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TiDB 2.1: What's New and What's Next

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Agenda

- Brief review about TiDB 2.0
- What's new in 2.1-beta
  - PD
  - TiKV
  - TiDB
- What's next?

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TiDB 2.0

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TiDB 2.0

- Improving stability and correctness
  - Chaos Testing, Fault Injections
  - TLA+
  - Raft, RocksDB tuning
- Boosting OLAP performance
  - RBO to CBO framework
  - Statistics Collection
  - New Execution Engine
- Making TiDB easier to use and operate

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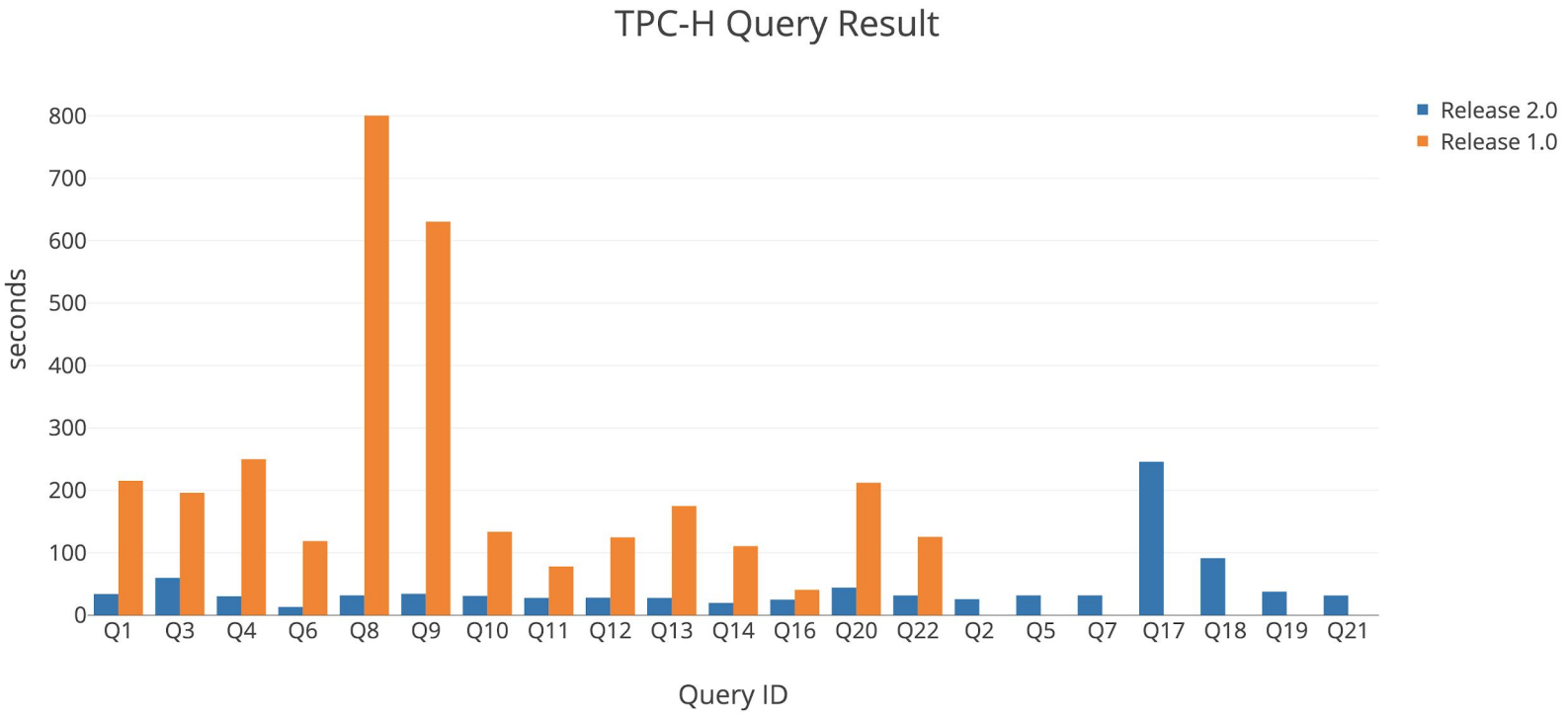
TiDB 2.0 on TPC-H Scale 50



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TiDB 2.1

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TiKV/PD

- PreVote
  - PD
  - TiKV
- Raft Learner
- Hotspot scheduling
- Metrics performance
  - RawGet +3%
- Asynchronous log

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SQL Layer (1/2)

