

Cloudera Runtime 7.1.0

Starting Apache Hive

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CLOUdera

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Start Hive on an insecure cluster

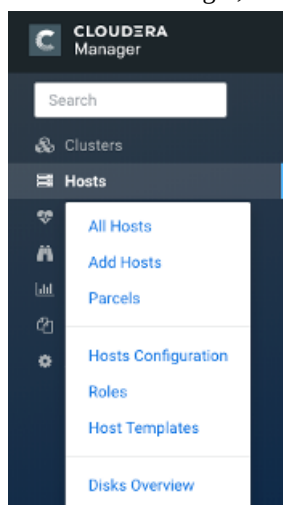
If you want to use Apache Hive for a quick test, you can do so using Hive default authorization mode, assuming you are on an insecure cluster (no Kerberos or Ranger policies). In default authorization mode, only user hive can access Hive. Steps to start the Hive shell, not to be mistaken with the Hive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

About this task

From the cluster command line, 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 CLUSTER NAME* CM URL .
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.

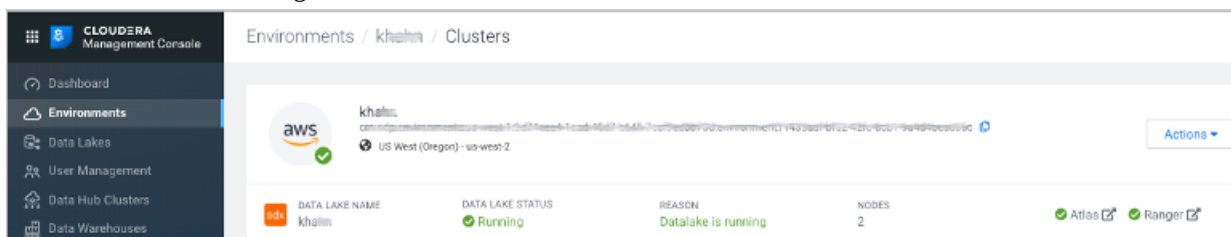
About this task

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

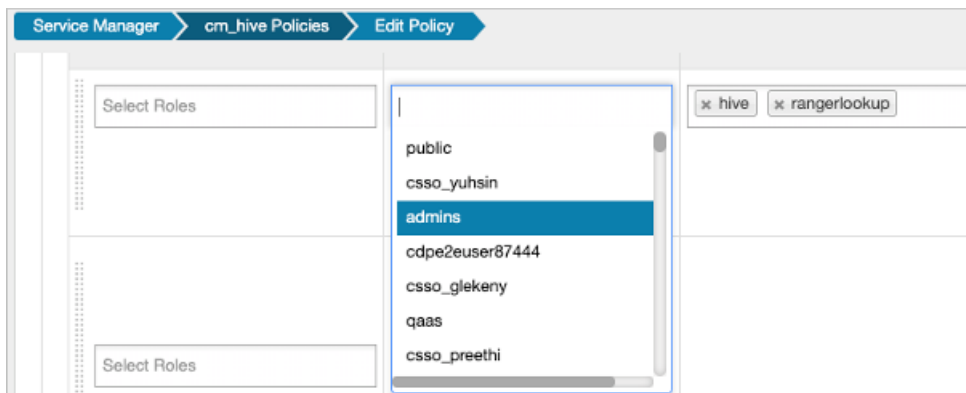
1. In CDP Public Cloud, navigate to Environments *YOUR ENVIRONMENT*.



2. On the far right, 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 rangerlookup impala	
8	all - global	--	Enabled	Enabled	--	--	hive rangerlookup impala	
9	all - database, table, column	--	Enabled	Enabled	--	admins	hive rangerlookup 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.

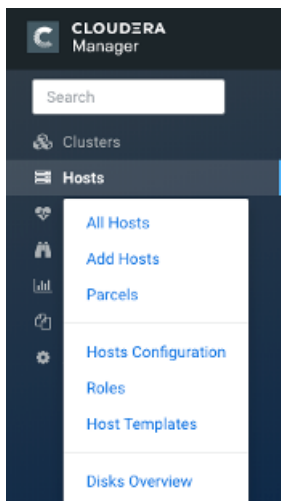


4. Check that the preloaded default database tables columns and information_schema database policies are enabled for group public.

