

Data Center and Enterprise Storage Solutions

Systems & Platforms



Enabling the most mission-critical use cases



Cloud Computing



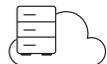
Big Data Analytics



Database Acceleration



Collaboration Applications



Virtualized Computing



Object Storage

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

89%

Most CIOs and technology decision makers believe all data has value if it can be stored and easily accessed.*

55%

However, more than half are not saving all the data necessary for their long-term business needs and, as a result, are not harnessing its full potential.

Making both fast and big data come alive for organizations requires a deep understanding of how data is transforming businesses across various industries. Our longstanding 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.

*Visit "Global Survey of CIOs and IT Decision Makers" on HGST.com for more information.

Enterprise Product Portfolio

	Systems	Platforms	
	Object Storage	Flash Storage	Scalability
			
Optimized For	Cloud-scale Storage Object Storage	Flash Arrays Multi-Tiered Flash Arrays All-Flash Arrays Hybrid Arrays	Storage Expansion Scalable Storage
Metrics	Capacity / Footprint \$/ PB	High IOPS Low Latency	\$/ GB for Flash Platforms TCO / TB for HDD Platforms
Data Requirements	Scalable capacity, data availability, and durability	High performance Full Data Management	Ease of integration with existing infrastructure
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ActiveScale™ X100 System

The ActiveScale X100 system is an integrated object-storage solution for large-scale data that requires extreme data durability with easy and fast retrieval. The ActiveScale system provides outstanding levels of simplicity, scalability, resiliency and affordability.



Highlights

- Ready to Deploy – Pre-configured system speeds implementation
- Easy to Grow – Increase capacity and performance as data grows
- Extreme Scalability – Scales easily for the most demanding environments
- High Resiliency – Up to 17 nines of data durability
- Outstanding TCO – Low acquisition cost, power/TB and operating costs
- System Availability – Choose 3-geo scale-out or 2-site asynchronous replication
- Security Features – End-to-end encryption for sensitive application data
- System Resiliency – BitSpread® with dynamic data placement avoids rebalancing and delivers consistent performance
- Strong Consistency – For always-fresh data for scale-out configurations
- Protection – Object versioning provides rapid recovery from accidental deletes

Applications/Environments

- Analytics
 - Data Lakes for analysis
 - High scalability for complete analysis
- Media and Entertainment
 - Live video archive
 - On-demand catalog
 - Cloud DVR
- Healthcare and Life Sciences
 - Genome data banks
 - Medical imaging
- Backup, Recovery & Archive
 - Backup as a Service
 - Data management
 - Disaster recovery



ActiveScale P100 System

The ActiveScale P100 is a modular object storage system for large-scale data that requires extreme data durability with easy and fast retrieval. The ActiveScale P100 provides outstanding levels of simplicity, scalability, resiliency and affordability



Highlights

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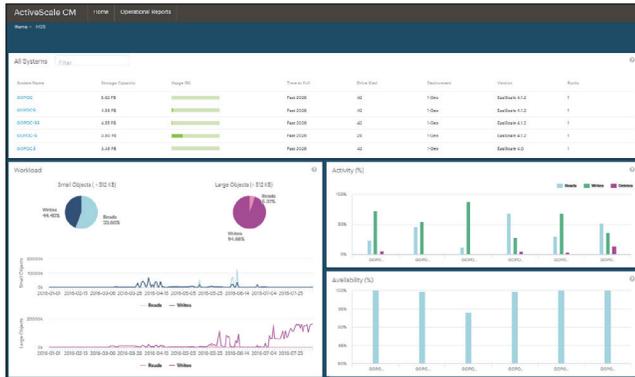
Applications/Environments

- Media & Entertainment Media Archive
 - Production Media Archive
 - On-premises Amazon S3™-compliant Media Target
- Life Sciences and Health Care
 - Genome data banks
 - Medical imaging
- Backup and Archive
 - Tape consolidation
 - Active data repository
- Analytic Storage Tier
 - Big data repository



ActiveScale CM Cloud-Based Analytics

Monitoring and storage analytics for ActiveScale and Active Archive Object Storage Systems by way of a cloud interface lets you get ahead of events before they become problems.



