



Modularity and Scalability in Calvin

Calvin is a...

Transaction Scheduling

Replication Management

Lower Inter-Partition Transaction Coordination Costs

Rearranged Transaction Execution Pipeline

- 1) Logging
- 2) Scheduling
- 3) Execution

Log is Ultimate Source of Truth

Advantages

- 1) Near-Linear Scalability

No Distributed Commit Protocols
Are Required

Advantages

- 1) Near-Linear Scalability
- 2) Strong Consistent Replication

Once a transaction is written to the log, no further inter replica coordination required to sync

Advantages

- 1) Near-Linear Scalability
- 2) Strong Consistent Replication
- 3) Highly Modular System Architecture

Calvin provides other system components with a declarative specification of the concurrency control

- 1) Log
- 2) Scheduler
- 3) Storage Back End

Advantages

- 1) Near-Linear Scalability
- 2) Strong Consistent Replication
- 3) Highly Modular System Architecture
- 4) Main-Memory OLTP performance over disk-resident data

All relevant data will be memory-resident
once the transaction begins executing

Calvin

- 1) Deterministic
- 2) Highly Scalable
- 3) Good backup/replication when crash
- 4) Highly modular