# Western Digital.

# Data Center Storage Solutions







# **Enabling the most** mission-critical use cases

The world is generating ever increasing amounts of data, at the same time we're seeing an acceleration in its richness and immediacy. How do we enable organizations to extract timely insights from this growing diversity of content, transactions and feeds and leverage it in the long run? How can we help businesses transform faster and achieve breakthroughs? How do we deliver higher levels of performance and endurance needed for making critical decisions immediately and over vast amounts of data?

All this data has the potential to unlock a new world of business opportunities. If we're going to unlock that potential then we need to make data come alive. Legacy solutions are too slow and limited to realize the value and insights hidden in the data. We need to rethink how data is captured, preserved, accessed and transformed. We need a new approach to data storage that delivers speed, agility and longevity for various applications, workloads and outcomes. We need storage solutions that make it economical to make data alive at scale.

# Creating environments for data to thrive

Making both fast and big data come alive for organizations requires a deep understanding of how data is transforming businesses across various industries. Our long-standing relationships with customers and partners across the spectrum of data give us unique insights into how needs are evolving. We're driving the innovation across every layer of the infrastructure necessary to stay ahead of new demands. Our breadth of expertise and level of integration give us an unmatched ability to deliver carefully calibrated solutions for every type and use of data.

We are in the early stages of a data revolution that will break through boundaries and create new frontiers. New discoveries will create intelligent machines, automated learning will transform economies, augmented reality will fundamentally change the way we experience the world around us.

These future innovations will be built on the continuous flow of data that will be mobilized, accessed and transformed in real time. That's the future we're working together with our customers and partners to create right now.



Cloud Computing





Database Acceleration







Object

# Enterprise Product Portfolio

# Solid State Drives

NVMe <sup>™</sup> SSDs	SAS SSDs	
Wiston Digital Ultrastar' DC SN640 antic corres sto  NVMe'  Weston Digital Ultrastar' DC SN200 Consection, www sto NVMe'	Western Digital. Ultrastar* DC SS540 DATA CENTER MO SAS	
Data Analytics & Database Acceleration Caching, loging, paging, indexing, flash arrays		
0.8 to 3 DW/D	1 to 10 DW/D	
IOPS / System Cost / IOPS	IOPS / System Proven Architecture	
Low latency, maximum throughput, high reliability	Scalability and reliability	
Ultrastar® DC SN640 Ultrastar® DC SN630 Ultrastar® DC SN200 Western Digital CL SN720	Ultrastar® DC SS540 Ultrastar® DC SS530	

# Solid State Drives

Memory Extension	SATA SSD	
Weenthald Ultrastar De MEZOU NVMe	Western Digital Ultrastar DC SA210 Bots Corres also Av. Soor a sood  SATA	
Dramatically scale system memory	Edge computing, read intensive environments	
Up to 78 PBW	0.1 to 0.7 DW/D	
Performance Capacity	Watts / IOPS Cost / IOPS	
DRAM-like performance for key enterprise applications and workloads	Optimized for cloud, boot and edge	
Ultrastar® DC ME200	Ultrastar® DC SA210	



# Hard Disk Drives

HelioSeal®	Air-based	
Witten Digital Ultrastar' DC HC620 Local Collection on Early 15 Tis  Witten Digital Ultrastar' DC HC530 Local Collection on Early 14 Tis	Weather Digital Ultrastar' DC HC330 Into Elements 100 Into Element	
Data Storage Bulk storage, replication, unstructured data	Data Storage RAID, structured data, NAS, SAN	
Up to 15TB <sup>1</sup>	Up to 10TB	
Capacity / Power TCO / TB	IOPS / TB \$ / Unit	
Higher capacity and reliability	High capacity and reliability	
Ultrastar® DC HC620 Ultrastar® DC HC530 Ultrastar® DC HC520 Ultrastar® DC HC510	Ultrastar® DC HC330 Ultrastar® DC HC320 Ultrastar® DC HC310 Ultrastar® DC HA210	

