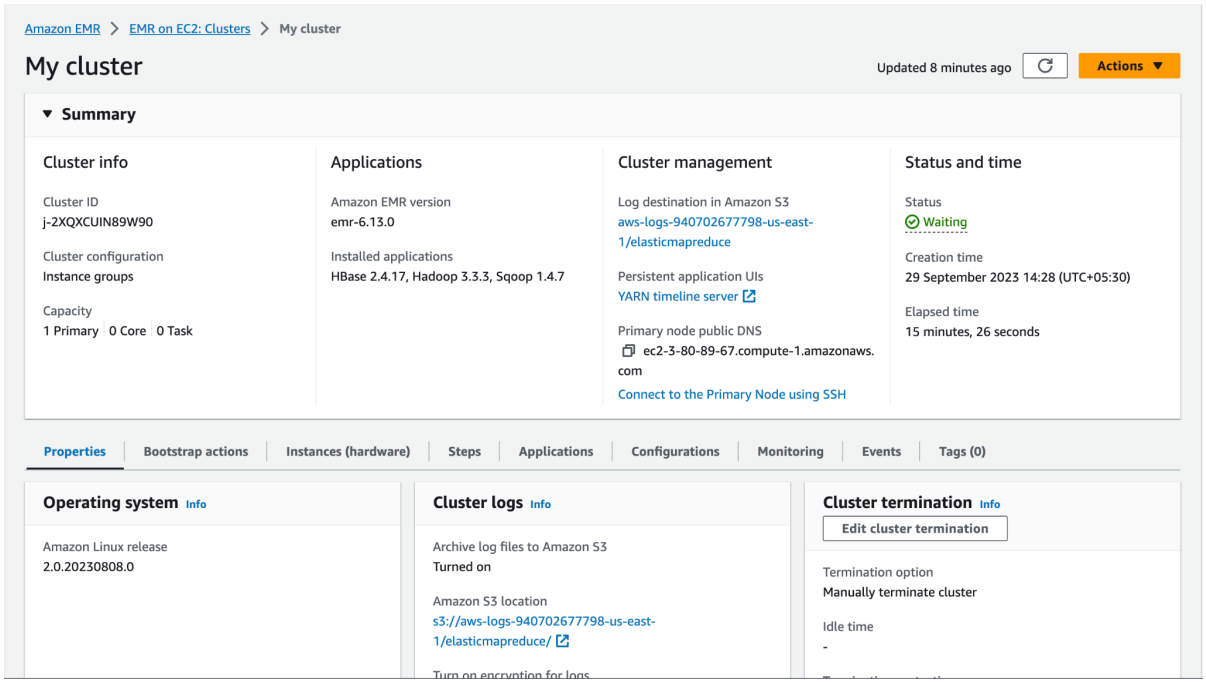
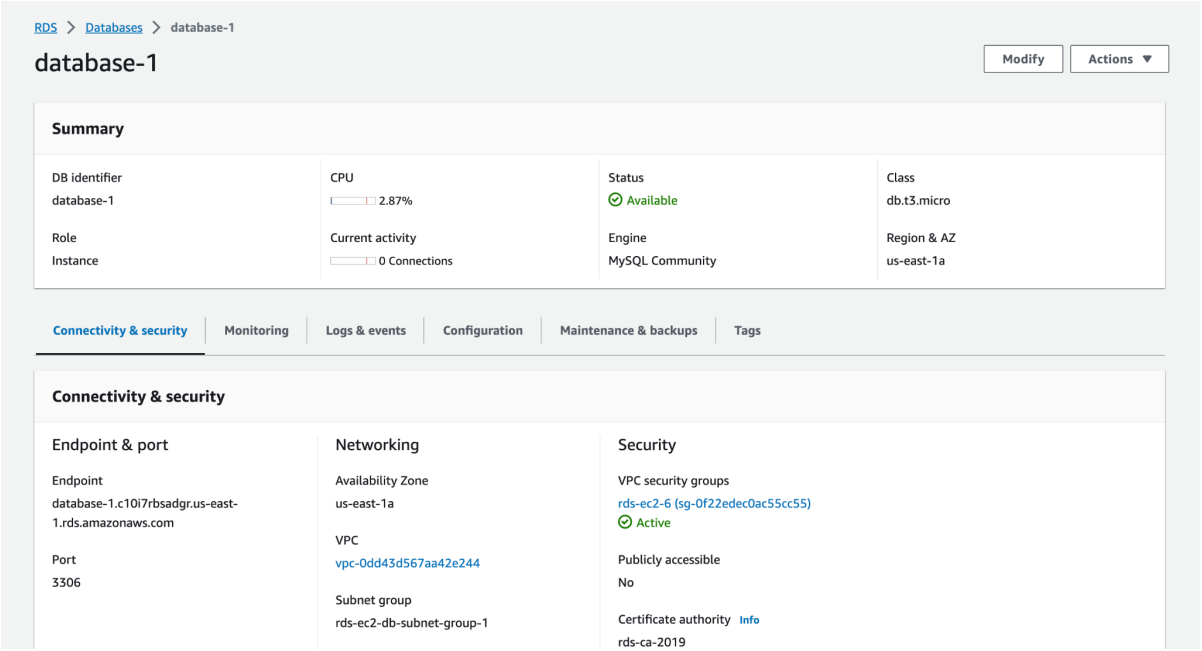
