

# Enterprise storage arrays: 2018 Products of the Year finalists

Eleven storage vendors, including legacy brands and some startups, entered arrays for consideration in the Storage magazine and SearchStorage 2018 Products of the Year competition.



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The enterprise storage arrays considered for our 2018 *Storage* magazine and SearchStorage Products of the Year awards confirm analysts' predictions: Data centers this year started to [adopt nonvolatile memory express \(NVMe\)](#) flash storage.

NVMe flash overcomes the bottlenecks of SCSI, the 1980s-era protocol historically used to transfer data between a host and storage. The next phase is expected to usher in standards-based NVMe over Fabrics, providing a connective tissue to fully enable the NVMe interface.

Eleven finalists made the cut. Most vendors highlighted a storage system built on NVMe flash, either in whole or in part. Well-known enterprise vendors dominate, having refashioned their all-flash arrays with PCI Express-connected NVMe drives in place of traditional SAS SSDs. But several startups made enough noise to elbow their way into consideration.

Entries could include any storage system available with flash, HDDs or hybrid mix. That includes Fibre Channel and iSCSI SAN, NAS and multiprotocol-unified systems, caching appliances, converged infrastructure products, disk controllers, HDDs and SSDs. To be considered for this category, hardware enterprise storage arrays must include all software management and storage features integrated within the storage media. Software products that run on any appliance are excluded.

As our entries indicate, hard disk use in primary storage continues to decline, although it remains a vibrant part of active archives and nearline cloud arrays. NVMe flash has ascended in line with the increase of AI-fueled analytics, DevOps and edge computing.

Five contenders for Products of the Year in the enterprise storage arrays category offer hybrid arrays that blend disk and flash. The remaining six storage arrays only use flash media.

## Datrium DVX 4.0

Datrium Inc. [DVX is hyper-converged infrastructure](#) designed on stateless servers, huge cache sizes and hybrid storage. DVX software-defined storage separates compute nodes and SSD nodes to enable independent scaling. The same DVX system handles primary data, backup and cloud services, while its driver captures read-write activity within containers to control latency. DVX uses a host CPU to apply data reduction before writing to cost-optimized durable media. Datrium's content-addressable storage handles snapshots for fast restores.

## Dell EMC PowerMax

Formerly branded as VMAX, PowerMax is Dell EMC's [upgraded all-flash flagship](#). PowerMax continues the VMAX multi-controller architecture, but supplants SAS SSDs with dual-ported NVMe flash bricks. In addition to NVMe, PowerMax performance improvements include an onboard machine learning capable of analyzing hundreds of millions of data sets a day. Dell EMC bills PowerMax as a SAN workhorse to consolidate multiprotocol storage. PowerMax 2000 provides 13 TB of effective capacity, while the high-end PowerMax 8000 scales to 4 petabytes (PBs) of usable storage.

## Hewlett Packard Enterprise HPE 3PAR

Hewlett Packard Enterprise (HPE) 3PAR all-flash enterprise storage arrays can scale up and scale out. Use cases range from midrange companies to traditional enterprise data centers with unified storage for mixed workloads. A single HPE 3PAR system starts at 4 TB and scales to more than 30 TB. For latency-sensitive applications, HPE claims 3PAR delivers more than three million IOPS at sub-millisecond latency. [Upgraded 3PAR](#) arrays integrated predictive analytics picked up from Nimble Storage in 2018.

## Hewlett Packard Enterprise HPE Nimble Storage Flash Arrays

Cloud-based InfoSight was a big reason behind HPE's 2017 acquisition of Nimble Storage all-flash and hybrid SAN arrays, which HPE reoriented to address primary and secondary workloads. The [Nimble Storage enterprise arrays](#) include the all-flash Nimble Storage AF Series arrays and Nimble HF Series hybrid flash systems.

## IBM FlashSystem 9100 (models AF7 and AF8)

[FlashSystem storage](#) combines IBM's FlashCore technology with IBM Spectrum Storage software. FlashCore 9100 allows customers to fill the 24-slot appliance with FlashCore mesh or NVMe SSDs. Proprietary IBM software boosts performance via Variable Stripe RAID, error correction and garbage collection, while hardware-accelerated inline data deduplication allows a consistent level of data reduction across a range of performance profiles. IBM FlashSystem is also available or validated as hardware for backup, cloud and data protection.

