



August 2019

The Company

Product

Storage Engine Accelerator

Offices

San Jose, Tel Aviv

Status

40 Employees, deep experience in database and SSD technologies

Core technology development completed

First product to be released in Q419

Raised to date

\$45M by leading VC's and Strategic investors

Western Digital.



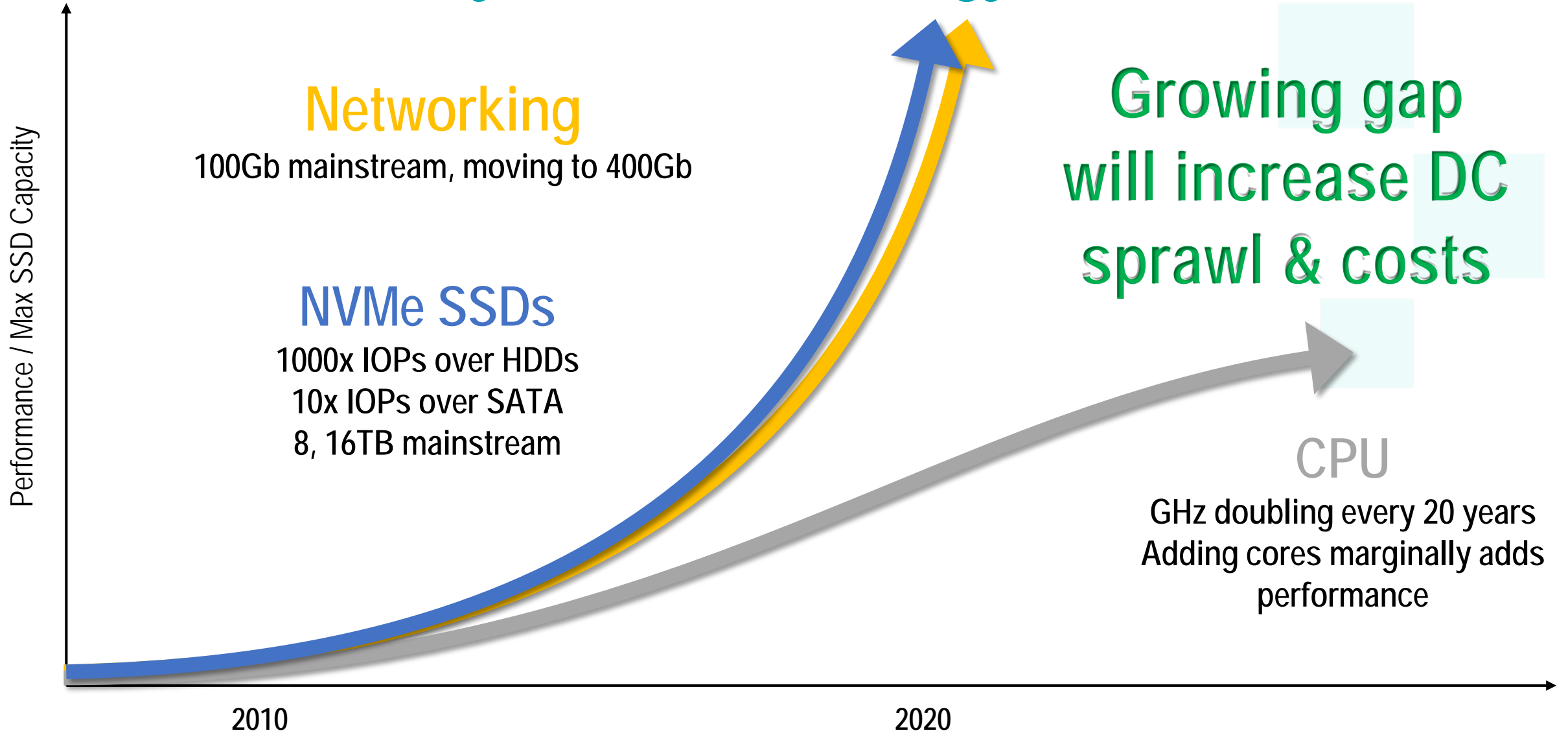
SoftBank
Ventures Asia

SOMV

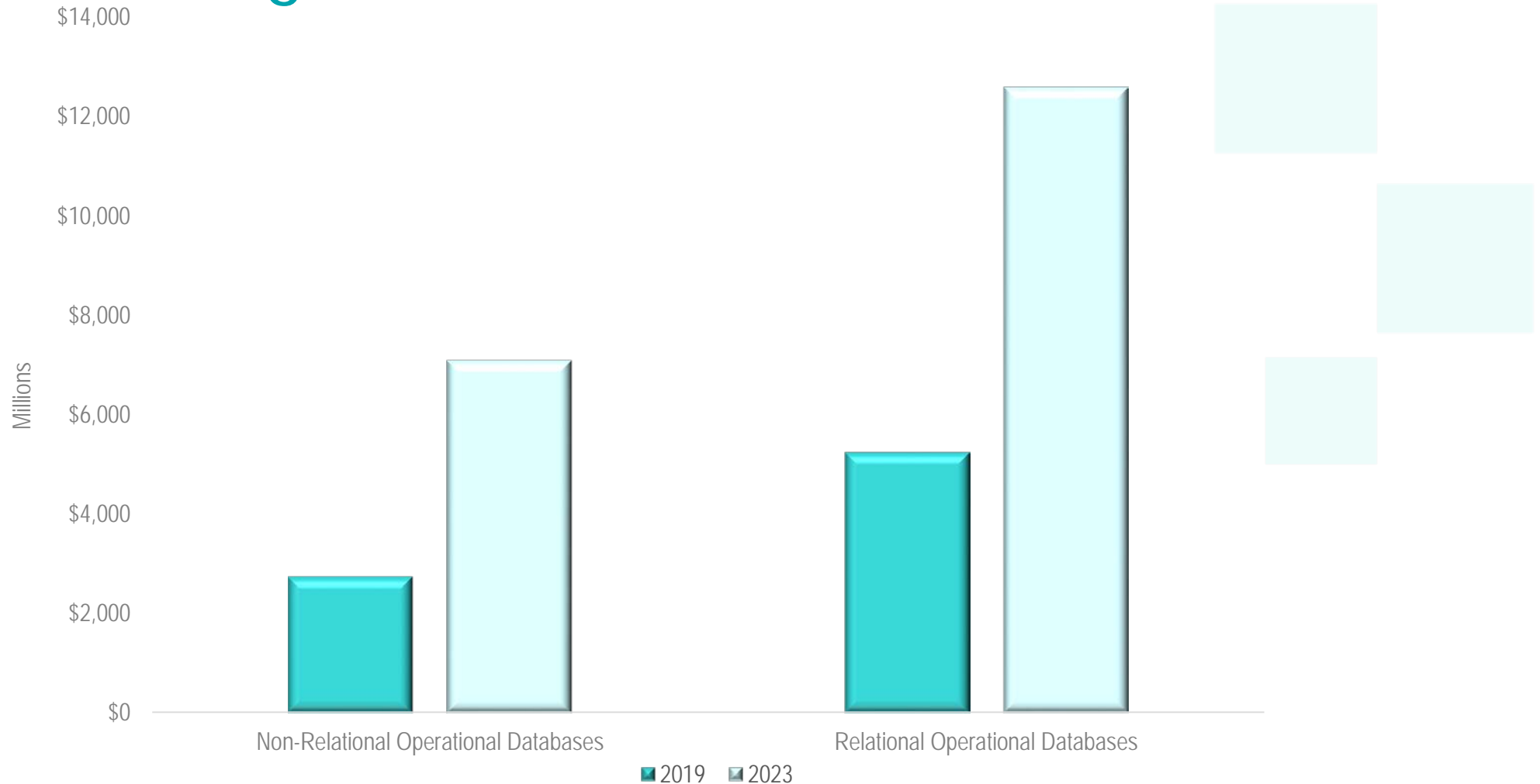


XILINX.