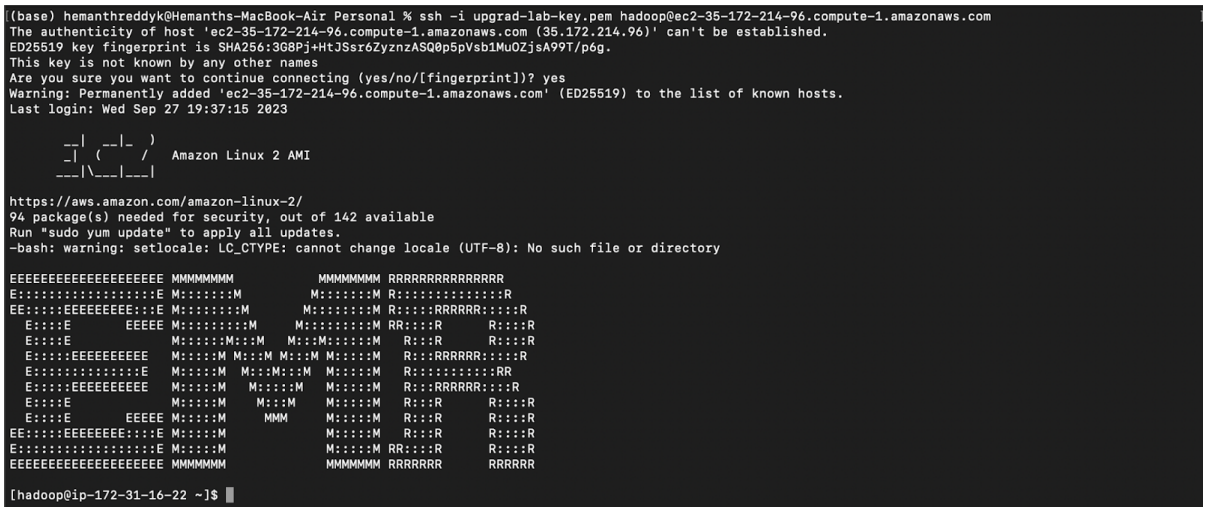
1. Create an EMR cluster with Hadoop, HBase and Sqoop



