The world's fastest data center SSD

The Micron 9550 NVMe SSD is simply the world's fastest data center SSD.[1] It is built with industry-leading innovation to deliver superior PCIe® Gen5 performance, flexibility, and security for AI and beyond.

Greater speed and efficiency for data-intensive workloads

The Micron 9550 SSD leads the pack with best-in-class performance[2] and power efficiency.[3,4]

Maximize GPU utilization

This leading SSD eclipses its competitors in AI-critical workloads such as Graph Neural Network (GNN) training, server memory extension (memory-mapped, file storage on the SSD), and standard AI performance benchmarks.[5]

Vertically integrated technology, flexible design options and security

Micron IP and components are fully vertically integrated with Micron-designed controller ASIC, 232-layer NAND, DRAM, firmware, and validation.

Micron 9550 NVMe SSD

1. Among currently in production Gen5 data center performance SSDs from the top competitive suppliers of enterprise SSDs with at least 10% of market share by revenue as of February 2024, as noted in Forward Insights "SSD Supplier Status Quarterly Q4" report. Faster performance refers to MB/s or IOPS for 1 DWPD 7.68TB. Comparison based on public information for 7.68TB (unformatted capacity; 1GB = 1 billion bytes, formatted capacity is less) available at the time of this product announcement.
2. Performance refers to publicly available specifications for these SSDs (IOPS, throughput, or both) relative to the SSDs in footnote 1.
3. Power efficiency refers to units of work done divided by power consumed in doing that work. Examples of units of work included, but are not limited to, IOPS, MB/s, operations per second, sample rates, and similar data center storage-related activities.
4. Class refers to SSDs that meet the criteria in footnote 1.
5. Based on workload performance measurement by Micron engineering among SSDs that meet the criteria in footnote 1. Details are in Table 2. Other workloads may yield different results.

Micron 9550 SSD key benefits

The world's fastest data center SSD

The Micron 9550 SSD is a breakthrough, high-performance storage device that offers best-in-class performance and power efficiency.

It is designed from the ground up to accelerate the most demanding data center workloads.

The ideal SSD for AI

GPUs are the tool of choice for AI and keeping them fed with data is paramount. Both sequential and random read performance are critical for AI. LLMs require high sequential reads while GNNs require high random read performance.

Micron innovation built in

The Micron 9550 SSD was developed in close collaboration with tier 1 OEMs for feature support and designed for qualification by all leading OEMs.

Built with NVMe 2.0 and OCP 2.0 support (with additional OCP 2.5 telemetry support), security, and SPDM 1.2 (device security for SSD authentication and end-user confidence).

Self-encrypting drive (SED) options help keep data safe by adding AES-256 encryption for hardware-based data encryption, with no loss of SSD performance.

Micron's Secure Encrypted Environment (SEE) provides dedicated security processing hardware with physical isolation for improved security.

Options are also available for FIPS 140-3 Level 2 and TAA compliance for US federal government procurement requirements.

micron.com/9550

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Unleash the power of innovative storage with the Micron 9550 SSD—a trailblazer in PCIe Gen5 SSD speed and efficiency. The Micron 9550 SSD is tailored for the most challenging AI and data center workloads to process immense data sets with class-leading power and energy efficiency.

Performance and efficiency	Micron 9550 benefit
Sequential read: 14,000 MB/s	Industry-leading read throughput
Sequential write: 10,000 MB/s	Up to 67% better write throughput
Random read: 3,300 KIOPS	Up to 35% better
Random write: 380 KIOPS	Up to 27% better
Superior power efficiency for AI workloads[6]	GNN training: Up to 43% less SSD power and 29% less system energy used
	SSD to GPU direct IO: Up to 81% less average SSD energy per 1TB of data transferred
	Input processing and results delivery: Up to 13% less system energy and 35% less SSD energy used
	AI models for language processing use up to 21% less SSD energy

Table 1: Performance and efficiency comparisons: Micron 9550 SSD and competitive SSDs

The ideal SSD for artificial intelligence

AI workloads demand performance. Leading sequential and random performance are imperative for performant AI. The Micron 9550 SSD delivers in some of the most demanding AI use cases. Don't allow GPUs to sit idle waiting on data from storage—the Micron 9550 SSD keeps them busier than ever.

