

Nimble Storage Adaptive Flash Arrays

Flash Performance for Mixed and Mainstream Workloads

The Nimble Storage Adaptive Flash array is the industry's only Cloud Ready predictive hybrid flash array. It combines a flash-optimized architecture with InfoSight™ Predictive Analytics — giving you the fastest, most reliable access to data. Backed by Nimble Storage's Timeless Storage™, there is no need to pay for optional software and forklift upgrades are a thing of the past. All Nimble flash arrays are Cloud Ready — providing an easy on-ramp to the cloud through Nimble Cloud Volumes.

Speed with Efficiency

Purpose-built flash architecture delivers sub-ms performance with unparalleled efficiency. And it's five times faster than other hybrid solutions.

Adaptive Service Levels

Assign, or change, the service level of an application at the click of a button.

- **Auto Flash:** High performance for mainstream applications
- **All Flash:** Guaranteed flash performance for the most performance sensitive applications
- **Minimal Flash:** Optimized for lowest cost of capacity

Non-Disruptive Scalability and Flexibility

Independently grow the capacity and performance of an array and scale the amount of flash to suit any application. Scale-out to petabytes at sub millisecond latency with up to 4 arrays managed as one.

Absolute Resiliency

- **99.9999% measured availability** through predictive analytics and “no single point of failure” hardware and software design.
- **Triple+ Parity RAID:** Tolerate three simultaneous drive failures plus additional protection from intra-drive parity.
- **SmartSecure encryption:** Application-granular, FIPS-certified encryption, and secure data shredding provides end-to-end security for data at rest and on-the-wire when replicated offsite.

Simple to Manage

- Storage is pre-configured and optimized for applications out-of-the-box. Tasks like selecting RAID-level, media layout, aggregations and reserves are no longer required. Initial configuration and set-up can be completed in less than two hours. Routine storage management operations can be completed in minutes.
- Manage storage at VM-level granularity using VMware vVols or through a vCenter plugin.
- Integration and certification with major hypervisors, applications, and infrastructure components.

Nimble Storage CS-Series Arrays

The **CS1000/H** array provides value and capacity for small to medium-sized IT organizations or remote offices, for mixed mainstream workloads.

The **CS3000** and **CS5000** are ideal for midsize IT organizations or distributed sites of larger organizations. These arrays offer the best capacity per dollar for mixed mainstream workloads and for virtual server consolidation.

The **CS7000** offers the highest performance for larger-scale deployments or IO-intensive mixed mainstream workloads and provides the best performance and IOPS per dollar. It is designed for consolidating multiple large-scale critical applications with aggressive performance demands.



Performance and Scalability

- Scale-up capacity and performance non- disruptively in an array
- Scale-out with up to four arrays managed as one
- Achieve multiple petabytes and over 1 million IOPS at sub-ms latency



One Third the TCO of Legacy Hybrid Flash

- Write to disk at flash like speeds through write serialization
- Inline compression and zero pattern elimination
- Integrated data protection efficiency
- Ground-up design efficiently leveraging flash as a cache



Absolute Resiliency

- Non-stop availability measured at 99.9999%
- Triple+ Parity RAID
- Application granular encryption and secure data shredding

“Our customers see large data sets, small data sets and diverse workloads. Nimble Storage's CS-Series array and all-flash expansion shelf combine to offer customers a means of covering lots of ground in terms of both performance and capacity, within an attractively small data center footprint.”

