Introduction to the MySQL Falcon OLTP storage engine

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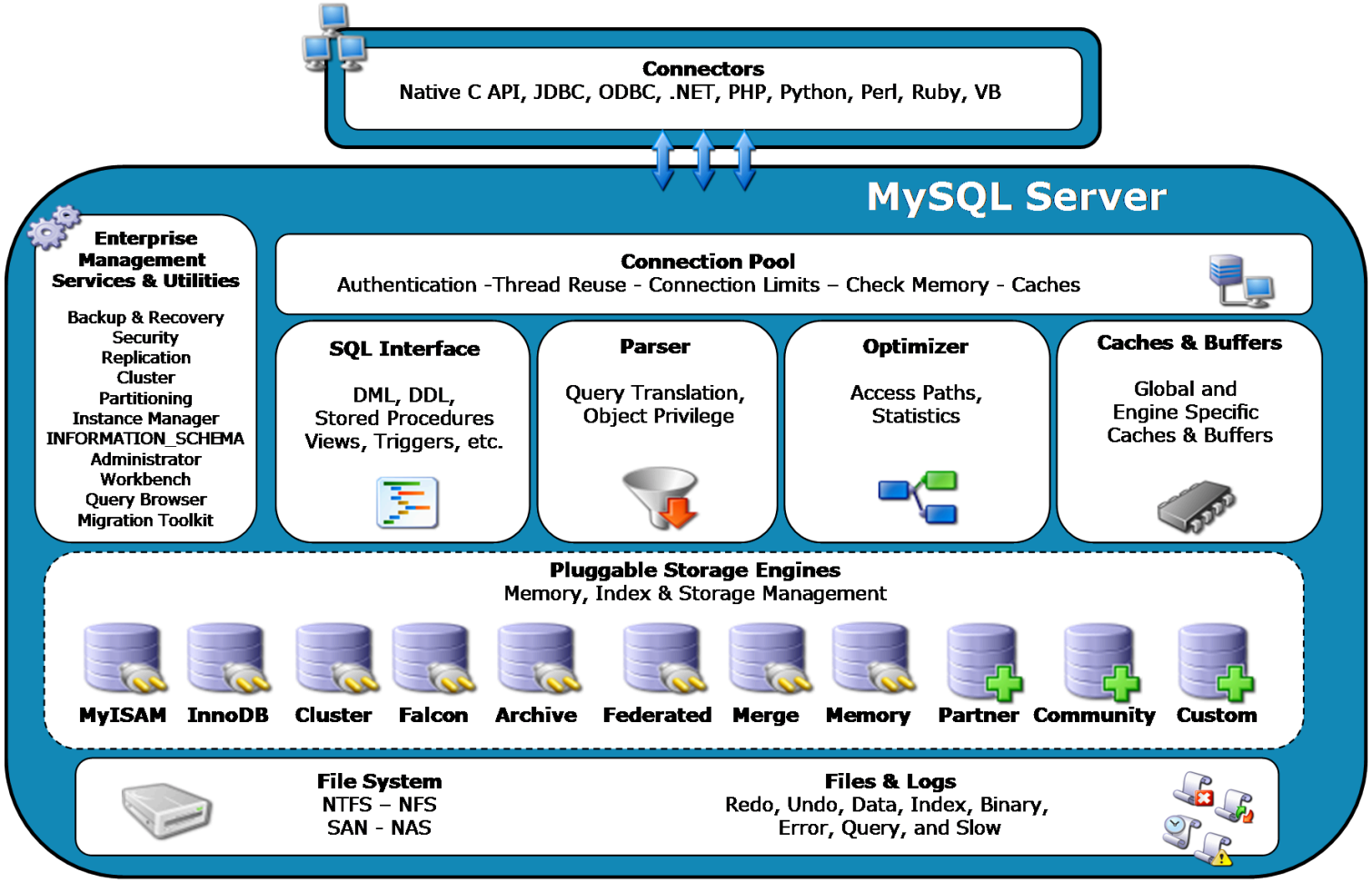
MySQL Storage Engine Architecture

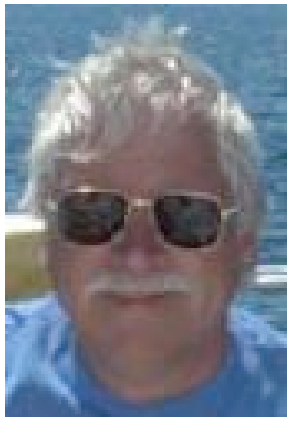


Introduction to the Falcon Engine

History/Background

- MySQL acquired Netfrastructure in February 2006
- With Netfrastructure comes next generational transactional database engine
- Engine produced by relational database pioneer Jim Starkey
- Currently being integrated into MySQL Server

Jim Starkey



- Multi-Version Concurrency Control (MVCC)
- 

- Rdb
- InterBase
- Major Firebird contributor with wife Ann Harrison
- ...