# Platforms

JBOF/JBOD	Storage Servers	Composable Infrastructure
Storage expansion, Scalable storage	Specialized servers, high density and data transport	NVMe over Fabric The future of data infrastructure
\$ / GB for SSD platforms TCO/ TB for HDD platforms	High density Low latency	Capacity / Footprint Low latency
Ease of integration with existing infrastructure	High density for edge and data transport	Highly scalable and flexible resource utilization
Ultrastar® Data60 Ultrastar® Data102 2U24 All-Flash Platform	Ultrastar® Serv60+8 Ultrastar® Serv24-A	OpenFlex™ F3100

## Ultrastar® DC SN640

#### Data center NVMe Solid-State Drives

https://www.westerndigital.com/products/data-center-drives/ultrastar-nvme-series-ssd



7.68TB, 3.84TB, 1.92TB, 960GB | 0.8 DW/D 6.4TB, 3.2TB, 1.6TB, 800GB | 2 DW/D

#### **Key Features**

- Western Digital NVMe 1.3 compliant controller; PCIe Gen3×4
- Up to 195K IOPS (70/30 random mixed workload)²
- Western Digital BiCS4 96L 3D TLC NAND
- MTBF rating of 2 million hours<sup>3</sup>

#### **Highlights**

- Optimized for all common read-intensive and mixed use workloads
- Full data-loss protection
- Instant Secure Erase (ISE) and AES-256 encryption
- Tunable capacity for application performance
- 5x performance improvement over SATA SSDs and 65% less power consumption compared to 25W Performance NVMe SSDs
- Vertically integrated with proven controller architecture accelerates qualification

#### Applications/Environments Workloads

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

### Ultrastar® DC SN630

#### **Data Center NVMe Solid-State Drives**

https://www.westerndigital.com/products/data-center-drives/ultrastar-nvme-series-ssd



7.68TB, 3.84TB, 1.92TB and 960GB | 0.8 DW/D 6.4TB, 3.2TB, 1.6TB, 800GB | 2 DW/D

#### **Key Features**

- Western Digital NVMe 1.3 compliant controller; PCIe Gen3×4
- Up to 360K Random Read IOPS 55K Random Write IOPS (4KiB)

#### **Highlights**

- Industry-standard 2.5-inch U.2 small form factor for high serviceability in a slim mm package
- Optimized for read-intensive & mixed-use workloads
- 65% less power consumption compared to 25W PCIe SSD solutions
- Hot Swap/Hot Plug support with data-loss protection
- NVMe MI 1.0 Management Interface Support
- MTBF rating of 2 million hours
- Instant Secure Erase (ISE) with AES-256 encryption

- Cloud and hyperscale storage
- Software Defined Storage
- File, Block and Object Storage applications
- Direct-attached Storage (DAS)
- Hyper-converged Infrastructure
- NoSQL databases
- Content Delivery Network (CDN)
- Virtualization



#### Ultrastar® DC SN200

#### **Data Center NVMe Solid State Drives**

https://www.westerndigital.com/products/data-center-drives/ultrastar-nvme-series-ssd



U.2 2.5-inch drive, HH-HL add-in card (AIC) 7.68TB, 3.84TB, 1.92TB, 960GB | 1DW/D 6.4TB, 3.2TB, 1.6TB, 800GB | 3DW/D

#### **Key Features**

- Up to 1.2M read IOPS (4KiB); up to 200K write IOPS (4KiB)
- Up to 580K IOPS mixed (R/W) random workloads (4KiB)
- Use as top tier storage to accelerate databases and high frequency workloads

#### **Highlights**

- High-performance PCIe Gen 3 & NVMe 1.2 compliant
- Capacity: 800GB to 7.68TB
- Ultra-low consistent latency
- Dual port (2×2) support for 2.5-inch drives for highly available system designs
- Superior enterprise-grade reliability: Flash-aware RAID, end- to-end data path protection, advanced ECC, secure erase, PowerSafe<sup>™</sup> power-loss protection
- 2M hr MTBF & 5-year limited warranty (or maximum endurance, whichever is less)

#### Applications/Environments

- Highest performance tier enterprise storage
- Databases supporting mission-critical applications
- Cloud and Hyperscale computing
- Online Transaction Processing (OLTP) and Online Analytical Processing (OLAP)
- High Frequency Trading (HFT)
- Virtualization

