

ExaFlash[®] One

Highlights

- 100% flash memory array, up to 768 TB raw
- Multiprotocol block, file, and object storage support
- Ethernet, Fibre Channel and InfiniBand connectivity
- High availability with no single-point-of-failure
- Powerful data protection and management features
- Patented stateless and federated architecture
- Backed by revolutionary customer-first Tectonic support



Advantages

- Open: All-inclusive software with no vendor lock-in
- Versatile: Unrivaled multiprotocol and QoS features
- Fast: Up to 12 GBps and 2 million IOPs
- Reliable: Designed for 99.9999% availability
- Efficient: As low as 0.65 W per raw TB
- Scalable: Up to 16 PB raw flash per 42U rack
- Dense: 2U form factor, less than 20" deep
- Affordable: Starts at just \$10,000



Enterprise All-Flash Storage for Everyone

Virtualization, containers, databases, analytics, cloud computing, digital media, and technical applications demand high-performance, ultra-efficient storage. By supporting virtually any block, file, and object protocol simultaneously, ExaFlash arrays provide the versatility to meet diverse workload requirements. Precise QoS controls, unrivaled in the industry, let you optimize the storage for your exact needs. All ExaFlash arrays can be managed in one elegant interface, simplifying administration as your business grows. With Nimbus Data's revolutionary Tectonic program, you also gain freedom – freedom from excessive capacity costs, freedom from vendor lock-in, freedom from unpredictable support fees, and freedom from costly hardware refreshes.

ExaFlash One features dual active-active controllers and scales up to 768 TB raw (up to 5 PB effective) using qualified industry-standard SSDs. Inline data services including thin provisioning, deduplication, compression, checksums, and encryption can be individually enabled or disabled to optimize performance precisely for your workloads. Non-disruptive updates, snapshots, clones, and RAID, as well as cloud integration for offsite replication, ensure your data is fully protected. ExaFlash One is backed by Tectonic, which includes first-class support, rapid parts replacement, free controller upgrades after 3 years, a zero emissions pledge, and more.

What Makes ExaFlash Different?

Future-proof

Native block, file, and object storage enable you to take on diverse workload requirements.

Purpose-built

Engineered to be the best all-flash array, not a generic server, for superior performance and reliability.

Versatility

Individually control inline data services, enabling precise optimization for your exact workload.

Scalability

Expand non-disruptively from terabytes to exabytes with one central point of administration.

Reliability

Fully-redundant active-active architecture and easy-to-service design enable 99.9999% uptime.

Performance

Patented stateless architecture and DSP accelerators offer superior reliability and throughput.

Freedom

An open architecture eliminates vendor lock-in and capacity price gouging, putting you back in control.

TCO

Automatic refreshes, free software, zero capacity taxes, and flat support guarantee the lowest TCO.

Transparency

Get a quote online in minutes, with capacity and performance details presented clearly and simply.

Simplicity

Deploy and provision storage in under an hour, with technical support just a few clicks away.

What Applications Can ExaFlash Help?



