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Visualization of Big Data with Hadoop

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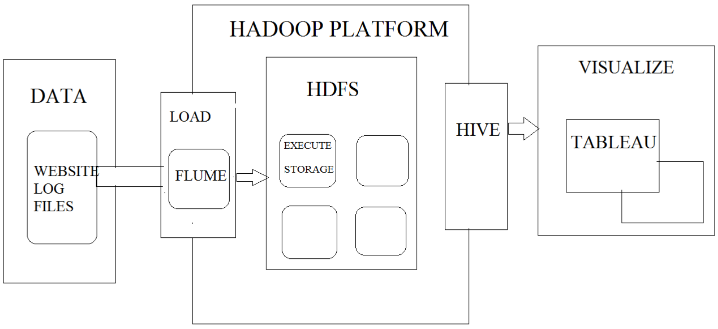
ABSTRACT: Big data is large amount of data which is structured and unstructured form. Now it is handle by Hadoop that is open source product. In this paper take a website log files as a big data and visualize over them using Tableau business intelligence tool. Log files is contain information about time stamp, IP address, URL, swid, genders, country and state and so on. The log files comes from web server. By analyzing these log files gives a correct idea about the user. Hadoop is tool for refine the data and it is also provides large scale processing performance. Here using a Cloudera platform for refine the data. And Tableau trial version for visualize the data.

KEYWORDS: Hadoop, Cloudera platform, Business intelligence tool, Hive, Clickstream.

I. INTRODUCTION

Website log files is big data that contains IP address, Time stamp, swid, categories and country. Clickstream is record user clicking actions on the web. It is used to understand customer behavior on website. Here identify the most efficient path for a site visitor to search a product, and then purchased it. And which products do visitor tend to buy together, and what they are most likely to buy in the future. And last where should I spend resources the user experience on my website?Once I have combined these datasets, then used a visualization tool to analyzed that which customers is related to which country, states, city and so on and what they are looking for.

II. BACKGROUND



Here design part of analysis and visualize clickstream data over Hadoop platform. Data is website log files, which is semi structured. Flume is using for upload the data in Hadoop, HDFS (Hadoop Distributed File System) is storing and managing the data. After using Hive queries to refine the data and last visualize the refined data into Tableau business intelligence tool.Done overall process in cloudera platform.

A. Data

Website log files is semi structured data and it is depend upon user behavior on website. Take the data from Hortonworks, for analysis and visualize purpose. Web logs contains information about Timestamp, URL, IP, Country, State, City and Categories.

B. Flume

Flume's high-level architecture is built on a streamlined codebase that is easy to use and extend. The project is highly reliable, without the risk of data loss. Flume also supports dynamic reconfiguration without the need for a restart, which reduces downtime for its agents.

C. HDFS

HDFS is stand of Hadoop Distributed File System, which is storing and managing the large amount of data (terabyte & petabyte). Files are stored across multiple nodes. HDFS is break the large files into small fixed blocks. HDFS makes clusters of machines and correlate work among them. If any cluster have failed, Hadoop continuous the work without losing the data by shifting the works remaining machines in the cluster.

D. Hive

Hive is query procedure which is refine the data. Basically its uses SQL procedures to refine the data. Hive provides a SQL-like interface to data stored in DP (data platform).Hive because of its SQL like query language is often used as the interface to an Apache Hadoop based data warehouse. Hive is considered friendlier and more familiar to users who are used to using SQL for querying data.

E. Visualize

Visualize the refined data into business intelligence tool which we have used Tableau. Visualization is showing in graphical form. Tableau is tool of analysis and visualize the structured and semi structured data.

III. SCOPE OF RESEARCH

Now a days, data are very important for every organization for better communication between their clients and management of product for their business.

The main scope of this research paper is to analyze and visualize the data. Hadoop framework works very well with structured and unstructured data. This also support variety of data formats in real time such as XML, JSON and text based flat files format.

The main advantage for the organization with Hadoop is the increase in their productivity, manufacturing and sales based on Hadoop analysis and visualization. Hadoop analysis work perfectly with the business analysis tool to visualization of data individually related to the organizations to fulfill their product in the needy places based on the visualizations of every individual products.

