CDH6.3.2配置Hue+Sentry权限管理

一、Sentry概述

`cdh` 版本的 `hadoop` 在对数据安全上的处理通常采用 `Kerberos+Sentry` 的结构。

`kerberos` 主要负责平台用户的用户认证， `sentry` 则负责数据的权限管理。

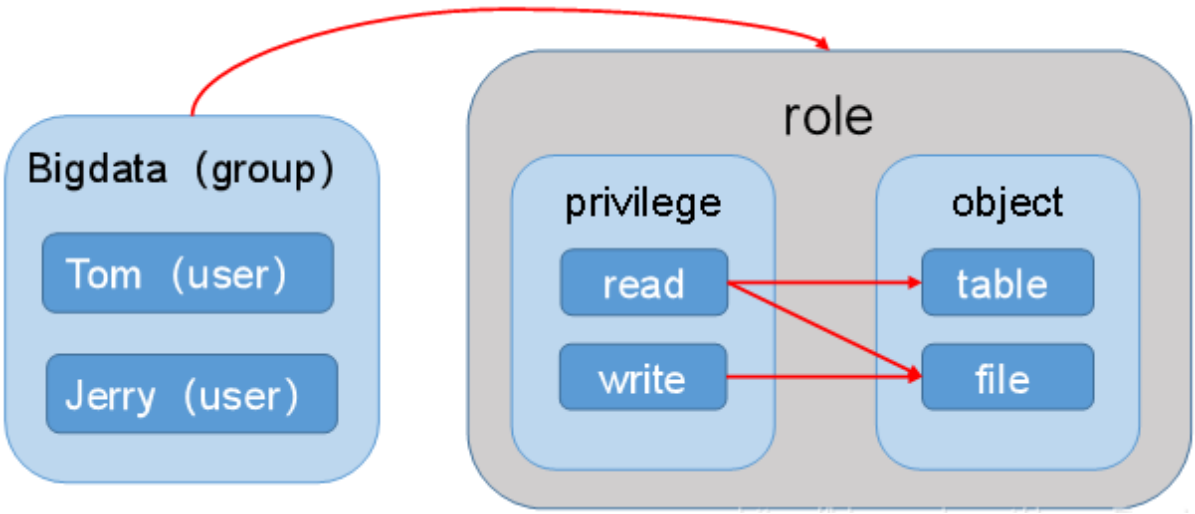
1.Sentry是什么

Apache Sentry是Cloudera公司发布的一个Hadoop开源组件，它提供了细粒度级、基于角色的授权以及多租户的管理模式。

Sentry提供了对Hadoop集群上经过身份验证的用户和应用程序的数据控制和强制执行精确级别权限的功能。Sentry目前可以与Apache Hive，Hive Metastore / HCatalog，Apache Solr，Impala和HDFS（仅限于Hive表数据）一起使用。

Sentry旨在成为Hadoop组件的可插拔授权引擎。它允许自定义授权规则以验证用户或应用程序对Hadoop资源的访问请求。Sentry是高度模块化的，可以支持Hadoop中各种数据模型的授权。

2.Sentry中的角色



- object: 受保护的对象
- privilege: 对 object 的访问权限
- role: privilege 的集合
- user: 用户
- group: user 的集合

二、Sentry安装部署

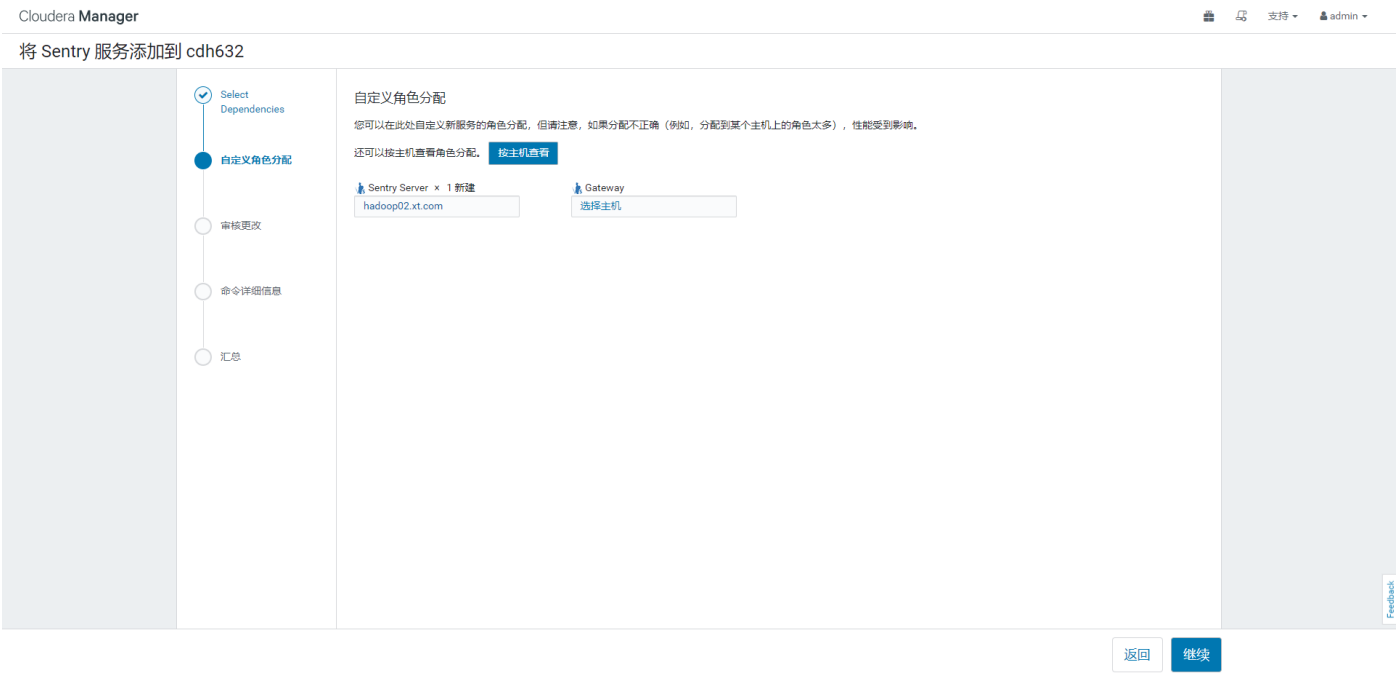
1.添加Sentry服务

Gherkin

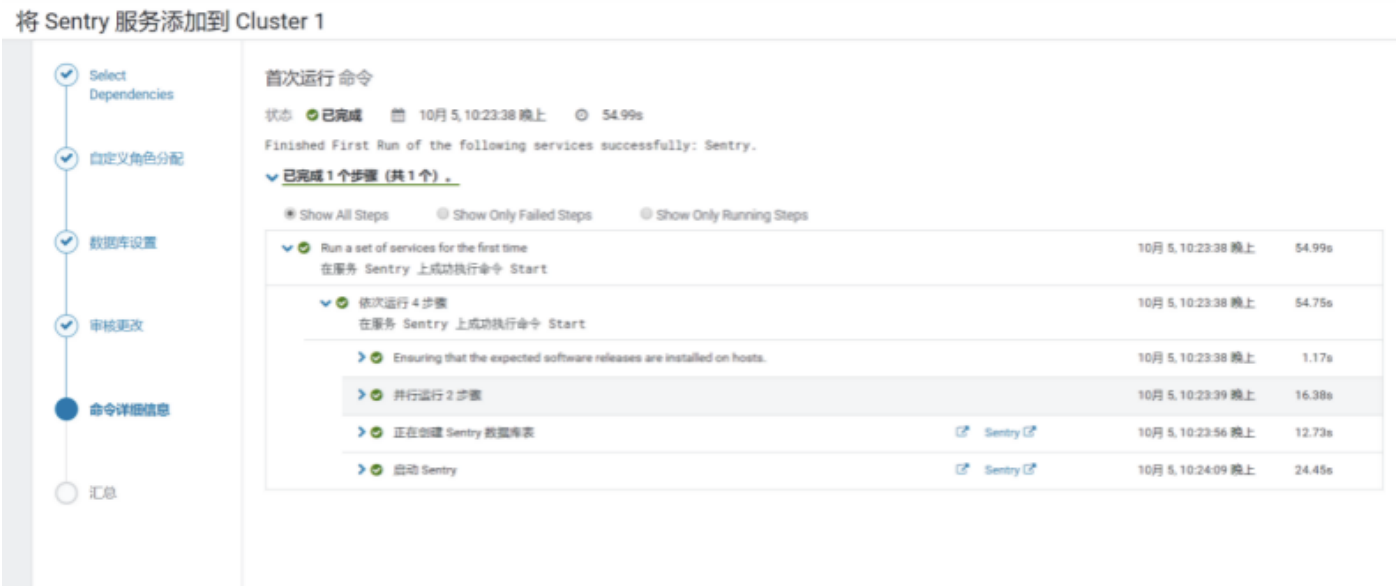
```
mysql> CREATE DATABASE sentry DEFAULT CHARACTER SET utf8;
CREATE USER 'sentry'@'%'IDENTIFIED BY 'sentry';
Query OK, 1 row affected (0.00 sec)

mysql> CREATE USER 'sentry'@'%'IDENTIFIED BY 'sentry';
Query OK, 0 rows affected (0.00 sec)

mysql> GRANT ALL PRIVILEGES ON sentry.* TO 'sentry'@'%' IDENTIFIED BY 'sentry';

Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql> GRANT ALL PRIVILEGES ON *.* TO 'sentry'@'%' IDENTIFIED BY 'sentry' WITH
GRANT OPTION;
Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| amon               |
| hive               |
| hue                |
| mysql              |
| oozie              |
| performance_schema |
| scm                |
| sentry             |
| sys                |
+--------------------+
10 rows in set (0.00 sec)

mysql> use sentry;
Reading table information for completion of table and column names
```

```
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> show tables;
+-----------------------------+
| Tables_in_sentry            |
+-----------------------------+
| AUTHZ_PATH                  |
| AUTHZ_PATHS_MAPPING         |
| AUTHZ_PATHS_SNAPSHOT_ID     |
| SENTRY_DB_PRIVILEGE         |
| SENTRY_GM_PRIVILEGE         |
| SENTRY_GROUP                |
| SENTRY_HMS_NOTIFICATION_ID  |
| SENTRY_PATH_CHANGE          |
| SENTRY_PERM_CHANGE          |
| SENTRY_ROLE                 |
| SENTRY_ROLE_DB_PRIVILEGE_MAP |
| SENTRY_ROLE_GM_PRIVILEGE_MAP |
| SENTRY_ROLE_GROUP_MAP       |
| SENTRY_ROLE_USER_MAP        |
| SENTRY_USER                 |
| SENTRY_USER_DB_PRIVILEGE_MAP |
| SENTRY_VERSION              |
+-----------------------------+
17 rows in set (0.00 sec)
```

