Hive – A Petabyte Scale Data Warehouse Using Hadoop

Ashish Thusoo, Joydeep Sen Sarma, Namit Jain, Zheng Shao, Prasad Chakka, Ning Zhang, Suresh Antony, Hao Liu and Raghotham Murthy

Facebook Data Infrastructure Team

Jose Abreu

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A Comparison of Approaches to Large-Scale Data Analysis

Andrew Pavlo
Brown University
pavlo@cs.brown.edu

Erik Paulson
University of Wisconsin
epaulson@cs.wisc.edu

Alexander Rasin
Brown University
alexr@cs.brown.edu

Daniel J. Abadi
Yale University
dna@cs.yale.edu

David J. DeWitt
Microsoft Inc.
dewitt@microsoft.com

Samuel Madden
M.I.T. CSAIL
madden@csail.mit.edu

Michael Stonebraker
M.I.T. CSAIL
stonebraker@csail.mit.edu

Hive

- Open-source data warehousing solution built on top of Hadoop.
- Supports queries written in HiveQL. (Derived from SQL.)
- Used to reduce the complex nature of writing Map-Reduce programs on Hadoop.
- Used to address requirements at Facebook. Ranging from the Ad Network to Facebook's Lexicon product.
- Supports hundreds of terabytes of data.
- Allows for legacy data to be incorporated into a table without transforming data.

Implementation

- Data is stored in tables of rows and columns. Each column has a associated type (Primitive Type or Complex Type)
- "Complex types are templated and can be composed to generate types of arbitrary complexity."
- LazySerDe – Deserializes rows into internal objects lazily so cost of deserialization of a column is incurred only if the column of the row is needed in query expression.
- Execution Engine - Each dependent task is only executed if all of its prerequisites have been executed.

Analysis

- Being Open-Source is always a plus.
- Being in a familiar language helps those that are coming into it.
- All or nothing task scheduling.
- Being able to transfer legacy tables means that you don't need to rip out everything if you decide to move over to Hive.
- Do not like the fact that you are not able to insert or update a table without overwriting the entire table.

Comparisons to "A Comparison of Approaches to Large-Scale Data Analysis"

- Parallel systems seem to perform better than MapReduce systems.
- Serialized data formats and compression features of Hadoop systems are much slower at data loading.
- MapReduce has more overhead than Parallel systems.
- Database systems were lacking during tests.
- MapReduce needs 1000 nodes to make 100 nodes on a Parallel System.

Advantages and Disadvantages

- Hadoop systems are easier to implement.
- No need for custom input handlers.
- Hadoop is the most popular open source implementation.
- Much slower than parallel systems.
- "Hive currently does not support inserting into an existing table or data partition and all inserts overwrite the existing data."
- Speed is limited with how fast each table can be read off a disk. (Parallel can use clustered indexes to do this faster.)