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 YOUR CLUSTER*, click the CM-URL.

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
```

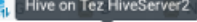
```
Connect using simple authentication to HiveServer2 on hs.local:10000 using
-n for username and -p for password
beeline -n username -p password -u jdbc:hive2://hs2.local:10012
```

```
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 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	 G  DN  G  G  L G  G  G  NM
ip-10-97-85-16.cloudera.site	1	 Hive on Tez HiveServer2  SNN  G  HMS  G  HS2  LB  HS  KTR  KG  LS  AP  ES  HM  RM  SM  TP  OS  G  HS  G  JHS  RM  ZS  S

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](#)

Accessing Hive from an external node

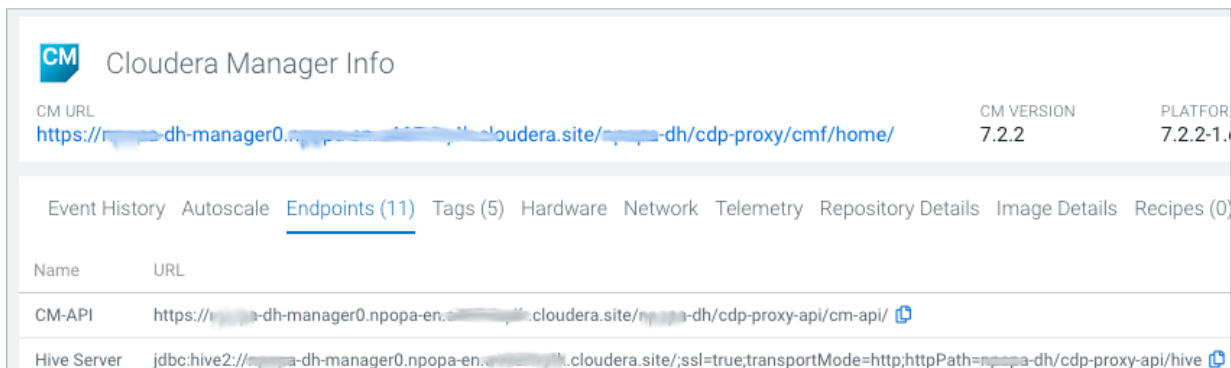
In CDP public cloud, most of the services are accessible through the Apache Knox gateway including Apache Hive. You need to know the URL of the Data Hubs cluster to use from an external cluster and the Beeline command to execute from an external node.

Before you begin

- In CDP Public Cloud, you must be running the Knox, Hive Metastore, and Hive services.
- The external node must be on a cluster that CDP Public Cloud can access.
- On an external cluster, you must be authorized to access the CDP Public Cloud Data Hub cluster.

Procedure

1. In CDP Public Cloud, in Cloudera Manager navigate to Data Hub Clusters Endpoints tab , and copy the Hive Server endpoint.



Cloudera Manager Info	
CM URL	https://[redacted]-dh-manager0.[redacted].cloudera.site/[redacted]-dh/cdp-proxy/cmf/home/
CM VERSION	7.2.2
PLATFORM	7.2.2-1.0
Event History Autoscale Endpoints (11) Tags (5) Hardware Network Telemetry Repository Details Image Details Recipes (0)	
Name	URL
CM-API	https://[redacted]-dh-manager0.npopa-en.[redacted].cloudera.site/[redacted]-dh/cdp-proxy-api/cm-api/
Hive Server	jdbc:hive2://[redacted]-dh-manager0.npopa-en.[redacted].cloudera.site/;ssl=true;transportMode=http;httpPath=[redacted]-dh/cdp-proxy-api/hive

If you are not running the required services, the URL you need to copy is not listed in Endpoints.

2. On the external node, enter the command to launch Hive.

```
beeline -p -u '<Hive Endpoint URL>;user=<your CDP user>'
```

For example:

```
beeline -p -u 'jdbc:hive2://test5-master0.repro.cloudera.site/;ssl=true;transportMode=http;httpPath=test5/cdp-proxy-api/hive;user=john'
```

The Hive prompt appears after entering the password, and you can enter Hive queries.

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. You use a keyword and options to launch these commands in Beeline.

About this task

Hive supports running Hive commands from the command line. The command you enter launches Beeline in the background. The `-e` flag followed by a Hive set command 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 by Beeline 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 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

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

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