



PRODUCT BRIEF



2.5-inch U.2 NVMe SSD
800GB, 1.6TB, 3.2TB, 6.4TB,
7.68TB, 3.84TB, 1.92TB and 960GB¹

Ultrastar® DC SN640

The Dynamic Data Center Environment

IT organizations have to optimize their infrastructure for the dynamic data center environment by improving utilization of storage capacity for demanding new workloads, improving responsiveness for critical applications, maintaining uptimes and availability, and lowering their TCO. With the advent cloud architectures driving new on premise data center designs utilizing converged, hyper converged, and composable infrastructure with higher performance CPUs, traditional SATA-based storage have become the bottleneck. Whereas, NVMe-based SSDs are designed specifically to maximize performance of flash memory and are widely deployed in the public cloud offering flexibility and scalability at lower costs.

The new Ultrastar® DC SN640 NVMe™ SSD improves performance and responsiveness over the current generation DC SN630 NVMe SSD and offers capacities including 960GB, 1.92TB, 3.84TB, and 7.68TB in U.2. (Gen3.1 × 4). The SN640 includes Western Digital's industry-leading 96L BiCS4 3D TLC NAND and in-house NVMe 1.3 controller providing 5x read performance improvement over SATA SSDs. The DC SN640 is a cost-optimized NVMe SSDs for broad deployment into cloud/hyperscale and on-prem data centers. The SN640 includes enterprise reliability features including power-loss protection, end-to-end data path protection, and a 5-year limited warranty.

Features

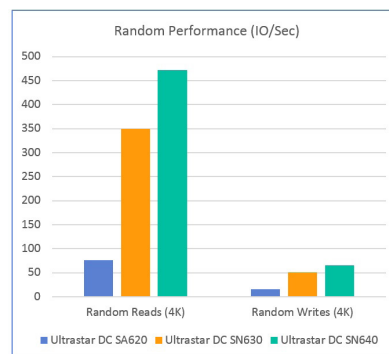
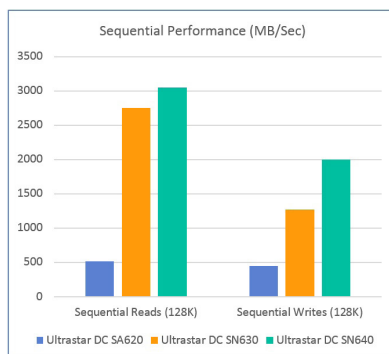
- Western Digital NVMe 1.3 compliant controller; PCIe Gen3.1x4
- Western Digital BiCS4 96L 3D TLC NAND
- 0.8 and 2.0 DWPD
- Full data-loss protection
- MTBF rating of 2 million hours
- Instant Secure Erase (ISE) and AES-256 encryption
- 5-year limited warranty

Benefits

- Optimized for all common read-intensive and mixed used workloads
- Tunable capacity for application performance
- Up to 195K IOPS (70/30 random mixed workload)
- 5x read performance improvement over SATA SSDs and 65% less power consumption compared to 25W performance NVMe SSDs
- Vertically integrated with proven controller architecture accelerates qualification

Specialized for the Following Applications

- Cloud and hyperscale storage
- Software Defined Storage
- File, Block and Object Storage applications
- Direct-attached Storage (DAS)
- Hyper-converged Infrastructure
- Virtualization



Designed for Workload Flexibility

The DC SN640 is offered in two endurance classes: 0.80 DW/D and 2 DW/D, each for a period of five years. The 0.80 DW/D swim lane is designed for read intensive applications while the 2 DW/D swim lane can be deployed in mixed-use workloads requiring higher performance and endurance levels over the life of the drive providing IT organizations a way to optimize for application performance.

Safeguarding Data

Regulatory and privacy requirements demand the need for increased data security for data at rest. The Ultrastar DC SN640 with Instant Secure Erase (ISE) helps safeguard data with AES-256 encryption engine and provides instant erase upon decommissioning and recommissioning the drive. Secured Firmware downloads with RSA authentication ensure that the drive runs authentic Western Digital firmware only.