2. Create a free tier RDS Instance



3. Connect to the primary node of the EMR Cluster using SSH



4. Download the required csv files into the EMR cluster

In this activity we need “yellow_tripdata_2017-01.csv” and “yellow_tripdata_2017-02.csv” files, let’s put them at following path ‘/home/hadoop/YellowCabData’

mkdir YellowCabsData

wget -P /home/hadoop/YellowCabsData https://nyc-tlc-upgrad.s3.amazonaws.com/yellow_tripdata_2017-01.csv

wget -P /home/hadoop/YellowCabsData https://nyc-tlc-upgrad.s3.amazonaws.com/yellow_tripdata_2017-02.csv

ls /home/hadoop/YellowCabsData/

```
[[hadoop@ip-172-31-16-22 ~]$ mkdir YellowCabData
[[hadoop@ip-172-31-16-22 ~]$ cd YellowCabData/
[[hadoop@ip-172-31-16-22 YellowCabData]$ wget https://nyc-tlc-upgrad.s3.amazonaws.com/yellow_tripdata_2017-01.csv
--2023-09-27 19:43:13--  https://nyc-tlc-upgrad.s3.amazonaws.com/yellow_tripdata_2017-01.csv
Resolving nyc-tlc-upgrad.s3.amazonaws.com (nyc-tlc-upgrad.s3.amazonaws.com)... 54.231.132.1, 52.217.236.57, 3.5.29.194, ...
Connecting to nyc-tlc-upgrad.s3.amazonaws.com (nyc-tlc-upgrad.s3.amazonaws.com)|54.231.132.1|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 914029540 (872M) [text/csv]
Saving to: 'yellow_tripdata_2017-01.csv'

100%[=============================================================================================================>] 914,029,540 27.8MB/s   in 32s

2023-09-27 19:43:45 (27.5 MB/s) - 'yellow_tripdata_2017-01.csv' saved [914029540/914029540]

[[hadoop@ip-172-31-16-22 YellowCabData]$ wget https://nyc-tlc-upgrad.s3.amazonaws.com/yellow_tripdata_2017-02.csv
--2023-09-27 19:43:51--  https://nyc-tlc-upgrad.s3.amazonaws.com/yellow_tripdata_2017-02.csv
Resolving nyc-tlc-upgrad.s3.amazonaws.com (nyc-tlc-upgrad.s3.amazonaws.com)... 52.217.163.249, 54.231.235.241, 52.216.60.57, ...
Connecting to nyc-tlc-upgrad.s3.amazonaws.com (nyc-tlc-upgrad.s3.amazonaws.com)|52.217.163.249|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 863487050 (823M) [text/csv]
Saving to: 'yellow_tripdata_2017-02.csv'

100%[=============================================================================================================>] 863,487,050 27.1MB/s   in 31s

2023-09-27 19:44:22 (27.0 MB/s) - 'yellow_tripdata_2017-02.csv' saved [863487050/863487050]

[[hadoop@ip-172-31-16-22 YellowCabData]$ ls
yellow_tripdata_2017-01.csv  yellow_tripdata_2017-02.csv
[hadoop@ip-172-31-16-22 YellowCabData]$
```

5. Connect to mysql running in RDS from the EMR cluster using the following command and Create a database named ‘YellowTaxiTripsDB’

mysql -h database-1.c10i7rbsadgr.us-east-1.rds.amazonaws.com -P 3306 -u admin -p

CREATE DATABASE YellowTaxiTripsDB;

USE YellowTaxiTripsDB;

```
[hadoop@ip-172-31-16-22 YellowCabData]$ mysql -h database-1.c10i7rbsadgr.us-east-1.rds.amazonaws.com -P 3306 -u admin -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 18
Server version: 8.0.33 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]> CREATE DATABASE YellowTaxiTripsDB;
Query OK, 1 row affected (0.01 sec)

MySQL [(none)]> use YellowTaxiTripsDB;
Database changed
MySQL [YellowTaxiTripsDB]>
```

