

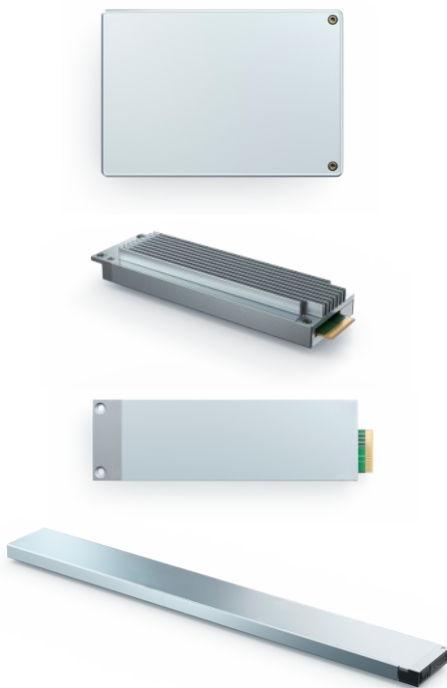


The Industry's Most Advanced PCIe 4.0 Portfolio.¹

Performance-Tuned for the Real World.

Product Brief

TLC 3D NAND SSDS



Our broadest and highest-performing family of TLC 3D NAND SSDs, Solidigm™ D7-P5520 and D7-P5620 drives (formerly Intel®), are the latest addition to the performance-optimized D7 series. These drives provide standard endurance and medium endurance, respectively, across an extended range of capacities and form factors. Building from multiple generations of PCIe 4.0 and deep industry insight, this is the industry's most advanced PCIe 4.0 portfolio with performance tuned for real-world applications. They efficiently accelerate compute and storage workloads in cloud and enterprise across a breadth of 1U and 2U server configurations. Designed and tested with zero tolerance for data errors² and consistently durable performance,³ they can be deployed with the utmost confidence.

Product series highlights

Compared to the previous generation of PCIe 4.0 products, performance has been significantly boosted across the board, enabling workload acceleration in mixed and read-intensive applications.

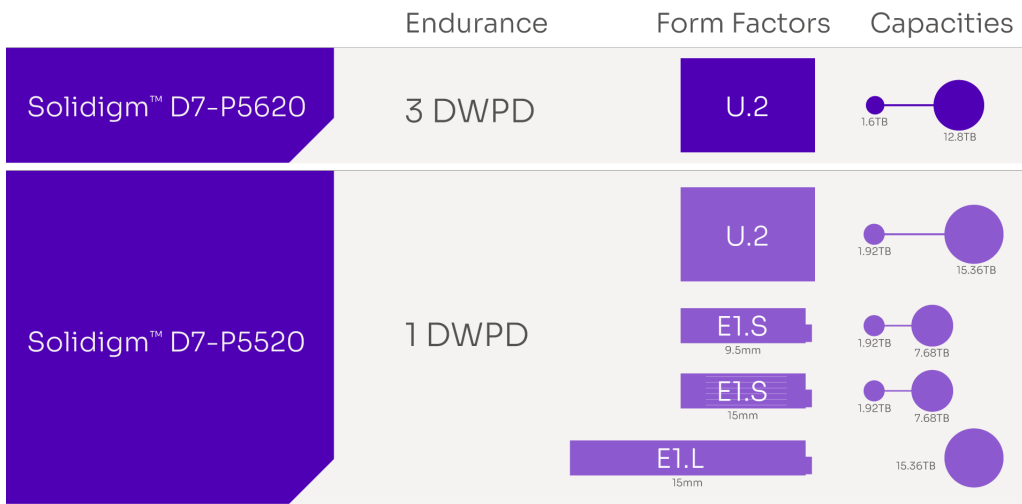
Read intensive

	4K Random workload (Higher is better)		Quality of service (4 KB, lower is better)
	4K Random read	4K Random write	Random read (QD1) 4 9s
3.84 TB Solidigm D7-P5520⁴ (versus 3.84 TB Solidigm D7-P5510)	Up to 42% higher	Up to 17% higher	Up to 43% better

Write intensive

	4K random workload (Higher is better)		Quality of service (4 KB, lower is better)
	4K Random read	4K Random write	Random write (QD1), 6 9s
3.2 TB Solidigm D7-P5620,⁵ R/W: 1,000K/341K (versus 3.2 TB Solidigm DC P4610, R/W: 638K/222K)	Up to 56% higher	Up to 53% higher	Up to 76% better

Form factor and capacity expansion enable server modernization opportunities spanning a broad range of 1U and 2U configurations for compute and storage servers.



With NAND media, firmware, and controllers common to all SKUs in the family, customers have an opportunity to ease qualifications across form factors and capacities, given the possibility of data sharing.