2.定义角色分配节点



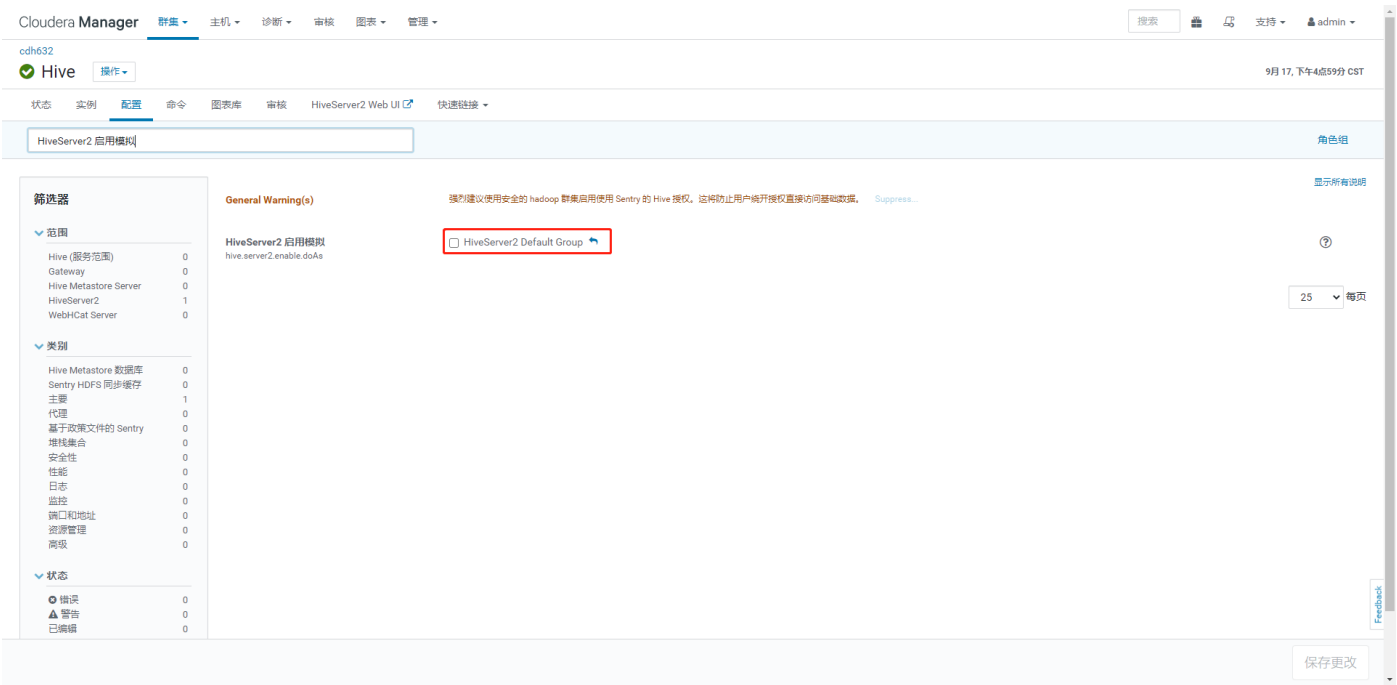
3.完成服务添加



三、Sentry与Hive/Impala集成

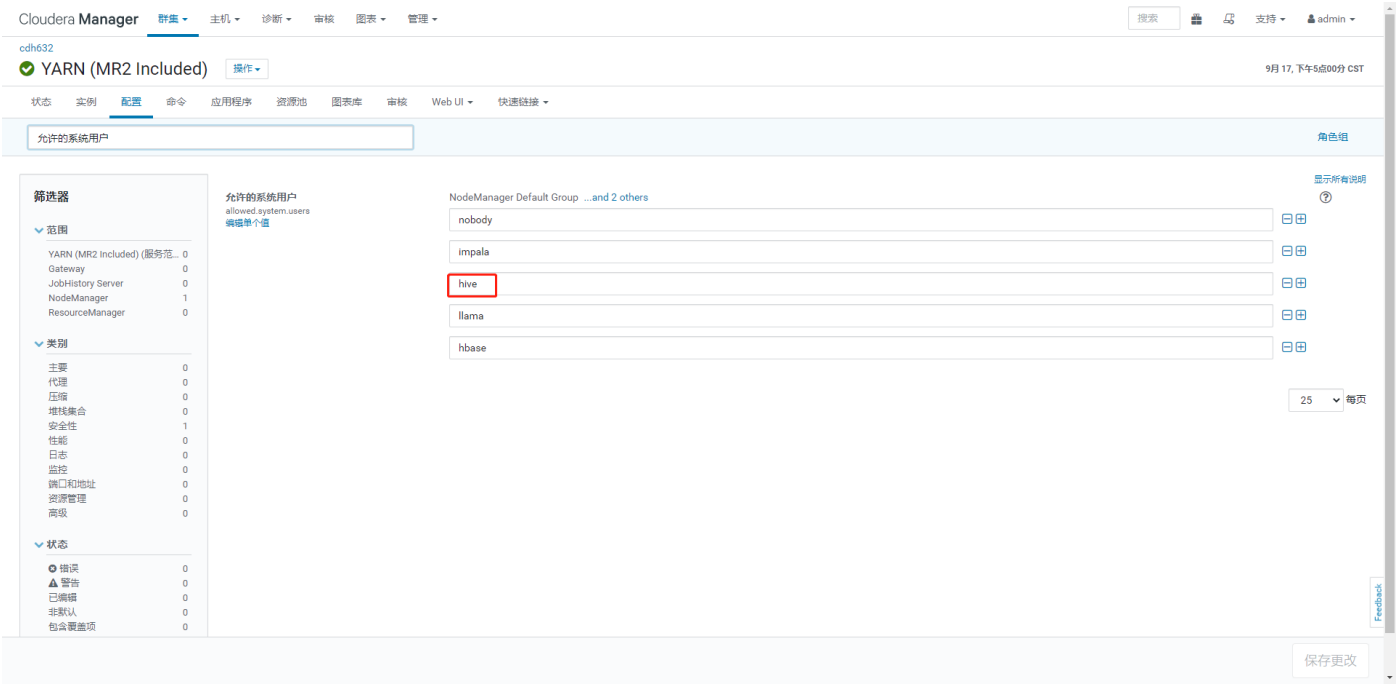
1.取消HiveServer2用户模拟

在hive配置项中搜索“HiveServer2 启用模拟”，取消勾选。



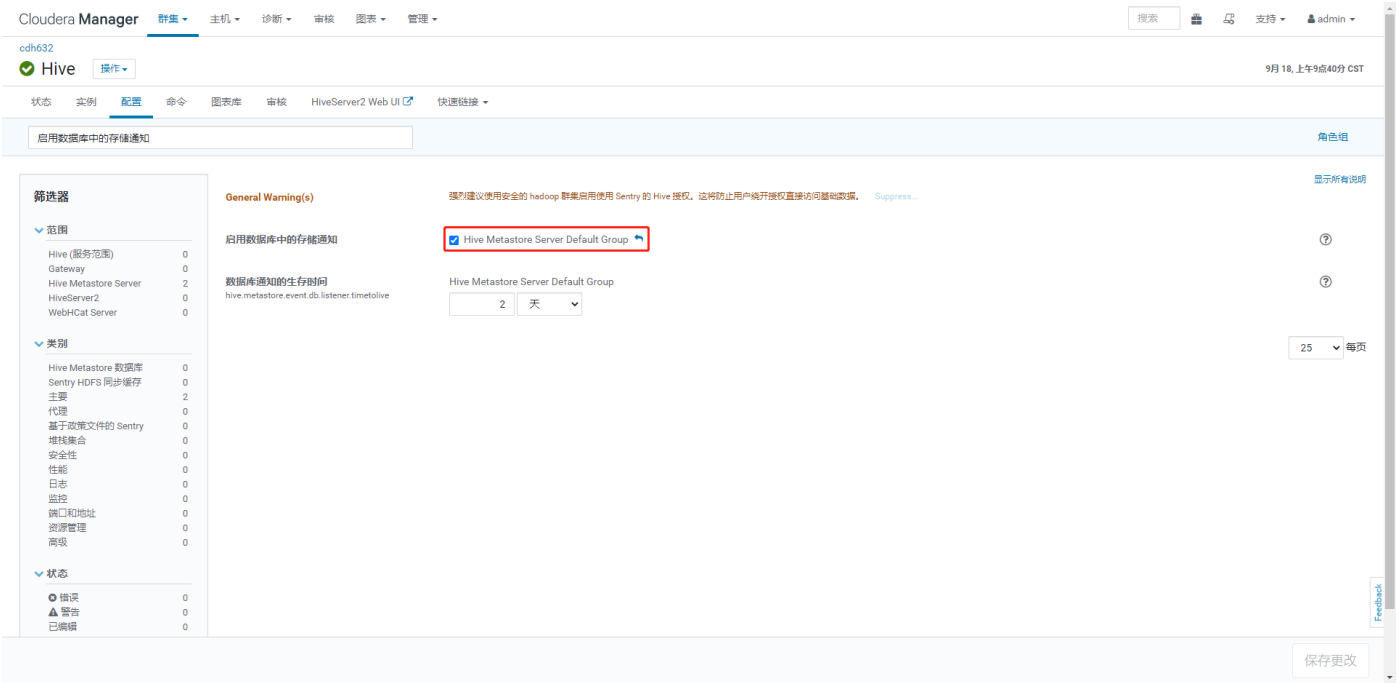
2.确保hive用户能够提交MR任务

在yarn配置项中搜索“允许的系统用户”，确保包含“hive”。

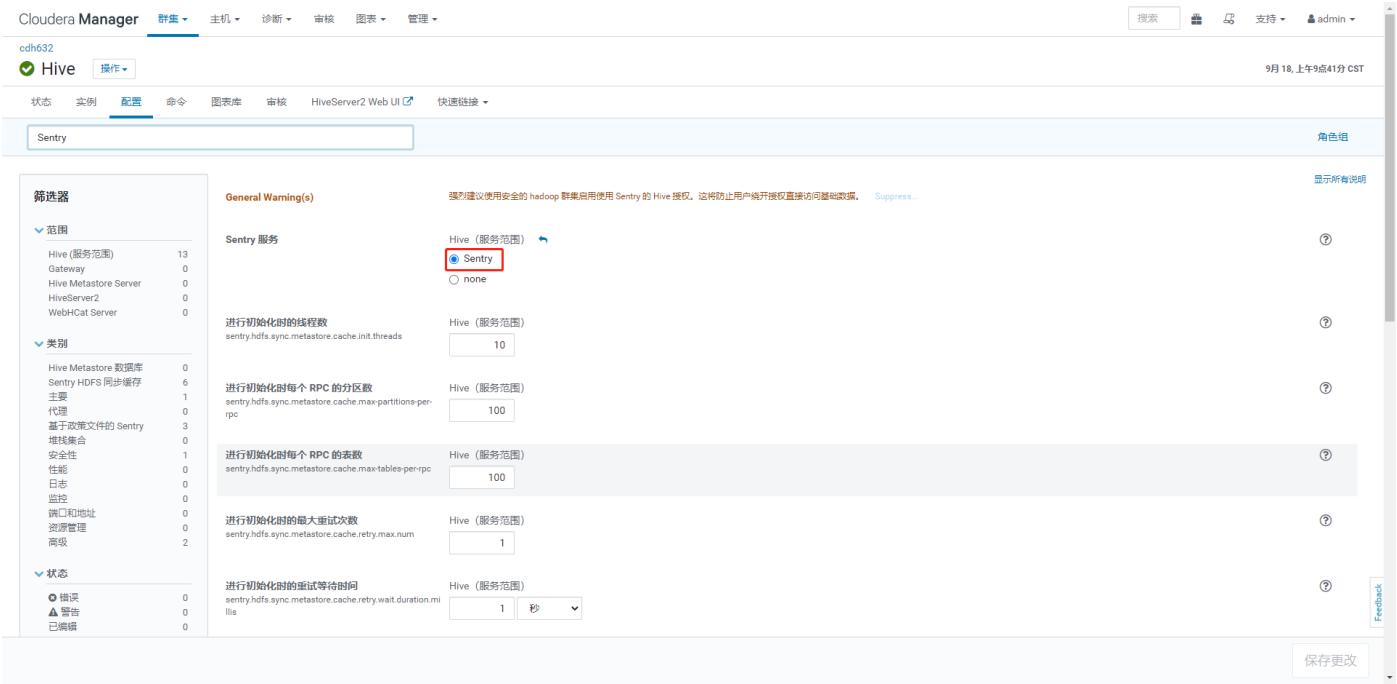


