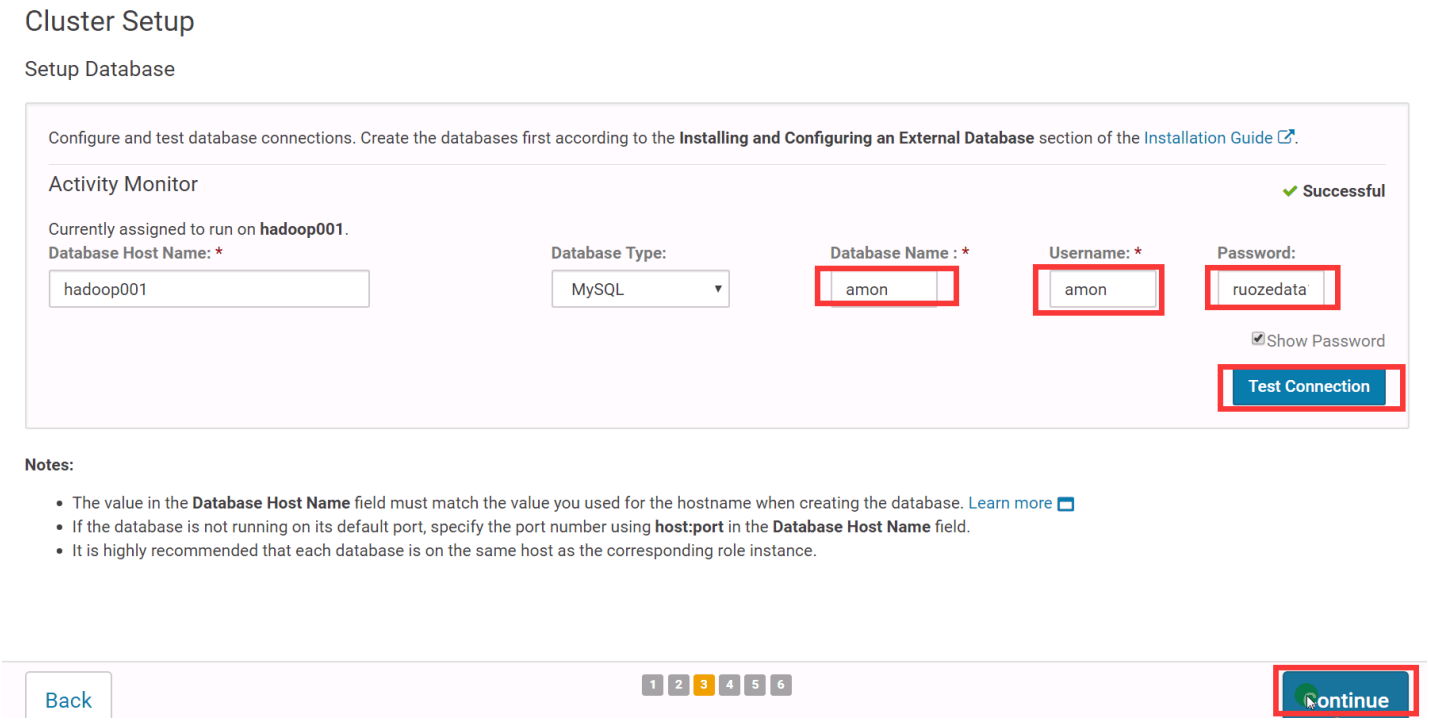
14.自定义服务，选择部署Zookeeper、HDFS、Yarn服务



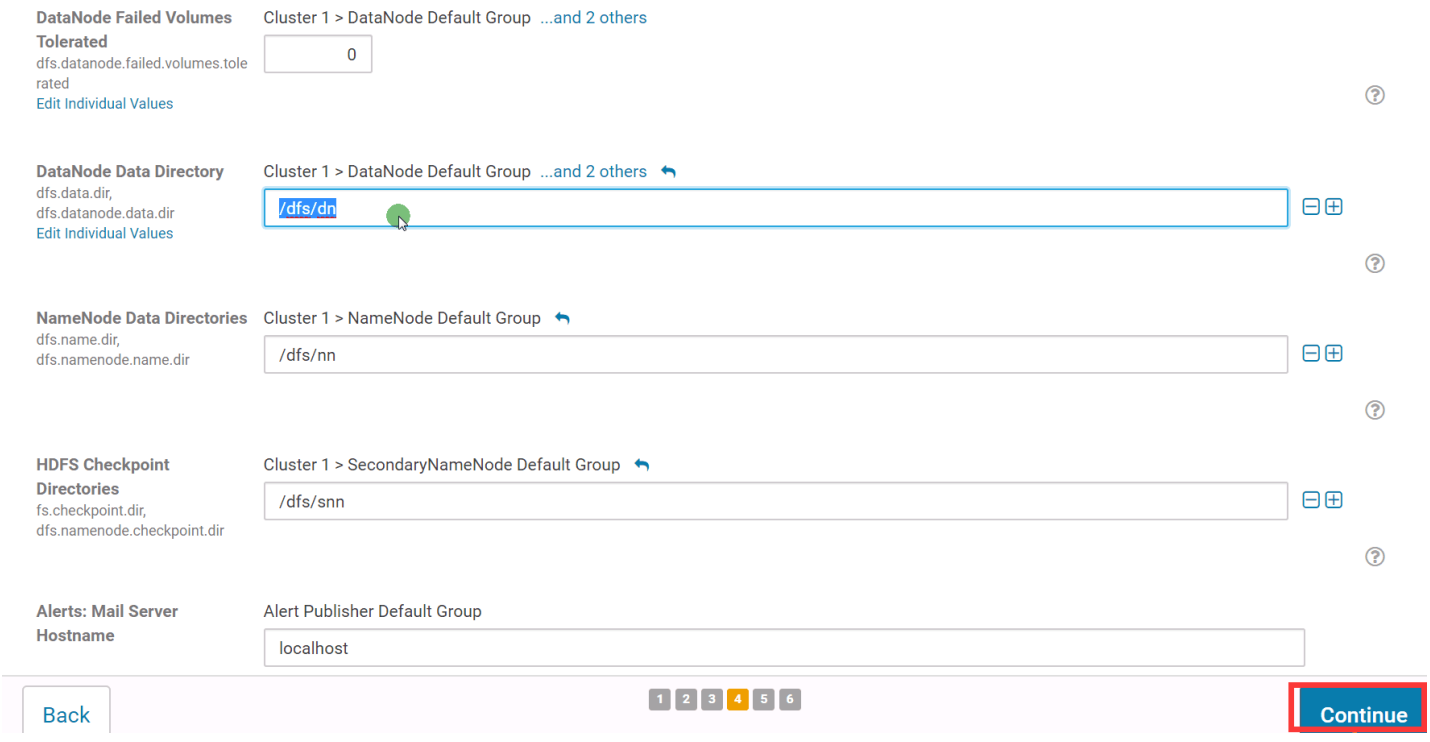
15.自定义角色分配



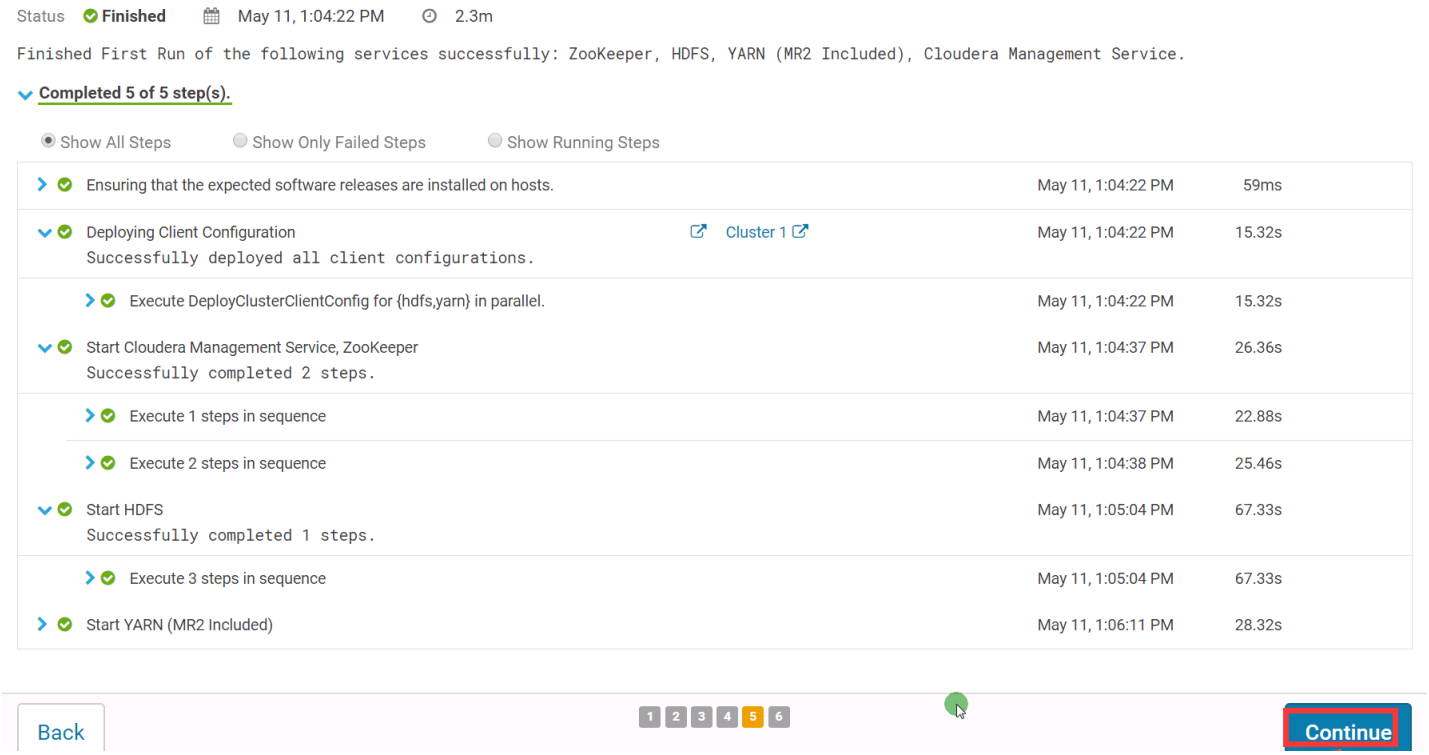
16.数据库设置



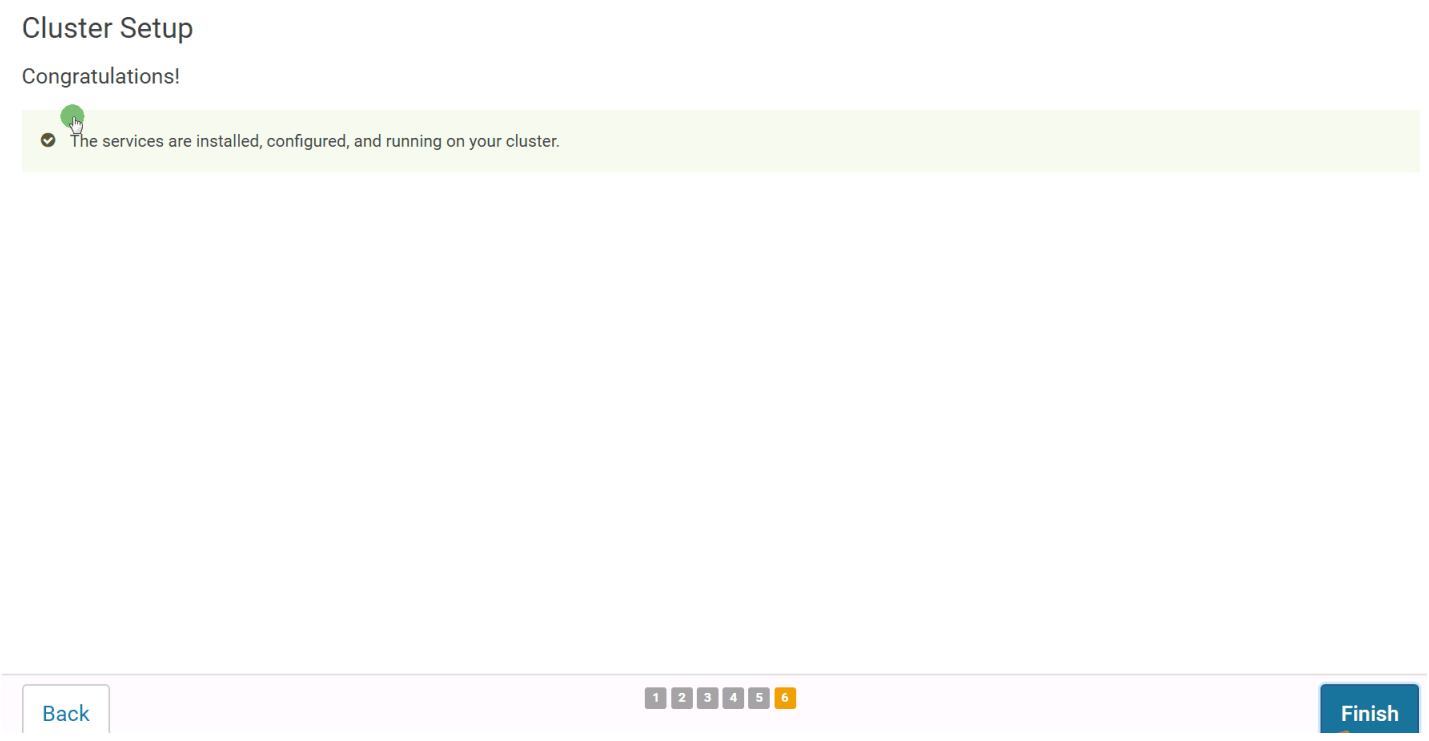
17.审改设置，默认即可



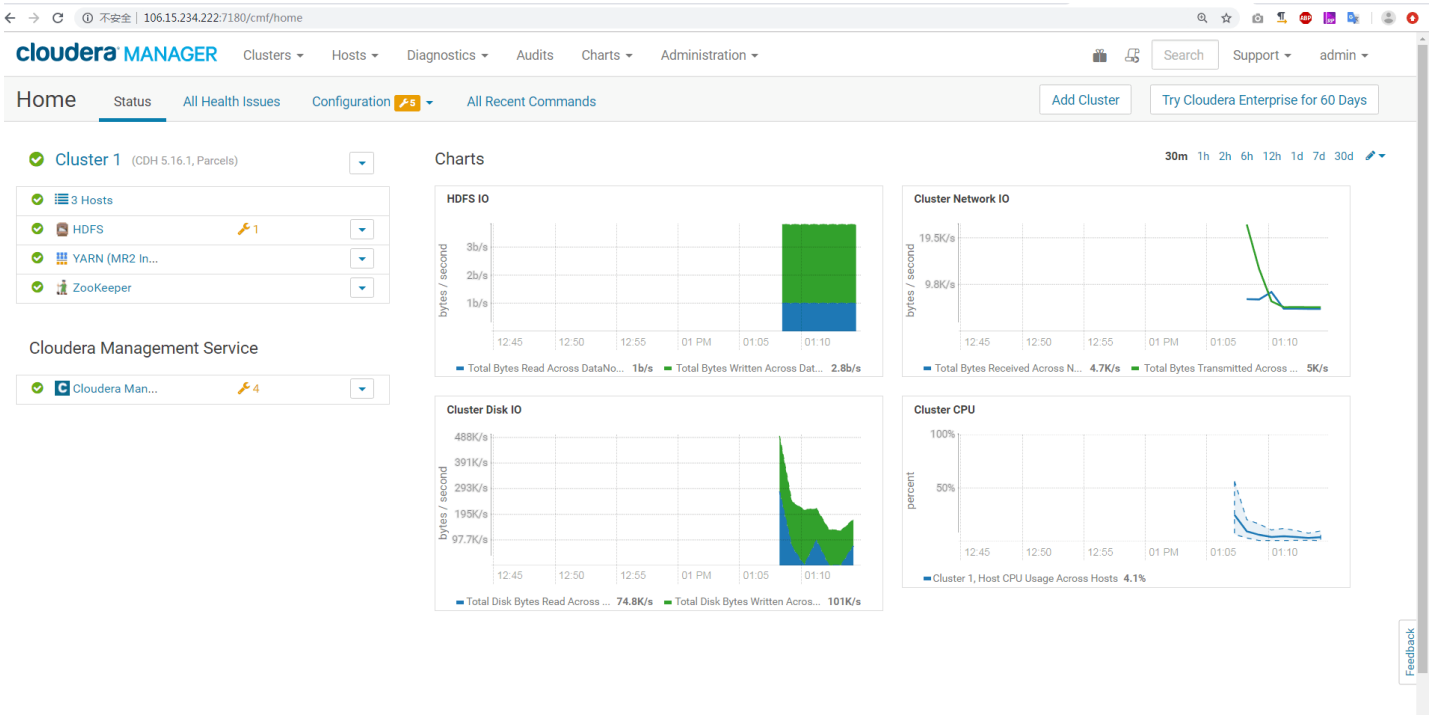
18.首次运行


Status Finished May 11, 1:04:22 PM 2.3m
Finished First Run of the following services successfully: ZooKeeper, HDFS, YARN (MR2 Included), Cloudera Management Service.
Completed 5 of 5 step(s).
Show All Steps
Show Only Failed Steps
Show Running Steps