Key Cloud Technology Trends

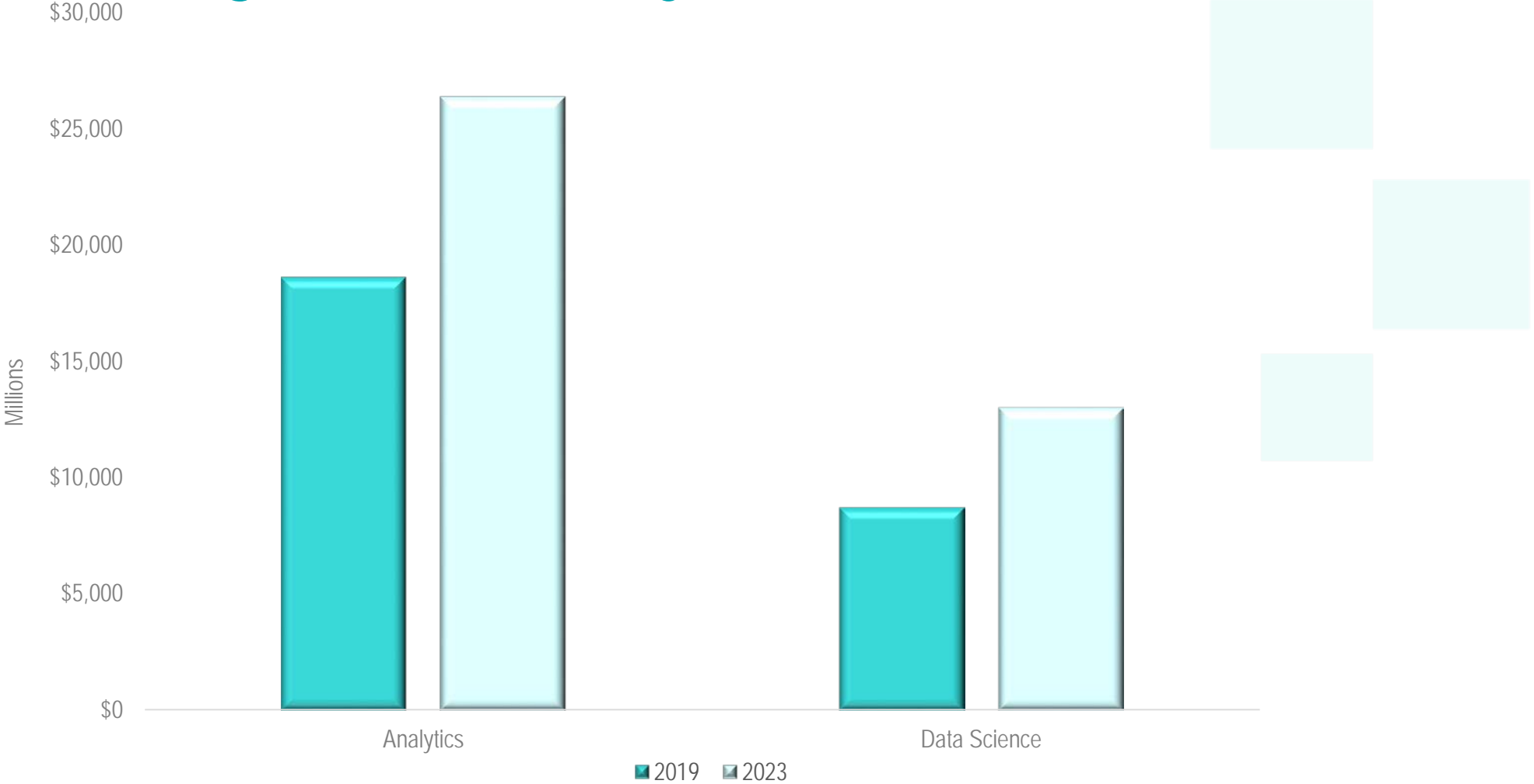


Motivating Trend: Cloud Database Market



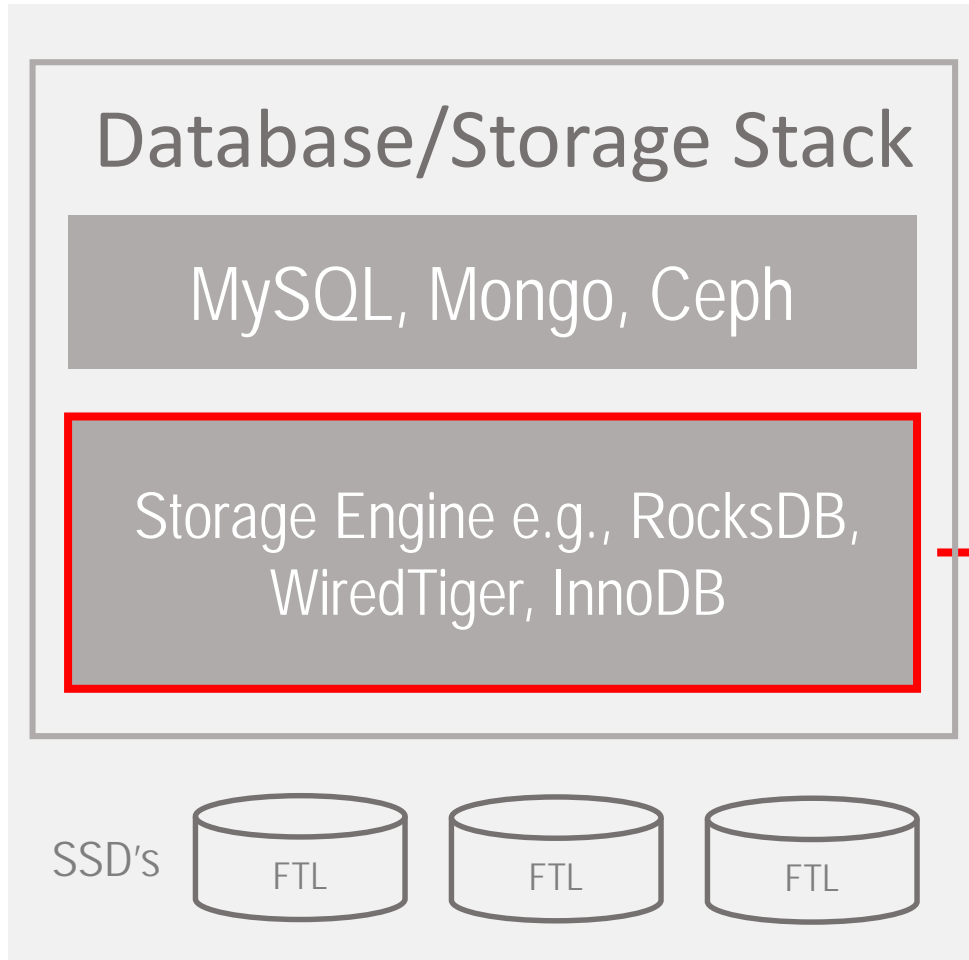
Cloud Database market segments are large and growing