#### **CL SN720**

#### M.2 2280 NVMe Solid-State Drives for Data Centers

https://www.westerndigital.com/products/data-center-drives/cl-sn720-ssd



2TB, 1TB, 512GB, 256GB

#### **Key Features**

- Purpose-built for boot and edge computing performance and reliability
- Read Speeds up to 3,250MB/s (1TB Model)

#### **Highlights**

- Up to 800 TBW Endurance (1TB Model)
- Optimized for Sequential-Write Workloads
- 2M Hours MTTF
- 256GB 2TB capacities
- M.2 2280 form factor
- O°C 85°C extended operating temperature
- 5-year limited warranty or Max Endurance (TBW) whichever comes first

- Very Read-Intensive Workloads
- Content Delivery Networks
- Server Boot
- Cloud Gaming Storage



### Ultrastar® DC SS540

#### Data Center 12Gb/s SAS Solid-State Drives

https://www.westerndigital.com/products/data-center-drives/ultrastar-sas-series-ssd



15.36TB, 7.68TB, 3.84TB, 1.92TB, 960GB | 1 DW/D 6.4TB, 3.2TB, 1.6TB, 800GB | 3 DW/D

#### **Key Features**

- Up to 2130MiB/s read; up to 2109 MiB/s write bandwidth
- Up to 470K read IOPS (4KiB); up to 240K write IOPS (4KiB)
- Data center grade 2.5M hours MTBF reliability rating

#### **Highlights**

- 3rd generation 3D TLC NAND flash for ultra-high performance and endurance
- 12Gb/s SAS interface for maximum throughput
- Advanced power-loss and data-management technology
- Self-encrypting models conform to TCG's Enterprise specification

#### Applications/Environments Workloads

- Ultra-high performance tier-o enterprise storage
- Enterprise-class servers and high-performance computing (HPC)
- Software-defined storage (SDS)
- Online transaction processing (OLTP)
- Finance and e-commerce
- Database analytics

## Ultrastar® DC SS530

#### Data Center 12Gb/s SAS Solid-State Drives

https://www.westerndigital.com/products/data-center-drives/ultrastar-sas-series-ssd



15.36TB, 7.68TB, 3.84TB, 1.92TB, 960GB, 480GB | 1DW/D 6.4TB, 3.2TB, 1.6TB, 800GB, 400GB | 3DW/D 3.2TB, 1.6TB, 800GB, 400GB | 10DW/D

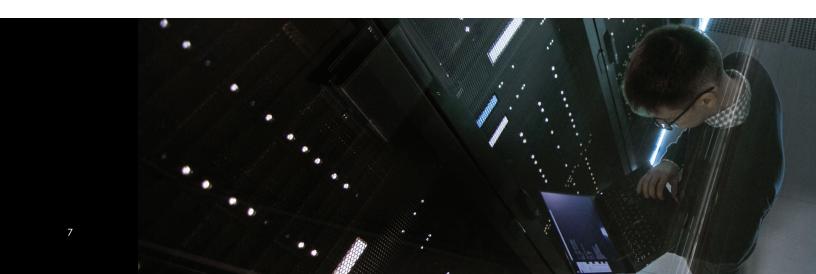
#### **Key Features**

- Up to 2150MiB/s read & 2120 MiB/s write bandwidth
- Up to 440K read IOPs (4KiB); up to 320k write IOPS (4KiB)
- Enterprise-grade 2.5M hours MTBF reliability rating

#### **Highlights**

- 2nd generation 3D TLC NAND flash for ultra-high performance and endurance
- 12Gb/s SAS interface for maximum throughput
- Advanced power-loss and data-management technology
- Self-encrypting models conform to TCG's Enterprise specification

- Ultra-high performance tier-o enterprise storage
- Enterprise-class servers and high performance computing
- Software-defined storage (SDS)
- Online transaction processing (OLTP)
- Financial and e-commerce
- Database analytics



