Western Digital.

Data Center Storage Solutions

Powering the Data Revolution

For more than 50 years, Western Digital® has been enabling data at scale. Our data center SSDs, HDDs and platforms enable our customers to gain and leverage insights that they can extract from the zettabytes of data being generated by smart factories, connected endpoints, autonomous vehicles, IoT devices and more. Our robust portfolio and our outstanding customer service help companies and individuals transform their businesses with data.

Essential Data Infrastructure for the Zettabyte Age

Western Digital.

Ultrastar® Data Center SSDs

- Portfolio breadth and depth for cloud computing to high-performance servers
- Industry-leading NAND
- Vertically integrated controllers and firmware

Ultrastar Data Center HDDs

- 1st with OptiNAND™-enabled 22TB CMR HDDs
- 1st with Energy-Assisted Magnetic Recording technology
- 1st with Triple Stage Actuator
- 1st with helium-filled HDDs

Ultrastar and OpenFlex™ Platforms

- High-capacity disk storage platforms
- High-performance flash storage platforms
- Innovative ArcticFlow™ & IsoVibe™ technologies
- Open Composable Infrastructure Solutions

Trusted Storage Delivering Innovation Across All Technologies

NVMe™ SSDs

Low-latency, high-performance NVMe SSDs to accelerate your data center workloads

Helium-filled HDDs

Highest capacity HDDs for data center expansion and cost-efficient scale

Air-filled HDDs

Economical and reliable data access for traditional data center application

Platforms

Complete portfolio of storage platforms and servers for SATA, SAS, NVMe and NVMe-oF™

Optimize Your Data Center with Ultrastar SSDs

	Ultrastar DC SN840	Ultrastar DC SN650
Compute Intensive/HPC	✓	
All Flash Array Primary Storage	✓	
Relational Databases	✓	
Artificial Intelligence/Machine Learning	✓	✓
Converged/Hyperconverged Infrastructure	✓	✓
OLTP	✓	
OLAP	✓	
Virtualization	✓	✓
noSQL Databases	✓	✓
Content Caching	✓	✓
File/Object Storage	✓	✓
Cloud Compute/Cloud Storage		✓

Ultrastar Data Center NVMe SSDs

	Ultrastar DC SN840	Ultrastar DC SN650
Interface	PCIe 3.1 1×4, 2×2, NVMe 1.3c	PCIe 4, 1×4, NVMe 1.4
Form Factor	U.2 15mm	U.3/U.2 15mm
Endurance/Capacity (GB)[1,2]	3 DW/D: 1600, 3200, 6400 1 DW/D: 1920, 3840, 7680, 15360	1 DW/D
NAND	3D TLC	
Seq R/W (MB/s), up to[3]	3,470/3,300	6,600/2,800
Random R/W (KIOPS), up to	780/257	950/110
Reliability[4]	Unrecoverable Bit Error Rate (UBER): 1 in 10^{17} MTBF (M hours): 2.5 AFR: 0.35%	Urecoverable Bit Error Rate (UBER): 1 in 10^{17} MTBF (M hours): 2 AFR: 0.44%
Security	SE, ISE, TCG Ruby	SE, ISE

* TCG Ruby Performance Values

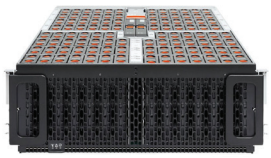
Ultrastar Data Center Helium-filled HDDs

	CMR with HelioSeal®				
	Ultrastar DC HC570	**Ultrastar DC HC560**	**Ultrastar DC HC550**	**Ultrastar DC HC530**	**Ultrastar DC HC520**
Interface	SATA 6Gb/s, SAS 12Gb/s				
Rotational speed (RPM)	7200				
Form Factor	3.5-inch data center HDD				
Capacity (TB)	22	20	18, 16	14	12
Format	512e				
Sustained transfer rate (MB/s, max)[5]	291	269	269 (18TB) 262 (16TB)	267	243
Idle_A (W), SATA/SAS[6]	5.7/6.0	6.0/6.1	5.6/5.8	5.5/5.9	5.0/6.1
ArmorCache™	Yes				
Reliability[7]	MTBF (M hours): 2.5, projected AFR: 0.35%, projected Workloads: up to 550TB/year			MTBF (M hours): 2.5 AFR: 0.35% Workloads: up to 550TB/year	
Security	Base (SE), SED			Base (SE), SED, SED-FIPS	

Ultrastar Data Center HDDs

	CMR, Air-filled			
	Ultrastar DC HC330	**Ultrastar DC HC320**	**Ultrastar DC HC310**	**Ultrastar DC HA210**
Interface	SATA 6Gb/s, SAS 12Gb/s			SATA 6Gb/s
Rotational speed (RPM)	7200			
Form Factor	3.5-inch data center HDD			
Capacity (TB)	10	8	6, 4	2, 1
Format	512e 512n available on 4TB capacity			512n
Sustained transfer rate (MB/s, max)	262	255	255 233 w/512n	200 (2TB) 184 (1TB)
Idle (W), SATA/SAS	8.0/9.0	7.4/8.4	5.9/7.0	5.9/NA
Reliability	MTBF (M hours): 2 AFR: 0.44% Workloads: up to 550TB/year			
Security	Base (SE), SED, SED-FIPS			SE

Ultrastar Data Center Platforms

	JBOD	
		
	Ultrastar Data60	**Ultrastar Data102**
Storage Type	HDD	
Interface	SATA/SAS	
# Drives (up to)	60	102
Capacity (up to)	1.3PB	2.2PB
Dimension	4U	
Features	IsoVibe ArcticFlow	

OpenFlex Data Center Platforms

	JBOD	
	OpenFlex Data24 (Standard)	**OpenFlex Data24**
Storage Type	SSD	SSD
Interface	NVMe (NVMe-oF) 2*RapidFlex NICs	NVMe (NVMe-oF) 6*RapidFlex NICs
# Drives (up to)	24	24
Capacity (up to)	368TB	368TB
Dimension	2U	2U
Features	Low Latency Ideal SAS replacement	Low Latency High Performance

[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 4KiB random write workload over 5 years.

[2] Endurance rating based on DW/D using 4KiB 100% random write and JESD 219 workloads over 5 years.

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

[4] 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.

[5] Idle specification is based on use of Idle_A

[6] Based on internal testing; performance may vary depending on host environment, drive capacity, logical block address (LBA), and other factors. 1MiB = 1,048,576 bytes (2^20), 1MB = 1,000,000 bytes (10^6)

[7] Final MTBF and AFR specifications will be based on a sample population and are esti¬mated by statistical measurements and acceleration algorithms under typical operating conditions, typical workload and 40°C device-reported temperature. Derating of MTBF and AFR will occur above these parameters, up to 550TB/year and 60°C (device reported temperature). MTBF and AFR ratings do not predict an individual drive's reliability and do not constitute a warranty.

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