Motivating Trend: Analytics Software Market



Analytics market segments are large and growing

Key-Value Storage Engines

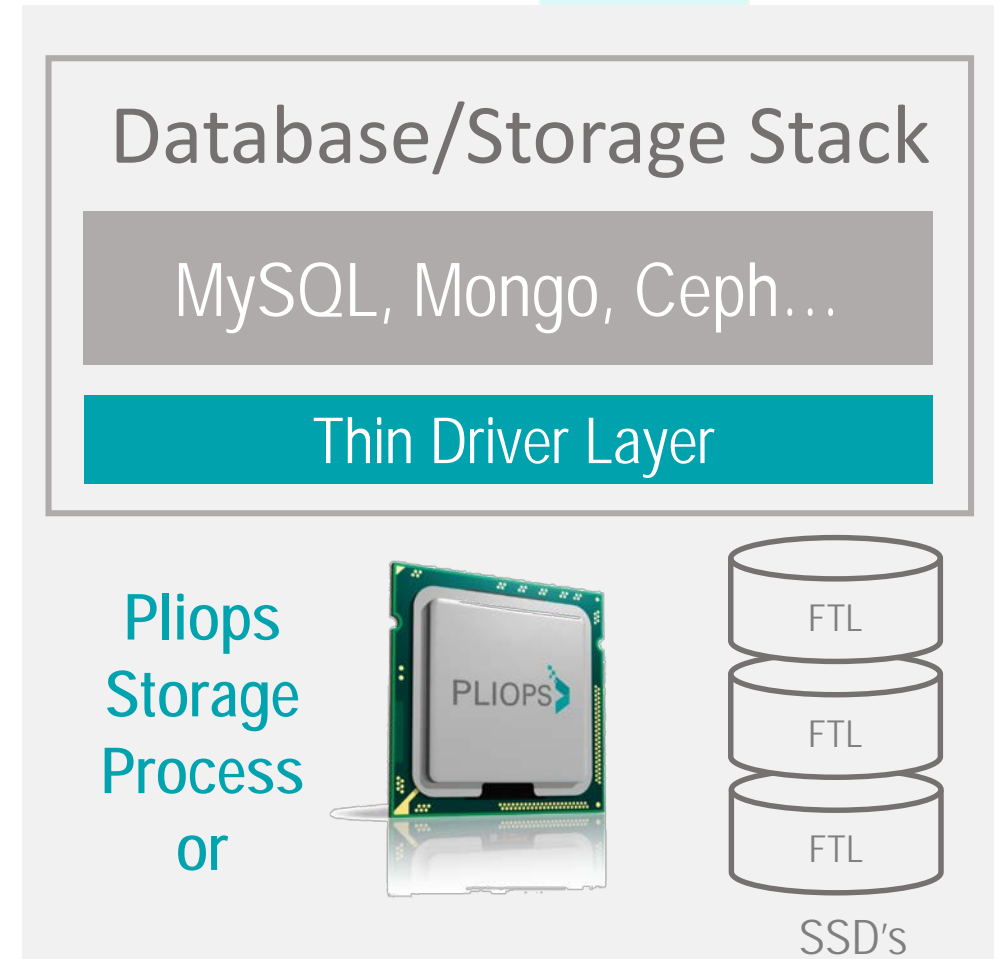
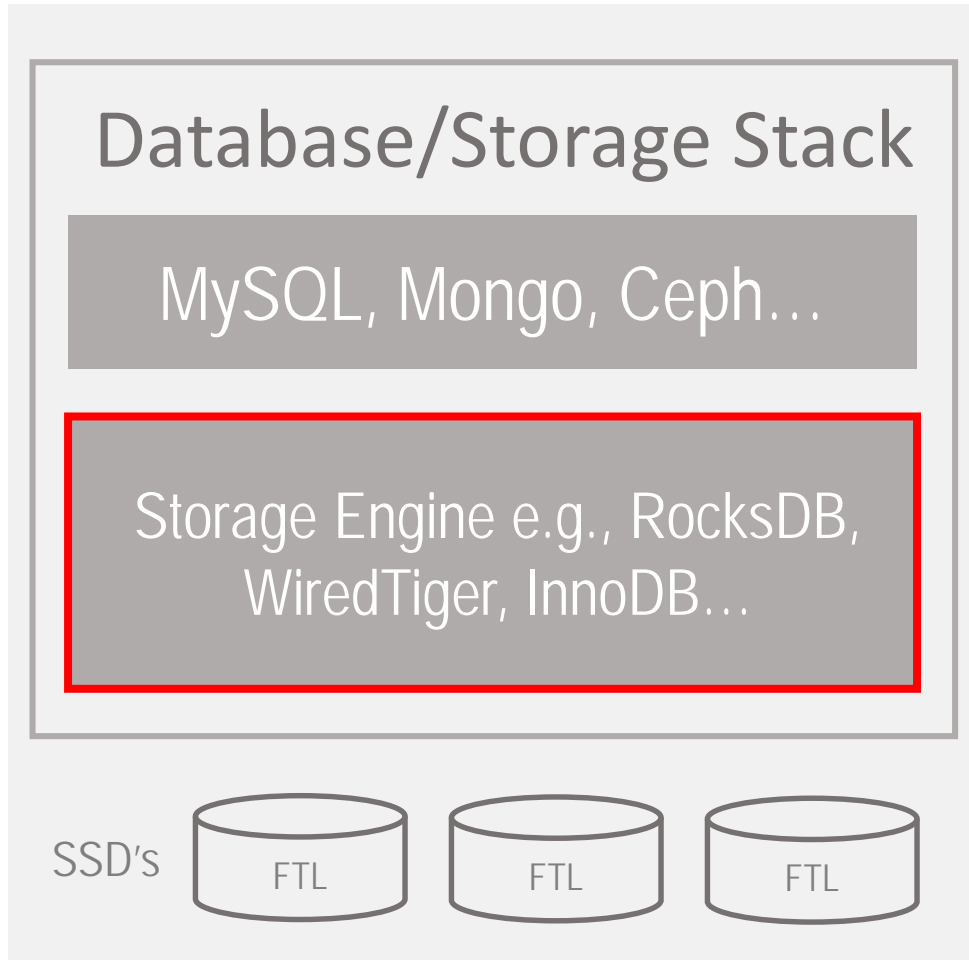