Ultrastar DC SN640 Specifications

Model Information								
Endurance ²	2DW/D	2DW/D	2DW/D	2DW/D	0.8DW/D	0.8DW/D	0.8DW/D	0.8DW/D
Capacity	800GB	1,600GB	3,200GB	6,400GB	960GB	1,920GB	3,840GB	7,680GB
Model Number	WUS4CB080D7P3E3	WUS4CB016D7P3E3	WUS4CB032D7P3E3	WUS4CB064D7P3E3	WUS4BB096D7P3E3	WUS4BB019D7P3E3	WUS4BB038D7P3E3	WUS4BB076D7P3E3
Part Number ³	OTS1952	OTS1953	OTS1954	OTS1955	OTS1927	OTS1928	OTS1929	OTS1930
Maximum Petabytes Written ²	2.92	5.84	11.68	23.36	1.4	2.8	5.61	11.21
Configuration								
Interface	PCIe Gen 3.1 x4 (Compliant to NVMe 1.3)							
Form Factor	U.2 2.5-inch drive							
Flash Memory Technology	Western Digital BiCS4 3D TLC NAND							
Performance ⁴								
Read Throughput (max MiB/s, Seq 128KiB)	3K	3.1K	3.1K	3.1K	3K	3.1K	3.1K	3.1K
Write Throughput (max MiB/s, Seq 128KiB)	1K	2K	1.8K	1.8K	1.1K	2K	1.8K	1.8K
Read IOPS (max, Rnd 4KiB)	414K	473K	468K	469K	413K	472K	469K	467K
Write IOPS (max, Rnd 4KiB)	108K	116K	115K	116K	44K	63K	63K	65K
Mixed IOPS (max, 70/30 R/W, 4KiB)	184K	307K	286K	304K	111K	194K	174K	187K
Read Latency (µs, avg.) ⁵	204	208	225	225	210	208	221	225
Reliability								
Uncorrectable Bit Error Rate (UBER)	1 in 10 ¹⁷							
MTBF ⁶ (M hours)	2							
Annualized Failure Rate (AFR) ⁶	0.44%							
Availability (hrs/day x days/wk)	24x7							
Limited Warranty ⁷ (years)	5							
Power								
Requirement (DC +/- 10%)	+12V							
Operating Power States (W, typical)	10, 11, 12							
Idle (W, average)	< 5W							
Physical Size								
z-height (mm)	7.00 +0.2/-0.5 (including labels)							
Dimensions (width x length x mm)	69.85 (+/- 0.25) x 100.45							
Weight (g, max)	95							
Environmental								
Operating Temperature ⁸	0°C to 78°C							
Non-Operating Temperature ⁹	-40°C to 85°C							

¹ One gigabyte (GB) is equal to 1,000MB (one billion bytes) and one terabyte (TB) is equal to 1,000GB (one trillion bytes) when referring to solid-state capacity. Accessible capacity will vary from the stated capacity due to operating environment.

² Endurance rating based on DW/D using 8KiB random write workload over 5 years.

³ Encryption setting supported Instant Secure Erase.

⁴ Based on internal testing. Performance will vary by capacity point, or with the changes in useable capacity. Consult product manual for further details. All performance measurements are in full sustained mode and are peak values. Subject to change.

⁵ Average read latency at 4KiB, QD=1.

⁶ MTBF and AFR specifications are based on a sample population and are estimated by statistical measurements and acceleration algorithms under typical operating conditions for this drive model. MTBF and AFR ratings do not predict an individual drive's reliability and do not constitute a warranty.

⁷ The warranty for the product will expire on the earlier of (i) the date when the flash media has reached one-percent (1%) of its remaining life or (ii) the expiration of the time period associated with the product.

⁸ Composite temperature reading.

⁹ Values are based on ambient temperature. Avoid non-operational exposure to temperatures in excess of 40°C for periods exceeding three months.

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