ActiveScale CM Provides

Forecast and planning capabilities based on current utilization trends

- Capacity modeling and forecast

Operational Reports

- System load and load balancing across different data centers
- Object system characteristics such as object size histogram, data protection overhead, and frequently accessed objects

Proactive Support

- Upload logs and configuration automatically to expedite case triage and resolution

Telemetry and Analytics Portal

- Get insights information by way of an easy-to-use cloud portal
- Cloud-based analytics engine enables users to proactively manage their ActiveScale or Active Archive Systems without competing with user IO requests, maximizing productivity
- Remote monitoring of system health and utilization regardless of system locations
- Leverages big data analytics to identify system anomalies for proactive management

Highlights

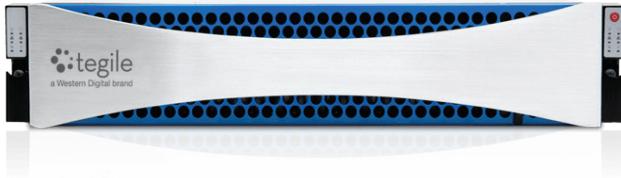
- See all ActiveScale systems in one GUI
- System health overview, prescriptive as well as predictive
- System capacity and utilization analytics, including trends and forecasting
- Enhanced experience with proactive support
- Quick support turnaround by eliminating/reducing the need to request log data
- Included as part of your systems support offering

Breakthrough Object Storage Management – ActiveScale CM provides cloud-based, advanced system insights and analytics for our object storage systems. The following features leverage big data analytics, complement basic system management functionalities, and enable proactive system maintenance:

- System utilization monitoring
- Capacity modeling
- Forecasting
- Historical trends

All work to effectively manage the ActiveScale system across your data centers, regardless of their location.

IntelliFlash™ N Series All-NVMe Storage Array



Benefits

- 60M IOPS per rack
- 14PB per rack
- 99.9999% Availability

Tier 0 storage @ the speed of memory

Imagine how much faster your business applications would run if your Tier 0 storage ran at the speed of memory. Get ready to be blown away by the performance of the N Series array.

NVMe™ is designed from the ground up to deliver high bandwidth and low latency storage access. The N Series unified array combines NVMe technology with the innovative data management capabilities of Tegile's IntelliFlash OS to deliver 100x performance acceleration for Tier 0 applications.

Memory-class performance in a united storage array

The N Series array delivers superior always-on performance effortlessly while seamlessly compressing and deduplicating data for all applications.

We have packed the N Series with every imaginable Tier 0 storage feature – multiple protocols, data reduction, data protection, automated data healing, high availability, disaster prevention non-disruptive upgrades.

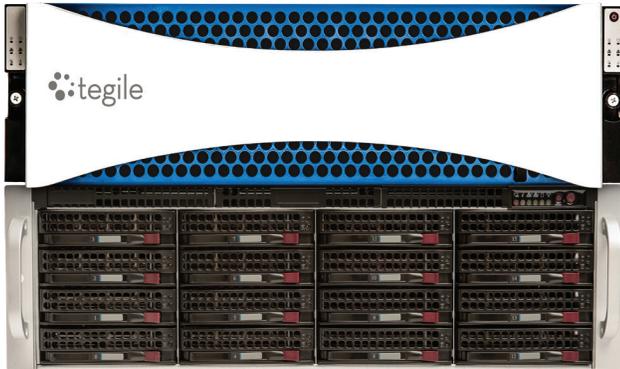
Rack-scale storage for every IT need

The N Series is the perfect storage platform for every IT need – from high-performance application workload acceleration to Tier 0 multi-petabyte-scale consolidation of ALL workloads in the data center

Scale as your performance and capacity needs grow. Add dense flash enclosures to N Series to seamlessly make it a multi-tiered flash system for your entire data center.



IntelliFlash Hybrid Storage Array



Applications/Environments

- Virtualize & Consolidate Business-Critical Applications with Confidence
- Deliver Supreme Performance for Virtual Desktops

Performance of Flash at the Price of Disk

Tegile offers an extensive line of hybrid arrays as part of the IntelliFlash portfolio. Tegile hybrid storage arrays leverage the performance of flash, the density of hard disks and the rich features of IntelliFlash operating system to deliver a compelling storage platform that accelerates a wide variety of workloads in the enterprise.