#### Ultrastar® DC ME200

Memory Extension Drive, NVMe, 1TiB, 2TiB, 4TiB\*

https://www.westerndigital.com/products/data-center-drives/ultrastar-dc-me200-memory-extension-drive



U.2 2.5-inch drive, HH-HL add-in card (AIC Software Defined Memory Capacity: 1TiB, 2TiB, 4TiB

#### **Key Features**

 Delivers DRAM-like performance for key enterprise applications and workloads

#### **Highlights**

- Enables scaling of system memory, typically up to 24TiB per 1U server and 96TiB in 4U servers
- Transparent to existing OS and applications
- Promotes server consolidation
- Fits most industry-standard server models

#### **Applications/Environments**

- Business Analytics
- Data Warehousing
- Application Caching
- Server Virtualization
- Container-Based Applications
- Genomics & Al Research
- Real-Time Analysis
- Cloud Services and SaaS
- IoT, Time-Series Analysis

#### Ultrastar® DC SA210

#### Data Center SATA Boot & Edge Solid-State Drives

https://www.westerndigital.com/products/data-center-drives/ultrastar-sata-series-ssd





1.92TB, 960GB, 480GB, 240GB, 120GB | 0.1DW/D (JESD219 Workloads)

1.92TB, 960GB, 480GB, 240GB, 120GB | 0.7DW/D (128KiB Sequential Workloads)

#### **Key Features**

- Purpose-Built—Designed for read-intensive workloads
- Versatile Design—Available in 2.5-inch and M.2 2280 form factors
- Optimized Performance—Up to 64K read IOPS (4KiB, QD32); up to 5K write IOPS (4KiB, QD32)

#### **Highlights**

- Enterprise-grade SATA 6Gb/s SSD for read-intensive applications
- Designed specifically for boot & edge applications
- Capacity: 120GB to 1.92TB
- 7mm 2.5-inch or M.2 2280 form factor
- 2M hr MTBF & 5-year limited warranty (or maximum endurance, whichever is less)

- Enterprise Boot
- Video Streaming, Video-on-Demand
- Audio Streaming
- File Servers
- Read-intensive Applications



<sup>\*</sup> Memory capacity is indicated by GiB and TiB and based on binary values such that one gibibyte (GiB) is equal to 2<sup>30</sup> bytes and one tebibyte (TiB) is equal to 1024 GiB (2<sup>40</sup>) bytes. Accessible capacity may be less due to operating environment.

#### Ultrastar® DC HC620

#### SMR, 3.5-inch Helium Platform Data Center Hard Drive

https://www.westerndigital.com/products/data-center-drives/ultrastar-dc-hc600-series-hdd





15TB, 14TB

#### **Key Features**

- 15TB, 14TB SMR (Shingled Magnetic Recording) HDD
- Extremely low Watts/TB and advanced power management technology
- Up to 255MB/s sustained transfer rate

#### **Highlights**

- Combines HelioSeal® and host-managed SMR to deliver more cost-effective capacity than CMR (conventional magnetic recording) drives
- Purpose-built, host-managed SMR for "sequential write" workloads and applications
- Consistent, predictable performance with uncompromising enterprise-class quality and reliability
- 2.5M hr MTBF & 5-year limited warranty

#### Applications/Environments

- Big Data or Bulk Storage
- Cloud Storage
- Social Media
- Content Libraries, Streaming Media and Digital Media Assets
- Online Back-up, Replication
- Compliance, Audits, Regulatory Records
- Primary and secondary storage for Apache Hadoop® to support Big Data Analytics
- Centralized video surveillance

## Ultrastar® DC HC530, 520

3.5-inch Helium Platform Data Center Hard Drives

https://www.westerndigital.com/products/data-center-drives/ultrastar-dc-hc500-series-hdd