Advanced feature set

Building on our previous generation PCIe 4.0 data center SSDs, the Solidigm D7-P5520 and D7-P5620 offer a wide range of new features (in addition to features supported by the Solidigm D7-P5510) that are essential to building modern data centers. Some of the notable drive features include:

Features	Benefits
PCIe VDM support through MCTP, enhanced SMART monitoring, support for cloud C0 log page, and NVMe Express (NVMe) MI 1.1	Reports drive health status without disrupting the I/O data flow over both PCIe and SMBus.
Variable sector size	Support for multiple sector sizes: 512/520/4,096/4,104/4,160 B. Expanded LBA format support provides flexibility to host software to pass metadata and protection information along with payload data.
Drive and data security—OPAL 2.0, configurable namespace locking, sanitize, secure erase	Enables drive-level security for data at rest.
Scatter gather list with dataset management	Improves performance by removing the need for data alignment at the host with concurrent TRIM operations.
Improved telemetry logs	Makes a wide range of stored data accessible and includes intelligent error tracking and logging increasing the reliability of finding and mitigating issues, and it supports error tracking and logging to increase the realibility of finding and mitigating issues. It also support accelerated qualification cycles—all of which can result in increased IT efficiency.
Dynamic multiple namespaces	Enhances runtime provisioning and storage management. Overprovisioning of drives with single, smaller namespaces can improve endurance and random write performance.
Device self-test	Improves customer experiences by helping ensure devices operate as expected. The host system can request the storage device (SSD) to perform tests to ensure it is functioning properly, including SMART check, volatile memory backup, NVMe integrity, and drive life.

Optimized for real-world cloud and enterprise storage workloads

Overall performance improvements combined with our deep, industry-wide technical insight deliver performance tuned for the real world, helping to efficiently accelerate compute and storage workloads for cloud and enterprise.

Examples of unlocking cloud storage workloads—Cloud compute services are used across a range of scenarios such as data backup, disaster recovery, databases, email, and virtual desktop. These usages present a highly random, mixed workload environment valuing low latency to improve the user experience, and the Solidigm D7-P5520 delivers nearly 11%⁶ better response time than prior-generation drives. Server-based storage solutions using virtualization software are another common cloud storage workload. VMs in these workloads create a mix of reads and writes that can be random or sequential. Compared to prior-generation drives, the Solidigm D7-P5520 accelerates these workloads with up to 13% better random read IOPS and up to 11% better sequential write throughput.⁷

Examples of unlocking enterprise storage workloads—As the name implies, general purpose servers (GPS) support a range of workloads that can span databases, email, unified communications, content delivery, and more. Given the nature of these servers, throughput and latency in a mixed environment is valued. Compared to the prior generation, the Solidigm SSD D7-P5520 accelerates 80/20 sequential/random read throughput up to 15% and reduces latency up to 13.5%.⁸ Data pipelines serving advanced workloads such as big data, machine learning, and AI are increasingly deployed in enterprises. I/O patterns vary widely through the pipeline phases, and the Solidigm D7-P5520 delivers with up to 7 % better throughput for data-ingestion workloads, up to 6.7% read latency improvement in a 50/50 workload for data preparation, and up to 23.7% higher random read IOPS for training workloads compared to the prior generation.⁹

TCO savings opportunities

Whether solving for storage-footprint optimization or for performance density, expanded capacity ranges and accelerated performance enable a range of cost-saving opportunities.

2U server examples

15.36 TB D7-P5520 versus 8 TB DC P4510		Targeting 368 TB capacity ¹⁰	
Space		50% smaller footprint	
Power		44% reduction	

15.36 TB D7-P5520 versus 8TB DC P4510		Targeting 10M IOPS ¹¹	
Space		50% smaller footprint	
Power		28% reduction	
Power efficiency (IOPS/Watt)		43% better	

Deploy with confidence

Solidigm D7-P5520 and Solidigm D7-P5620 drives are designed and tested with a passion for—and a relentless focus on—quality, reliability, and consistency, so you can deploy them with confidence.

Quality and reliability designed into every drive:

- In-house design or design control of all critical components
- Robust third-party component quality assurance (QA) program
- Enhanced Power Loss Management firmware checks to ensure data accuracy¹²

Drives validated and tested above and beyond:

- **Data reliability:** Data reliability is enhanced on multiple levels with PLI testing that simulates real-world conditions, UBER testing to 10x beyond JEDEC specification, and SDC testing at the highest levels in the industry.²
- **Drive reliability:** Proven reliability delivers AFR significantly better than JEDEC in high-volume manufacturing.¹³ Robust RDT and margin-corner testing helps ensure drives perform reliably in real-world conditions.
- **Consistency:** Up to 90% IOPS consistency and <0.3% IOPS variability provides consistent performance over life of the drive³

To learn more about how Solidigm D7-P5520 and Solidigm D7-P5620 drives can help you unlock the value of your data, visit our value calculator at: [Solidigm.com](https://www.solidigm.com).

Performance and features at a glance		
Model	Solidigm D7-P5520	Solidigm D7-P5620
Capacity and form factor	U.2 15 mm: 1.92 TB, 3.84 TB, 7.68 TB, 15.36 TB E1.S 9.5 mm/15 mm: 1.92 TB, 3.84 TB, 7.68 TB E1.L 9.5 mm: 15.36 TB	U.2 15 mm: 1.6 TB, 3.2 TB, 6.4 TB, 12.8 TB
Interface	PCIe 4.0 x4, NVMe 1.4, NVMe-MI 1.1	
Drive manageability	NVMe-MI 1.1, PCIe over vendor-defined messages (VDM), PCIe over Management Component Transport Protocol (MCTP), OCP cloud CO log page support	
Media	Solidigm 144-L 3rd generation 3D NAND (formerly Intel®)	
Performance	4K random read/write up to 1.1M/220K IOPS	4K random read/write up to 1.1M/390K IOPS
	128K sequential read/write up to 7,100/4,200 megabytes per second (MB/s)	128K sequential read/write up to 7,100/4,200 megabytes per second
Endurance (DWPD, 5 years)	Up to 1	Up to 3
Warranty	Five-year limited warranty	