

Cloudera Runtime 7.0.0

Starting Apache Hive

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CLOUdera

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Start Hive on an insecure cluster

If you want to use Apache Hive for a quick test, you can do so using Hive default authorization mode, assuming you are on an insecure cluster (no Kerberos or Ranger policies). In default authorization mode, only user hive can access Hive. Steps to start the Hive shell, not to be mistaken with the Hive CLI that CDP does not support, include how to log into a cluster.

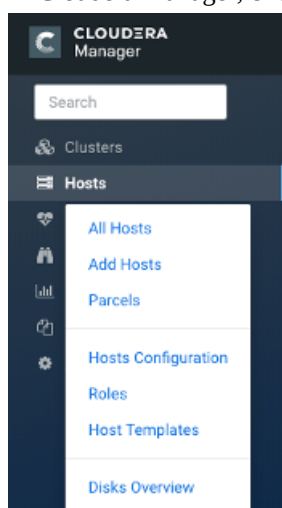
Before you begin

Required roles:

- HiveServer
- Hive Metastore

Procedure

1. In CDP Data Center, click CM URL to open Cloudera Manager.
2. In Cloudera Manager, click Hosts All Hosts .



3. Make a note of the IP address or host name of a node in your cluster, for example myhost-vpc.cloudera.com.
4. Log into the cluster.
For example:

```
ssh myhost-vpc.cloudera.com
```

5. Type hive to start Hive from the command line.
6. Enter Hive queries.

```
SHOW DATABASES;
```

```
CREATE TABLE students (name VARCHAR(64), age INT, gpa DECIMAL(3,2));
```

```
INSERT INTO TABLE students VALUES ('fred flintstone', 35, 1.28), ('barney rubble', 32, 2.32);
```

Start the Hive shell in a secure cluster

You start the Hive shell using a Beeline command to query Hive. The recommended way to start Hive securely is as an end user authorized by Apache Ranger. As administrator, you set up the end user in the operating system, and configure Ranger policies.

About this task

Before starting Hive for the first time, you might want to check that you are covered by Ranger policies required for basic operations as shown in step 5. All users need to use the default database, perform operations such as listing database names, and query the information schema. The preloaded default database tables columns and information_schema database Ranger policies cover group public (all users). If these policies are disabled, you cannot use the default database, perform basic operations such as listing database names, or query the information schema. For example, if the default database tables columns policy is disabled, the following error appears if you try to use the default database:

```
hive> USE default;  
Error: Error while compiling statement: FAILED: HiveAccessControlException  
Permission denied: user [hive] does not have [USE] privilege on [default]
```

You start the Hive shell using Beeline. You can get help about starting the Hive shell. On the command line, type

```
hive -h
```

Output is:

```
Connect using simple authentication to HiveServer2 on localhost:10000  
beeline -u jdbc:hive2://localhost:10000 username password  
  
Connect using simple authentication to HiveServer2 on hs.local:10000 using -  
n for username and -p for password  
beeline -n username -p password -u jdbc:hive2://hs2.local:10012  
  
Connect using Kerberos authentication with hive/localhost@mydomain.com as H  
iveServer2 principal  
beeline -u "jdbc:hive2://hs2.local:10013/default;principal=hive/localhost@m  
ydomain.com"  
  
Connect using SSL connection to HiveServer2 on localhost at 10000  
beeline "jdbc:hive2://localhost:10000/default;ssl=true;sslTrustStore=/usr/lo  
cal/truststore;trustStorePassword=mytruststorepassword"  
  
Connect using LDAP authentication  
beeline -u jdbc:hive2://hs2.local:10013/default <ldap-username> <ldap-pas  
sword>
```

Before you begin

Required roles:

- HiveServer
- Hive Metastore

Procedure

1. In CDP Data Center, click CM URL to open Cloudera Manager.
2. In Clusters Ranger Hadoop SQL , select the Hive service.

3. Edit the all - database, table, column policy.

Policy ID	Policy Name	Policy Labels	Status	Audit Logging	Roles	Groups	Users
7	all - global	--	Enabled	Enabled	--	--	hive beacon dpprofiler hue + More..
8	all - database, table, column	--	Enabled	Enabled	--	--	hive beacon dpprofiler hue + More..