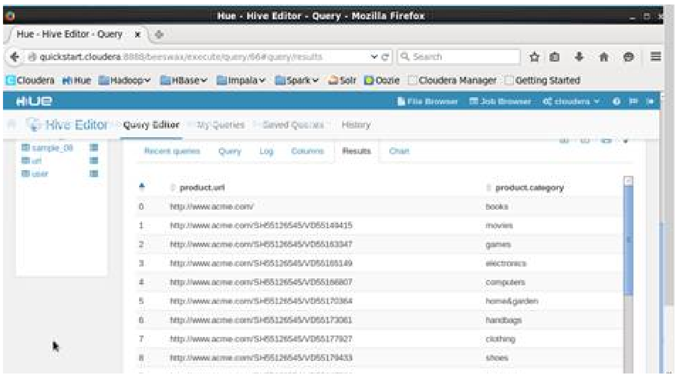
IV. METHDOLOGY

In this experiment, use following tools to visualize the data from different sources:-

A. Data upload

Downloaded the data from Hortonworks website. Then open the cloudera Hadoop platform after that open the hue in cloudera. Here worked on single node, saving the data in HDFS. Go to the HDFS manage and create the folder. Then upload the data from file browser in created folder.After that uploaded the rest data's as same technique.

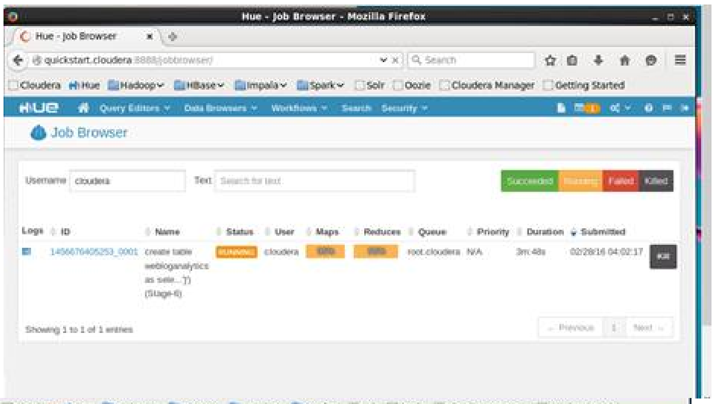
Then created the tables in hive using hive queries. So here can see the created tables in database that is Omniturelogs, Product and User. Then load the data in created tables using queries and can see the uploaded data.



	product.url	product.category
0	http://www.acme.com/	books
1	http://www.acme.com/SH55126545/VD55149415	movies
2	http://www.acme.com/SH55126545/VD55163347	games
3	http://www.acme.com/SH55126545/VD55165149	electronics
4	http://www.acme.com/SH55126545/VD55166807	computers
5	http://www.acme.com/SH55126545/VD55170364	home&garden
6	http://www.acme.com/SH55126545/VD55173061	handbags
7	http://www.acme.com/SH55126545/VD55177927	clothing
8	http://www.acme.com/SH55126545/VD55179433	shoes

B. Refining data

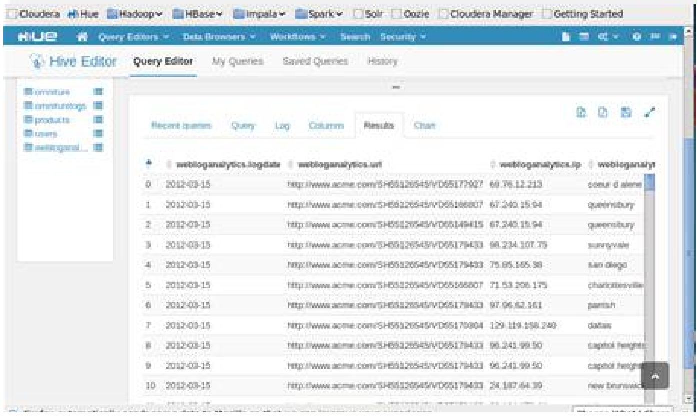
In the previous uploaded the data in tables.Here create the new table of important column that need for analysis purpose then create the table of important column that is time stamp, ip address, url, swid, city, country, state. Finally created table that joins the website log data to the registered user data and products data



Username: cloudera

Logs	ID	Name	Status	User	Maps	Reduces	Queue	Priority	Duration	Submitted
	1456676405253_0001	create table webloganalytics as sele...T) (Stage-6)	RUNNING	cloudera	100%	100%	root.cloudera	N/A	3m:48s	02/28/16 04:02:17

Showing 1 to 1 of 1 entries



	webloganalytics.logdate	webloganalytics.url	webloganalytics.ip	webloganalyt
0	2012-03-15	http://www.acme.com/SH55126545/VD55177927	69.76.12.213	coeur d alene
1	2012-03-15	http://www.acme.com/SH55126545/VD55166807	67.240.15.94	queensbury
2	2012-03-15	http://www.acme.com/SH55126545/VD55149415	67.240.15.94	queensbury
3	2012-03-15	http://www.acme.com/SH55126545/VD55179433	98.234.107.75	sunnyvale
4	2012-03-15	http://www.acme.com/SH55126545/VD55179433	75.85.165.38	san diego
5	2012-03-15	http://www.acme.com/SH55126545/VD55166807	71.53.206.175	charlottesville
6	2012-03-15	http://www.acme.com/SH55126545/VD55179433	97.96.62.161	parrish
7	2012-03-15	http://www.acme.com/SH55126545/VD55170364	129.119.156.240	dallas
8	2012-03-15	http://www.acme.com/SH55126545/VD55179433	96.241.99.50	capitol heights
9	2012-03-15	http://www.acme.com/SH55126545/VD55179433	96.241.99.50	capitol heigh
10	2012-03-15	http://www.acme.com/SH55126545/VD55179433	24.187.64.39	new brunswic