## Infinidat InfiniBox R4

Among the enterprise storage arrays, the Infinidat InfiniBox is a disk-based system swimming in an ocean of flash. The InfiniBox design hinges on machine learning algorithms that extract high performance from commodity-priced capacity spinning media. Infinidat's system only includes about 3% of flash to support its neural caching system, giving it the potential for seven nines of availability at petabyte scale. The latest version of [InfiniBox system](#) software supports more than 8 PB of effective capacity in a 42U rack.

## Pavilion Data NVMe-over-Fabric Array

Pavilion Data's [NVMe over Fabrics array](#) eschews the traditional two-controller design for a modular design that allows racks of storage to be customized for different types of application. Multiple types of NVMe SSDs may be deployed in the same system, with dedicated storage for different applications. Pavilion Data array capacities range from 14 TB to 1 PB and include a suite of data management.

## Pure Storage AIRI

The combination of Pure Storage FlashBlade NAND storage blades and Nvidia DGX-1 supercomputers resulted in the launch of Pure's AI-ready infrastructure (AIRI) in 2018. The product is based on a 15-blade FlashBlade array, ingesting data from four Nvidia graphical processing units. [Pure Storage AIRI](#) comes as an integrated hardware-software stack to operationalize AI at scale. It packs 50 racks of compute and storage in less than 50 inches of space.

## Quantum Xcellis

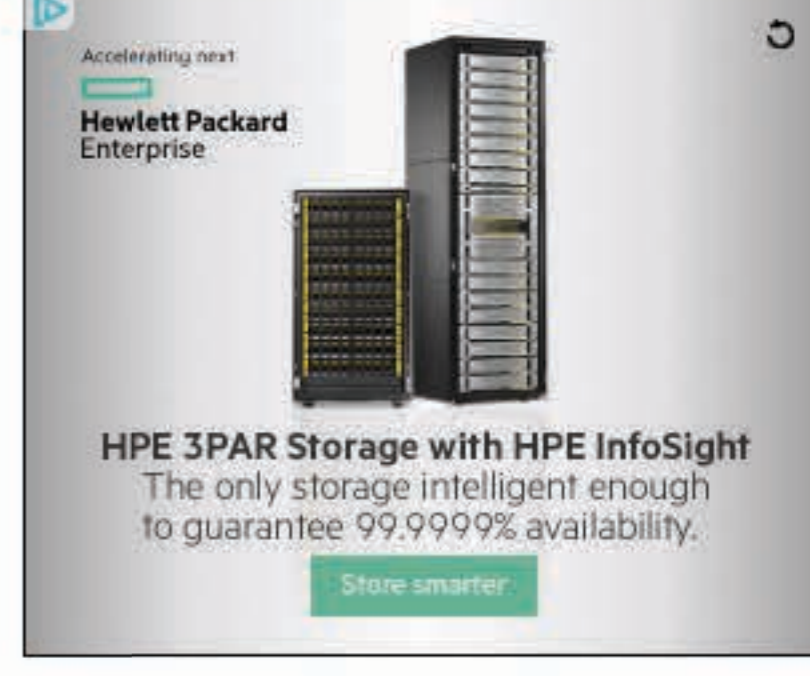
The scale-out NAS market has been under pressure from object storage. With upgrades to Xcellis NAS devices and its StorNext file system, Quantum hopes to fortify its hold on storage for streaming media. Customers can scale performance and storage separately or in unison, allowing [Xcellis NAS](#) to deliver hundreds of PBs with no performance hit. Recent updates added tools for data management, hybrid tiering and AI. The latest Xcellis NAS hardware added NVMe flash.

## Storbyte Eco-Flash

Designed with an application-specific integrated circuit, [Storbyte Eco-Flash](#) abstracts non-flash memory modules within NVMe SSDs and presents it as a unified flash device. The Eco-Flash hardware uses open systems engineering and commodity drives to enable plug-and-play appliances that extend across industry standards, third-party storage products and RAID systems of disk enclosures. Storbyte claims its data remapping architecture delivers a fourfold performance boost versus conventional flash.