3.配置Hive使用Sentry

在Hive配置项中搜索“启用数据库中的存储通知”，勾选。

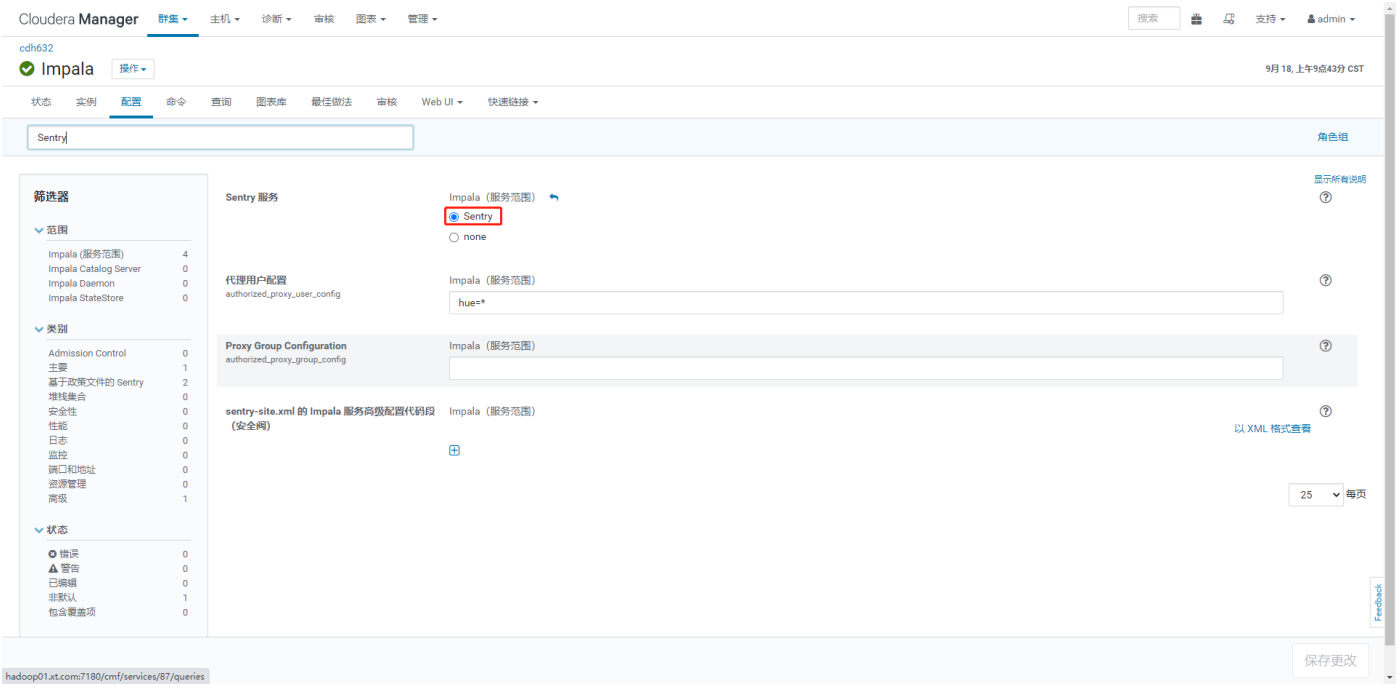


在Hive配置项中搜索“Sentry”，勾选Sentry。



4.配置Impala使用Sentry

在Impala配置项中搜索“Sentry”，勾选。

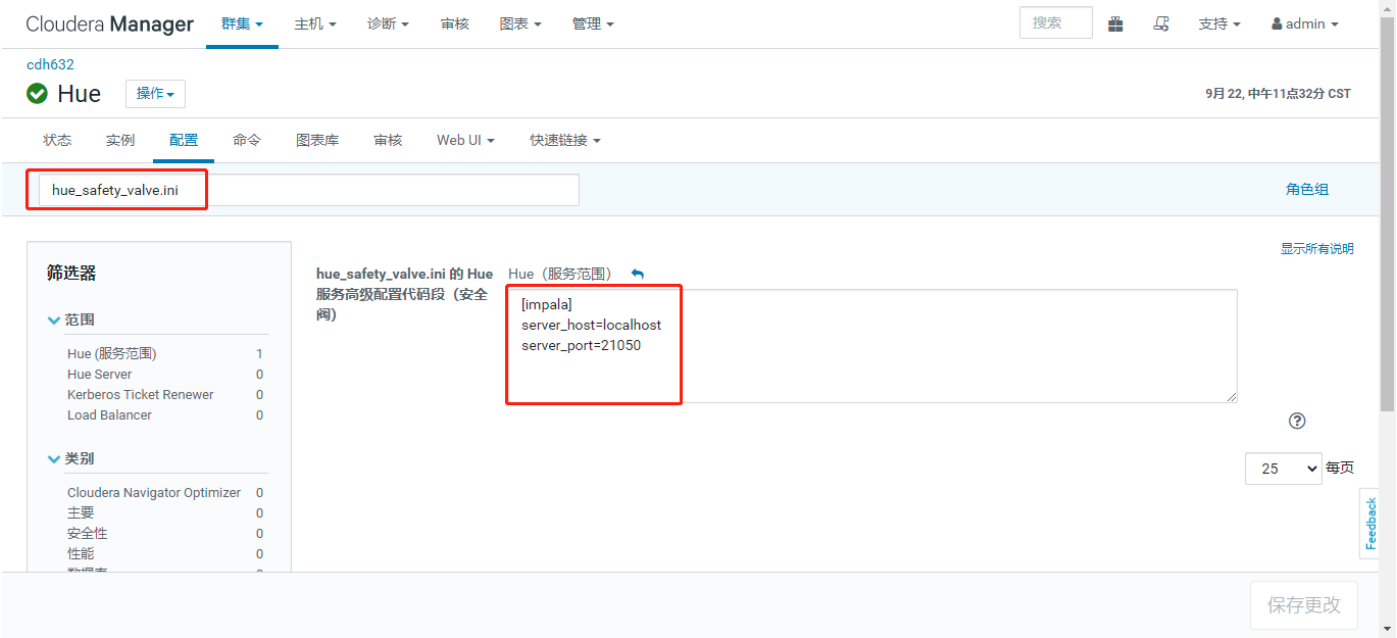


在hue配置项中搜索“hue_safety_valve.ini”，添加。

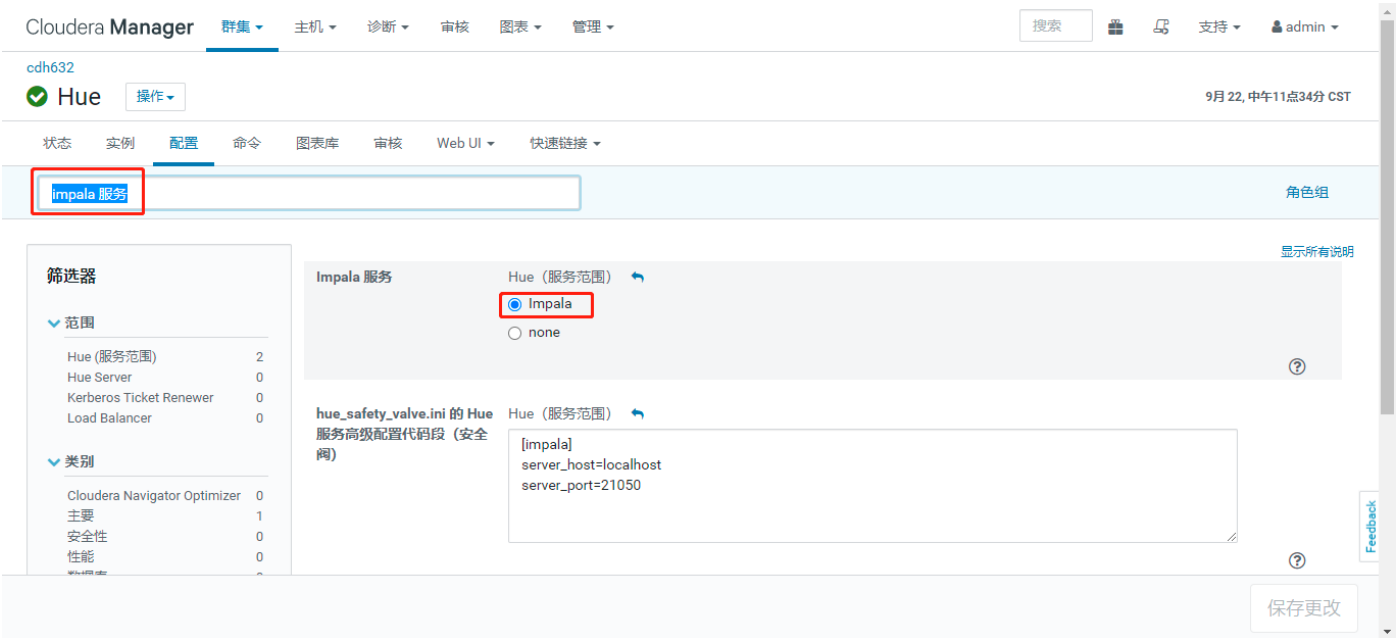
[impala]

