1. First, log in into your EMR instance (using hadoop, then switch user to root using `sudo -i`) and complete the initial steps of setup. Now you need to run the following command to install the MySQL connector jar file.

   wget https://de-mysql-connector.s3.amazonaws.com/mysql-connector-java-8.0.25.tar.gz

   tar -xvf mysql-connector-java-8.0.25.tar.gz

   cd mysql-connector-java-8.0.25/

   sudo cp mysql-connector-java-8.0.25.jar /usr/lib/sqoop/lib/

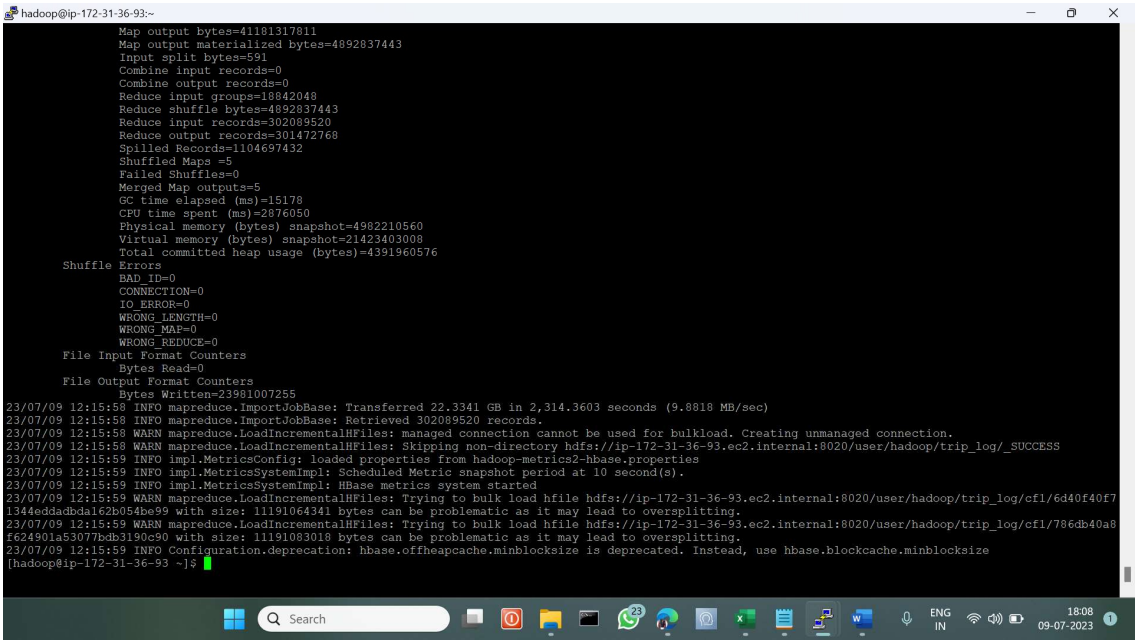
2. To ingest data from mySQL RDS to HBase table:

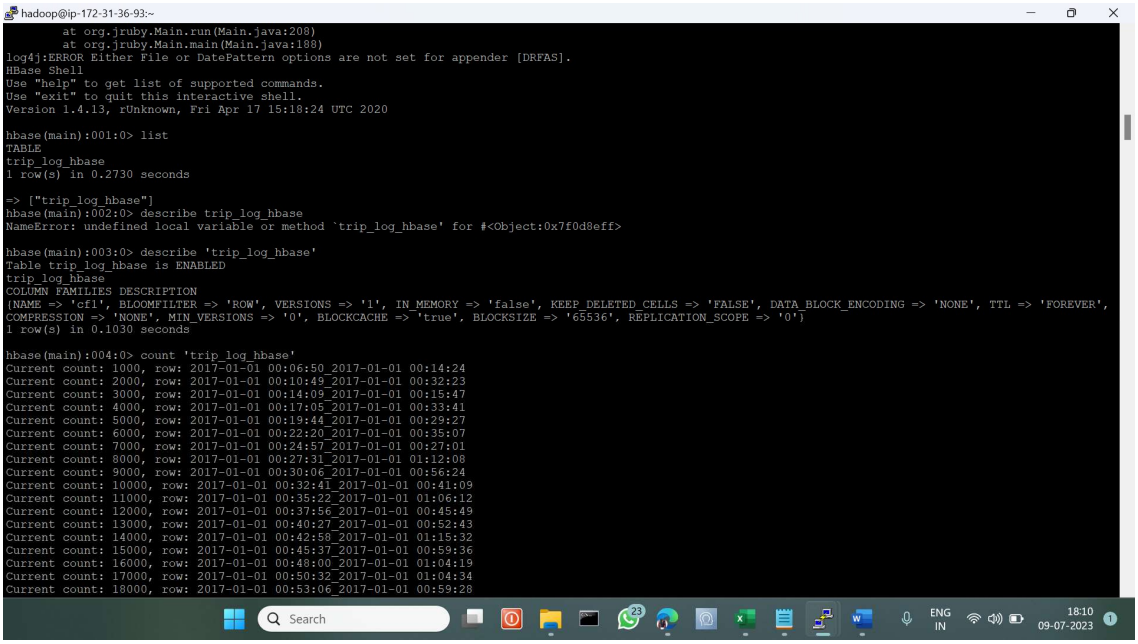
   sqoop import --connect jdbc:mysql://mydbinstance.cxueuenwsllg.us-east-1.rds.amazonaws.com/taxi_records --username admin --password 12345678 --table trip_log --hbase-table trip_log_hbase --column-family cf1 --hbase-create-table --hbase-row-key tpep_pickup_datetime,tpep_dropoff_datetime --hbase-bulkload --split-by payment_type