AI use cases	Micron 9550 benefit
Graph Neural Network (GNN) training[6]	33% faster training
	29% less system power used
	60% higher SSD performance
AI training offload	34% faster throughput
	80% better power efficiency
	81% less power used

Table 2: AI workload comparisons: Micron 9550 SSD and competitive SSDs

Micron innovation, built in

The Micron 9550 SSD brings vertically integrated technology, a broad range of capacities and form factors, open standard support, and security features that are built in.[7]

Micron innovation	Benefit
Vertical integration	Micron IP and components are fully vertically integrated including, Micron-designed SSD controller ASIC, Micron's leading 232-layer NAND, Micron DRAM, and Micron produced and validated SSD firmware.
Broad range of capacities and form factors	The capacity range and form factors needed to fit multiple use cases: 4TB to 32TB capacity and U.2, E1.S, and E3.S standard form factors.
Open standard support	Compliance with the Open Compute Project (OCP) 2.0 (r21) standards helps enhance interoperability, simplify qualification, and speed deployment. Support for OCP 2.5 telemetry enhances data logging to help simplify optimization and diagnostics.
Security features built in[7]	SPDM 1.2 device security, self-encrypting drive (SED) options, Micron Secure Execution Environment (SEE, a dedicated security processing unit electrically isolated from the other [open] microprocessor(s) inside the SSD controller), FIPS 140-3 Level 2, and TAA compliant options.

Table 3: Micron innovations

6. These and subsequent power efficiency and performance statements are based on Micron engineering test results in AI training offload, measured SSD-to-GPU direct data transfer rate with a 1TB dataset, and standard AI performance benchmarks. Values are maximums observed during testing. Performance improvements are calculated as the percentage difference between the Micron 9550 SSD performance and competitor drives in footnote 1.
7. 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.

Micron 9550 SSD key specifications

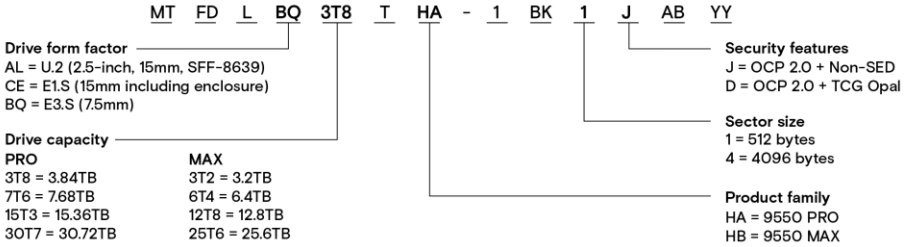
Form Factors		Micron 9550 PRO Read-intensive, 1 drive write per day				Micron 9550 MAX Mixed-use, 3 drive writes per day			
U.2 (15mm)		✓	✓	✓	✓	✓	✓	✓	✓
E3.S (7.5mm)		✓	✓	✓	✓	✓	✓	✓	✓
E1.S (15mm)		✓	✓	✓	–	–	–	–	–
Capacities[11]		**3.84TB**	**7.68TB**	**15.36TB**	**30.72TB**	**3.2TB**	**6.4TB**	**12.8TB**	**25.6TB**
Sequential read (MB/s)[8]		14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000
Sequential write (MB/s)[8]		6,000	10,000	10,000	10,000	6,000	10,000	10,000	10,000
Random read (KIOPS)[9]		3,000	3,300	3,300	2,800	3,000	3,300	3,300	2,800
Random write (KIOPS)[9]		300	380	400	400	540	640	720	700
70/30 Random read/write (KIOPS)		510	720	970	1,100	760	1,000	1,300	1,300
Latency (TYP)[10]		60 (read) 15 (write)	60 (read) 15 (write)	60 (read) 15 (write)	60 (read) 15 (write)	60 (read) 15 (write)	60 (read) 15 (write)	60 (read) 15 (write)	60 (read) 15 (write)
Endurance (TBW)[11]	RND	7,008	14,016	28,032	56,064	17,520	35,040	70,080	140,160
	SEQ	29,400	58,300	104,500	201,200	37.200	74,200	143,100	282,600

Micron 9550 SSD: Common Features		
Basic Attributes	Interface	PCIe Gen5 1x4, NVMe v2.0b
	NAND	Micron 232-layer 3D TLC NAND
	OCP compliance	OCP 2.0 (r21) compliance
Reliability	MTTF[12]	MTTF: 2.0M hours @ 0–55°C and 2.5M hours @ 0–50°C
	UBER	<1 sector per 10^{17} bits read
	Warranty	5 years
Environmental Characteristics	Power	Sequential read (average RMS value): up to 18W (PRO and MAX) Sequential write (average RMS value): up to 16W (PRO and MAX)
	Operating Temp.	0–70°C

Notes: All values provided are for reference only and are not warrantied 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.

Micron 9550 SSD part numbers

Micron 9550 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/9550 for more information.



8. Unformatted. 1GB = 1 billion bytes. Formatted capacity is less.
9. 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 32; Random READ workloads measured using FIO with a queue depth of 512 (1,100,000 IOPS statement based on 4K sector size; Random WRITE workloads measured using FIO with a queue depth of 128).
10. Latency values measured with random workloads using FIO, 4KB transfers, queue depth = 1; TYP = median, 50th percentile.
11. 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 percentage used in the SMART/Health information (Log Identifier 02h) to check the device life used.
12. Product achieves MTTF based on population statistics not relevant to individual units.

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