4. Add your user or group name to Hive policies to grant full access to Hive.
For example, add the admins group name to the list of groups that can access Hive.

Service Manager > cm_hive Policies > Edit Policy

Select Roles

public

csso_yuhsin

admins

cdpe2euser87444

csso_glekeny

qaas

csso_preethi

x hive

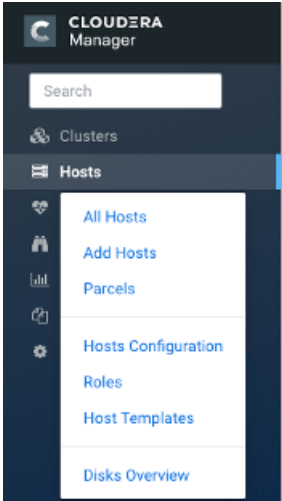
x rangerlookup

Select Roles

5. Check that the preloaded default database tables columns and information_schema database policies are enabled for group public.

Policy ID	Policy Name	Policy Labels	Status	Audit Logging	Roles	Groups	Users
7	all - global	--	Enabled	Enabled	--	--	hive beacon dpprofiler hue + More..
8	all - database, table, column	--	Enabled	Enabled	--	--	hive beacon dpprofiler hue + More..
9	all - database, table	--	Enabled	Enabled	--	--	hive beacon dpprofiler hue + More..
10	all - database	--	Enabled	Enabled	--	public	hive beacon dpprofiler hue + More..
11	all - hiveservice	--	Enabled	Enabled	--	--	hive beacon dpprofiler hue + More..
12	all - database, udf	--	Enabled	Enabled	--	--	hive beacon dpprofiler hue + More..
13	all - url	--	Enabled	Enabled	--	--	hive beacon dpprofiler hue + More..
14	default database tables columns	--	Enabled	Enabled	--	public	--
15	Information_schema database ...	--	Enabled	Enabled	--	public	--

6. In Cloudera Manager, click Hosts All Hosts .



7. Make a note of the IP address or host name of a node in your cluster, for example myhost-vpc.cloudera.com.
8. Use ssh to log into the cluster.
For example:

```
ssh myhost-vpc.cloudera.com
```

9. In Cloudera Manager Hosts Role(s) , find the IP Address or host name of HiveServer HS2 (Hive on Tez HiveServer2). For example:

Hosts	Count	Roles
ip-10-97-84-212.cloudera.site; ip-10-97-85-[91, 163].cloudera.site	3	
ip-10-97-85-16.cloudera.site	1	Hive on Tez HiveServer2

This node has the HiveServer role, so you can use the name or IP address in Beeline.

10. Start the Hive shell.

- Use your own user name if your cluster security is set up.
- Use the user name hive and no password.

Substitute the name or IP address of your HiveServer host for myhiveserver.

Simple authentication:

```
beeline -u jdbc:hive2://myhiveserver:10000 -n <your user name> -p
```

Kerberos authentication:

```
beeline -u "jdbc:hive2://myhiveserver:10000/default;principal=<HiveServer-Kerberos-Principal>"
```

For example:

```
beeline -u "jdbc:hive2://10.10.20:10000/default;principal=hive/10.10.20@ROOT.HWX.SITE;
```

Encryption:

```
beeline -u "jdbc:hive2://<host>:<port>/<database>;ssl=true;sslTrustStore=<path-to-truststore>;sslTrustStorePassword=<password>"
```

Now, you can enter Hive queries.

```
SHOW DATABASES;
```

```
CREATE TABLE students (name VARCHAR(64), age INT, gpa DECIMAL(3,2));
```

```
INSERT INTO TABLE students VALUES ('fred flintstone', 35, 1.28), ('barney rubble', 32, 2.32);
```

Related Information

[Configure a Resource-based Policy: Hive](#)

[Preloaded resource-based services and policies](#)

Run a Hive command

You can run most Hive commands that push configuration variables to Hive SQL scripts from the command line of a node in your cluster. The hive keyword, which launches Beeline in the background, precedes the command.

