WIREDTIGER Introduction

WiredTiger is rethinking data management for modern hardware with a focus on multi-core scalability and maximizing the value of every byte of RAM.

The WiredTiger Storage Engine is an Open Source, NoSQL key/value data management engine combining the high performance of in-memory databases with the unlimited capacity of Flash or disk-backed databases.

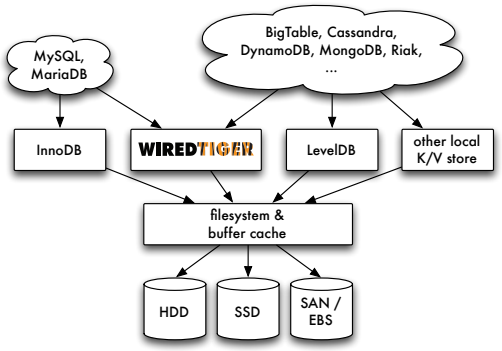
WiredTiger can be deployed as either an embedded data management layer in applications or as a component under a higher-level engine such as MySQL.

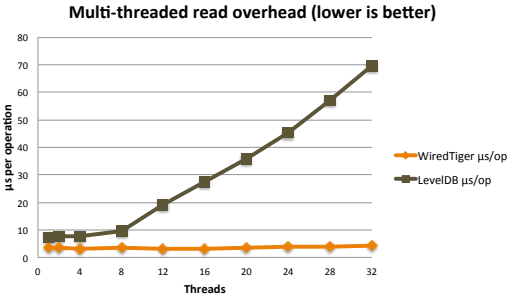
Architected for modern multi-core, large memory and disk systems, WiredTiger effectively exploits the processor caches to outperform traditional disk-based engines even when data is fully cached in memory. WiredTiger's unique combination of latch-free and non-blocking algorithms scales to millions of transactions per second on a single server while still consistently achieving response-time latency measured in microseconds.

WiredTiger supports a wide variety of workloads including efficient sparse data via column stores, bounded query and update performance via row stores and write-optimized workloads via log-structured merge (LSM) trees with Bloom filters.

Applications can use WiredTiger as a simple key/value store, but it also provides a complete schema layer to manage column groups, indices and projections. This makes it easy to combine access methods in a single table: a sparse, wide table could be stored using a column-store for primary data with indices stored in LSM trees.

WiredTiger saves Flash and disk costs with a compact file format including variable block sizes of up to 16GB and extensive compression: run-length encoding, key-prefix compression, dictionary, static encoding and pluggable block compression.





WiredTiger supports ACID transaction semantics including snapshot isolation. Combining optimistic concurrency control with multi-versioned data helps WiredTiger provide consistent low latency because conflicts between transactions do not cause threads to block.

WiredTiger is fully persistent, and can be configured for either simple checkpoint durability or fine-grained durability based on write-ahead logging. Either way, data is automatically recovered to a consistent state. As a "no-overwrite" store, even disk-write failure does not require catastrophic recovery.

The WiredTiger Storage Engine is a reliable database building block with built-in monitoring and an extensive test suite. It is production ready and fully supported.

Big Data

Lower costs
Higher utilization, less hardware for a given workload

High performance
Hotter cache, choice of access methods, RAM speeds

Low latency
Non-locking algorithms, multi-versioned data

Ease of use
Simple K/V store or complete schema layer

Extensible
Loadable modules, pluggable collation and compression

Production Quality
Highly reliable, no-overwrite storage, fully supported

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