- Responsible for data storage and retrieval
- Keep the data sorted
- Traditionally based on B-trees
- LSM has taken over, RocksDB popular
- Complex and prone to variable performance

Source of Key-Value Inefficiencies

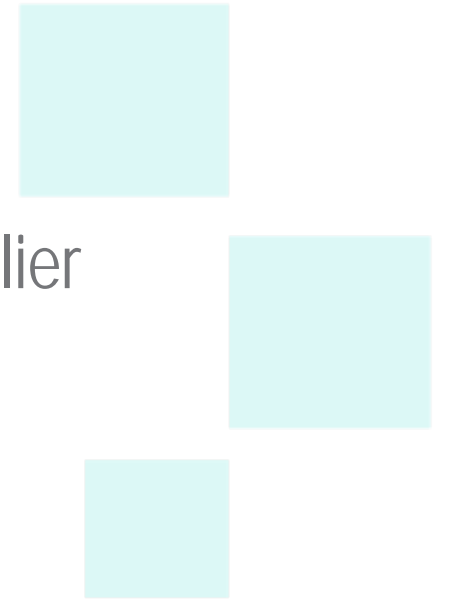
- How to efficiently map variable-sized data to fixed-size blocks?
 - Huge memory maps vs. multiple flash accesses, speed vs. space efficiency
- High CPU and I/O costs for sorting, resorting, and garbage collection of data
- High read and write amplification – typically 20-100x
 - Reduces flash lifetime or requires expensive flash
 - Reduces effective application bandwidth
 - When using disaggregated block storage, 20-100x app bandwidth required