Ensuring that the expected software releases are installed on hosts. May 11, 1:04:22 PM 59ms
Deploying Client Configuration
Successfully deployed all client configurations.
Cluster 1
May 11, 1:04:22 PM 15.32s
Execute DeployClusterClientConfig for {hdfs,yarn} in parallel. May 11, 1:04:22 PM 15.32s
Start Cloudera Management Service, ZooKeeper
Successfully completed 2 steps.
May 11, 1:04:37 PM 26.36s
Execute 1 steps in sequence May 11, 1:04:37 PM 22.88s
Execute 2 steps in sequence May 11, 1:04:38 PM 25.46s
Start HDFS
Successfully completed 1 steps.
May 11, 1:05:04 PM 67.33s
Execute 3 steps in sequence May 11, 1:05:04 PM 67.33s
Start YARN (MR2 Included) May 11, 1:06:11 PM 28.32s
Back
1 2 3 4 5 6
Continue

19.恭喜您!


Cluster Setup
Congratulations!
The services are installed, configured, and running on your cluster.
Back
1 2 3 4 5 6
Finish

20.主页



CDH全套课程目录，如有buy，加微信(ruoze_star)

0.青云环境介绍和使用
1.Preparation
    谈谈怎样入门大数据
    谈谈怎样做好一个大数据平台的运营工作
    Linux机器,各软件版本介绍及安装(录播)
2.Introduction
    Cloudera、CM及CDH介绍
    CDH版本选择
    CDH安装几种方式解读
3.Install&UnInstall
    集群节点规划,环境准备(NTP,Jdk and etc)
    MySQL编译安装及常用命令