## Vexata VX-100 Scalable NVMe Storage Systems

Vexata is going after many of the same enterprise customers as Pavilion Data. Distributed software architecture is the basis of Vexata VX-100 Scalable NVMe Storage Systems. [Vexata's modular design](#) attempts to hit the trifecta: capacity, cost and performance. The VX-OS operating software supports NVMe over Fabrics via 32 Gbps Fibre Channel, 40 Gigabit Ethernet (GbE) and 100 GbE SAS connectivity. Vexata added support for 8 TB NVMe 3D NAND SSDs, scaling raw capacity to 512 TB in 6U in 2018.

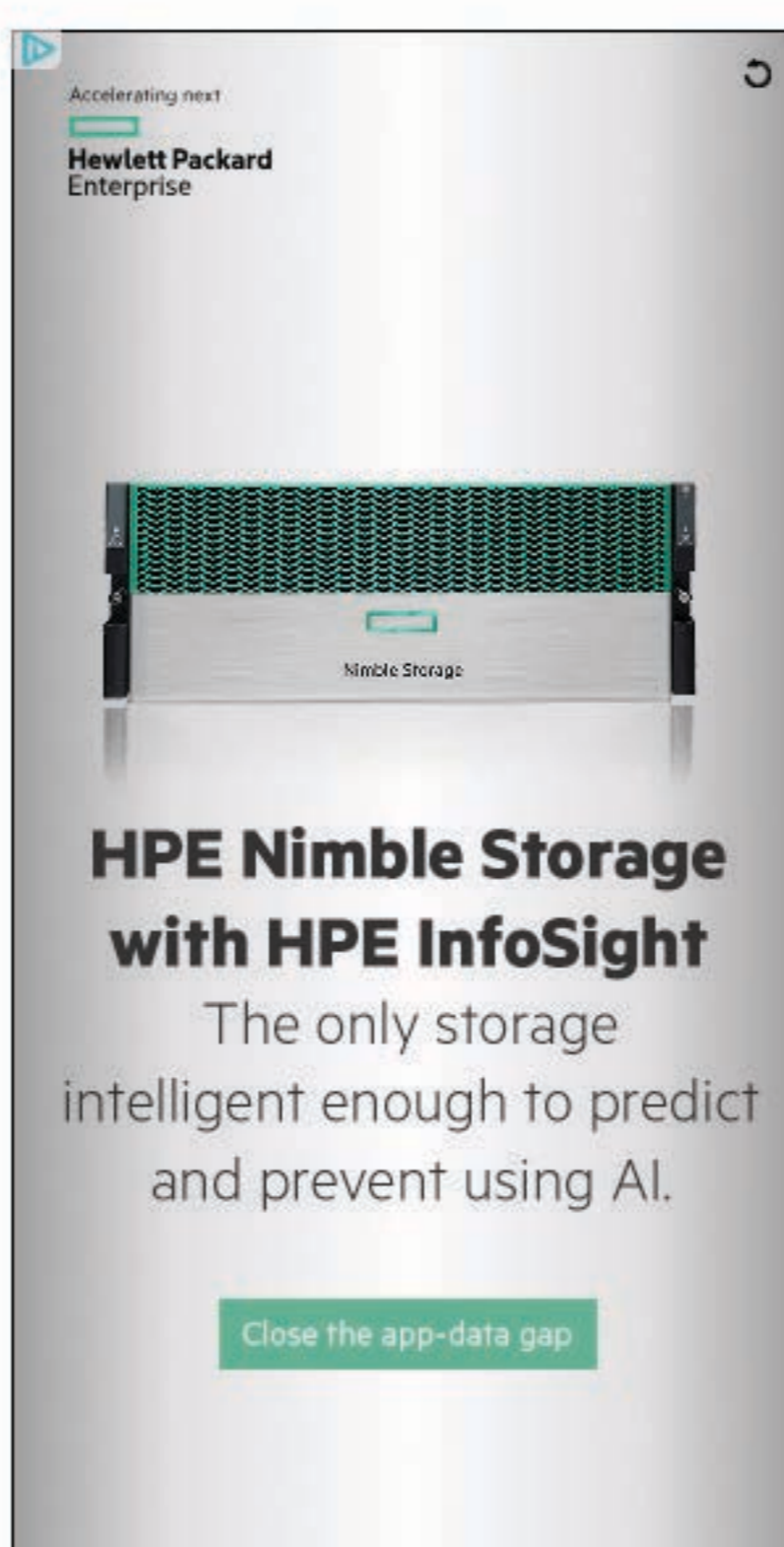


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