Fully redundant with active/active controllers, these arrays are built for enterprise datacenters with resilience, data availability and data protection in mind. With Tegile hybrid arrays, you no longer have to compromise between performance, capacity and cost for accelerating and protecting your enterprise applications.

IntelliFlash All-Flash Storage Array



Applications/Environments

By delivering performance, high density, and compelling economics, the T Series is ideal for latency-sensitive, business critical workloads such as:

- Online transaction processing
- Real-time analytics
- Decision support
- Data warehousing

All-Flash Arrays for Any Workload

Tegile all-flash arrays make it easy and affordable to make the transition to a flash-centric data center. The T Series portfolio enables you to start small and scale in capacity as your business grows. Start with the T4500 or T4600 all-flash array and deliver a turbo-boost to your legacy storage array while deferring equipment replacement and move up to the T4800 when your density and capacity requirements grow.



IntelliFlash Multi-Tiered Flash Storage Array



All-Flash Arrays for Any Workload

At the core of IntelliFlash HD is the same platform that powers Tegile's award-winning flash arrays. The IntelliFlash platform brings together several architectural innovations in flash management, data persistence and data management to enable IntelliFlash HD to deliver unprecedented levels of performance, data consolidation, simplicity and economics. Tegile arrays can already run any of an organization's workloads. With IntelliFlash HD, you can consolidate all your workloads and all of your data onto a single array to achieve the best balance of performance and economics at scale.

Applications/Environments

IntelliFlash HD is tailor made for any workflow that requires the extreme performance of the industry's fastest flash combined with the high density of large capacity flash in a single storage system.

Highlights

Scalable Architecture – Dual active-controller scale-up architecture allows for easy capacity and performance growth.

High-Capacity Density – Performance means nothing if you don't have the space to use it. IntelliFlash HD delivers Petabytes of capacity in a compact 6U footprint.

Sustained Performance – With high throughput and low latency for mixed workload consolidation and Big Data analytics IntelliFlash HD can handle your most intensive workloads.

Affordable Disaster Recovery – Replicate between all-flash AND hybrid configurations.

Unified Storage – Native block (FC, iSCSI) and file (NFS, CIFS/SMB3) access that can be run concurrently.

Comprehensive Data Services – Inline deduplication and compression, snapshots, read/write clones, and thin provisioning help you get the most capacity out of your IntelliFlash HD array.

Benefits

Superior Economics – With industry-leading densities, you will find the perfect balance of performance and economics.

Industry Leading OPEX – With a platform that is energy efficient, features inline data reduction and is easy to maintain, customers save on power, cooling and labor.

Unmatched Compatibility – With multiple certified configurations with Oracle®, Microsoft, VMware®, and many others, IntelliFlash HD is ready for your IT environment.

VMware Support – Includes a vCenter plug-in and Integrates with VMware SRM and VAAI.

Simplified Management – Single UI management for all operations.



UltraStar® Data102

102-Bay Hybrid Storage Platform with up to 1.2PB capacity



IsoVibe™ Patented 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™ Patented 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

- Up to 102 UltraStar He12 HDDs (SAS or SATA)
- Hybrid support for up to 24 SSDs (SAS or SATA) for a data acceleration tier
- Up to 1.2PB of raw storage in 4U
- Choose dual-port SAS for high availability or single-port SATA for low cost
- 4 rack units, 1047mm depth
- Up to 12 × 12Gb/s SAS3 host connections

Highlights

- **Patented IsoVibe technology** ensures 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 datacenter's cold aisle
- **More Efficient Cooling:** Patented ArticFlow 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

Applications/Environments

- Backup/Archive
- Security/Surveillance
- Email
- Cold-Storage Tier



Ultrastar Data60

60-Bay Hybrid Storage Platform with up to 720TB Capacity



IsoVibe Patented 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 Patented 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

