

Cloudera Runtime 7.0.0

## Starting Apache Hive

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# CLOUdera

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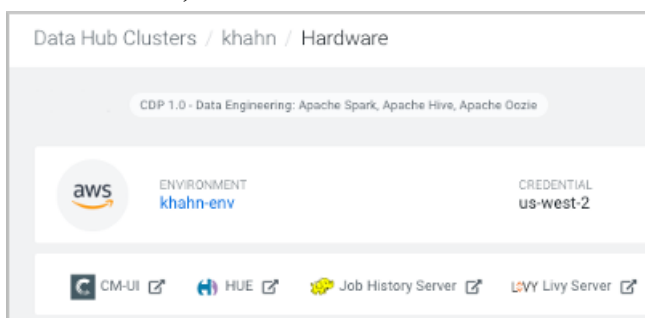
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## Start the Hive shell

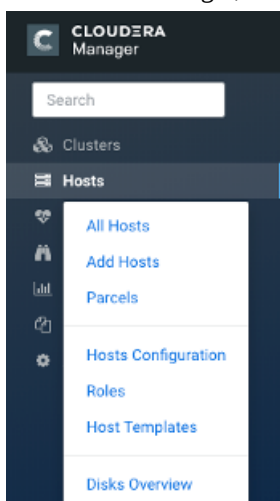
Generally, you type `hive` on the command line of your cluster to start the Hive shell. In the background, Beeline launches the Hive shell.

### Procedure

1. In CDP Public Cloud, in Environments *YOUR ENVIRONMENT* Data Lakes *YOUR DATA LAKE* , in the Data Lake Cluster tab, click CM-UI.



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. Use `ssh` to 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 Hive using a password

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

### 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 the following steps. 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:

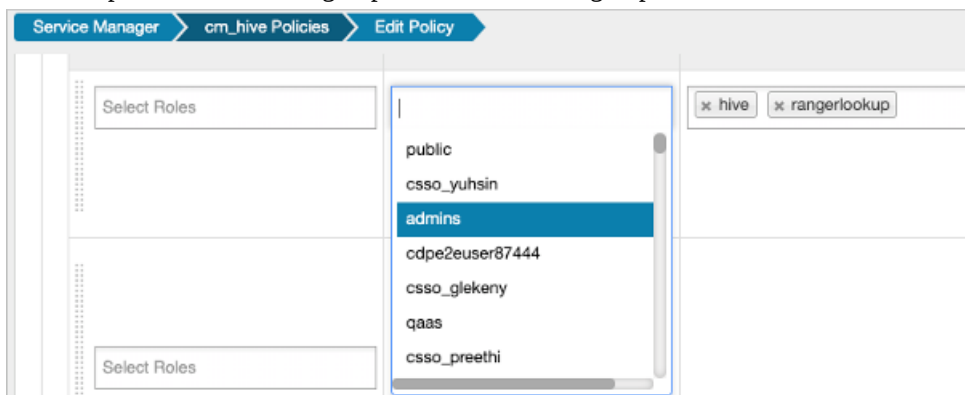
```
hive> USE default;
Error: Error while compiling statement: FAILED: HiveAccessControlException
Permission denied: user [hive] does not have [USE] privilege on [default]
```

### Procedure

1. In CDP Public Cloud, navigate to Environments *YOUR ENVIRONMENT* Data Lakes *YOUR DATA LAKE*.
2. In the Data Lake Cluster tab, click Ranger cm\_hive and in Allow Conditions, edit all - database, table, column.

| Policy ID | Policy Name                   | Policy Labels | Status  | Audit Logging | Roles | Groups | Users                          | Action                                                                                                                                                                                                                                                            |
|-----------|-------------------------------|---------------|---------|---------------|-------|--------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7         | all - hiveservice             | --            | Enabled | Enabled       | --    | --     | hive<br>rangerlookup<br>impala |    |
| 8         | all - global                  | --            | Enabled | Enabled       | --    | --     | hive<br>rangerlookup<br>impala |    |
| 9         | all - database, table, column | --            | Enabled | Enabled       | --    | admins | hive<br>rangerlookup<br>impala |    |

