

The industry-leading E3.S 1T 122TB data center SSD¹ designed for AI, cloud, enterprise, and hyperscale storage

Our lives are more digitized than ever before.

Smart devices, IoT, and other connected gadgets constantly collect and transmit data. Streaming services and social media vie for our attention. In 2010, the annual data generation was around 1.2 zettabytes. In 2025, that number is expected to grow to about 0.4 zettabytes daily (146 zettabytes annually). This is a considerable increase, and means that by the end of 2025, we should surpass the amount created in all of 2010, in less than a week.²

The power needed to do this is immense. Data centers already consume 1–2% of global electricity, and their demand is expected to see a 160% increase by 2030, largely due to AI.³ But their power budgets are expected to grow by just 7.5%.⁴

Imagine we could learn from all that data if we could efficiently ingest, store, organize, and feed it to AI. We could help solve real problems.

The Micron 6600 ION SSD addresses all these challenges.

It is a capacity-focused, PCIe Gen5 data center SSD that features full-stack integration, with Micron QLC G9 NAND, DRAM, controller, firmware, and validation to help simplify qualifications and streamline deployment.



Micron 6600 ION SSD (U.2, E3.S 1T)

1. Based on officially announced, sampling, and available 122.88TB SSDs from competitor's as per public information available at the time of this document's publication.
2. See https://www.usitc.gov/publications/332/executive_briefings/ebot_data_centers_around_the_world.pdf for more information.
3. See <https://www.goldmansachs.com/insights/articles/AI-poised-to-drive-160-increase-in-power-demand> for additional details on data center power consumption.
4. See <https://www.gminsights.com/industry-analysis/data-center-power-market> for additional details on data center power budget growth.
5. Based on public information related to commercially available data center SSDs at the time of this product's announcement, 122.88TB Micron 6600 ION E3.S 1T SSD compared to a competitor's 122.88TB U.2 SSD or 36TB HDD (all capacity statements refer to rated capacity; formatted capacity will be less; 1GB = 1 billion bytes). Class refers to capacity-focused, data center storage solutions (SSD or hard drive). Density refers to capacity per unit of rack space. Micron 6600 ION 122.88 TB SSD: 20 SSDs per 1U chassis = 2.458PB per U; competing 122.88TB U.2 SSD: 24 SSDs per standard 2U chassis = 2.928 PB per 2U = 1.464PB per U of rack space (calculated value); 24 X 36TB HDDs per 2U chassis = 0.432PB per U of rack space (calculated value). Assuming 36U of rack space for storage, Micron 6600 ION = 88.5 PB per rack; U.2 SSD = 53.1 PB per rack; HDD = 15.6PB per rack. Difference calculated as $(88.5PB / 53.1PB) - 1 = 0.67$ and $(88.5PB / 15.6PB) - 1 = 4.7$, each expressed as a percentage. Other configurations may yield different results. Legacy SSDs refer to the U.2 SSD form factor. These are examples; different configurations may yield different results.
6. Power efficiency is expressed in TB capacity / power in watts. HDD calculated TB/watt: $3 \times 36TB \text{ HDD (10 watts each)} = 108TB / 30 \text{ watts} = 3.6TB \text{ per watt}$. Micron 6600 ION calculated TB/watt: $1 \times \text{Micron 6600 ION} = 122.88TB / 25 \text{ watts} = 4.9TB \text{ per watt}$; difference calculated as $(4.9 / 3.6) - 1 = 0.37 = 37\%$ expressed as a percentage. Assumes similar carbon emissions for power sources.
7. Typical capacity-focused, data center storage solutions like 122.88TB U.2 SSDs or 36TB HDDs each require more servers and more racks to store an example, fixed amount of data (>100PB). According to public information at the time of this product's launch, 36TB HDDs typically consume up to 10 watts (10W) of power each, equivalent to 30W of power for 108TB = 3.6TB per watt, while the Micron 6600 ION SSD consumes up to 25W for 122.88TB = 4.9TB/W. For additional information on TCO, see <https://www.snia.org/forums/cmsi/programs/TCOcalc>
8. NAND leadership refers to Micron shipping the only G9 QLC NAND to OEMs in an SSD at the time of this product's announcement; SSD leadership refers to the Micron 6600 ION SSD being the industry-leading E3.S-1T 122TB data center SSD (all statements are based on public information available at the time of the product's announcement). See <https://investors.micron.com/news-releases/news-release-details/micron-announces-volume-production-ninth-generation-nand-flash> for additional details on Micron G9 NAND.