- Up to 60 Ultrastar He12 HDDs (SAS or SATA)
- Hybrid support for up to 24 SSDs (SAS or SATA) to create a caching or data acceleration tier
- Up to 720TB of raw storage in 4U
- Dual-port SAS for high availability or single-port SATA for low cost
- 4 rack units height, 705mm depth
- Up to 12 × 12Gb/s SAS3 host connections

Highlights

- **Patented IsoVibe technology** ensures 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 datacenter's cold aisle
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Applications/Environments

- Backup/Archive
- Security/Surveillance
- Email

Ultrastar Serv24

Performance-optimized NVMe platform for software-defined storage (SDS)



Designed for Fast Data

Flash technology has revolutionized the performance of storage systems; NVMe technology extends flash storage to its full potential. Built upon our storage expertise, the Ultrastar Serv24 features the latest Intel® Xeon® CPUs. Chipset, core count and power can be customized, providing the flexibility to meet varying requirements depending on data workload and performance requirements.

Whether as a stand-alone file server or part of a scale-out deployment, the Ultrastar Serv24 is built to deliver screaming performance in software-defined storage environments. With low latency and consistently high bandwidth, data is accelerated to the speed of flash.

Key Features

- Up to 184TB in a 2U unit
- Up to 24 NVMe SSDs with a range of capacities and endurance options
- High-performance Intel "Purley"- based server with a choice of CPUs
- 2 512GB SSD boot drives
- 256GB DDR4 DRAM
- 2-port 10GbE included
- 1-port 1GbE for system management
- 2 PCIe x16 slots available for add-in cards
- Enterprise-grade redundant and hot-swappable PSUs and fans

Applications/Environments

Purpose-built for such storage/IO intensive applications such as:

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

The Ultrastar Serv24 enables rapid deployment into rack-scale IT environments.



Ultrastar Serv24-HA Storage Server

Performance-optimized NVMe platform for software-defined storage (SDS)



Designed for Fast Data

Newly available dual-port NVMe SSD technology means that all-flash array deployments can now benefit from full high availability and NVMe performance. The servers are connected with a Non-Transparent Bridge (NTB), a PCIe Gen3x16 link, which the software-defined storage stack can use to synchronize metadata between the two compute canisters.

The Ultrastar Serv24-HA is built to deliver high availability and enterprise-class reliability. The entire enclosure, including server canisters, is backed with a 5-year limited warranty.

Key Features

- Up to 24 2.5" dual-port NVMe SSDs
- Up to 184TB¹ of raw storage in 2U
- Dual Intel Xeon Scalable Processor-based server canisters
- Each compute canister includes
 - Dual processors with a choice of Intel Xeon CPUs
 - 2 M.2 SSD boot drives
 - 24 DDR4-2400 DIMM slots
 - 4 10GbE ports
 - 1GbE for IPMI system management
 - 3 Gen 3 PCIe x16 slots
- Enterprise-grade redundant and hot-swappable PSUs, SSDs, server canisters
- Optional battery backup unit

Applications/Environments

Purpose-built for such storage/IO intensive applications such as:

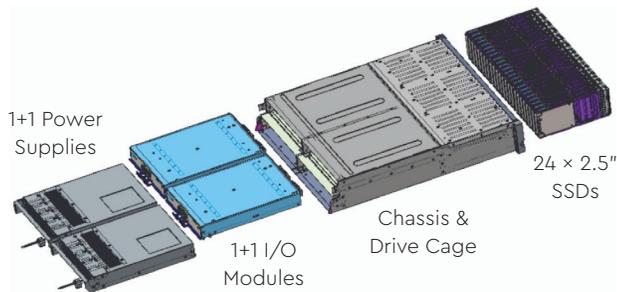
- All-Flash Array
- Software-defined storage
- Private cloud
- Fast data analytics

2U24 Flash Storage Platform

Low Latency Flash Storage Platform with up to 184TB Capacity



5 year
Limited
Warranty



Key Features

- 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
- Up to 4.7M IOPS, 23 GB/s; <1ms latency
- Available SSD capacities include 7.68TB, 3.84TB, 1.92TB, and 960GB
- Start with 12 SSDs; upgrade one additional module at a time
- 2 rack units
- Up to six 12Gb/s SAS3 connections to host
- Easy maintenance of front-accessible, hot-swappable SSD modules.