14TB, 12TB

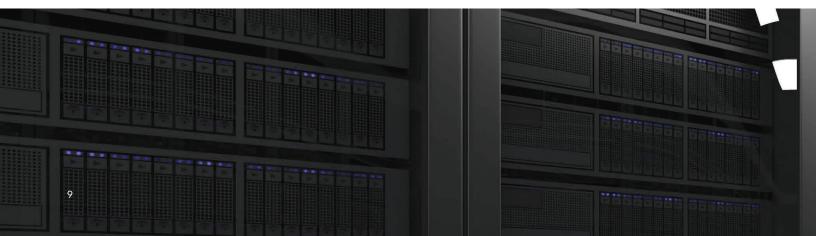
#### **Key Features**

- HelioSeal design delivers outstanding power efficiency (Watts/TB)
- Up to 14TB capacity in a standard 3.5-inch form factor
- 2.5M hours MTBF rating and 5-year limited warranty

#### **Highlights**

- CMR technology works seamlessly in capacity enterprise applications and environments
- Lower power than Ultrastar air-filled drives
- Up to 267 MB/s sustained transfer rate
- TDMR and improved dual-stage microactuator provide optimal head positioning and rotational vibration robustness
- Self-Encrypting Drive (TCG SED) options offer Instant Secure Erase (ISE) feature

- Enterprise and data center applications where capacity density, power efficiency and reliability are paramount
- Cloud & hyperscale storage
- Massive scale-out (MSO), high-density data centers
- Distributed File Systems (DFS)
- Bulk storage using object storage solutions like Ceph™ and OpenStack™ Swift
- Primary and secondary storage for Hadoop\* to support Big Data Analytics
- Surveillance Analystics
- Drop-in ready for mainstream enterprise-capacity applications



# Ultrastar® DC HC330, DC HC320, DC HC310

#### 3.5-inch Data Center Hard Drives

https://www.westerndigital.com/products/data-center-drives/ultrastar-dc-hc300-series-hdd



10TB, 8TB, 6TB, 4TB

#### **Key Features**

- Proven and cost-efficient Common hardware and firmware across Ultrastar DC HC300-series family
- Security Hardware encryption options
- Drop-in Ready—Designed for traditional storage and server applications

#### Highlights

- 10TB to 4TB capacity points support both OEM & cloud deployments
- Up to 262MB/s sustained transfer rate
- Advanced Format 512e models
- Self-Encrypting Drive options
- 2M hr MTBF & 5-year limited warranty

#### Applications/Environments Workloads

- Distributed file systems, like Apache Hadoop, to support Big Data analytics
- Rack-mounted storage enclosures
- Server based distributed storage systems
- Direct & Network Attached Storage (DAS & NAS)
- RAID arrays
- Distributed file systems, like Hadoop, to support Big Data analytics
- Legacy applications requiring 512n format (4TB)

#### Ultrastar® DC HA210

#### 3.5-inch Data Center SATA Hard Drive

https://www.westerndigital.com/products/data-center-drives/ultrastar-dc-ha200-series-hdd





2TB, 1TB

#### **Key Features**

- Dual-stage actuator
- Rotational vibration sensor technology
- SATA 6Gb/s with 512n sectors
- 128MB cache buffer

#### Highlights

- Up to 2TB capacity in a standard 3.5-inch form factor
- Enhanced RAFF™ anti-vibration technology for robust performance in multi-drive environments
- Reliable, field-proven design
- SATA 6Gb/s with 512-byte (512n) supports legacy enterprise applications
- 2M hr MTBF & 5-year limited warranty

- RAID arrays
- Massive scale-out (MSO) data centers
- Data warehousing & mining
- Cloud storage
- Enterprise NAS
- Disk-to-disk backup & archiving
- Legacy mainstream enterprise capacity applications that require 512n block size



#### Ultrastar® Data102

102-Bay Hybrid Storage Platform with up to 1.4PB capacity

https://www.westerndigital.com/products/storage-platforms/ultrastar-data102-hybrid-platform



### Ultrastar® Data60

60-Bay Hybrid Storage Platform with up to 840TB Capacity

https://www.westerndigital.com/products/storage-platforms/ultrastar-data60-hybrid-platform



#### IsoVibe™ Innovative Vibration Isolation Technology

Precise cuts in the baseboard provide a suspension for the drives in the chassis, isolating them from transmitted vibration. The result is that consistent performance is maintained, even when all the drives are working hard.

