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SATA Flash Storage Will Never Be the Same

WHY YOU NEED IT NOW

Still debating the shift to enterprise SSDs within your organization? Here’s why there’s really no argument at all.
Today’s enterprise data centers face a simple choice: Modernize now or eat the competition’s dust. The future of data storage will be built on ever-increasing capacity, efficiency, speed and security, and old-school spinning platters simply can no longer keep up.

That is why the future belongs to flash storage. Thanks to the painless upgrade path afforded by Micron’s SATA SSD solutions, that future is now.
According to a recent study supported by the U.S. Department of Energy, U.S. data center storage installed capacity will grow to almost 1ZB by 2020, a nearly six-fold growth in six years.1

U.S. data centers consumed about 70 billion kilowatt-hours of electricity in 2014, representing 2% of the country’s total energy consumption.2

Increasingly, time means money — literally. Even back in 2006, Amazon estimated that every 100ms of latency cost them 1% in sales.3

Juniper Research projects that by 2019, cybercrime will cost businesses more than $2 trillion.4

Micron’s 5100 SATA SSDs address each of these challenges in ways that HDDs, and even other SDDs, simply cannot.
1. Space and Power Savings (Cost Savings)

Because SSDs pack more storage into less space than HDDs and draw less power per TB to operate, they can reduce total cost of ownership (TCO) with savings in real estate, facility maintenance, climate control, and energy.

**Industry-leading SATA capacity:**
Micron’s TLC 3D NAND engineering offers maximum capacity in a smaller physical space — up to 8TB, double that of any competitor.

**Engineered for high performance:**
The 5100 series’ high capacity doesn’t compromise performance. In fact, the drives reach steady-state random write speeds of up to 80,000 IOPS, dwarfing the competition.

**HOW MUCH SPACE DO YOU NEED TO STORE 2.5PB OF DATA?**

- **High Capacity HDD:** 21 Chassis
- **5100 Standard Chassis:** 14 Chassis
- **5100 SSD Specific Chassis:** 7 Chassis

The Micron 5100 squares off against high-capacity HDDs.
2. Flex Capacity™

IT administrators once had to choose specific SSDs for each workload: read-focused, write-focused, and balanced read/write use. Micron’s FlexPro™ architecture allows customers to tune performance and capacity within a single drive. The result: maximum flexibility, interoperability, and cost-efficiency.

**Easy adjustments:** Administrators can adjust the capacity of the Micron 5100, which in turn tunes write performance. Dial up capacity for greater storage. Dial down to increase performance.

**Extended lifetime:** By matching capacity and performance precisely to workload, FlexPro firmware maximizes the usable range of each drive.

**Lower total cost of ownership:** Without the need to purchase, inventory, and maintain multiple types of SSDs to match a wide variety of applications, workloads, and requirements, IT administrators can retain fewer SKUs in their inventory. Fewer SKUs helps reduce initial investment and ongoing maintenance costs.

**HOW DOES FLEX CAPACITY WORK?**

![Diagram showing raw capacity and user capacity with different capacity options: 960GB, 800GB, 480GB.](image)
3. Data integrity and end-to-end data protection

No amount of drive capacity, performance, or efficiency is worth compromising data security. For that reason, market-leading data protection and encryption are built into Micron’s FlexPro firmware architecture.

**Rock-solid security:** The 5100 Series offers AES-256 bit encryption, TCG-enterprise protection, and FIPS 140-2 Validated drives to meet the most stringent security standards.

**Built-in encryption:** Data at rest is protected at the hardware level without the overhead or performance degradation of software-based encryption. The encryption key generated by the SSD can never leave the drive.

**End-to-end protection:** The SSD’s memory protection error correcting code (MPECC) engine protects user data by following it through the data path to prevent data integrity errors.

**Full power loss protection:** Data availability and integrity are not compromised in the event of a sudden power loss.
4. Unsurpassed performance

Micron’s 5100 Series SSDs are engineered to deliver lightning-fast performance that remains consistent under the most demanding enterprise data workloads.

**Designed from the ground up for performance and reliability:**

Using Micron’s 384GB 32-layer NAND, which stores more bits in the same space, the 5100 has a simpler design: Fewer NAND packages for a given capacity means fewer solder joints and simpler, lower cost PCB. This denser NAND also enables lower costs per bit, higher SSD capacity, and improved reliability.

“Micron is shaking things up a bit with its latest 5100 Series SSDs, which not only tip the scales with 8TB of storage, but also bring a blistering 74,000 random write IOPS to bear. This easily beats Samsung, the industry Goliath at this point, which musters a comparatively unimpressive 27,825 IOPS with its SM863, and it also beats out Micron’s own previous-generation M510DC SSDs, which provided 23,528 IOPS.”

— Paul Alcorn, Tom’s Hardware
Today’s enterprise data centers require high performance, maximum durability, and uncompromised security right now — as well as the agility to adapt to the exponential growth anticipated into the foreseeable future. Micron’s 5100 Series SSDs provide IT departments with the ideal upgrade path to meet these growing challenges and opportunities head-on.

Learn more about how Micron 5100 SSDs can provide the capacity and flexibility your growing enterprise needs, visit enterprisestorage.com.