server_host=localhost

server_port=21050

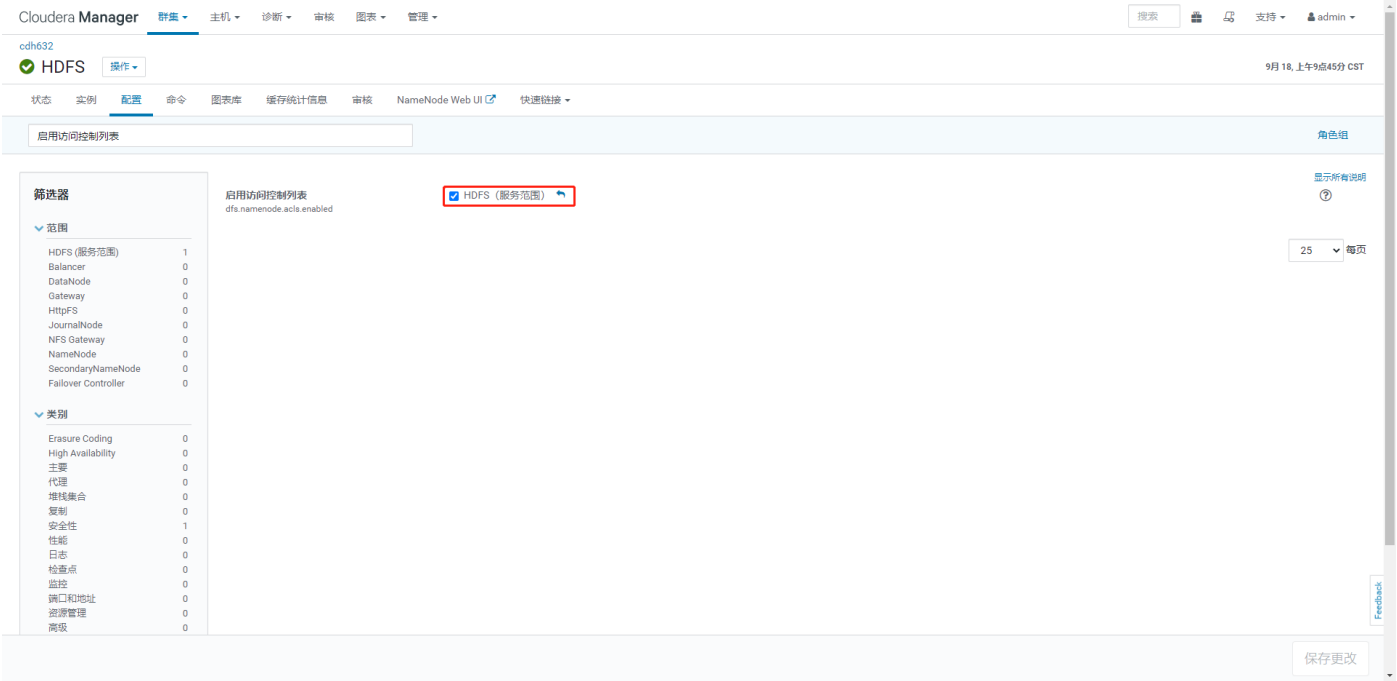


在hue配置项中搜索“impala 服务”，勾选impala。

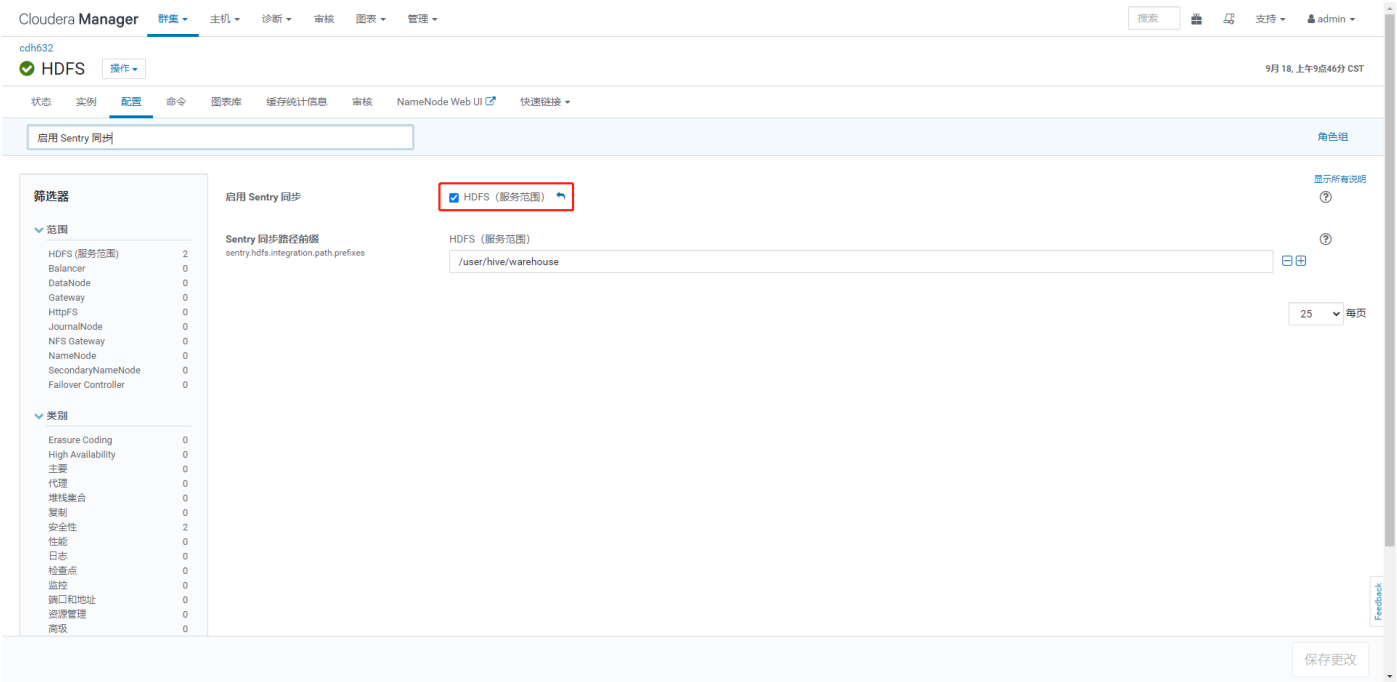


5.配置HDFS权限与Sentry同步

在HDFS配置项中搜索“启用访问控制列表”，勾选。

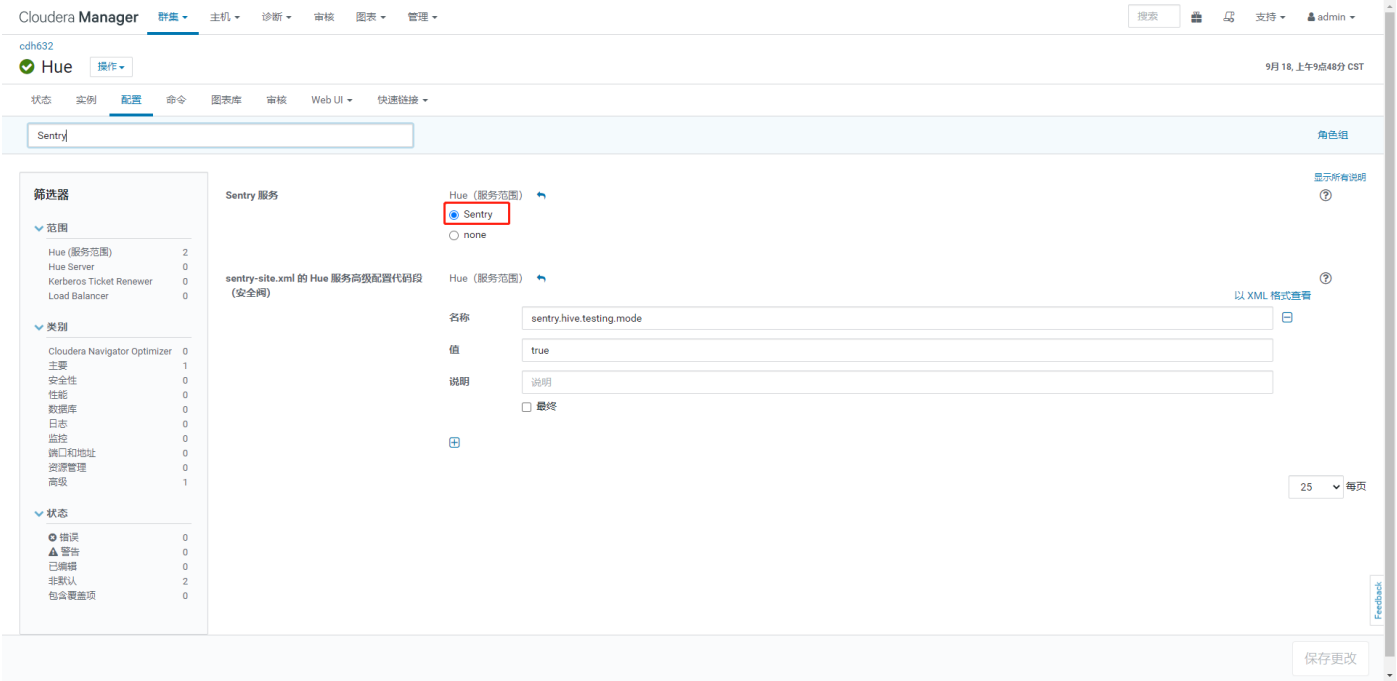


在HDFS配置项中搜索“启用 Sentry 同步”。

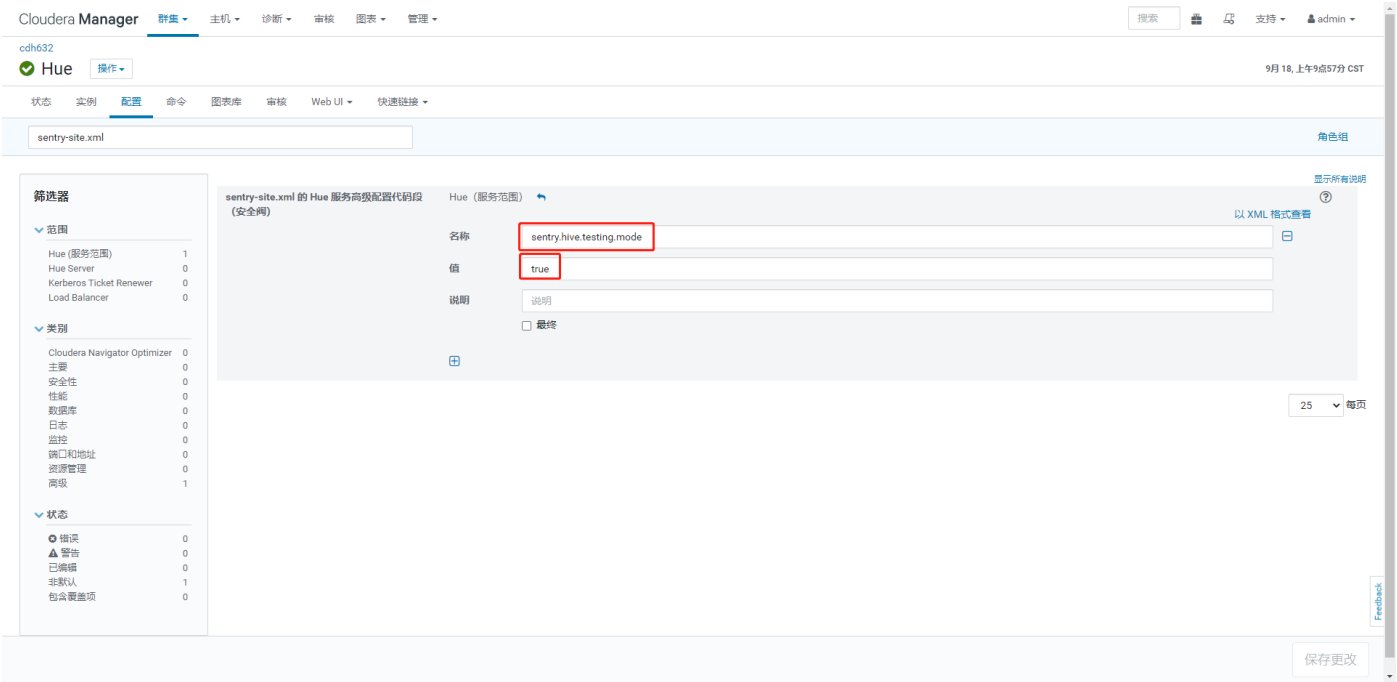


6.Sentry授权HUE授权配置

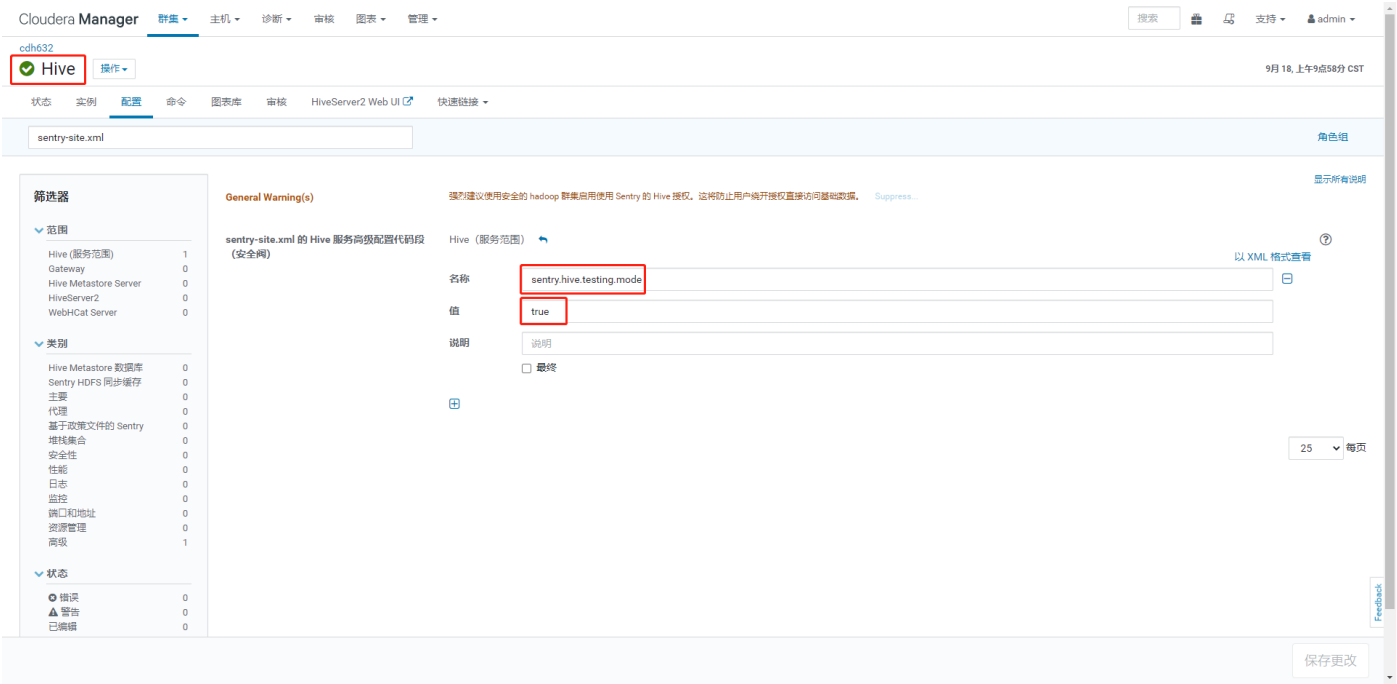
配置HUE支持Sentry，在HUE配置项中搜索“Sentry”，勾选Sentry。



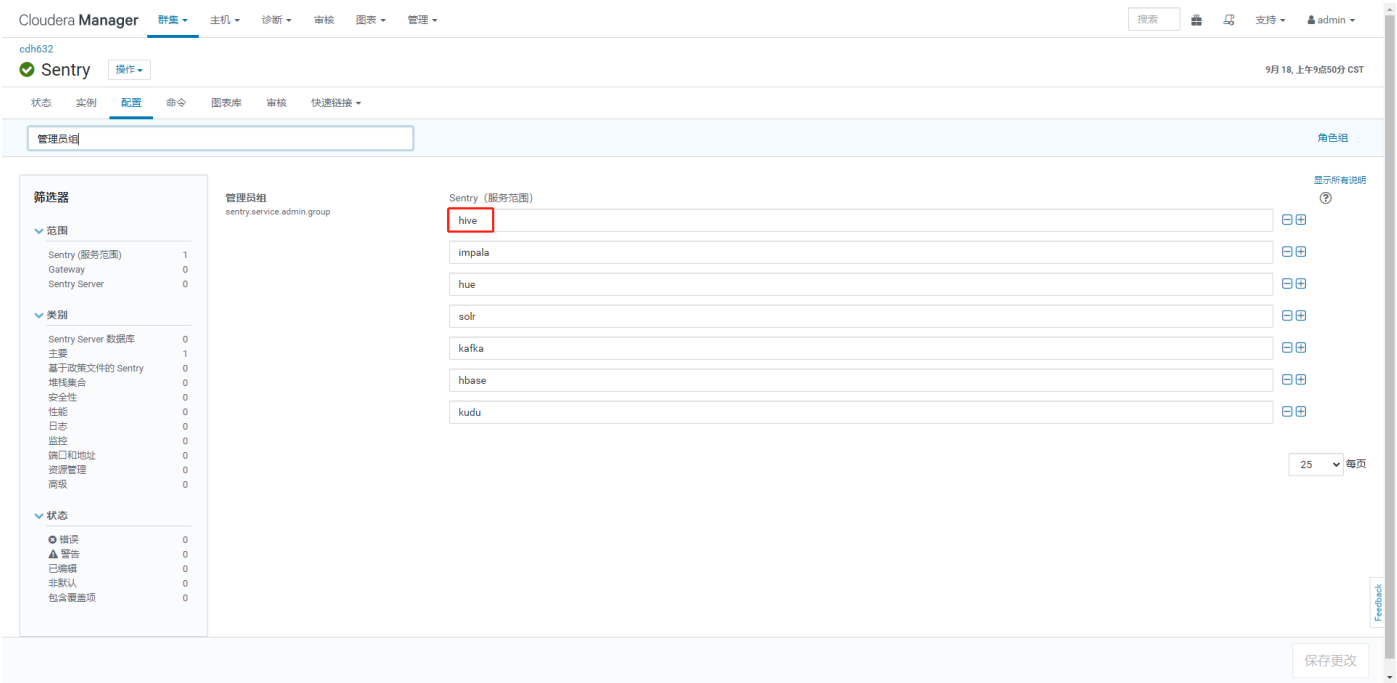
在HUE配置项中搜索“**sentry-site.xml**”，添加如下内容。sentry.hive.testing.mode



在Hive配置项中搜索“**sentry-site.xml**”，添加如下内容。sentry.hive.testing.mode



查看Sentry权限管理中的管理员组。在Sentry的配置项中搜索“管理员组”，其中包括hive、impala，只有当某用户所属组位于其中时，才可为其他用户授予权限。



四、Sentry不同用户组和用户授权

1.需求及说明