Pliops Architecture



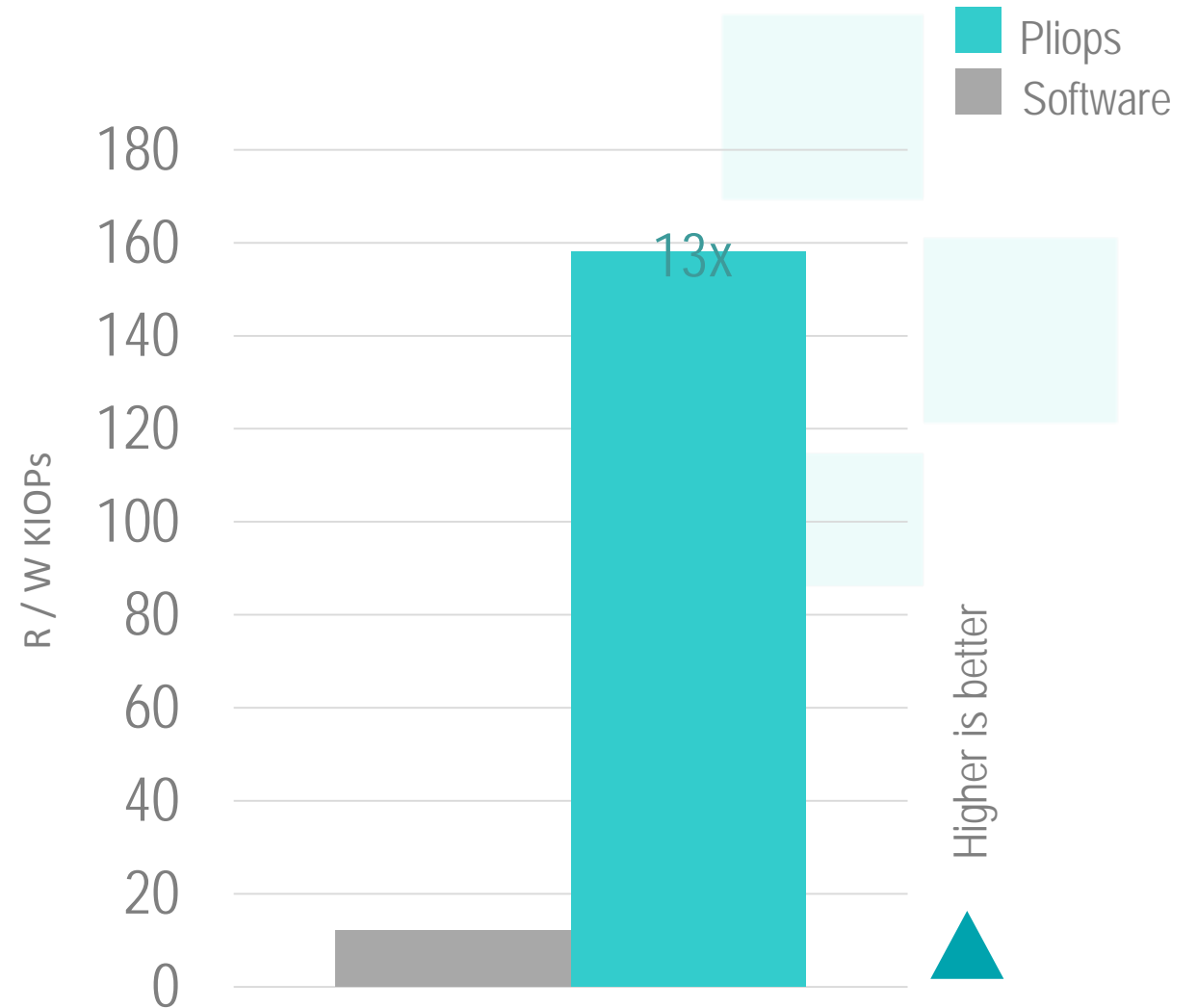
Role of Hardware

- Management of highly compressed object memory map
 - Extremely memory-efficient, software alternatives much costlier
- Key sorting
- Object garbage collection
- Compression, encryption
- Data persistency, logging
- Frees memory and compute resources to run applications, not manage storage

