Presto: Distributed SQL on Anything

Strata Hadoop, San Jose 2017

Kamil Bajda-Pawlikowski
Chief Architect
Teradata Center for Hadoop
What is Presto?

- 100% open source distributed ANSI SQL query engine
  - Originally developed by Facebook

- Key Differentiators:
  - Performance & Scale
  - Cross platform query capability, not only SQL on Hadoop

- Apache licensed, hosted on GitHub
  - Certified distro & support from Teradata
Presto Architecture

Coordinator
- Metadata API
- Parser/ analyzer
- Planner
- Scheduler
- Data location API

Pluggable

Client

Worker

Parser/ analyzer

Data stream API

Worker

Data stream API

Worker

Data stream API

Database
Presto Extensibility

Coordinator

- Metadata API
  - HDFS / S3
  - NoSQL
  - DBMS
  - Custom
- Data location API
  - HDFS / S3
  - NoSQL
  - DBMS
  - Custom

Parser/analyzer → Planner → Scheduler

Worker

- Data stream API
  - HDFS / S3
  - NoSQL
  - DBMS
  - Custom
Presto Connectors
Presto Users

See more at https://github.com/prestodb/presto/wiki/Presto-Users
Presto in Action

Multiple clusters (1000s of nodes total)
300PB in HDFS, MySQL, and Raptor
1000s users, 10-100s concurrent queries
Presto in Action

250+ nodes on AWS
40+ PB stored in S3 (Parquet)
Over 650 users with 6K+ queries daily
Presto in Action

200+ nodes (2 dedicated clusters)
25K+ & 3K+ queries daily
Presto in Action

200+ nodes on-premises
Parquet nested data
Presto in Action

120+ nodes in AWS
2PB is S3 and 200+ users supported by Teradata
Open Source Community

• Collaboration with Facebook and Presto community
  – Joint design and development
  – Conference talks, meetups and webinars

• Major commitment from Teradata Labs:
  – 20 full-time engineers
  – Free and open source contributions
  – Enterprise-ready distribution

"A special shout out goes to Teradata — which joined the Presto community this year with a focus on enhancing enterprise features and providing support — for having seven of our top 10 external contributors."

— Facebook
Teradata Initial Contributions to Presto

Phase 1
- June 8, 2015
- Implement
  - Installer
  - Documentation
  - Monitoring & Support Tools

Phase 2
- Q4 2015
- Integrate
  - Management Tool Integration
  - YARN Integration
  - ODBC Driver

Phase 3
- Q2 2016
- Proliferate
  - JDBC Driver
  - BI Certification
  - Kerberos
  - Connectors

Expanding ANSI SQL Coverage

Commercial Support

Completely
ANSI SQL Support

[ WITH with_query [, ...] ]
SELECT [ ALL | DISTINCT ] select_expr [, ...]
FROM table1 [[ INNER | OUTER ] JOIN table2 ON (...)]
WHERE condition]
GROUP BY expression [, ...] ]
HAVING condition]  
UNION [ ALL | DISTINCT ] select ]
ORDER BY expression [ ASC | DESC ] [, ...] ]
LIMIT [ count | ALL ] ]

In addition:
• Windowing functions
• UNNEST, TABLESAMPLE
• ROLLUP, CUBE, GROUPING SETS
• EXISTS, EXCEPT, INTERSECT
• Subqueries
BI Tools Certifications
Deployment Types

• On premises deployments:
  – Dedicated clusters (bare metal & virtual)
  – Co-located with HDFS

• Cloud deployments:
  – AWS / EMR
  – Teradata IntelliCloud
  – Microsoft Azure
### Teradata Planned Contributions to Presto

<table>
<thead>
<tr>
<th>Phase 4</th>
<th>Phase 5</th>
<th>Phase 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q4 2016</td>
<td>Q2 2017</td>
<td>Q4 2017</td>
</tr>
</tbody>
</table>

**Expand**
- LDAP
- Secure communication
- New Connectors
- Performance Tweaks

**Optimize**
- Cost Based Optimizer
- Spill to Disk
- New Connectors
- Performance Tweaks

**Manage**
- Workload Management
- Optimizer Improvements
- New Connectors
- Performance Tweaks

---

**Expanding ANSI SQL Coverage**

**Commercial Support & Services**
More information

Certified Distro: [www.teradata.com/presto](http://www.teradata.com/presto)
Website: [www.prestodb.io](http://www.prestodb.io)
Presto Users Group: [www.groups.google.com/group/presto-users](http://www.groups.google.com/group/presto-users)

GitHub:
- [www.github.com/prestodb/presto](http://www.github.com/prestodb/presto)
- [www.github.com/Teradata/presto](http://www.github.com/Teradata/presto)