大数据平台需要给不同用户，分配搭配不同组，每个组都有自己的权限。在本文中不仅可以对用户访问hive库进行授权，同时也可以用户访问对hdfs路径进行授权。

2.大数据平台权限管理明细表

（1）角色和用户分配

角色名称	用户名称
admin	tangjin
analyst	yangxiaodong
engineer	leizheng

（2）角色和权限分配

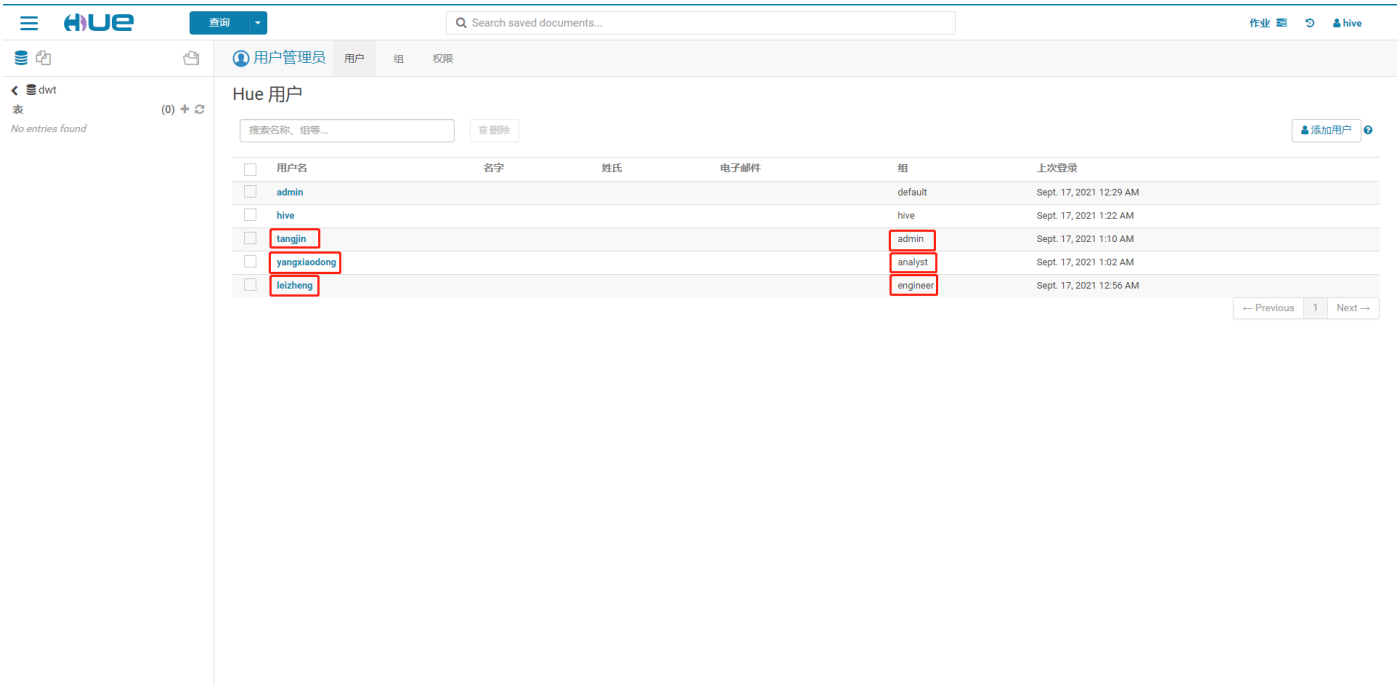
其中：select只有查询功能，all是有增删改查功能。

Role(Sentry)	Group(Linux)	Permissions(Hive)	Group(HUE)	Permissions(HUE)
admin	admin	all	admin	all
analyst	analyst	select	analyst	hive & impala
engineer	engineer	all	engineer	hive & impala

Hiveserver2权限和sentry权限对比：

	Hiveserver2	Sentry
用户/组/角色	1. 权限可以被授予给用户，也可以授予给角色； 2. 用户被指定属于一个或者多个角色； 3. 存在两个默认角色：Public和Admin；可以对Public角色授权，使得所有用户均具有该权限；在配置文件中指明属于Admin角色的	1. 权限只能被授予给角色 2. 角色被指定属于一个或者个多组； 3. 可以设定一个Sentry管理员所属的组：所有属于管理员组的用户都具有管理员的能力；
授权对象	数据库/表/视图	服务器/数据库/表/视图/列/URI
授权级别	SELECT, INSERT, UPDATE, DELETE, ALL	SELECT, INSERT, ALL

