

facebook

Presto

Past, Present, and Future

Dain Sundstrom

SELECT now() - INTERVAL '6' MONTH

By The Numbers

- 6 months
- 15 releases
- 30 contributors
- 662 commits
- 1406 files changed
- 130,305 insertions(+) 43,699 deletions(-)

New SQL Features

- Create table
- Distinct aggregations
- Cross joins
- Custom functions

Optimizations

- Range predicate push down
- Distributed aggregations
- Distributed window functions
- Distinct-limit optimization
- Approximate queries

Type System

- Plugins can add new scalar types
- Extensible operators
- DATE, TIME, TIMESTAMP and INTERVAL
 - Time zones with DST rules
 - Localized parse and format
- HyperLogLog type

New Connectors

- Hadoop 1.x
- Hadoop 2.x
- CDH 5
- Custom S3 integration for Hadoop
- Cassandra
- TPC-H

SELECT now()

Hive 0.13 Support

- New file formats
 - ORC
 - Parquet
 - DWRF
- Vectorized ORC (2-3x more efficient)
- ORC stripe skipping

Index Joins

- Targeting low cardinality joins
- Lazy hash build
- Predicate push down
- Aggregation push down
- Initial version is already checked in
- Currently supported in HBase and MySQL

Connectors

- HBase
 - Requires features in Facebook HBase
 - Index joins
- JDBC (MySQL)
 - Sharding
 - Index joins

Views

- Create/drop views
- View definition stored in connector
- Fully optimized by Presto
- Views stored in Presto syntax
 - Not compatible with existing Hive views

Machine Learning

- Supports classification and regression
 - Multiple algorithms (Currently only SVM)
- Feature extraction and normalization
- New functions and types
- Possibly extend SQL grammar
- Highly experimental

Continuous Integration

- Continuous correctness testing
 - Run queries against prod and trunk
- Continuous benchmark
- Run full test suite with every connector

- Faster release cycle

**SELECT now() + INTERVAL '1' YEAR
APPROXIMATE AT 95.0 CONFIDENCE**

SQL Features

- Structs, Maps and Lists
- Table generating functions
- Scalar sub queries
- Features required to run all TPC-DS
- Create table with partitioning
- Possibly: Insert, delete, drop partition

Execution Engine

- Huge joins and aggregations
 - Hash distributed
 - Co-distributed and co-partitioned
 - Spill to disk (flash)
- Work stealing
- Basic task recovery

Native Store

- Stores data directly on worker nodes
- Uses custom data format
- Initial use cases
 - Store for 'hot' data
 - Store for 'live' data
- Support co-distributed data

Security

- Authentication
 - Username/password, Kerberos, SSL cert
- Authorization
 - Integration with plugins
- Grant permissions from SQL

New REST API

- Prepared statements
 - Bound parameters
- Server managed sessions
- Explicit support for non-query (DML/DDDL)
- Split query submission, stats, and data fetching

ODBC Driver

- Targeting major BI tools
 - Tableau, MicroStrategy and Excel
- Support for Windows, Mac and Linux
- Will require new REST API
- Written in D
- Entirely open source (ASL2)

Plugins

- Plugin repository
- Manage plugins from CLI
- Function catalogs
- Push down joins and aggregations
- Custom optimizers

```
SELECT question  
FROM audience  
WHERE isAwesome(question)
```

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