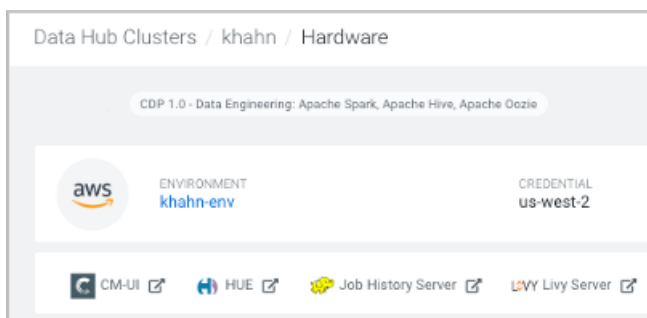
3. Add your user or group name to Hive policies to grant full access to Hive.  
For example, add the admins group name to the list of groups that can access Hive.



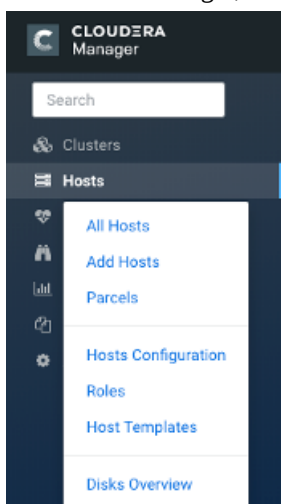
4. Check that the preloaded default database tables columns and information\_schema database policies are enabled for group public.

| 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 | --                                  |

5. In Environments *YOUR ENVIRONMENT* Data Lakes *YOUR DATA LAKE* , in the Data Lake Cluster tab, click CM-UI.



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
```

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
HiveServer2 principal
beeline -u "jdbc:hive2://hs2.local:10013/default;principal=hive/localhost@mydomain.com"

Connect using SSL connection to HiveServer2 on localhost at 10000
beeline "jdbc:hive2://localhost:10000/default;ssl=true;sslTrustStore=/usr/local/truststore;trustStorePassword=mytruststorepassword"

Connect using LDAP authentication
beeline -u jdbc:hive2://hs2.local:10013/default <ldap-username> <ldap-password>
```

## 9. Using the fully qualified domain name or IP address a node in your cluster from Cloudera Manager Hosts Role(s) and looking through the list of roles to find Hive on Tez HiveServer2, for example.

| <input type="checkbox"/> | Status | Name             | IP          | Roles                                                                                                                             |
|--------------------------|--------|------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | ?      | vpc.cloudera.com | 10.65.13.98 | 36 Role(s) <ul style="list-style-type: none"> <li>HBase Gateway</li> <li>.</li> <li>.</li> <li>Hive on Tez HiveServer2</li> </ul> |

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

## 10. Start the Hive shell.

- Use your 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 10.65.13.98.

Simple authentication:

```
beeline -u jdbc:hive2://10.65.13.98:10000 -n <your user name> -p
```

Kerberos:

```
beeline -u "jdbc:hive2://10.65.13.98:10000/default;principal=hive/_HOST@CLLOUDERA.SITE"
```

**11.** 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](#)

## 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                 |
|                                                                 |
| ...                                                             |
```

## Convert Hive CLI scripts to Beeline

If you have legacy scripts that execute Hive queries from edge nodes using the Hive CLI, you must solve potential incompatibilities with variable substitution in these scripts. CPD and CPD Data Center 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 allowlist (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. Include these configuration parameters in the allowlist: In Cloudera Manager, go to Clusters `HIVE_ON_TEZ-1` 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 allowlist, for example: `mylocal\.*|junk`.  
This action appends `mylocal.test.var` and `mylocal.test.env.var` parameters to the allowlist.
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

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