3.创建hue用户及分组



4.创建linux用户及分组

创建linux用户账号和用户组（linux用户账号和用户组跟HUE用户账号和用户组一致）

- hue启动hive，所以hiveService2角色所在机器建立用户和组
- hue启动impala，所以impala daemon角色所在机器建立用户和组
- hue启动spark，同时hdfs是acl控制权限，所以namenode角色所在机器建立用户和组

CSS

```
# 创建用户组
[root@hadoop01 ~]# groupadd  admin
[root@hadoop01 ~]# groupadd  analyst
[root@hadoop01 ~]# groupadd  engineer

# 创建用户
[root@hadoop01 ~]# useradd  -g  admin  tangjin
[root@hadoop01 ~]# useradd  -g  analyst  yangxiaodong
[root@hadoop01 ~]# useradd  -g  engineer  leizheng

# 修改用户秘密
[root@hadoop01 ~]# passwd  tangjin
[root@hadoop01 ~]# passwd  yangxiaodong
[root@hadoop01 ~]# passwd  leizheng
```

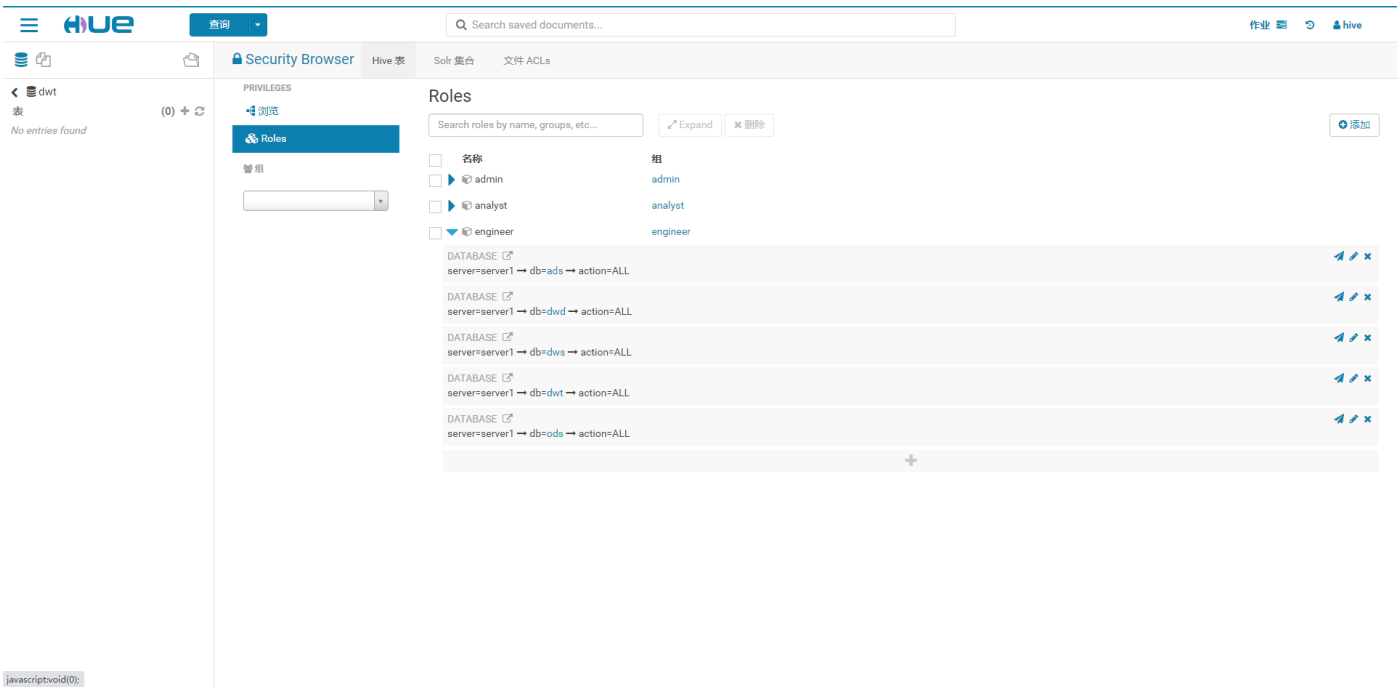
附一些常用命令：

```
(创建一个新用户且添加到已有组)
例：创建用户baidu且将用户baidu加入到etl组中，
sudo  useradd -g etl baidu

(将一个已有的用户添加到已有组，使此用户组成为该用户的附加用户组)
例：将用户 baidu加入到 users组中，
sudo  usermod -a -G users baidu

(将一个已有的组移除已有用户)
从wheel组中删除 test用户
gpasswd wheel -d test

（用户的密码设置）
sudo  passwd username

cat /etc/passwd 可以查看所有用户的列表
cat /etc/group 查看用户组
groups username 显示用户所属的用户组
```

5.创建Sentry角色，角色授予linux组，给角色授权

（1）Hue Security界面操作及授权方法

添加角色并分配给组



（2）beeline命令行操作及授权方法

访问（hive节点），进入beeline命令行，建立连接，创建角色和权限并将角色赋予用户组。

SQL

```
1.beeline 登陆
beeline
!connect jdbc:hive2://hadoop01:10000
AC: hive 【用hive登陆】
PW: ******

2.创建admin,impala,bigdata角色
show roles;
create role admin;
create role analyst;
create role engineer;

3.为角色赋予超级权限
grant all on server server1 to role admin;
grant select on server server1 to role engineer;
grant create on server server1 to role engineer;
grant insert on server server1 to role engineer;
grant select on server server1 to role analyst;

4.将角色授权给各个用户组
grant role admin to group admin; --admin用户组有admin权限
grant role analyst to group analyst;--analyst用户组有查询权限
grant role engineer to group engineer;--engineer用户组有查询和创建权限。
```

```
SLF4J: Found binding in [jar:file:/opt/cloudera/parcels/CDH-6.3.2-1.cdh6.3.2.p0.1605554/jars/log4j-slf4j-impl-2.8.2.jar!/org/slf4j/impl/Stat
icLoggerBinder.class]
SLF4J: Found binding in [jar:file:/opt/cloudera/parcels/CDH-6.3.2-1.cdh6.3.2.p0.1605554/jars/slf4j-log4j12-1.7.25.jar!/org/slf4j/impl/Static
LoggerBinder.class]
SLF4J: See http://www.slf4j.org/codes.html#multiple_bindings for an explanation.
SLF4J: Actual binding is of type [org.apache.logging.slf4j.Log4jLoggerFactory]
Beeline version 2.1.1-cdh6.3.2 by Apache Hive
beeline> !connect jdbc:hive2://localhost:10000/
Connecting to jdbc:hive2://localhost:10000/
Enter username for jdbc:hive2://localhost:10000/: hive
Enter password for jdbc:hive2://localhost:10000/: **********
Connected to: Apache Hive (version 2.1.1-cdh6.3.2)
Driver: Hive JDBC (version 2.1.1-cdh6.3.2)
Transaction isolation: TRANSACTION_REPEATABLE_READ
```