6. Now create a table ‘tripdata’ that can hold all the columns present in the csv files with appropriate data types

```
CREATE TABLE tripdata (
  VendorID INT,
  tpep_pickup_datetime VARCHAR(20),
  tpep_dropoff_datetime VARCHAR(20),
  passenger_count INT,
  trip_distance FLOAT,
  RatecodeID INT,
  store_and_fwd_flag CHAR(1),
  PULocationID INT,
  DOLocationID INT,
  payment_type INT,
  fare_amount FLOAT,
  extra FLOAT,
  mta_tax FLOAT,
  tip_amount FLOAT,
  tolls_amount FLOAT,
  improvement_surcharge FLOAT,
  total_amount FLOAT,
  congestion_surcharge FLOAT DEFAULT 0.0,
  airport_fee FLOAT DEFAULT 0.0
);
```

```
MySQL [YellowTaxiTripsDB]> CREATE TABLE tripdata (
    ->   VendorID INT,
    ->   tpep_pickup_datetime VARCHAR(20),
    ->   tpep_dropoff_datetime VARCHAR(20),
    ->   passenger_count INT,
    ->   trip_distance FLOAT,
    ->   RatecodeID INT,
    ->   store_and_fwd_flag CHAR(1),
    ->   PULocationID INT,
    ->   DOLocationID INT,
    ->   payment_type INT,
    ->   fare_amount FLOAT,
    ->   extra FLOAT,
    ->   mta_tax FLOAT,
    ->   tip_amount FLOAT,
    ->   tolls_amount FLOAT,
    ->   improvement_surcharge FLOAT,
    ->   total_amount FLOAT,
    ->   congestion_surcharge FLOAT DEFAULT 0.0,
    ->   airport_fee FLOAT DEFAULT 0.0
    -> );
Query OK, 0 rows affected (0.04 sec)

MySQL [YellowTaxiTripsDB]> describe tripdata;
+-----------------------+-------------+------+-----+---------+-------+
| Field                 | Type        | Null | Key | Default | Extra |
+-----------------------+-------------+------+-----+---------+-------+
| VendorID              | int         | YES  |     | NULL    |       |
| tpep_pickup_datetime  | varchar(20) | YES  |     | NULL    |       |
| tpep_dropoff_datetime | varchar(20) | YES  |     | NULL    |       |
| passenger_count       | int         | YES  |     | NULL    |       |
| trip_distance         | float       | YES  |     | NULL    |       |
| RatecodeID            | int         | YES  |     | NULL    |       |
| store_and_fwd_flag    | char(1)     | YES  |     | NULL    |       |
| PULocationID          | int         | YES  |     | NULL    |       |
| DOLocationID          | int         | YES  |     | NULL    |       |
| payment_type          | int         | YES  |     | NULL    |       |
| fare_amount           | float       | YES  |     | NULL    |       |
| extra                 | float       | YES  |     | NULL    |       |
| mta_tax               | float       | YES  |     | NULL    |       |
| tip_amount            | float       | YES  |     | NULL    |       |
| tolls_amount          | float       | YES  |     | NULL    |       |
| improvement_surcharge | float       | YES  |     | NULL    |       |
| total_amount          | float       | YES  |     | NULL    |       |
| congestion_surcharge  | float       | YES  |     | 0       |       |
| airport_fee           | float       | YES  |     | 0       |       |
+-----------------------+-------------+------+-----+---------+-------+
19 rows in set (0.00 sec)

MySQL [YellowTaxiTripsDB]>
```

7. Load the data from csv files into tripdata table

LOAD DATA LOCAL INFILE '/home/hadoop/YellowCabData/yellow_tripdata_2017-01.csv' INTO TABLE tripdata FIELDS TERMINATED BY ',' LINES TERMINATED BY '\n' IGNORE 1 LINES;

LOAD DATA LOCAL INFILE '/home/hadoop/YellowCabData/yellow_tripdata_2017-02.csv' INTO TABLE tripdata FIELDS TERMINATED BY ',' LINES TERMINATED BY '\n' IGNORE 1 LINES;

select count(*) from tripdata;

Therefore we loaded **18880595** records into **tripdata** table