Hive Partitions & Buckets with Example

Tables, Partitions, and Buckets are the parts of Hive data modeling.

What is Partitions?

Hive Partitions is a way to organizes tables into partitions by dividing tables into different parts based on partition keys.

Partition is helpful when the table has one or more Partition keys. Partition keys are basic elements for determining how the data is stored in the table.

For Example: -

"Client having Some E –commerce data which belongs to India operations in which each state (38 states) operations mentioned in as a whole. If we take state column as partition key and perform partitions on that India data as a whole, we can able to get Number of partitions (38 partitions) which is equal to number of states (38) present in India. Such that each state data can be viewed separately in partitions tables.

Sample Code Snippet for partitions

1. Creation of Table all states

```
create table all states(state string, District string,Enrolments string)

row format delimited

fields terminated by ',';
```

2. Loading data into created table all states

```
Load data local inpath '/home/hduser/Desktop/AllStates.csv' into table allstates;
```

3. Creation of partition table

```
create table state_part(District string,Enrolments string) PARTITIONED BY(state string);
```

4. For partition we have to set this property

```
set hive.exec.dynamic.partition.mode=nonstrict
```

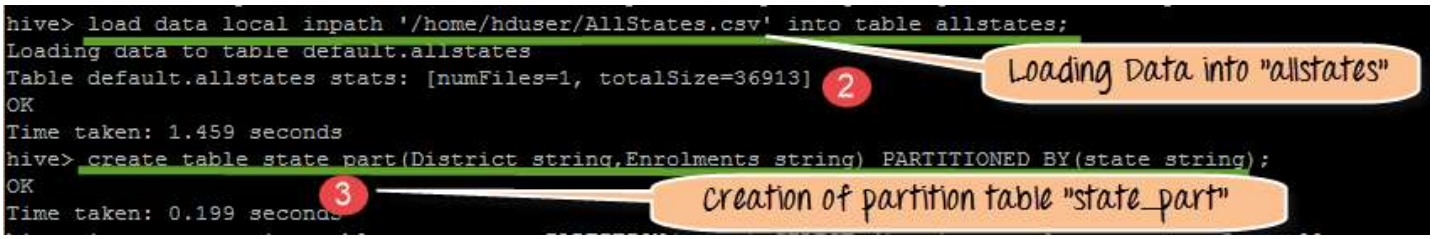
5. Loading data into partition table

```
INSERT OVERWRITE TABLE state_part PARTITION(state)
SELECT district,enrolments,state from  allstates;
```

6. Actual processing and formation of partition tables based on state as partition key
7. There are going to be 38 partition outputs in HDFS storage with the file name as state name. We will check this in this step

The following screen shots will show u the execution of above mentioned code

(/images/Hive/120415_1301_Dataoperati7.png)



(/images/Hive/120415_1301_Dataoperati8.png)

(/images/Hive/120415_1301_Dataoperati9.png)

(/images/Hive/120415_1301_Dataoperati10.png)

From the above code, we do following things

1. Creation of table all states with 3 column names such as state, district, and enrollment
2. Loading data into table all states
3. Creation of partition table with state as partition key
4. In this step Setting partition mode as non-strict(This mode will activate dynamic partition mode)
5. Loading data into partition tablestate_part
6. Actual processing and formation of partition tables based on state as partition key
7. There is going to 38 partition outputs in HDFS storage with the file name as state name. We will check this in this step. In This step, we seeing the 38 partition outputs in HDFS

What is Buckets?

Buckets in hive is used in segregating of hive table-data into multiple files or directories. it is used for efficient querying.

- The data i.e. present in that partitions can be divided further into Buckets
- The division is performed based on Hash of particular columns that we selected in the table.
- Buckets use some form of Hashing algorithm at back end to read each record and place it into buckets
- In Hive, we have to enable buckets by using the **set.hive.enforce.bucketing=true;**

Step 1) Creating Bucket as shown below.

(/images/Hive/120415_1301_Dataoperati11.png)

From the above screen shot

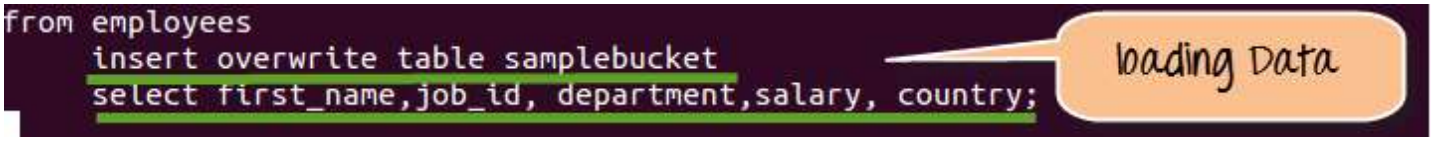
- We are creating sample_bucket with column names such as first_name, job_id, department, salary and country
- We are creating 4 buckets overhere.
- Once the data get loaded it automatically, place the data into 4 buckets

Step 2) Loading Data into table sample bucket

Assuming that"Employees table" already created in Hive system. In this step, we will see the loading of Data from employees table into table sample bucket.

Before we start moving employees data into buckets, make sure that it consist of column names such as first_name, job_id, department, salary and country.

Here we are loading data into sample bucket from employees table.



(/images/Hive/120415_1301_Dataoperati12.png)

Step 3) Displaying 4 buckets that created in Step 1

(/images/Hive/120415_1301_Dataoperati13.png)

From the above screenshot, we can see that the data from the employees table is transferred into 4 buckets created in step 1.

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