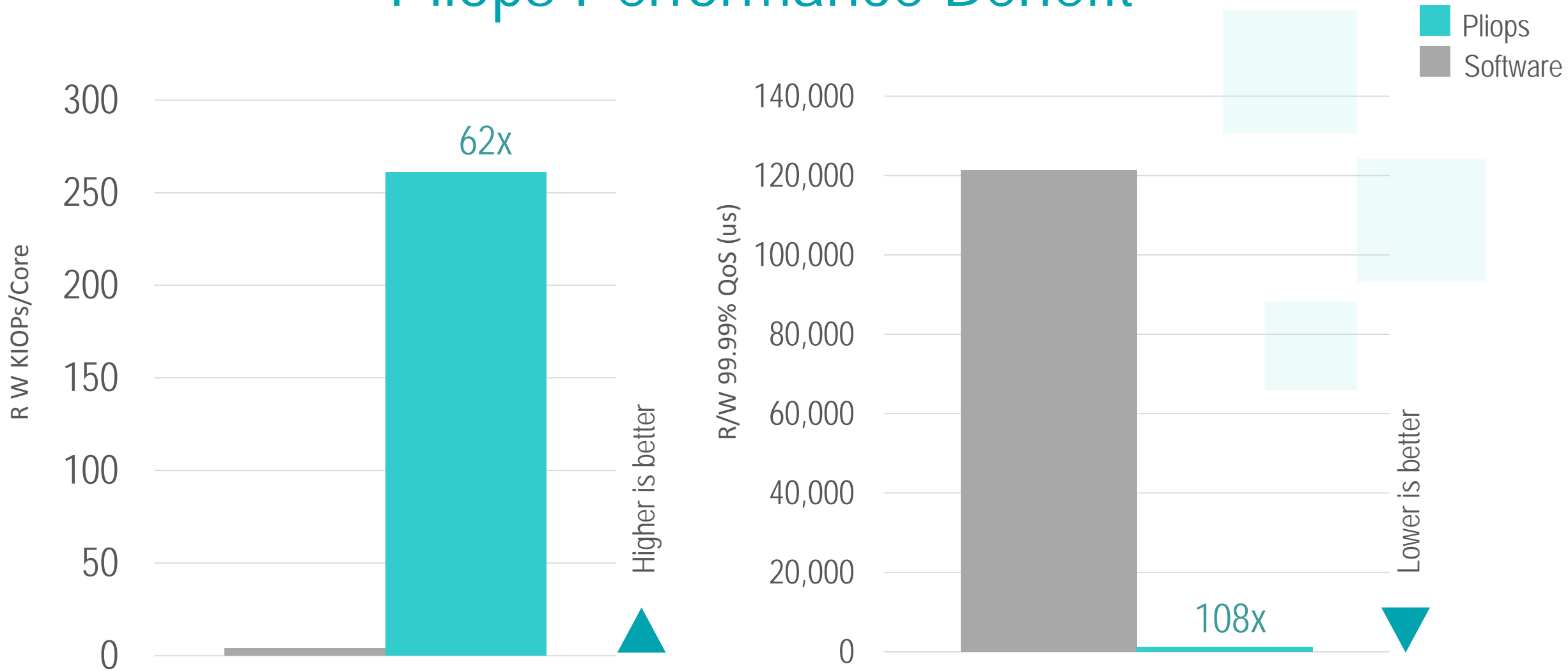


Pliops Performance Benefit

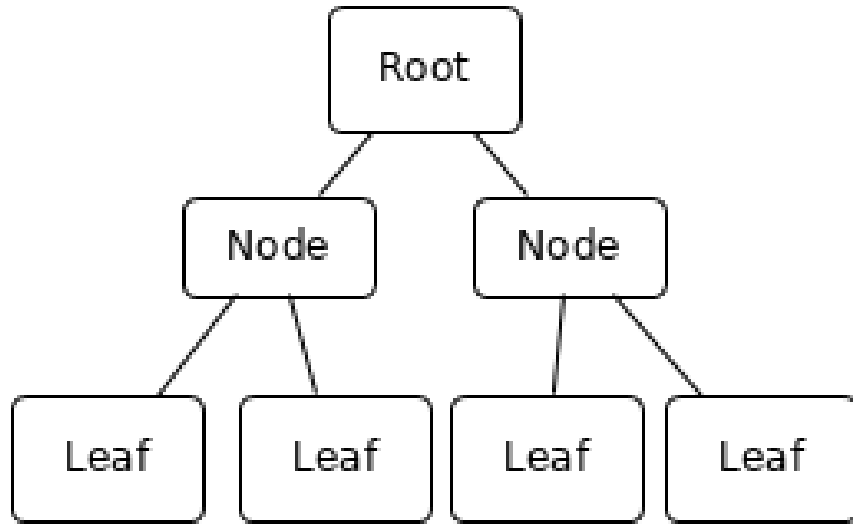
Server Hardware & Software Specifications	
CPU	1x 4.3 GHz Intel processor 6 cores, 12 threads
Memory	32 GB
SSD	RocksDB (caching disabled): NVMe1TB SSD Pliops (caching disabled): 1TB NVMe SSD All drives under test were pre-conditioned
KV	16B key, 800B value
Workload	DBBench Readwhilewriting QD32



Pliops Performance Benefit



Application Example: MySQL

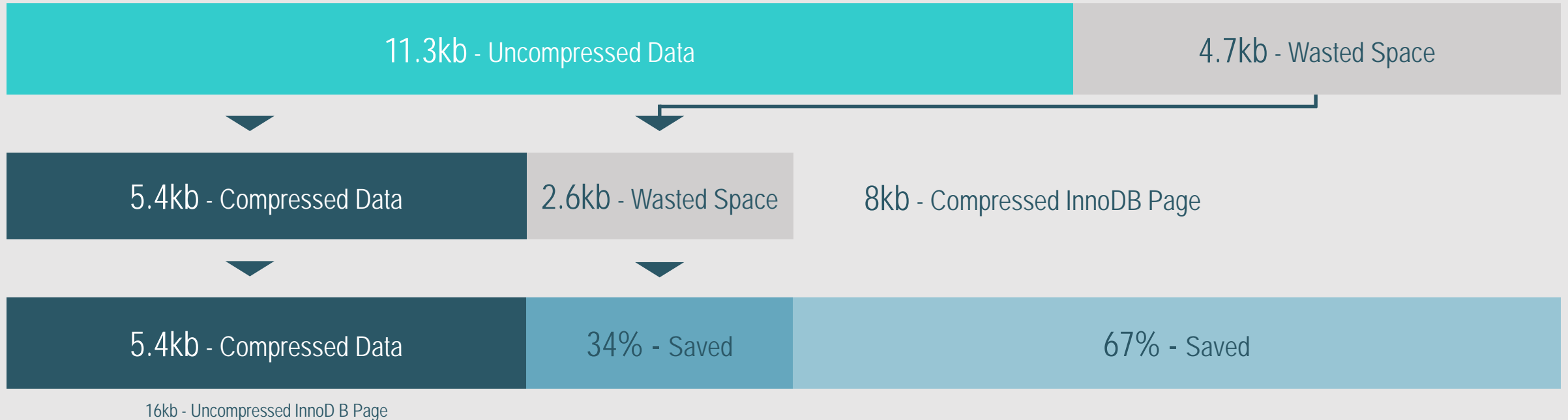


MySQL stores its data in [InnoDB](#), a B-tree based storage engine

B-tree overview:

- Tree-based structure consisting of blocks with a fixed maximum size
- Key-value pairs are stored in the leaf blocks
- Once a block grows beyond the max size, it is split. Similarly, small blocks are merged
- InnoDB and most B-trees are write-in-place architectures
 - Hard to reclaim disk space as data files are of fixed size
 - The space used per block is the block size, regardless of data size

Pliops Space Advantage on MySQL



67%

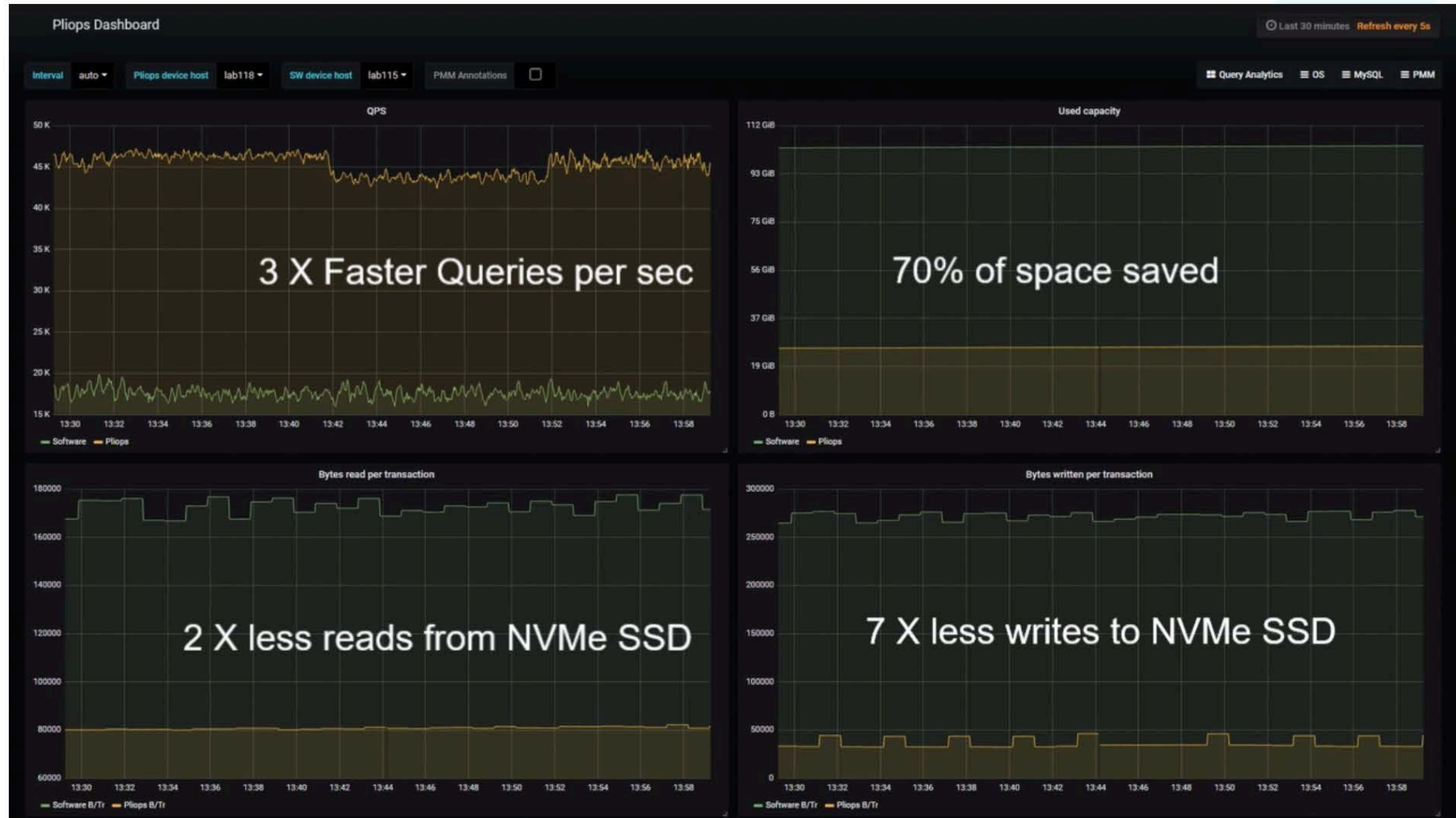
Pliops consumes 67% less capacity than **uncompressed** InnoDB

34+%

Pliops consumes 34+% less capacity than **compressed** InnoDB



MySQL: Pliops vs. Software



Percona Monitoring and Management

Next Steps

- MySQL POC available for testing – September
- Solutions for Redis and other DBs available soon
- Hardware-optimized compressed block device – Q4/2019
- Optimized storage engine solutions in 2020
- Come talk with us for further details!



THANK YOU!