   command explanation:
   This is a `sqoop` command that imports data from a MySQL database table `trip_log` into an HBase table `trip_log_hbase`. Here is what each option in the command does:

   - `--connect`: specifies the JDBC connection string for the MySQL database.
   - `--username`: specifies the username to use when connecting to the MySQL database.
   - `--password`: specifies the password to use when connecting to the MySQL database.
   - `--table`: specifies the name of the MySQL table to import data from.
   - `--hbase-table`: specifies the name of the HBase table to import data into.
   - `--column-family`: specifies the name of the column family in HBase where the imported data will be stored.
   - `--hbase-create-table`: creates an HBase table if it does not exist.
   - `--hbase-row-key`: specifies one or more columns from the MySQL table that will be used as the row key in HBase.
   - `--hbase-bulkload`: uses HBase bulk load feature for faster data loading.
   - `--split-by`: specifies a column from the MySQL table that will be used to split data into multiple HBase regions.

   In this command, data is imported from the MySQL table `trip_log` into an HBase table named `trip_log_hbase`. The column family in HBase where the imported data will be stored is named `cf1`. The row key in HBase is composed of two columns from the MySQL table: `tpep_pickup_datetime` and `tpep_dropoff_datetime`. The data is loaded into HBase using bulk load feature for faster loading. The data is split into multiple regions based on the column `payment_type`. Let me know if you have any other questions.


hadoop@ip-172-31-36-93:~
Map output bytes=41181317811
Map output materialized bytes=4892837443
Input split bytes=591
Combine input records=0
Combine output records=0
Reduce input groups=18842048
Reduce shuffle bytes=4892837443
Reduce input records=302089520
Reduce output records=301472768
Spilled Records=1104697432
Shuffled Maps =5
Failed Shuffles=0
Merged Map outputs=5
GC time elapsed (ms)=15178
CPU time spent (ms)=2876050
Physical memory (bytes) snapshot=4982210560
Virtual memory (bytes) snapshot=21423403008
Total committed heap usage (bytes)=4391960576
Shuffle Errors
BAD_ID=0
CONNECTION=0
IO_ERROR=0
WRONG_LENGTH=0
WRONG_MAP=0
WRONG_REDUCE=0
File Input Format Counters
Bytes Read=0
File Output Format Counters
Bytes Written=23981007255
23/07/09 12:15:58 INFO mapreduce.ImportJobBase: Transferred 22.3341 GB in 2,314.3603 seconds (9.8818 MB/sec)
23/07/09 12:15:58 INFO mapreduce.ImportJobBase: Retrieved 302089520 records.
23/07/09 12:15:58 WARN mapreduce.LoadIncrementalHFiles: managed connection cannot be used for bulkload. Creating unmanaged connection.
23/07/09 12:15:58 WARN mapreduce.LoadIncrementalHFiles: Skipping non-directory hdfs://ip-172-31-36-93.ec2.internal:8020/user/hadoop/trip_log/_SUCCESS
23/07/09 12:15:59 INFO impl.MetricsConfig: loaded properties from hadoop-metrics2-hbase.properties
23/07/09 12:15:59 INFO impl.MetricsSystemImpl: Scheduled Metric snapshot period at 10 second(s).
23/07/09 12:15:59 INFO impl.MetricsSystemImpl: HBase metrics system started
23/07/09 12:15:59 WARN mapreduce.LoadIncrementalHFiles: Trying to bulk load hfile hdfs://ip-172-31-36-93.ec2.internal:8020/user/hadoop/trip_log/cf1/6d40f40f7
1344eddadbda162b054be99 with size: 11191064341 bytes can be problematic as it may lead to oversplitting.
23/07/09 12:15:59 WARN mapreduce.LoadIncrementalHFiles: Trying to bulk load hfile hdfs://ip-172-31-36-93.ec2.internal:8020/user/hadoop/trip_log/cf1/786db40a8
f624901a53077bdb3190c90 with size: 11191083018 bytes can be problematic as it may lead to oversplitting.
23/07/09 12:15:59 INFO Configuration.deprecation: hbase.offheapcache.minblocksize is deprecated. Instead, use hbase.blockcache.minblocksize
[hadoop@ip-172-31-36-93 ~]$
Search
ENG
IN
18:08
09-07-2023