#### ArcticFlow™ Innovative Thermal Zone Cooling Technology

By introducing cool air into the center of the chassis, drives operate at lower and more consistent temperatures than conventional systems. This results in lower fan speeds, reduced vibration, lower power consumption, quieter operation and ultimately higher reliability.

#### **Key Features**

- Hybrid Storage Platform with up to 1.4PB capacity
- Up to 60 or 102 Ultrastar HDDs (SAS or SATA)
- Hybrid support for up to 24 SSDs (SAS or SATA) for a data acceleration tier
- Choose dual-port SAS for high availability or single-port SATA for low cost
- Up to 12 × 12Gb/s SAS-3 host connections

#### **Highlights**

- Innovative IsoVibe technology helps ensure maximum performance and drive life even under heavy workloads
- Cold-Aisle Access: Rack-mounted top cover and Cable Management Arm for quick and easy service from your data center's cold aisle
- More Efficient Cooling: Innovative ArcticFlow technology reduces power requirements and fan speed
- Enterprise Grade: Redundant, hot-swap PSUs, IO Modules and fans. Supports SCSI Enclosure Services (SES-3) and Microsoft certified drives
- Industry Leading Warranty: Enclosure and all components covered by a 5-year limited warranty

- Dense server expansion
- Software-defined storage
- Private cloud
- Big data analytics
- Data tier for service provider

## 2U24 Flash Storage Platform

Low Latency Flash Storage Platform with up to 368TB Capacity

https://www.westerndigital.com/products/storageplatforms/2u24-flash-storage-platform



#### **Key Features**

- Flash storage platform with up to 24 Ultrastar® 2.5" SAS SSD modules
- Up to 4.7M IOPS, 23 GB/s; <1ms latency
- Over 368TB of raw capacity with 15.36TB SSDs
- Start with 12 SSDs and add additional SSDs as needed to meet changing needs
- 2 rack units height, 536mm depth
- Up to six 12Gb/s SAS3 connections to host
- Easy maintenance of front-accessible, hot-swappable SSD modules.

#### **Benefits**

The 2U24 Flash Storage Platform addresses the demanding storage needs of large enterprises and cloud service providers who require high performance, reliable, easy-to-expand flash capacity. The platform offers these distinct features designed for modern data centers:

- Enterprise-class high availability: hot-swappable components including SSDs, I/O Modules, power supply units (integrated fans)
- Fully upgradeable firmware enables drive technology and capacity updates without impacting applications
- Supports enterprise workloads including database, virtualization and scale-out configurations

#### **Applications/Environments**

Ideal for accelerating enterprise workloads that require high IOPS, low latency and flexible compute-to-storage ratio.

- Scale-out flash file servers
- Hyper-V, SQL, data analytics
- Virtual Desktop Infrastructure, Virtual Server Infrastructure
- HPC



#### Ultrastar® Serv60+8

#### High-capacity Hybrid Storage Server

https://www.westerndigital.com/products/storage-platforms/ultrastar-serv60-8-hybrid-server



#### **Designed for High Density and Flexibility**

This high-capacity hybrid storage server addresses the demanding needs of large enterprise customers, OEMs, cloud service providers, and resellers/integrators that require dense, shared HDD or hybrid storage with compute included. The Ultrastar\* Serv60+8 hybrid storage server offers a choice of CPUs, memory, and drives, providing the flexibility to balance capacity, performance and cost.

Western Digital HelioSeal HDDs ensure cool running, quiet operation and high reliability while the SSDs provide a fast data tier for additional performance. Conventional dense disk shelves frequently suffer from performance degradation due to induced vibration from adjacent drives. And traditional platforms have cooling challenges as the cooling air passes over successive rows of drives, losing effectiveness as it gets heated up along the airflow path. Our innovative IsoVibe and ArcticFlow technologies address these challenges. IsoVibe reduces vibration-induced performance degradation, while ArcticFlow overcomes the cooling issues by introducing cool air into the middle of the platform. Both these technologies contribute to long-term reliability, enabling our five-year limited warranty on the entire platform.