About this task

Hive supports running Hive commands from the command line using Beeline only. In the task below, you start Beeline in the background and enter the -e flag followed by a Hive set command that lists system variables.

Procedure

On the command line of a node in your CDP cluster, enter the hive command to send configuration properties to standard output.

```
> hive -e set
```


Supported commands appear. All obsolete Hive CLI commands are supported on the Beeline command line except set key=value commands that configure Hive Metastore.

The output includes the system variable settings:

```
+-----+
|                                     |
|                               set   |
+-----+
| _hive.hdfs.session.path=/tmp/hive/hive/91ecb...00a |
| _hive.local.session.path=/tmp/hive/91ecb...00a    |
|                                     |
| ...                                              |
+-----+
```

Converting Hive CLI scripts to Beeline

If you have legacy scripts that run Hive queries from edge nodes using the Hive CLI, you must solve potential incompatibilities with variable substitution in these scripts. CDP supports Beeline instead of Hive CLI. You can use Beeline to run legacy scripts with a few caveats.

About this task

In this task, you resolve incompatibilities in legacy Hive CLI scripts and Beeline:

- Configuration variables
 - Problem: You cannot refer to configuration parameters in scripts using the hiveconf namespace unless allowed.
 - Solution: You include the parameter in the HiveServer whitelist.
- Namespace problems
 - Problem: Beeline does not support the system and env namespaces for variables.
 - Solution: You remove these namespace references from scripts using a conversion technique described in this task.

Procedure

1. Create a conversion script named `env_to_hivevar.sh` that removes env references in your SQL scripts.

```
#!/usr/bin/env bash

CMD_LINE=""

#Blank conversion of all env scoped values
for I in `env`; do
  CMD_LINE="$CMD_LINE --hivevar env:${I} "
done
echo ${CMD_LINE}
```

2. On the command line of a node in your cluster, define and export a variable named `HIVEVAR`, for example, and set it to execute the conversion script.

```
export HIVEVAR=`./env_to_hivevar.sh`
```

3. Define and export variables to hold a few variables for testing the conversion.

```
export LOC_TIME_ZONE="US/EASTERN"
export MY_TEST_VAR="TODAY"
```

4. On the command line of a cluster node, test the conversion: Execute a command that references HIVEVAR to parse a SQL statement, remove the incompatible env namespace, and execute the remaining SQL.

```
hive ${HIVEVAR} -e 'select "${env:LOC_TIME_ZONE}";'
```

```
+-----+
|      _c0      |
+-----+
|  US/EASTERN   |
+-----+
```

5. Create a text file named init_var.sql to simulate a legacy script that sets two configuration parameters, one in the problematic env namespace.

```
set mylocal.test.var=hello;
set mylocal.test.env.var=${env:MY_TEST_VAR};
```

6. Whitelist these configuration parameters: In Cloudera Manager, go to Clusters HIVE Configuration , and search for hive-site.
7. In HiveServer2 Advanced Configuration Snippet (Safety Valve) for hive-site.xml, add the property key: hive.security.authorization.sqlstd.confwhitelist.append. See link below.
8. Provide the property value, or values, to whitelist, for example: mylocal\..*|junk.
This action appends mylocal.test.var and mylocal.test.env.var parameters to the whitelist.
9. Save configuration changes, and restart any components as required.
10. Execute a command that references HIVEVAR to parse a SQL script, removes the incompatible env namespace, and executes the remaining SQL, including the whitelisted configuration parameters identified by hiveconf:.

```
hive -i init_var.sql ${HIVEVAR} -e 'select "${hiveconf:mylocal.test.var}"', "${hiveconf:mylocal.test.env.var}";'
```

```
+-----+-----+
|  _c0   |  _c1   |
+-----+-----+
| hello  | TODAY  |
+-----+-----+
```

Related Information

[Custom Configuration \(about Cloudera Manager Safety Valve\)](#)

[Example of using the Cloudera Manager Safety Valve](#)