Jeff Thomas
Director of IT Operations
MarkLogic

Adaptive Flash Array Specifications

Nimble Storage CS-Series Array ^{1,2}	CS1000H	CS1000	CS3000	CS5000	CS7000	Scale-Out ³ 4x CS7000
Raw Capacity (TB/TiB) ⁴	11-1,198/ 10-1,090	21-1,218 / 19-1,108	21-1,470 / 19-1,337	21-1,470 / 19-1,337	21-1,470 / 19-1,337	5,880 / 5,348
Usable Capacity (TB/TiB) ⁴	7-952 / 6-866	16-982/ 14-893	16-1,185/ 14-1,078	16-1,185 / 14-1,078	16-1,185 / 14-1,078	4,742 / 4,313
Effective Capacity (TB/TiB) ^{4,5}	13-1,905 / 12-1,733	32-1,964 / 29-1,786	32-2,371 / 29-2,156	32-2,371 / 29-2,156	32-2,371 / 29-2,156	9,484 / 8,626
Max # of Expansion Shelves (Hybrid/All Flash)	6 / 1	6 / 1	6 / 1	6 / 1	6 / 1	24 / 4
Flash Capacity (TB/TiB) ⁴	0.5-28 / 0.4-25	0.7-28 / 0.65-25	0.7-36 / 0.65-33	0.7-76 / 0.65-69	0.7-108 / 0.65-98	2.9-432 / 2.6-393
RAID Level	Triple+ Parity					
Onboard iSCSI/Mgmt 1Gb/10Gb ports per array ⁶	4	4	4	4	4	16
Optional iSCSI 1Gb ports per array ⁶	4 or 8	4 or 8	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	96
Optional iSCSI 10 Gb ports per array ⁶	4 or 8	4 or 8	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	96
Optional FC 8Gb/16Gb ports per array	4 or 8	4 or 8	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	96
Max Power Requirement (Watts/ kVA)	500W / 0.56kVA	600W / 0.67kVA	700W / 0.78kVA	800W / 0.89kVA	900W / 1kVA	3600W / 4kVA
Thermal (BTU)	1,638	1,965	2,293	2,620	2,948	11,792

ES2 Expansion Shelves

	ES2 Hybrid	ES2 All Flash for Hybrid ⁷
Raw Capacity (TB/TiB) ⁴	21-210 / 18-190	N/A
Usable Capacity (TB/TiB) ⁴	16-169 / 14-154 ⁹	N/A
Effective Capacity (TB/TiB) ^{4,3}	32-337/ 28-308	N/A
Flash Capacity (TB/TiB) ⁴	0.7-108 / 0.7-98	3.8-184 / 3.5-167
Max Power Requirement (Watts/ kVA)	500/0.56	325/0.36
Therma (BTU)	1638	1638

NOTES

- CS1000, CS3000, and CS5000 support scale up to any model within the CS family. CS1000H supports scale up to the CS3000H.
- The CS1000H consists of up to 22 HDDs and 2 DFCs (Dual Flash Carriers). All other CS Series models consists of up to 21 HDD drives and 3 DFCs (holding up to 6 SSDs).
- Scale-out configuration consists of 4x CS7000 arrays, each with six maximum capacity expansion shelves.
- Raw, usable, and effective capacities are shown in TB (10¹²) and TiB (2⁴⁰ bytes). Usable and effective capacities take into account space used for parity, spares, SSD cache, and system overhead.
- Effective capacity is a range from minimum in the base array to maximum in the array plus expansion shelves. Assumes data reduction of two to one (2X) from compression.
- Each array controller has 2x 10GbE ports built in. Optional ports are 1GbaseT, 10GbaseT or 10GbE SFP+.
- The ES2-AFS2 (ES2-All Flash for Hybrid) accommodates up to 48 SSDs, which can be populated in packs of 4 at a time.
- Weight for the CS1000H is 90 lbs. / 41kg
- When attached to a CS1000H, capacity is 16-167 / 14-152

Physical and Environmental Specifications

Dimensions	7"H x 17.5"W x 26.5"D 17.8 cm x 44.5 cm x 67.3 cm 4 Rack Units
Weight ⁸	105 lbs. / 48 kg
Weight (ES2)	90 lbs. / 41kg
Weight (ES2-All Flash)	70 lbs. / 32 kg
Operating Temperature	10 - 35° C (50 - 95° F)
Non-Operating Temperature	0° C - 40° C (32° F - 104° F)
Operating Humidity	8 - 90%
Non-Operating Humidity	5 - 95%



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