**Virtualization /
Containers**



**Databases
and OLTP**



**AI / Machine
Learning**



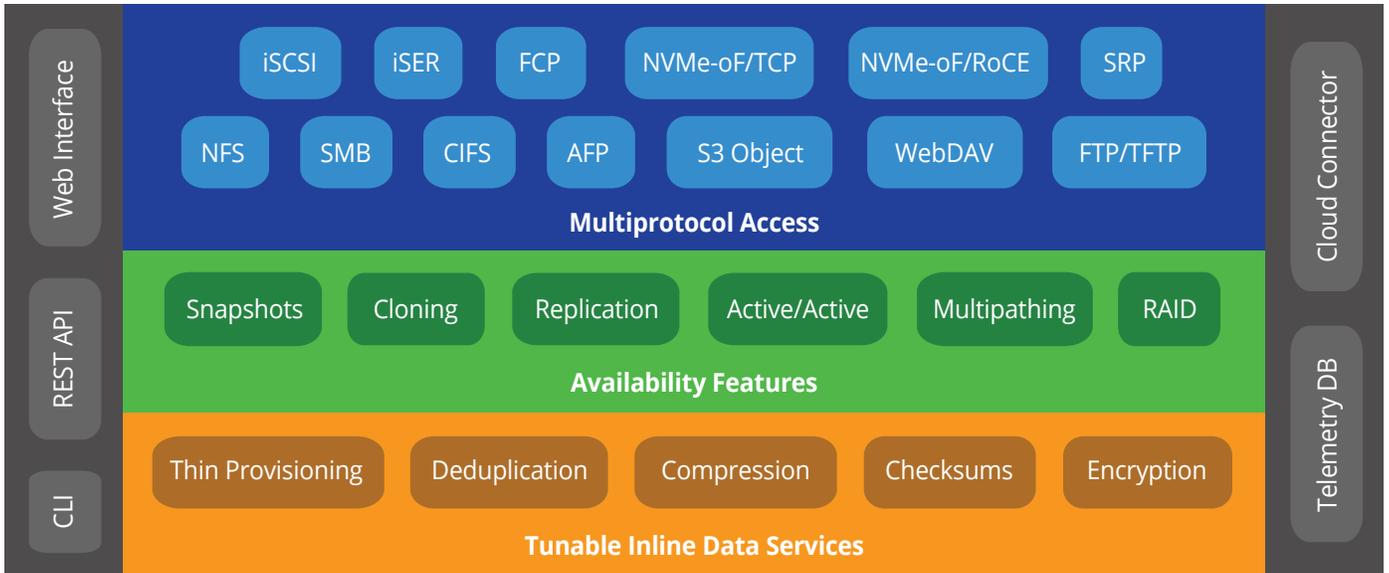
**Digital
Content**



**Big Data
and HPC**

Comprehensive Data Management Capabilities

ExaFlash arrays are powered by Nimbus Data AFX, a next-generation operating system and management platform developed exclusively for solid state storage. AFX supports a broad range of media, including NAND flash (TLC, QLC) and storage-class memory (Optane, 3D XPoint) using industry-standard NVMe and SAS interfaces.



With Vantage, our web-based management platform, you have one pane of glass from which to visualize your complete storage infrastructure. Vantage collects telemetry from the entire federation of ExaFlash arrays, providing centralized reporting to facilitate capacity planning, performance analysis, and administrative tasks. A powerful and fully-documented REST API simplifies integration of ExaFlash arrays into existing enterprise management platforms.

The screenshot shows the Nimbus Data Vantage web management interface. The main view displays the 'System Status' for a selected system (b44-sfp). It features a rack visualization with drive bays and a table of controller details.

CONTROLLER	ROLE	IP ADDRESS	BAY	OS VERSION	HA ASSOCIATE	SERIAL #	STATE	STATUS
nd3c0a6e	ACTIVE	10.10.10.97	141	141	nd3c0fae	00223d3c0a6e	OPTIMIZED	OK
nd3c0fae	ACTIVE	10.10.10.99	141	141	nd3c0a6e	00223d3c0fae	OPTIMIZED	OK

Optimize Storage for Your Workload

ExaFlash arrays put you in control. Thin provisioning, deduplication, compression, checksums, and encryption can be enabled or disabled individually, giving you powerful QoS control. Workloads that benefit, like virtualization and databases, can leverage these features. Workloads that do not benefit, like digital media or technical computing, can avoid them. This ensures that performance and utilization are always optimized for a given workload, avoiding the costly alternative of purchasing multiple storage arrays. Each SSD can even be accessed as an individual block device, providing the benefits of network storage with the latency of direct-attached storage.



Intelligent Mode

- › Complete data management
- › Dedupe, compression, thin provisioning, checksums, encryption, snapshots, clones, replication, RAID
- › Ideal for use cases that require comprehensive data management features



Ludicrous Mode

- › RAID protection only
- › Optimized for the absolute maximum throughput and I/O performance
- › Ideal for extreme performance workloads like machine learning, AI, HPC, analytics, and digital media



Bare-metal Mode

- › Direct access to each SSD
- › NVMeoF, iSCSI, FC, or SRP access to each SSD for the lowest possible latency
- › For JBOF and RDMA-based flash fabrics, or for environments with host-based storage management