    推荐:CDH离线安装(踩坑心得,全面剖析)
    解读暴力卸载脚本

4.CDH Management
    CDH体系架构剖析
    CDH配置文件深度解析
    CM的常用命令
    CDH集群正确启动和停止顺序
    CDH Tsquery Language
    CDH常规管理(监控/预警/配置/资源/日志/安全)

5.Maintenance Experiment
    HDFS HA 配置 及hadoop/hdfs常规命令
    Yarn HA 配置 及yarn常规命令

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        Other CDH Components HA 配置
        CDH动态添加删除服务(hive/spark/hbase)
        CDH动态添加删除机器
        CDH动态添加删除及迁移DataNode进程等
        CDH升级(5.10.0-->5.12.0)

    6.Resource Management
        Linux Cgroups
        静态资源池
        动态资源池
        多租户案例

    7.Performance Tunning
        Memory/CPU/Network/Disk及集群规划
        Linux参数
        HDFS参数
        MapReduce及Yarn参数
        其他服务参数

    8.Cases Share
        CDH4&5之Alternatives命令 的研究
        CDH5.8.2安装之Hash verification failed
        记录一次CDH4.8.6 配置HDFS HA 坑
        CDH5.0集群IP更改
        CDH的active namenode exit(GC)和彩蛋分享

    9. Kerberos
        Kerberos简介
        Kerberos体系结构
        Kerberos工作机制
        Kerberos安装部署
        CDH启用kerberos
        Kerberos开发使用(真实代码)

    10.Summary
        总结
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