System APIs

Let's explore BigTable APIs.

We'll cover the following

BigTable provides APIs for two types of operations:

- Metadata operations
- Data operations

Metadata operations#

BigTable provides APIs for creating and deleting tables and column families. It also provides functions for changing cluster, table, and column family metadata, such as access control rights.

Data operations#

Clients can insert, modify, or delete values in BigTable. Clients can also lookup values from individual rows or iterate over a subset of the data in a table.

- BigTable supports single-row transactions, which can be used to perform atomic read-modify-write sequences on data stored under a single row key.

- Bigtable does not support transactions across row keys, but provides a client interface for batch writing across row keys.
- BigTable allows cells to be used as integer counters.
- A set of wrappers allow a BigTable to be used both as an input source and as an output target for MapReduce (https://hadoop.apache.org/docs/r1.2.1/mapred_tutorial.html) jobs.
- Clients can also write scripts in Sawzall (a language developed at Google) to instruct server-side data processing (transform, filter, aggregate) prior to the network fetch.

Here are APIs for write operations:

- **`Set()`** : write cells in a row
- **`DeleteCells()`** : delete cells in a row
- **`DeleteRow()`** : delete all cells in a row

A read or scan operation can read arbitrary cells in a BigTable:

- Each row read operation is atomic.
- Can ask for data from just one row, all rows, etc.
- Can restrict returned rows to a particular range.
- Can ask for all columns, just certain columns families, or specific columns.

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BigTable Data Model

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Partitioning and High-level Architecture

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