Key Benefits

Best-in-class data center storage density⁵

- Store over 2.4PB per 1U with the industry-leading E3.S 122TB SSD
- Up to 67% fewer servers are required for the same capacity
- Enable immense storage in fewer servers, fewer racks, and less physical real estate in the data center

Sustainability at scale⁶

- Up to 37% better power efficiency
- Enable immense storage in fewer servers, fewer racks, and less physical real estate in the data center, helping save power, reduce carbon emissions, and improve sustainability

Leading-edge Micron SSD and NAND technology with vertical integration

- The only G9 QLC NAND shipping to OEMs in a high-capacity data center SSD⁷
- Industry-leading six-plane NAND architecture provides for higher degrees of parallelism, improving drive performance⁸
- Qualify with confidence knowing that the Micron data center drives are vertically integrated with a Micron-built controller, NAND, DRAM, firmware, manufacturing, and validation

micron.com/6600

Maximize storage capacity, lower data center storage footprint

Traditional storage designs can make maximum storage density a constant challenge. The Micron 6600 ION redefines the capacity of a single rack, providing up to 88.5PB per rack versus 53.1PB for legacy SSDs and 25.9PB for HDDs.⁹ With 20 E3.S SSDs per 1U server, the Micron 6600 ION SSD offers 3.4X the storage capacity per rack of legacy HDDs and 1.7X the capacity per rack of legacy U.2 SSDs, requiring less floor space and fewer servers, improving storage scalability and TCO.¹⁰

Footprint factors	Micron 6600 ION 122.88TB SSD	Competing 122.88TB U.2 SSD	Datacenter-class HDD	The 6600 advantage
Capacity per drive	122.88TB	122.88TB	36TB	Up to 3.4X better capacity per drive
Number of drives (chassis)	40 SSDs (2U)	24 SSDs (2U)	40 HDDs (2U)	Up to 1.7X drives per U
Rack capacity (PB per rack)	88.5PB	53.1PB	25.9PB	Up to 3.4X capacity per rack

Table 1: Micron 6600 ION SSD capacity, footprint comparison vs. HDD-based capacity solutions

Reduce energy and cooling costs, lower carbon footprint at scale

Beyond capacity and density, the Micron 6600 ION SSD transforms energy economics in the data center by helping reduce power per PB, helping reduce emissions, and cooling demands.

The Micron 6600 ION 122TB SSD is rated at a maximum power consumption of 25W, while traditional 36TB HDDs consume about 10 watts each. The Micron 6600 SSD consumes fewer watts for a similar capacity. This helps drive less cooling, lower energy costs, and fewer emissions, helping you meet your sustainability targets while keeping TCO under control.

Energy, cooling factors	122.88TB Micron 6600 ION SSD	Competing 122.88TB U.2 SSD	Datacenter-class HDD	The 6600 advantage
Rated power consumption per drive	25 watts	25 watts	10 watts	Up to 5 watts less (3x HDD offer similar total capacity)
#drives per 36U of rack space	720	432	720	Up to 1.7X more drives per rack
PB in 36U of rack space	88.5	53.1	25.9	Up to 5.7X better capacity per rack
TB managed per watt	4.9	4.9	3.6	Up to 37% better TB per watt power density

Table 2: Micron 6600 ION SSD energy efficiency improvements over competitive SSD and HDD-based capacity solutions

Leading-edge Micron technology with vertical integration

Micron continues to push the boundaries of data storage technology with industry-leading, ninth-generation QLC NAND-based SSDs available. Built on an innovative, six-plane QLC NAND architecture that provides higher degrees of parallelism for more simultaneous READ/WRITE commands, this leading Micron QLC NAND technology offers an I/O rate of up to 3.6 GB/s.

The Micron 6600 ION SSD leverages a similar, vertically integrated architecture to other Micron data center SSDs, helping confidently enable qualification.¹¹

Micron G9 QLC feature	The Micron G9 QLC advantage
G9 QLC NAND in an SSD	Leading NAND technology for capacity-focused, data center SSDs
Six-plane architecture	Improved parallelism for faster IO
Vertical integration	Qualify with confidence: Micron NAND, DRAM, controller, firmware, validation, and manufacturing.

Table 3: Micron 6600 ION SSD features and E3.S density comparisons

9. Calculated assuming 36U of rack space available for storage: Micron 6600 ION SSD (122.88TB X 20 SSDs X 36U of rack space) = 88.47PB; Competitor's U.2 SSD (122.88TB X 24 SSDs in 2U X 18 (2U chassis in 36U)) = 53.084PB; Hard drives: (36TB X 40 HDDs in 2U X 18 (2U chassis in 36U)) = 25.9PB per rack.