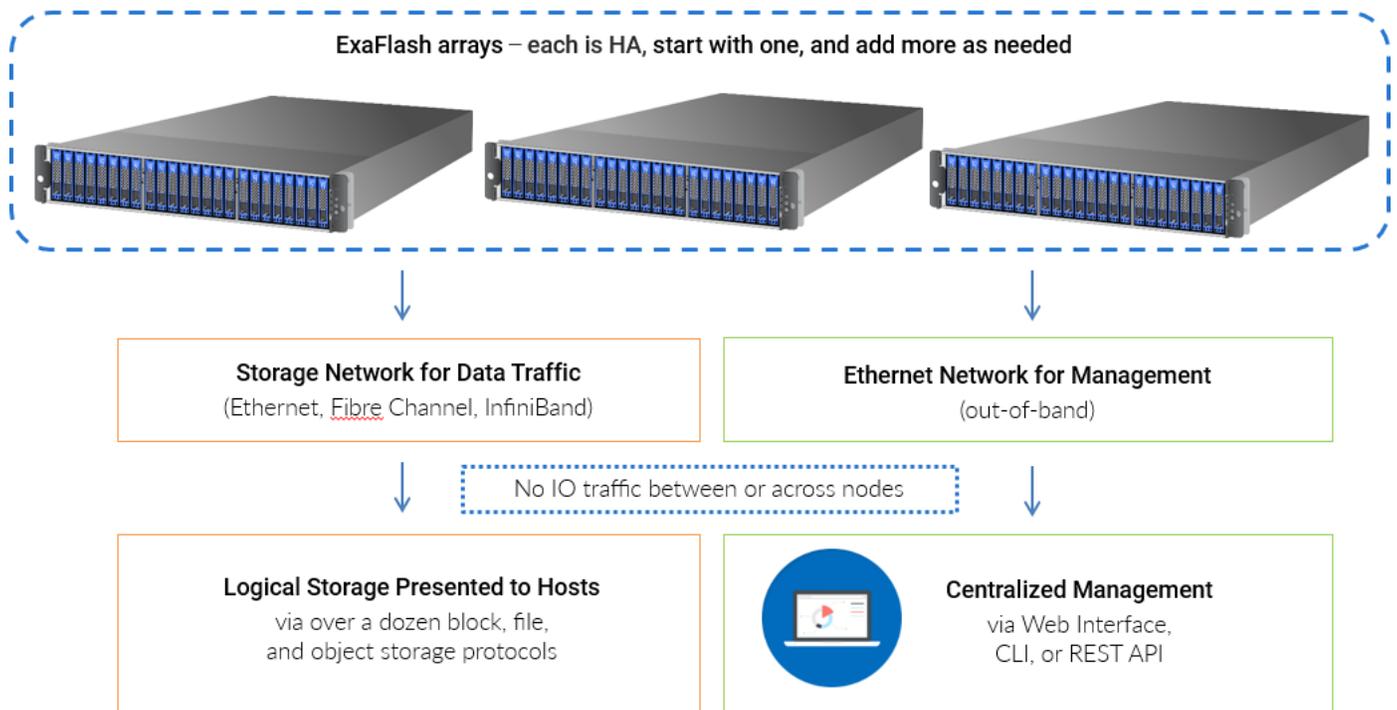
Multiprotocol Versatility with One Platform

ExaFlash arrays support over a dozen storage protocols. Block (SAN) protocols, file (NAS) protocols, and object (Amazon S3 compliant) protocols can coexist simultaneously on one ExaFlash array. All data types can even share the same logical pool of capacity, without any artificial silos. This not only eliminates the need for different storage arrays, but it also simplifies capacity planning and improves storage utilization with global data reduction. ExaFlash arrays are available with high-speed Fibre Channel, Ethernet, and InfiniBand connectivity.

Block	File	Object
iSCSI, iSER, FCP, SRP NVMeoF-TCP/RoCE	NFS, SMB, CIFS, AFP, WebDAV, FTP, TFTP, SFTP	Amazon S3 compatible
Solid State Technology		
TLC Flash QLC Flash Optane 3D XPoint NVMe SAS		
Storage Networks		
Ethernet Fibre Channel InfiniBand RDMA		

Scale Capacity and Performance in Lock-step

With each new ExaFlash array, performance and capacity increase in unison. The federated architecture does not depend on cluster-wide metadata, battery backups, nor a backend network fabric. This approach offers superior resiliency (no global metadata risk), much lower cost (dramatically less hardware), and more consistent performance (lower latency). Web-based management provides one pane of glass for administering the entire storage infrastructure.



Enterprise-class Resiliency

ExaFlash One arrays are rock-solid, fault-tolerant, and built for 99.9999% availability. ExaFlash offers dual active-active controllers, non-disruptive updates, online capacity expansion, redundant power/cooling modules, and hot-plug components. This no-single-point-of-failure design is completely tool-less – anybody can service ExaFlash with ease. Powered by Nimbus Data AFX, ExaFlash One includes snapshots, clones, asynchronous replication (to another ExaFlash array or to the cloud), online data scrubbing, and flash-optimized RAID protection.