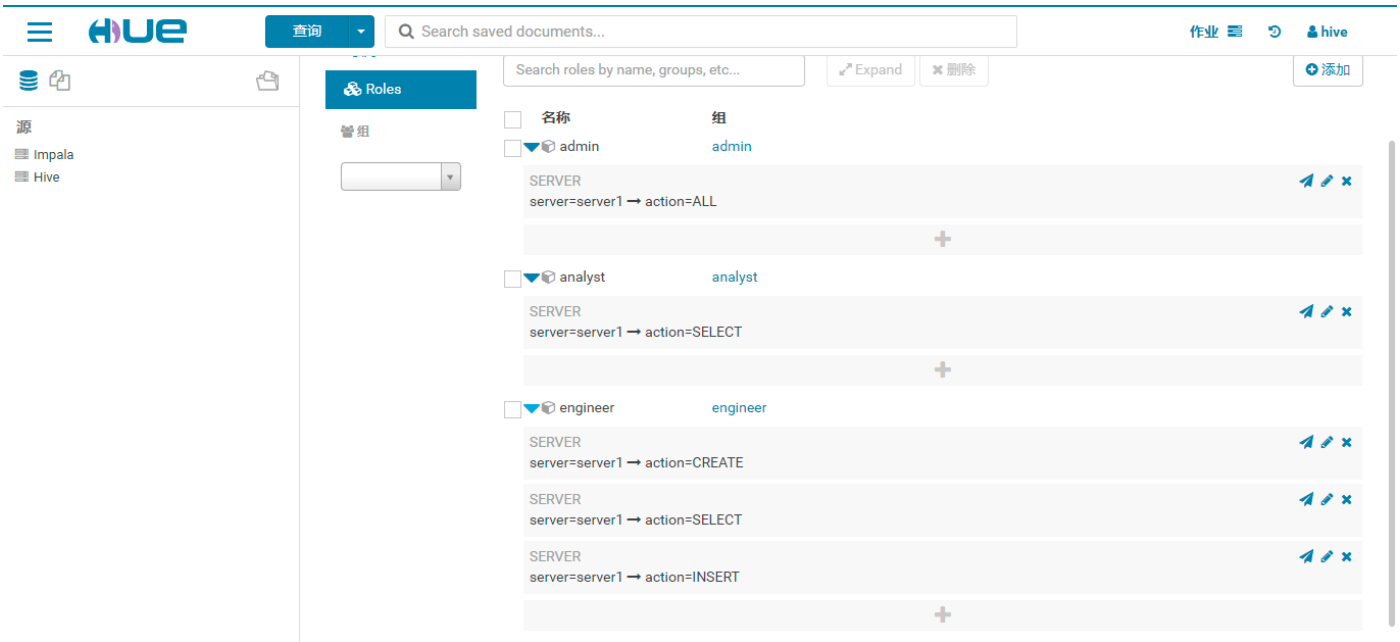
```
0: jdbc:hive2://localhost:10000/> show roles;
INFO  : Compiling command(queryId=hive_20210922101153_ba439fb5-18b9-46a4-be6e-f9c2b669c044): show roles
INFO  : Semantic Analysis Completed
INFO  : Returning Hive schema: Schema(fieldSchemas:[FieldSchema(name:role, type:string, comment:from deserializer)], properties:null)
INFO  : Completed compiling command(queryId=hive_20210922101153_ba439fb5-18b9-46a4-be6e-f9c2b669c044); Time taken: 0.041 seconds
INFO  : Executing command(queryId=hive_20210922101153_ba439fb5-18b9-46a4-be6e-f9c2b669c044): show roles
INFO  : Starting task [Stage-0:DDL] in serial mode
INFO  : Completed executing command(queryId=hive_20210922101153_ba439fb5-18b9-46a4-be6e-f9c2b669c044); Time taken: 0.005 seconds
INFO  : OK
+-------+
| role  |
+-------+
+-------+
No rows selected (0.071 seconds)
0: jdbc:hive2://localhost:10000/> create role admin;
INFO  : Compiling command(queryId=hive_20210922101337_2ba4da4a-1811-430c-8718-83ced5eefe6f): create role admin
INFO  : Semantic Analysis Completed
INFO  : Returning Hive schema: Schema(fieldSchemas:null, properties:null)
INFO  : Completed compiling command(queryId=hive_20210922101337_2ba4da4a-1811-430c-8718-83ced5eefe6f); Time taken: 0.039 seconds
INFO  : Executing command(queryId=hive_20210922101337_2ba4da4a-1811-430c-8718-83ced5eefe6f): create role admin
INFO  : Starting task [Stage-0:DDL] in serial mode
INFO  : Completed executing command(queryId=hive_20210922101337_2ba4da4a-1811-430c-8718-83ced5eefe6f); Time taken: 0.037 seconds
INFO  : OK
No rows affected (0.093 seconds)
0: jdbc:hive2://localhost:10000/> show roles;
INFO  : Compiling command(queryId=hive_20210922101340_cc009b4d-212f-4db6-800f-a007d729dafc): show roles
INFO  : Semantic Analysis Completed
INFO  : Returning Hive schema: Schema(fieldSchemas:[FieldSchema(name:role, type:string, comment:from deserializer)], properties:null)
INFO  : Completed compiling command(queryId=hive_20210922101340_cc009b4d-212f-4db6-800f-a007d729dafc); Time taken: 0.039 seconds
INFO  : Executing command(queryId=hive_20210922101340_cc009b4d-212f-4db6-800f-a007d729dafc): show roles
INFO  : Starting task [Stage-0:DDL] in serial mode
INFO  : Completed executing command(queryId=hive_20210922101340_cc009b4d-212f-4db6-800f-a007d729dafc); Time taken: 0.007 seconds
INFO  : OK
+--------+
|  role  |
+--------+
| admin  |
+--------+
```

```
0: jdbc:hive2://localhost:10000/> show roles;
INFO  : Compiling command(queryId=hive_20210922102308_c11d2a05-5cc6-45d6-965a-1488ac915a09): show roles
INFO  : Semantic Analysis Completed
INFO  : Returning Hive schema: Schema(fieldSchemas:[FieldSchema(name:role, type:string, comment:from deserializer)], properties:null)
INFO  : Completed compiling command(queryId=hive_20210922102308_c11d2a05-5cc6-45d6-965a-1488ac915a09); Time taken: 0.039 seconds
INFO  : Executing command(queryId=hive_20210922102308_c11d2a05-5cc6-45d6-965a-1488ac915a09): show roles
INFO  : Starting task [Stage-0:DDL] in serial mode
INFO  : Completed executing command(queryId=hive_20210922102308_c11d2a05-5cc6-45d6-965a-1488ac915a09); Time taken: 0.009 seconds
INFO  : OK
+-----------+
|   role    |
+-----------+
| admin     |
| analyst   |
| engineer  |
+-----------+
3 rows selected (0.086 seconds)
```

```
0: jdbc:hive2://localhost:10000/> grant all on server server1 to role admin;
INFO  : Compiling command(queryId=hive_20210922101405_cf66f7a4-11d4-49c2-b8d2-9b4c96f3e037): grant all on server server1 to role admin
INFO  : Semantic Analysis Completed
INFO  : Returning Hive schema: Schema(fieldSchemas:null, properties:null)
INFO  : Completed compiling command(queryId=hive_20210922101405_cf66f7a4-11d4-49c2-b8d2-9b4c96f3e037); Time taken: 0.043 seconds
INFO  : Executing command(queryId=hive_20210922101405_cf66f7a4-11d4-49c2-b8d2-9b4c96f3e037): grant all on server server1 to role admin
INFO  : Starting task [Stage-0:DDL] in serial mode
INFO  : Completed executing command(queryId=hive_20210922101405_cf66f7a4-11d4-49c2-b8d2-9b4c96f3e037); Time taken: 0.048 seconds
INFO  : OK
No rows affected (0.102 seconds)
0: jdbc:hive2://localhost:10000/> grant select on server server1 to role engineer;
INFO  : Compiling command(queryId=hive_20210922101449_73fadd15-2255-4784-b821-92728a30212c): grant select on server server1 to role engineer
INFO  : Semantic Analysis Completed
INFO  : Returning Hive schema: Schema(fieldSchemas:null, properties:null)
INFO  : Completed compiling command(queryId=hive_20210922101449_73fadd15-2255-4784-b821-92728a30212c); Time taken: 0.039 seconds
INFO  : Executing command(queryId=hive_20210922101449_73fadd15-2255-4784-b821-92728a30212c): grant select on server server1 to role engineer
INFO  : Starting task [Stage-0:DDL] in serial mode
INFO  : Completed executing command(queryId=hive_20210922101449_73fadd15-2255-4784-b821-92728a30212c); Time taken: 0.013 seconds
INFO  : OK
No rows affected (0.063 seconds)
0: jdbc:hive2://localhost:10000/> grant create on server server1 to role engineer;
INFO  : Compiling command(queryId=hive_20210922101459_e2c8088d-baf5-44d3-8de8-7ef56721eecf): grant create on server server1 to role engineer
INFO  : Semantic Analysis Completed
INFO  : Returning Hive schema: Schema(fieldSchemas:null, properties:null)
INFO  : Completed compiling command(queryId=hive_20210922101459_e2c8088d-baf5-44d3-8de8-7ef56721eecf); Time taken: 0.039 seconds
INFO  : Executing command(queryId=hive_20210922101459_e2c8088d-baf5-44d3-8de8-7ef56721eecf): grant create on server server1 to role engineer
INFO  : Starting task [Stage-0:DDL] in serial mode
INFO  : Completed executing command(queryId=hive_20210922101459_e2c8088d-baf5-44d3-8de8-7ef56721eecf); Time taken: 0.015 seconds
INFO  : OK
No rows affected (0.07 seconds)
0: jdbc:hive2://localhost:10000/> grant select on server server1 to role analyst;
INFO  : Compiling command(queryId=hive_20210922101506_873d0707-0ceb-4a78-9262-dc5fba0d0566): grant select on server server1 to role analyst
INFO  : Semantic Analysis Completed
INFO  : Returning Hive schema: Schema(fieldSchemas:null, properties:null)
INFO  : Completed compiling command(queryId=hive_20210922101506_873d0707-0ceb-4a78-9262-dc5fba0d0566); Time taken: 0.04 seconds
INFO  : Executing command(queryId=hive_20210922101506_873d0707-0ceb-4a78-9262-dc5fba0d0566): grant select on server server1 to role analyst
INFO  : Starting task [Stage-0:DDL] in serial mode
INFO  : Completed executing command(queryId=hive_20210922101506_873d0707-0ceb-4a78-9262-dc5fba0d0566); Time taken: 0.009 seconds
```

```
0: jdbc:hive2://localhost:10000/> grant role admin to group admin;
INFO  : Compiling command(queryId=hive_20210922101557_82c5af6b-0c34-45ed-97a7-d2a981a3b2aa): grant role admin to group admin
INFO  : Semantic Analysis Completed
INFO  : Returning Hive schema: Schema(fieldSchemas:null, properties:null)
INFO  : Completed compiling command(queryId=hive_20210922101557_82c5af6b-0c34-45ed-97a7-d2a981a3b2aa); Time taken: 0.038 seconds
INFO  : Executing command(queryId=hive_20210922101557_82c5af6b-0c34-45ed-97a7-d2a981a3b2aa): grant role admin to group admin
INFO  : Starting task [Stage-0:DDL] in serial mode
INFO  : Completed executing command(queryId=hive_20210922101557_82c5af6b-0c34-45ed-97a7-d2a981a3b2aa); Time taken: 0.038 seconds
INFO  : OK
No rows affected (0.086 seconds)
0: jdbc:hive2://localhost:10000/> grant role analyst to group analyst;
INFO  : Compiling command(queryId=hive_20210922101605_d3335c5c-3bac-44ff-8c8e-feef042ca8f1): grant role analyst to group analyst
INFO  : Semantic Analysis Completed
INFO  : Returning Hive schema: Schema(fieldSchemas:null, properties:null)
INFO  : Completed compiling command(queryId=hive_20210922101605_d3335c5c-3bac-44ff-8c8e-feef042ca8f1); Time taken: 0.036 seconds
INFO  : Executing command(queryId=hive_20210922101605_d3335c5c-3bac-44ff-8c8e-feef042ca8f1): grant role analyst to group analyst
INFO  : Starting task [Stage-0:DDL] in serial mode
INFO  : Completed executing command(queryId=hive_20210922101605_d3335c5c-3bac-44ff-8c8e-feef042ca8f1); Time taken: 0.011 seconds
INFO  : OK
No rows affected (0.057 seconds)
0: jdbc:hive2://localhost:10000/> grant role engineer to group engineer;
INFO  : Compiling command(queryId=hive_20210922101612_89ac1b02-6a88-4074-ae0c-d1720991e6da): grant role engineer to group engineer
INFO  : Semantic Analysis Completed
INFO  : Returning Hive schema: Schema(fieldSchemas:null, properties:null)
INFO  : Completed compiling command(queryId=hive_20210922101612_89ac1b02-6a88-4074-ae0c-d1720991e6da); Time taken: 0.037 seconds
INFO  : Executing command(queryId=hive_20210922101612_89ac1b02-6a88-4074-ae0c-d1720991e6da): grant role engineer to group engineer
INFO  : Starting task [Stage-0:DDL] in serial mode
INFO  : Completed executing command(queryId=hive_20210922101612_89ac1b02-6a88-4074-ae0c-d1720991e6da); Time taken: 0.012 seconds
INFO  : OK
```

