

Perspectives

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Facebook Releases Cassandra as

Open Source

Last week the Facebook Data team released Cassandra as open source. Cassandra is an structured store with write ahead logging and indexing. [Jeff Hammerbacher](#), who leads the Facebook Data team described Cassandra as a BigTable data model running on a Dynamo-like infrastructure.

Google Code for Cassandra ([Apache 2.0 License](#)):

<http://code.google.com/p/the-cassandra-project/>.

Avinash Lakshman, Prashant Malik, and Karthik Ranganathan presented at [SIGMOD 2008](#) this year: [Cassandra: Structured Storage System over a P2P Network](#). From the presentation:

Cassandra design goals:

- High availability
- Eventual consistency
- Incremental scalability
- Optimistic replication
- Knobs to “tune” tradeoffs between consistency, durability, and latency
- Low cost of ownership
- Minimal administration

Write operation: write to arbitrary node in Cassandra cluster, request sent to node owning the data, node writes to log first and then applied to in-memory copy. Properties of write: no locks in critical path, sequential disk accesses, behaves like a write through cache, atomicity guarantee for a key, and always writable.

Cluster membership is maintained via gossip protocol.

Lessons learned:

- Add fancy features only when required
- Many types of failures are possible
- Big systems need proper systems-level monitoring
- Value simple designs

Future work:

- Atomicity guarantees across multiple keys
- Distributed transactions (*I'll try to talk them out of this one*)
- Compression support
- Fine grained security via ACLs

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It looks like a well engineered system.

—jrh

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