Finally this data is refined data. Still today after this step used ODBC driver for access the data into excel but here found the download option and download the data. Then copy from cloudera platform into system desktop with using winscp tool (use for copy the data from Linux in window and windows to Linux). So here reduce the step of access the data with ODBC driver. Then next term is visualize the refined data.

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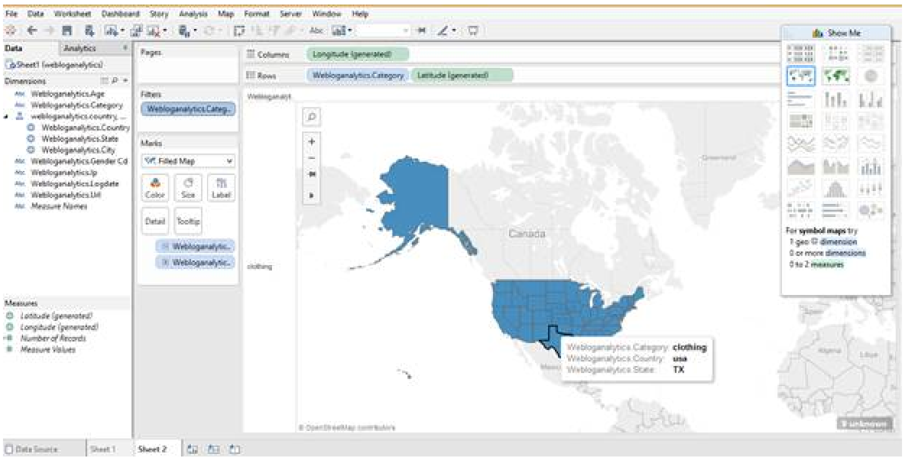
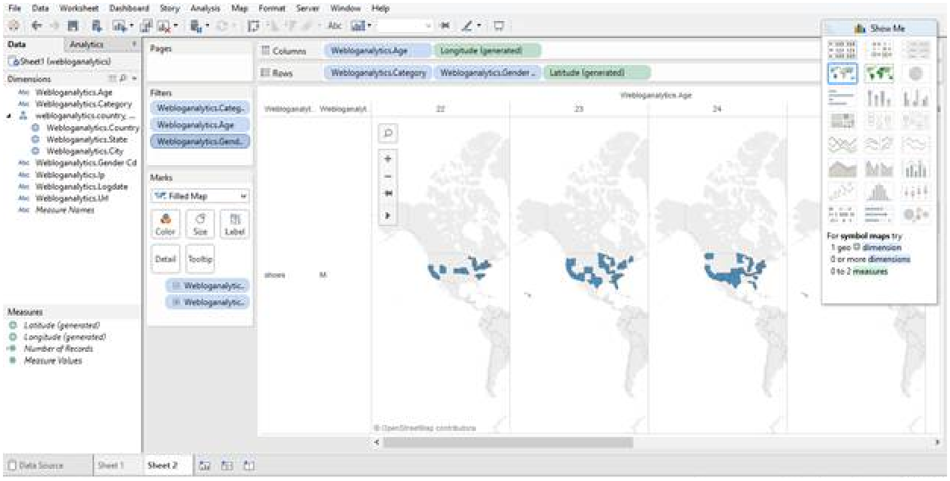
V. EXPERIMENTAL RESULT

Visualize the data into any business intelligence tool. Here we use the business intelligence tool is Tableau trial version. Here can analysis anything like country where mostly purchase the clothes and can see URL, IP addresses and so more. Dataset includes product data, so can display the product categories viewed by website visitors in each state.



Webloganalytics.Category: clothing
Webloganalytics.Country: usa
Webloganalytics.State: TX

This chart shows that the majority of men shopping for clothing on website are between the ages of 22 and 30. With this information, we can optimize our content for this market segment.



VI. CONCLUSION

Now a days websites log files are very crucial for every organization for analysis purpose. After we visualized log files we can supply the products or goods or other things in the required Country, state and Cities where mostly need of particular product. In this paper, for we collect the data form Hortonworks website .Design the overall process and experiment. In the experiment section we have not use the ODBC driver for access the data but we have download the data and copied into business intelligence tool for visualize over them.

VII. ACKNOWLEDGEMENT

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