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## Micron Positions QLC to Lead Market Transition from Hard Disk Drives to Solid State Drives

### Micron® 5210 ION SSD for Enterprise Applications Now Available Worldwide

#### News Highlights

- | Worldwide availability of the Micron 5210 ION enterprise SATA SSD through global distributors, resellers and system builders, enabling the continued transition from hard drives to flash-based SSDs
- | Product targeted at read-intensive applications such as artificial intelligence, machine learning, deep learning, real-time analytics, big data, business intelligence, NoSQL databases, object stores and media streaming
- | Delivers 175 times faster random reads, 30 times faster random writes, 2 times more sequential throughput and 3 times more energy efficiency than the largest 10K RPM HDDs
- | MSRPs similar on a \$/GB basis to 2.4TB 10K HDDs
- | Full enterprise feature set for improved security: AES 256-bit encryption, end-to-end data path protection, power-loss protection and 5-year warranty
- | Available in affordable and HDD-compatible 2.5-inch form factor in capacities of 1.92TB, 3.84TB and 7.68TB

BOISE, Idaho, Nov. 07, 2018 (GLOBE NEWSWIRE) -- Micron Technology, Inc., (Nasdaq: MU) today announced the next step towards market leadership for its quad-level cell (QLC) NAND technology with immediate broad market availability of the popular Micron 5210 ION enterprise SATA SSD, [the world's first QLC SSD](#), which began shipping to select customers and partners in May of this year. Available through global distributors, the Micron 5210 ION enterprise SATA SSD further accelerates Micron's lead in the QLC market, enabling replacement of hard disk drives (HDDs) with SSDs and building on Micron's recent launch of the Crucial® P1 NVMe QLC SSD for consumer markets.

Enterprise storage needs are increasing as data center applications deliver real-time user insights and intelligent and enhanced user experiences, leveraging artificial intelligence (AI), machine learning, big data and real-time analytics. At the same time, there is a growing consumer need for higher storage capacity to support digital experiences. QLC SSDs are uniquely designed to address these requirements.

"Since launching the world's first QLC SSD and now making it available broadly to the market, Micron is enabling the rapid shift from slow, power-hungry HDDs to solid state drives," said Derek Dicker, Micron's corporate vice president and general manager of the Storage Business Unit. "QLC technology will become ubiquitous as today's enterprise and consumer segments start reaping the inherent advantages of SSDs over HDDs, now delivered at similar price points offered by HDDs."

High-density Micron QLC 64-layer 3D NAND flash media achieves densities of one terabit on a single chip, enabled by next-generation cell architecture, and offers an attractive option to AI and machine learning professionals. Providing the ease of SATA with the economics and speed of QLC NAND, the Micron 5210 ION SSD has already hastened the speed at which AI learns.

"By switching to QLC SSDs from hard disk drives, our machine learning workloads complete eight times faster for TensorFlow processing, TFRecord creation, ingest and image classification," said Gautam Shah, CEO of Colfax International, a leading machine learning solution provider. "We found that [a 2.3TB, 100,000 image dataset took 15.17 hours on our HDD platform while the Micron 5210 ION completed the same task in just 1.87 hours, resulting in 13 hours of savings on an everyday task](#). The more machine learning you do and the bigger your dataset, the more your time savings will compound."

"With AI and deep learning transforming every industry, we see exponential demand for deep-learning-specific, GPU-accelerated compute and high-performance storage solutions," said Dr. Rene Meyer, vice president of technology at AMAX, a leading deep learning solutions provider. "Fast training data access is crucial to efficient model training. Replacing a traditional 64TB HDD centralized shared storage array with an all-flash Micron 5210 array, [we found a 10x bandwidth increase and a notable reduction of model training times](#). The drive's combination of fast read performance coupled with cost-reducing QLC NAND and the SATA interface make the 5210 an easy choice for shared centralized storage solutions."

#### Key Features and Target Workloads of the Micron 5210 ION SSD

The Micron 5210 ION arrives in capacities up to 7.68TB in the affordable and HDD-compatible 2.5-inch (7mm) SATA form factor. Accessing data at the speed of flash, the Micron 5210 ION delivers sequential read speeds of 540 MB/s and up to 90,000 random read IOPS. Compared to the largest 10K RPM HDDs available, the Micron 5210 ION delivers 175 times faster random reads, 30 times faster random writes and 2 times faster sequential throughput.<sup>1</sup> It's also three times more energy efficient, fueling a lower terabyte-to-terabyte total cost of ownership. The slim 2.5-inch form factor also allows users to pack twice as many Micron 5210 ION SSDs into the typical 2U rack and save on power, cooling, licenses and floor space.<sup>2</sup>

Ideal for read-intensive workloads such as the data lakes that feed AI, machine learning, deep learning and other read-intensive environments — real-time analytics, big data, object stores, business intelligence, NoSQL databases, media streaming and more — the Micron 5210 ION is architected to meet the needs of the fastest-growing enterprise workloads. To learn more about the specifications of the Micron 5210 ION SSD and the advantages it provides, visit the official product website or read the many workload-specific white papers, which are available in the [Micron 5210 ION SSD media kit](#) and at [www.micron.com/5210](http://www.micron.com/5210).

### Availability

The Micron 5210 ION SSD is now in mass production and immediately available through leading global distributors, resellers and system builders — at prices comparable to 10K HDDs.

### Resources

- | Media Kit, containing technical briefs, case studies and photos: <https://www.micron.com/about/news-and-events/media-relations/media-kits/>
- | 5210 ION product page: <http://www.micron.com/5210>
- | Crucial P1 SSD product page: <http://www.crucial.com/usa/en/storage-ssd-p1>
- | [Machine learning white paper](#) and case study by Colfax International
- | [Deep learning white paper](#) and case study by AMAX
- | QLC thought leadership center for workload-specific research: <http://www.micron.com/qlc>
- | Blog: [www.micron.com/about/blogs](http://www.micron.com/about/blogs)
- | LinkedIn: [www.linkedin.com/company/micron-storage](http://www.linkedin.com/company/micron-storage)
- | Twitter: [www.twitter.com/MicronStorage](http://www.twitter.com/MicronStorage)
- | YouTube: <http://www.youtube.com/user/MicronTechnology>

### About Micron Technology, Inc.

Micron Technology is a world leader in innovative memory solutions. Through our global brands — Micron®, Crucial® and Ballistix® — our broad portfolio of high-performance memory technologies, including DRAM, NAND, NOR Flash and 3D XPoint™ memory, is transforming how the world uses information. Backed by 40 years of technology leadership, our memory and storage solutions enable disruptive trends, including artificial intelligence, machine learning, and autonomous vehicles, in key market segments like cloud, data center, networking and mobile. Our common stock is traded on the Nasdaq under the MU symbol. To learn more about Micron Technology, Inc., visit [micron.com](http://micron.com).

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The Micron 5210 was the world's first QLC SSD to be shipped and sold (21 May 2018).

<sup>1</sup>Based on a typical 2U storage server with the ability to hold 12 3.5-inch drives or 24 2.5-inch drives.

<sup>2</sup>Based on public data sheet values for the 1.92TB Micron 5210 SSD (70,000 IOPS) and SNIA PTSe IOPS industry-standard test results or 2.4TB 10K hybrid HDDs (rounded up to 400 IOPS). Actual performance may vary. Energy efficiency comparison based on data sheet values for active average reads.

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