Introduction to the Falcon Engine

Netfrastructure/Falcon Customer Profile

- Major East Coast law firm
- 500GB+ transactional database
- 100-200 concurrent users
- Heavy BLOB usage
- Not one occurrence of lock contention
- Very pleased with response times

Hoagland, Longo, Moran, Dunst, & Doukas LLP

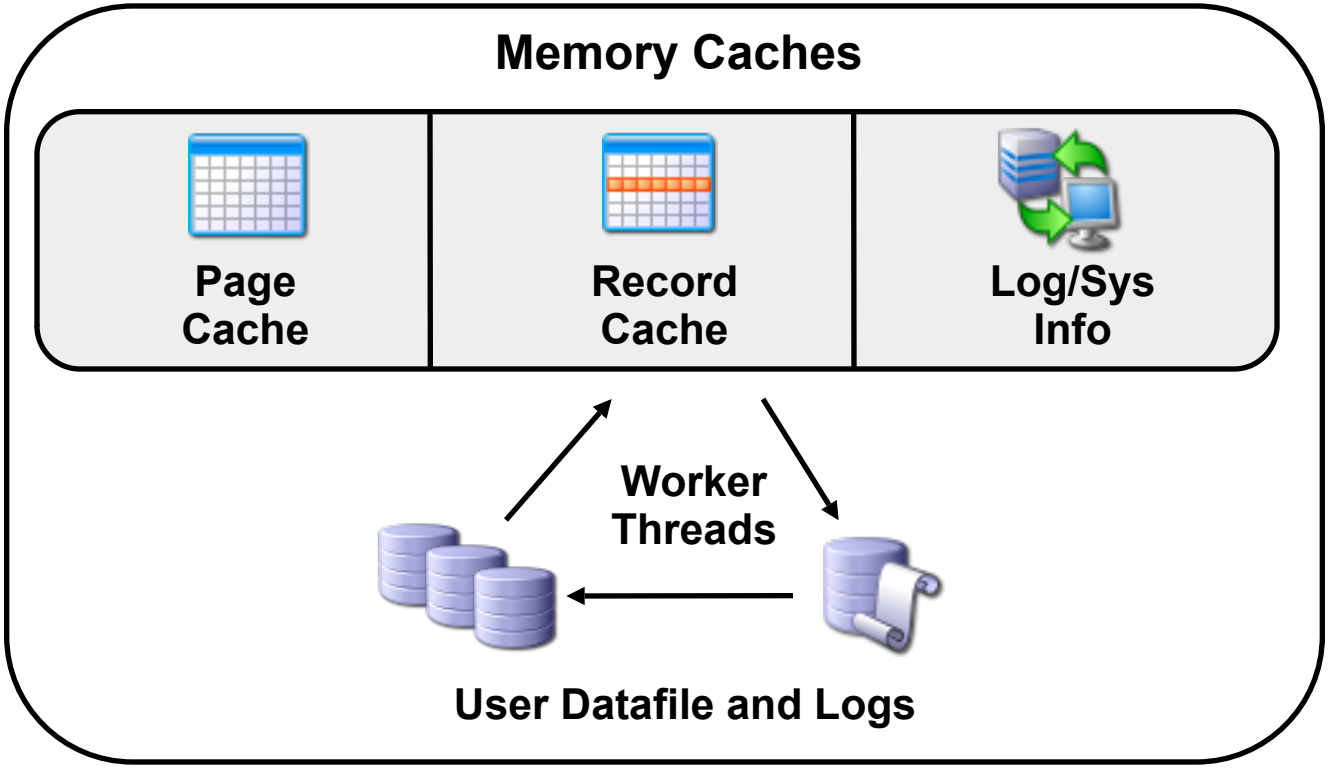
Introduction to the Falcon Engine

What is the Falcon Engine?

Falcon Transactional Engine

- Multi-generational ACID transactional control
- True MVCC implementation
- Instant rollbacks
- Crash recovery
- Advanced B-Tree Indexes
- Hassle-free storage management
- Server enforced referential integrity (above store engine layer)
- Perfect for high-traffic apps having short-medium sized transactions