- Optimizer && Execution Engine
  - Optimize the selection range of `Index Join` to improve the execution performance
  - Support `Index Hint` and `Join Hint` in the `UPDATE` and `DELETE` statements
  - Parallel `Hash Aggregate`, `Project` operators: +350%, + 74%
  - New Aggregation Framework
- DML && Server
  - Optimize the conflicted transaction performance
  - Optimize the statement performance of `insert ignore on duplicate key update`
  - Optimize explain output
  - Server-side cursor

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SQL Layer (2/2)

- DDL
  - Optimize the execution speed of the `CreateTable` statement
  - Optimize the execution speed of `ADD INDEX`
  - Parallely executing DDL: AddIndex, Other DDL statements
- HTTP API
  - Scatter the distribution of table Regions in the TiKV cluster
  - General log
  - Log level

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2.1-beta is shipped.
2.1-GA is not far away.

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What's Next?

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PD

- Hotspot Scheduling
  - Collecting Information
  - Auto balance/split hot region
- Powerful replica strategy
  - IDC
  - Replica count

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TiKV

- Multi-thread Raft store
- Multi-thread Apply worker
- Learner
- Consensus Join
- The next generation storage engine
  - Optimize for large key-value
  - Compaction
  - Optimize for data scanning

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TiDB

- Optimizer
  - Join reorder
  - Cost Model refactor
  - Consider cost when applying rules
  - Statistics dynamic update
- Execution Engine
  - Parallel operators
  - Projection pushdown
  - Improve the performance of point-query
  - File sort
- Table Partition
- View, Window Function, CTE

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Performance

- OLTP

256	93134.33	49159.67	61562.47	85323.6	105099.62

- OLAP

```
| 17    | 1677.236763s   | 355.391590118s | 371.94% |
| 18    | 611.662471056s | 344.731801987s | 77.43%  |
```

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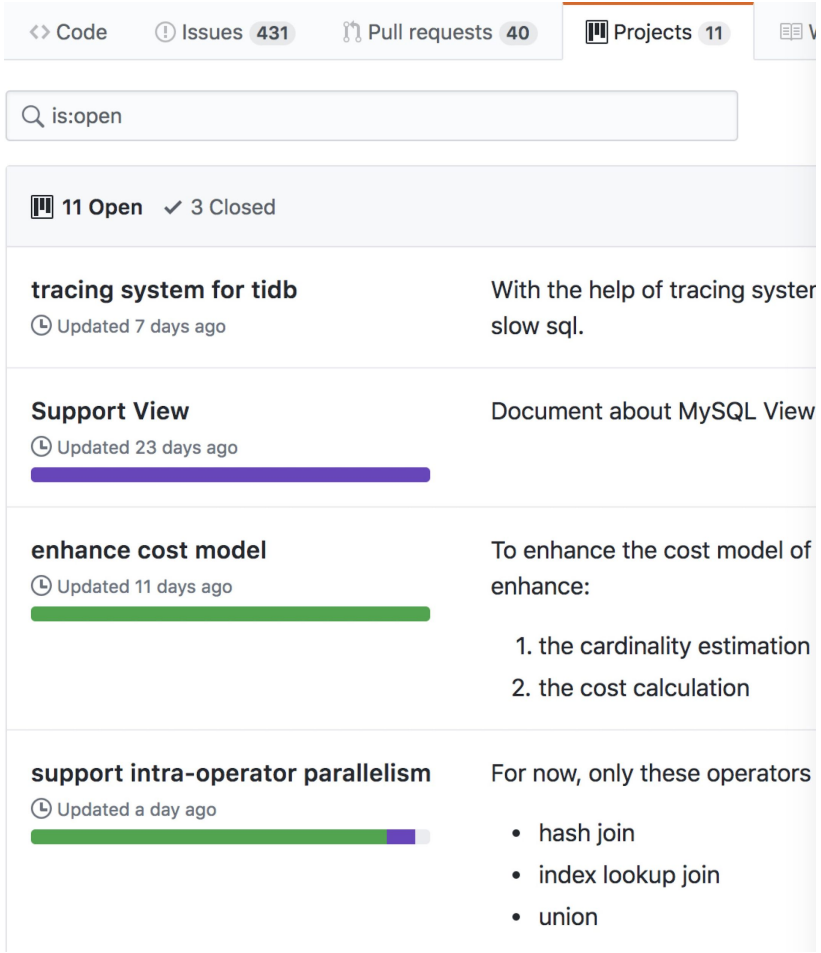
Open Source

- Document
  - Design Docs
  - Source Code Reading
- Community
  - More open
  - More contributors: 161 -> 191
  - More committers



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One more thing: A brand new admin tool

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Thanks !