hadoop@ip-172-31-36-93:~
at org.jruby.Main.run(Main.java:208)
at org.jruby.Main.main(Main.java:188)
log4j:ERROR Either File or DatePattern options are not set for appender [DRFAS].
HBase Shell
Use "help" to get list of supported commands.
Use "exit" to quit this interactive shell.
Version 1.4.13, rUnknown, Fri Apr 17 15:18:24 UTC 2020
hbase(main):001:0> list
TABLE
trip_log_hbase
1 row(s) in 0.2730 seconds
=> ["trip_log_hbase"]
hbase(main):002:0> describe trip_log_hbase
NameError: undefined local variable or method `trip_log_hbase' for #<Object:0x7f0d8eff>
hbase(main):003:0> describe 'trip_log_hbase'
Table trip_log_hbase is ENABLED
trip_log_hbase
COLUMN FAMILIES DESCRIPTION
{NAME => 'cf1', BLOOMFILTER => 'ROW', VERSIONS => '1', IN_MEMORY => 'false', KEEP_DELETED_CELLS => 'FALSE', DATA_BLOCK_ENCODING => 'NONE', TTL => 'FOREVER',
COMPRESSION => 'NONE', MIN_VERSIONS => '0', BLOCKCACHE => 'true', BLOCKSIZE => '65536', REPLICATION_SCOPE => '0'}
1 row(s) in 0.1030 seconds
hbase(main):004:0> count 'trip_log_hbase'
Current count: 1000, row: 2017-01-01 00:06:50_2017-01-01 00:14:24
Current count: 2000, row: 2017-01-01 00:10:49_2017-01-01 00:32:23
Current count: 3000, row: 2017-01-01 00:14:09_2017-01-01 00:15:47
Current count: 4000, row: 2017-01-01 00:17:05_2017-01-01 00:33:41
Current count: 5000, row: 2017-01-01 00:19:44_2017-01-01 00:29:27
Current count: 6000, row: 2017-01-01 00:22:20_2017-01-01 00:35:07
Current count: 7000, row: 2017-01-01 00:24:57_2017-01-01 00:27:01
Current count: 8000, row: 2017-01-01 00:27:31_2017-01-01 01:12:08
Current count: 9000, row: 2017-01-01 00:30:06_2017-01-01 00:56:24
Current count: 10000, row: 2017-01-01 00:32:41_2017-01-01 00:41:09
Current count: 11000, row: 2017-01-01 00:35:22_2017-01-01 01:06:12
Current count: 12000, row: 2017-01-01 00:37:56_2017-01-01 00:45:49
Current count: 13000, row: 2017-01-01 00:40:27_2017-01-01 00:52:43
Current count: 14000, row: 2017-01-01 00:42:58_2017-01-01 01:15:32
Current count: 15000, row: 2017-01-01 00:45:37_2017-01-01 00:59:36
Current count: 16000, row: 2017-01-01 00:48:00_2017-01-01 01:04:19
Current count: 17000, row: 2017-01-01 00:50:32_2017-01-01 01:04:34
Current count: 18000, row: 2017-01-01 00:53:06_2017-01-01 00:59:28
Search
ENG
IN
18:10
09-07-2023