Falcon Engine Architecture

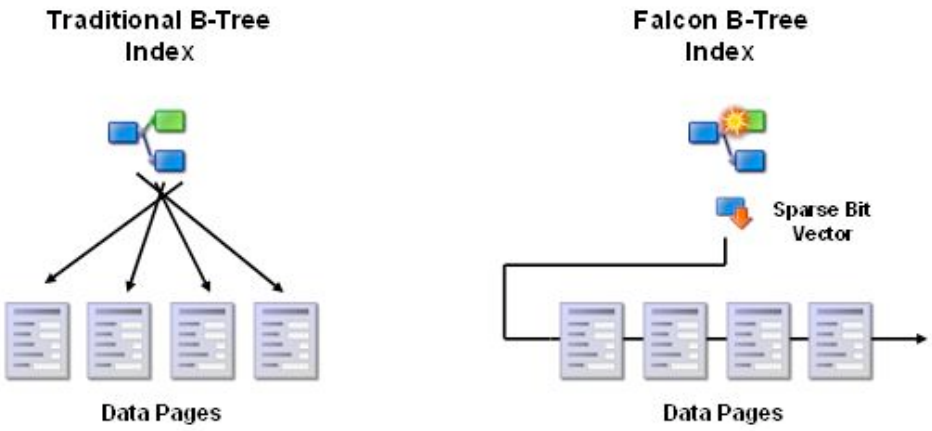


Falcon Engine Distinguishing Features

- **Storage Management**
  - Single user data file (v1)
  - Write-ahead log
  - Auto space management
- **Memory Management**
  - Separate caches for data, index/BLOBs
  - Unique data cache – caches only needed rows instead of full pages
  - Easily tuned with min/max cache values

Falcon Engine Distinguishing Features

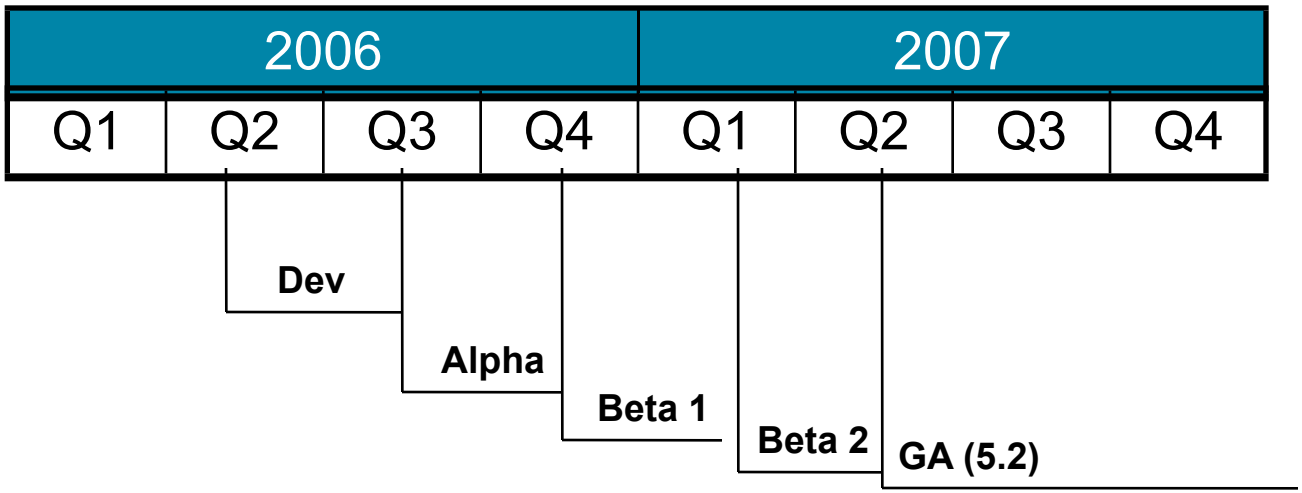
- **Transaction/Lock Management**
  - ACID, multi-generational, MVCC implementation
  - Transactions handled in memory, with optimisations for BLOBs
- **Object Management**
  - Standard heap tables
  - Advanced B-tree, Cluster-like index implementation



Feature	Falcon	InnoDB	NDB Cluster	MyISAM
Crash Recovery	☑	☑	☑	
Online Parameter Support	☑			☑
Foreign Key Support	☑	☑		
Tablespaces	*	☑	☑	
Automatic File Extension	☑	☑	☑	☑
Data Caching	☑	☑	☑	
Index Caching	☑	☑	☑	☑
ACID Transactions	☑	☑	☑	
Distributed Transaction Support	☑	☑	☑	
Implicit Savepoints	☑	☑		
MVCC (Full/Real) Support	☑	*		
Row-level Locks	*	☑		
Deadlock Detection	☑	☑	☑	
GIS support	☑	☑		☑
B-Tree Indexes	☑	☑	☑	☑
Clustered Indexes	*	☑		
Full Text Indexes	V2			☑

Use Cases and Timeline

- Perfect for 64-bit architectures with loads of RAM (but runs on 32-bit machines with standard RAM configurations).
- Zero-administration makes Falcon good candidate for "embedded" database applications.
- Very well suited to high-traffic, transactional Web sites with small-large sized transactions (optimised currently for small-medium) and high up-time requirements.



Thank You!

Questions?

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