10. Calculated as (Micron 6600 ION SSD capacity per rack) / (competitor's SSD or HDD option capacity per rack) - 1, expressed as a percentage. Assuming fixed floor space per rack for each storage device type. Other configurations may vary.

11. Vertical integration refers to Micron designing and/or manufacturing of the SSD controller, firmware, NAND, DRAM, and SSD assembly and test.

Micron 6600 ION SSD key specifications

SSD capacity ¹²		30.72TB		61.44TB		122.88TB	
Form factors	U.2 (15mm)	✓		✓		✓	
	E3.S 1T (7.5mm)	✓		✓		✓	
Performance ¹³ 128KB sequential transfers, 4KB random transfers	Sequential read (MB/s)	14,000		14,000		14,000	
	Sequential write (MB/s)	2,700		2,900		3,000	
	Random read (IOPS)	2,000,000		2,000,000		2,000,000	
	Random write (4KB, IOPS)	100,000		40,000		40,000	
	Random write (16KB, IOPS)	100,000		40,000		40,000	
	Read latency (μs, QD1, typical)			70			
Power Consumption & Use Active average, RMS	Maximum			≤25W			
	Idle			≤5W			
Endurance by Workload ¹⁴	100% 128KB sequential writes	1.0 SDWPD				1.0 SDWPD	
	100% 16KB random write	0.3 RDWPD				0.3 RDWPD	
	100% 4KB random write	0.3 RDWPD				0.075 RDWPD	
	Indirection unit	4KB				16KB	
Basic Attributes	Interface			PCIe Gen5 1x4 NVMe (v2.0b)			
	NAND			Micron G9 QLC NAND			
	MTTF ¹⁵			2.5 million device hours			
	UBER			<1 sector per 10 ¹⁷ bits read			
Common features	OCP and NVMe			OCP 2.6, NVMe 2.0d, NVMe-MI 1.2d			
	Compliance and FIPS			TAA-compliant; FIPS 140-3 L2 certifiable			
	Security			CNSA 2.0, SPDM 1.2, Micron SEE, SED options			
	Additional			SGLs, SRIS, PCIe lane reversals			

Table 4: Micron 6600 ION SSD specifications overview

Note: All values provided are for reference only and are not warranted values. For warranty information, visit <https://www.micron.com/sales-support/sales/returns-and-warranties/enterprise-ssd-warranty> or contact your Micron sales representative. Values represent the theoretical maximum endurance for the given transfer size and type. Actual lifetime will vary by workload. Actual power consumption will vary by workload. All performance values shown are for 25-watt maximum power consumption.

Micron 6600 ION SSD part numbers

The Micron 6600 ION SSD part number information is provided below for configuration-dependent values (shown in bold). Other part number values in the example part number are fixed. See the parts catalog at micron.com/660ION for more.

MT

FD

L

BQ

30T7

Q

HF

-

1

BQ

4

J

AB

YY

Form factor

AL = U.2 (15mm)

BQ = E3.S 1T (7.5mm)

Drive Capacity

30T7 = 30.72TB

61T4 = 61.44TB

122T8 = 122.88TB

Default Sector Size

1 = 512 bytes

4 = 4096 bytes

Extended Options

AB = Standard

FC = FIPS (140-3 L2 certifiable + TAA)

Extended Firmware Features

J = OCp 2.6 (Non-SED)

D = OCp 2.6 + SED (TCG Opal)¹⁶

12. Rated capacity; formatted capacity will be less; 1GB = 1 billion bytes.

13. Performance measured under the following conditions: Steady state as defined by SNIA Solid State Storage Performance Test Specification Enterprise v1.1; Drive write cache enabled; NVMe power state 0; Sequential workloads measured using FIO with a queue depth of 128; Random workloads measured using FIO with a queue depth of 512.


14. Actual lifetime will vary by workload. Total bytes written calculated assuming drive is 100% full (user capacity) with workload of 100% 4KB random in TB (first value) or 100% 128KB sequential (second value) in TB. Refer to the percentage used in the SMART/Health information (Log Identifier 02h) to check the device life used.

15. Product achieves MTTF based on population statistics, not relevant to individual units. 2.5M hour MTTF at 50°C in SMART per OCp REL-1.

16. No hardware, software or system can provide absolute security under all conditions. Micron assumes no liability for lost, stolen or corrupted data arising from the use of any Micron products, including those products that incorporate any of the mentioned security features.

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