#### **Features**

- Up to 60 Ultrastar® HDDs (SAS or SATA) plus up to 8 (SAS or SATA) SSDs
- Over 960TB of raw capacity with 14TB HDDs and 15.36TB SSDs
- Dual-port SAS for high availability or single-port SATA for low cost
- Hybrid support for up to 32 SSDs to create a data acceleration tier
- 4 rack units height, 1099mm depth
- Innovative IsoVibe technology ensures maximum performance even in heavy workloads
- Enterprise-grade redundant and hot-swappable PSUs, fans, IO module and drive modules
- Improved cooling from innovative ArcticFlow technology
- Rack-mounted top cover for quick and easy service

- Dense storage server
- Software-defined storage
- Private cloud
- Big data analytics
- Data tier for service provider



## Ultrastar® Serv24-A

#### **Rugged Data Transport** Portable Storage Server

https://www.westerndigital.com/products/storageplatforms/ultrastar-serv24-a-server



#### **High Performance Meets Portability**

Sometimes data needs to be physically transported safely and with multiple security measures when traditional methods of sending that data over a network may not be a viable alternative due to cost, security, or speed. This may include transporting movie files from location to post-production; seismic data from exploration rig to shore; sensitive battlefield data to base; or simply moving data center content to a cloud service provider. The Ultrastar Serv24-A Portable Storage Server provides up to 368TB of solid-state storage in a rugged, tamperevident case. With dual Intel® Xeon® CPUs and highperformance SSDs, data ingest and transfer is fast and

Multiple security options are available, including Trusted Platform Module (TPM), secure erase, and up to AES-256 SSD encryption. The integrated handle makes it easy to carry and the available wheeled transit case can provide for even more rugged transport. The Ultrastar Serv24-A Portable Storage Server is built to deliver high performance and enterprise-class reliability. The entire enclosure is backed with a 5-year limited warranty.

#### **Key Features**

- Tamper-evident 2U aluminum enclosure
- Optional Secure Erase, Trusted Platform Module
- Multiple security options
- AES-256 SSD encryption available
- Rear connectors can be selectively covered
- Ruggedized yet lightweight for easy transport
- Dual-socket Intel Xeon scalable processor-based
- 10 Gb Ethernet connections RJ45 or SFP+
- Up to 368TB raw capacity

## OpenFlex<sup>™</sup> F3100 Series **Fabric Drive**

#### Composable Infrastructure

https://www.westerndigital.com/products/storageplatforms/openflex-composable-infrastructure



#### The Future of Data Infrastructure

The NVMe<sup>™</sup> interface, which was designed for flash, removed the performance bottlenecks of SAS and SATA, which were both designed for disk. But to achieve maximum benefit from NVMe attached flash, the flash needs to be close to the processor, locally attached on the PCIe bus in the server. Sharing the flash storage externally to the server over a SAS interface reintroduces performance bottlenecks, but there is a solution. NVMe-over-Fabrics (NVMe-oF™) extends NVMe over a high-speed fabric.

NVMe-oF attached storage dramatically improves performance, utilization, and agility in the data center. It enables the performance promise of flash to be realized in shared storage as if it was locally attached. OpenFlex NVMe-oF products allow storage to be disaggregated from compute, enabling servers and applications to share a common pool of high performance storage capacity.

Additionally, OpenFlex can be deployed as part of a composable infrastructure, a new architectural approach that enables virtual systems resources to be assembled from shared pools of resources, including compute, storage and networking. Data and processing power can easily be shared between applications, or needed capacity can be allocated to an application regardless of location.

#### **Features**

- Composable, shareable high-performance storage
- Access data from anywhere in the data center.
- Lower Capex and Opex by reducing resource over provisioning
- Manageable through existing data center orchestration frameworks
- Reduce stranded or underutilized resources.
- Dynamic provisioning—scale down resources just as easily as you scale up
- Common hardware for any use case
- Scale at the enclosure or device level
- Deploy uniform components at a time, provision as needed

# Connect with Us

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- <sup>1</sup> One megabyte (MB) is equal to one million bytes, 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 storage capacity. Actual user capacity may be less depending on operating environment.
- <sup>2</sup> Performance 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.
- <sup>3</sup> 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.

## Western Digital.

#### **Contact Information**

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