Micron® 2210 SSDs With NVMe™: Dynamic Write Acceleration Provides Performance With QLC Storage

NVMe Speed and HDD Economics in One Smart SSD

The Micron® 2210 client solid state drive (SSD) bridges the gap between the low cost of hard disk drives (HDDs) and the performance, reliability, low power and security of NVMe™ SSDs.

For the first time Micron brings together NVMe performance, low-cost quad-level-cell (QLC) NAND and Micron Dynamic Write Acceleration (DWA). The Micron 2210 changes the game by combining advanced SSD capabilities with HDD-like economics.

Micron brings improved write performance and right -sized capacity to the 2210 SSD by blending a faster single-level-cell (SLC) mode with QLC. This balances the need for fast writes and higher capacity.

Table 1 shows the Micron 2210's broad range of storage capacities.

Micron 2210 QLC SSD With NVMe			
Form Factor	M.2 (22x80)		
Interface	PCIe x4 Gen3, NVMe 1.3		
Capacities [1]	**512GB**	**1TB**	**2TB**
Seq Read (MB/s)[2]	2,200	2,200	2,200
Seq Write (MB/s)[2]	1,070	1,800	1,800
Random Read (IOPS)[3]	150K	230K	265K
Random Write (IOPS)[3]	260K	320K	320K
Endurance (TBW)	180TB	360TB	720TB
MTTF (Million Hours)	2	2	2

Table 1: Micron 2210 Configurations

Features/Fast Facts

The Micron 2210 SSD combines Micron's NAND expertise with 96-layer design and QLC leadership.

- Enhanced performance is totally automatic. Integrated intelligence places new data in the SLC-mode area to optimize performance & endurance.
- The right NAND technology with Micron's expertise enables SSD performance and HDD economics.
- Dynamic Write Acceleration balances the Micron 2210 storage pools to match changing demand.

The Right NAND Technology

The Micron 2210 SSD combines two different QLC NAND operating modes into one smart NVMe SSD ─ SLC mode for write performance and endurance and QLC mode for massive capacity when you need it. All managed seamlessly and transparently to the user.

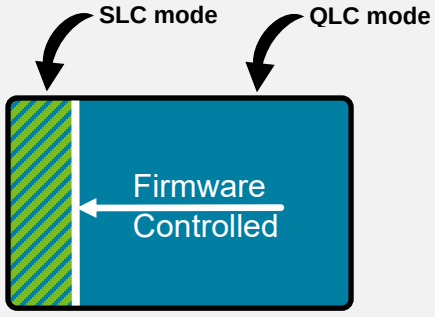

Figure 1: 2210 Dual-Mode QLC NAND

1. Capacities: Unformatted. 1GB = 1 billion bytes. Formatted capacity is less.
2. Sequential Read/Write: 128KB transfer size, fresh-out-of-box (FOB).
3. Random Read/Write: 4KB transfer size, fresh-out-of-box (FOB).

Dual-Mode QLC NAND Simplifies Caching

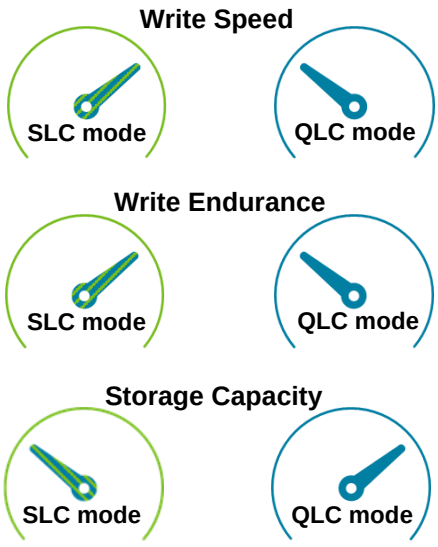

Figure 2: NAND Mode Characteristics

Using Dynamic Write Acceleration, the Micron 2210 QLC SSD manages its NAND in two modes – SLC mode for cache and QLC mode for capacity. Cache storage writes data faster and offers improved write endurance but holds less data than capacity storage. Capacity storage is designed for immense capacity and low cost.

The Micron 2210's self-optimizing cache operates transparently, without user intervention or configuration, to improve write performance. A small amount of NAND flash is used as a fixed cache with a larger amount used for the dynamic cache, up to 14% of the SSD's total capacity.

As more data is written, the 2210 SSD resizes its dynamic cache accordingly. As users delete data, the 2210 SSD automatically enlarges the cache to boost write performance. This smart architecture dynamically balances write performance with capacity on the fly to match your workflow.

There's nothing to set, nothing to adjust, nothing to manage. It's all automatic.

Typical Configuration

Increased Capacity

SLC mode ***QLC mode***

Hard Drives Beware

With its Dynamic Write Acceleration, the Micron 2210 SSD offers an affordable way to transition from disk to flash. It's ideal for performance-sensitive workloads where HDDs aren't able to keep up.

Learn more at www.micron.com/2210