创建完成后可以从hue security界面查看 server 级别角色

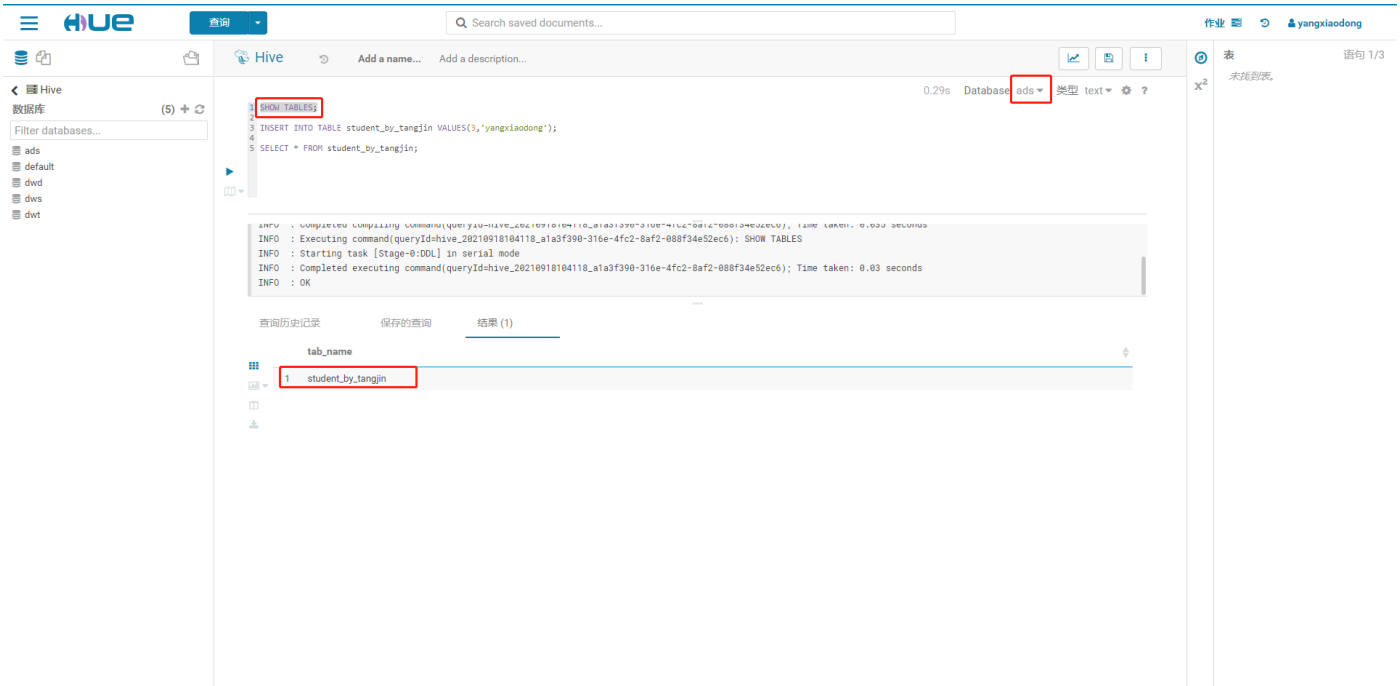


常见命令行操作

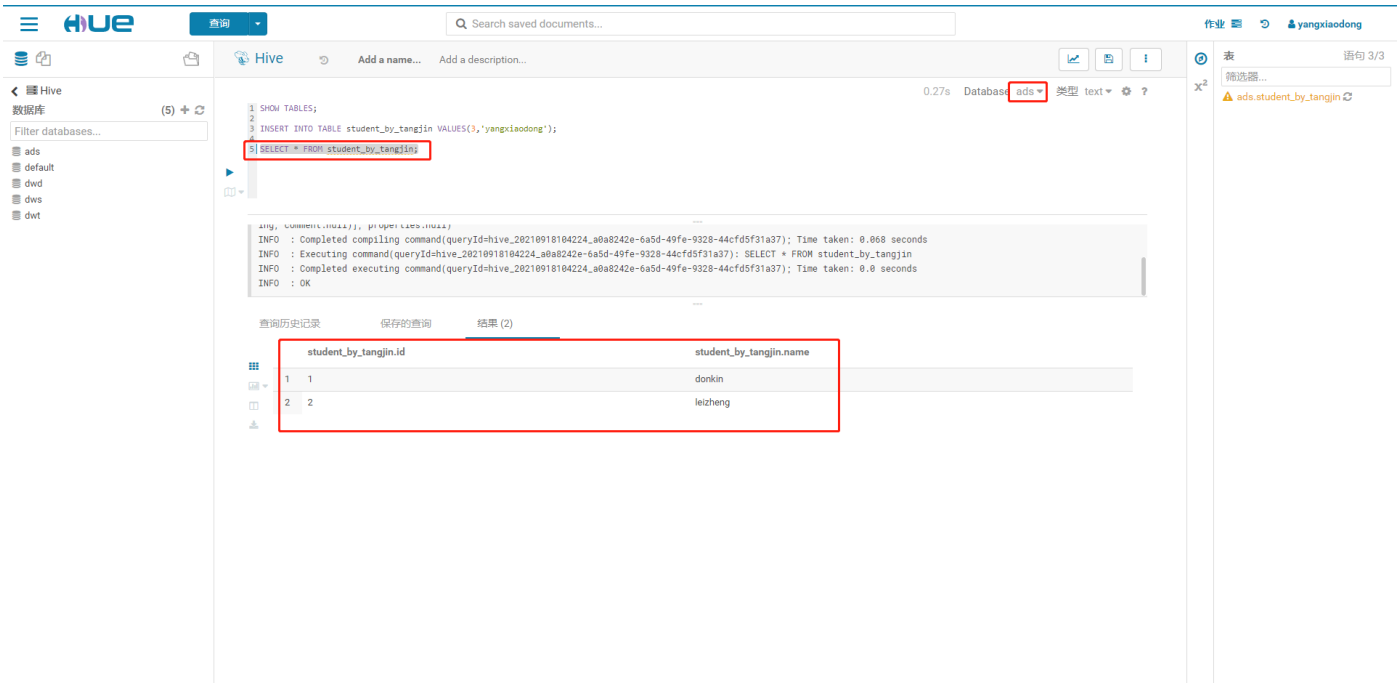
```CSS
1.查看角色: show roles;

2.创建角色: create ROLE [role_name];

3.将角色授予组: GRANT ROLE role_name [, role_name]
TO GROUP （groupName） [,GROUP （groupName）]

4.将角色移除组: REVOKE ROLE role_name [, role_name]
FROM GROUP （groupName） [,GROUP （groupName）]

5.给角色授权（权限分三种: SELECT,INSERT,ALL）:
GRANT (PRIVILEGE) [, (PRIVILEGE) ] ON (OBJECT) (object_name)
TO ROLE (roleName) [,ROLE (roleName)]
给角色授权例子:
GRANT select on table dws.dws_t1_branch_master_a to role T1Consult;
GRANT select on database t1_project to role T1Consult;

6.创建和删除角色 CREATE ROLE ROLE_NAME
删除角色: DROP ROLE ROLE_NAME

把role_test1角色授权给jayliu用户，命令如下
grant role role_test1 to user jayliu;

7.查看jayliu用户被授权的角色，命令如下:
SHOW ROLE GRANT user jayliu;

8.取消jayliu用户的role_test1角色，操作命令如下:
revoke role role_test1 from user jayliu;

把某个库的所有权限给一个角色，角色给用户!
grant all on database user_lisi to role role_lisi;
grant role role_lisi to user lisi;

把某个库的权限直接给用户!
grant ALL ON DATABASE USER_LISI TO USER lisi;

收回 revoke ALLondatabase default from user lisi;

查看用户对数据看的权限 show grant user lisi on database user_lisi;
```

6.不同角色进行操作

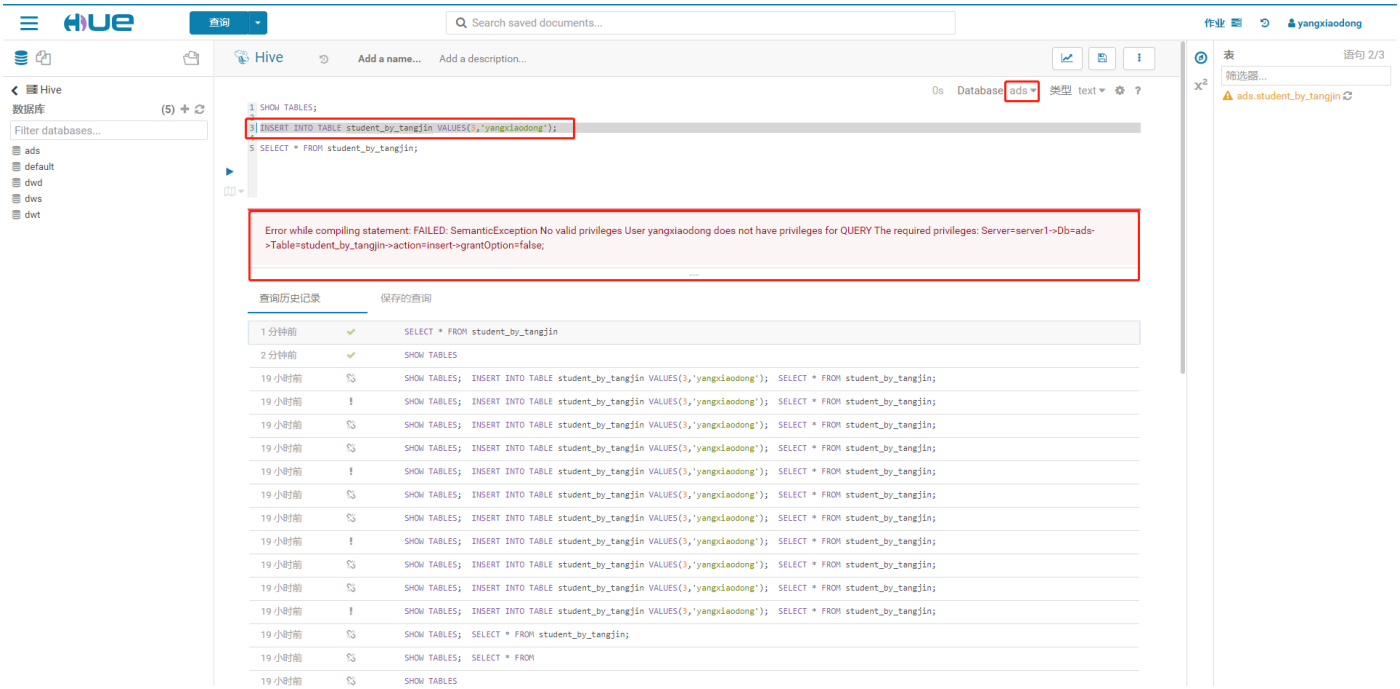
SHOW TABLES;



SELECT * FROM student_by_tangjin;



INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');



```
SHOW TABLES;

INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');

SELECT * FROM student_by_tangjin;
```

```
Error while compiling statement: FAILED: SemanticException No valid privileges User yangxiaodong does not have privileges for QUERY The required privileges: Server=server1->Db=ads->Table=student_by_tangjin->action=insert->grantOption=false;
```

```
1 分钟前   ✓   SELECT * FROM student_by_tangjin
2 分钟前   ✓   SHOW TABLES
19 小时前       SHOW TABLES;  INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');  SELECT * FROM student_by_tangjin;
19 小时前   !   SHOW TABLES;  INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');  SELECT * FROM student_by_tangjin;
19 小时前       SHOW TABLES;  INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');  SELECT * FROM student_by_tangjin;
19 小时前       SHOW TABLES;  INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');  SELECT * FROM student_by_tangjin;
19 小时前   !   SHOW TABLES;  INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');  SELECT * FROM student_by_tangjin;
19 小时前       SHOW TABLES;  INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');  SELECT * FROM student_by_tangjin;
19 小时前       SHOW TABLES;  INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');  SELECT * FROM student_by_tangjin;
19 小时前   !   SHOW TABLES;  INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');  SELECT * FROM student_by_tangjin;
19 小时前       SHOW TABLES;  INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');  SELECT * FROM student_by_tangjin;
19 小时前       SHOW TABLES;  INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');  SELECT * FROM student_by_tangjin;
19 小时前   !   SHOW TABLES;  INSERT INTO TABLE student_by_tangjin VALUES(3,'yangxiaodong');  SELECT * FROM student_by_tangjin;
19 小时前       SHOW TABLES;  SELECT * FROM student_by_tangjin;
19 小时前       SHOW TABLES;  SELECT * FROM
19 小时前       SHOW TABLES
```

参考连接：

https://blog.csdn.net/qq_31454379/article/details/114361759

https://yuhui.blog.csdn.net/article/details/88851917