Benefits

The 2U24 flash 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



4U60G2 Storage Platform

HDD Storage Platform with up to 720TB Capacity



Highlights

Scalable Capacity | Up to 720TB in 4U of rack-height.
Scalable to 2.88PB

Reliable | 5-year limited warranty on the drives and enclosure

Quicker Integration | Pre-qualified and pre-tested Ultrastar HDD or SSD modules

Enterprise Grade | Hot-swappable components, SCSI Enclosure Services, Microsoft certified

Expandable | Host connectivity: 4 x HD Mini-SAS ports per I/O module. Supports up to 8 hosts.

Key Features

- Up to 60 integrated Ultrastar drive modules
 - drive module capacity includes 12TB, 10TB, 8TB and 6TB
- Hybrid capability: can be configured with up to twelve (12) 800GB SSDs to create separate performance tiers within the platform
- Available with SAS drives for HA application or with SATA drives for cost-optimized applications
- Available with 512e or 4Kn sector size (by part number)
- Supports up to 4 storage enclosures for daisy-chaining
- Host connectivity: 4 x HD Mini-SAS ports per IO Module
- Fully compliant with 12Gb/s SAS 3 interconnect
- Hot-swappable components: two power supplies with integrated fans, drive modules and IO Modules
- Cable Management Arm (CMA) eliminates tangled cables during servicing of hot-swappable CRUs
- SCSI Enclosure Services (SES-3)
- Microsoft certified for Windows Server® 2012, 2012R2, 2016
- 5-year limited warranty

Configurations

- 720TB using Ultrastar 12TB helium HDDs
- 600TB using Ultrastar 10TB helium HDDs
- 480TB using Ultrastar 8TB helium HDDs
- 360TB using Ultrastar 6TB air HDDs
- 240TB using Ultrastar 4TB air HDDs
- 192TB using Ultrastar 8TB helium HDDs
- 144TB using Ultrastar 6TB air HDDs
- 96TB using Ultrastar 4TB air HDDs

Applications/Environments

- Storage appliances
- Security/surveillance
- High Performance Computing (HPC)

G-RACK™ 12

High-Performing NAS for Media & Entertainment Workflows



Highlights

- High-performance transfer rates
 - Up to 2000MB/S
- NLE Integration
 - Adobe® Premiere® Pro, Apple® Final Cut Pro® X or Media composer®
- Protocol Compatibility
 - iSCSI Support for flexible network connectivity
- Userfriendly GUI
 - Easy-to-use browser-based interface for simple setup, configuration and management
- Ultra-reliable
 - HGST Ultrastar enterprise-class hard drives
- Scalable
 - Storage can scale with optional expansion chassis with up to 120TB each

Key Features

- High-performance shared storage for video editing and creative applications
- Scalable storage capacity to grow with your needs (up to 500TB of usable storage²)
- Cutting edge file system for high reliability and data protection
- Specialized G-NAS™ OS designed for Media & Entertainment workflows for easy setup, conguration and management
- Compatible with numerous MAM/DAM applications for high-performance asset management

Configurations

- 48TB G-RACK 12 (Server)
- 72TB G-RACK 12 (Server)
- 96TB G-RACK 12 (Server)
- 120TB G-RACK 12 (Server)
- 48TB G-RACK 12 EXP (Expansion Chassis)
- 72TB G-RACK 12 EXP (Expansion Chassis)
- 96TB G-RACK 12 EXP (Expansion Chassis)
- 120TB G-RACK 12 EXP (Expansion Chassis)

Ideally suited for

- Collaborative workflows for 4K video and above
- Sharing large files on centralized platforms
- Editing or transferring large amounts of data quickly

²500TB of usable storage achieved with one G-RACK 12 120TB server plus four G-RACK EXP 120TB Expansion Chassis units. RAID sets are limited to 28 drives.



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One MB is equal to one million bytes, one GB is equal to one billion bytes, one TB equals 1,000GB and one PB equals 1,000TB when referring to HDD/SSD capacity. Accessible capacity will vary from the stated capacity due to formatting and partitioning of the HDD/SSD drive, the computer's operating system, and other factors.

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