Open Architecture Frees You from Vendor Lock-in

ExaFlash One supports up to 24 industry-standard SSDs, enabling up to 768 TB of raw flash in one 2U rackmount system (up to 5 PB effective after data reduction). While other enterprise storage array vendors force you to buy drives (the most expensive part) exclusively from them, Nimbus Data breaks up this monopoly. In partnership with major SSD manufacturers, Nimbus Data has qualified a variety of enterprise-grade SSDs. Customers have the freedom to populate ExaFlash One with these qualified SSDs while maintaining their support benefits. This open approach eliminates the excessive price markups imposed by existing enterprise storage array vendors.

Tectonic - A New Way Forward for Enterprise Storage

More than ever, a powerful data storage infrastructure is a strategic advantage. Yet existing enterprise storage arrays remain proprietary, complex, and expensive. For decades, enterprise storage vendors have unfairly burdened their customers with inflated capacity costs, escalating support fees, costly hardware refreshes, and an often tedious sales process. At Nimbus Data, we believe this status quo must change.

Nimbus Data Tectonic represents a complete rethinking of the entire enterprise storage experience, from initial customer engagement to support and operations. Tectonic puts freedom, transparency, and sustainability at the forefront. Tectonic offers enterprise storage customers superior service, greater agility, and lower total costs.

No Tiers

First-class support for everyone, including 24 x 7 x 365 support and rapid parts replacement.

Freedom

Support for industry-standard SSDs, eliminating vendor lock-in and excessive markups.

Simplicity

A flat annual support fee per array, not per terabyte, regardless of system age.

Ageless

Free non-disruptive controller upgrades after 3 years, eliminating costly hardware refreshes.

No Taxes

All-inclusive software, free software updates, and no capacity-based license fees.

Transparency

Get a detailed quote and TCO analysis online in minutes with just a few clicks.

No Lock-in

No long-term contract required – 1 year minimum, extendable up to 7 years as desired.

Zero Emissions - Better Storage for a Better Planet

With Nimbus Data's commitment to sustainability, Tectonic includes a Zero Emissions pledge. Under this initiative, Nimbus Data buys, at its own expense, 100% renewable energy (solar and/or wind power) to fully offset the carbon footprint of the power usage of ExaFlash arrays during the support term. So even if your data center does not use renewable energy, you will be doing your part to support sustainability and the health of our planet.

How Does ExaFlash Stack Up?




	AFX	Purity
Operating system name		
Block storage (SAN) support	✓	Requires FlashArray
File storage (NAS) support	✓	Requires separate pool
Object storage support	✓	Requires FlashBlade
Global data reduction across all data types	✓	✗
Fibre Channel support	✓	✓
Ethernet support	✓	✓
InfiniBand support	✓	✗
QoS control of each inline data service	✓	✗
Ludicrous mode (RAID-only)	✓	✗
Bare-metal mode (JBOF/direct SSD access)	✓	✗
Supports qualified industry-standard SSDs	✓	✗
Common software across all array models	✓	✗

How Does Tectonic Stack Up?




	Tectonic	Evergreen
Program name		
No support tiers / first class support for all	✓	✗
Add your own SSDs from qualified major vendors	✓	✗
Flat support cost regardless of array capacity	✓	✗
Zero carbon footprint backed by renewable energy	✓	✗
All-inclusive software and free software updates	✓	✓
Free non-disruptive controller upgrades after 3 years	✓	Requires Evergreen Gold
24 x 7 x 365 support and rapid parts replacement	✓	✓
Generate instant detailed price quotes online	✓	✗

ExaFlash One - Specifications

Performance	Throughput IOPS Latency	Up to 12 GBps (1 MB block size) Up to 2 million (4 KB block size) As low as 50 µsec (4 KB block size)
Controllers	QSFP+ version SFP+ version	4 QSFP+ ports per controller (up to 8 QSFP+ ports per system) 56 / 40 Gb InfiniBand (FDR / QDR) and 40 / 10 / 1 Gb Ethernet 4 SFP+ ports per controller (up to 8 SFP+ total ports per system) 16 / 8 / 4 Gb Fibre Channel and 10 / 1 Gb Ethernet
Storage	Raw Capacity Potential Capacity Flash Type SSDs	Up to 768 TB Up to 5 PB (after deduplication and compression) Supports qualified industry-standard enterprise SSDs Up to 24 (available in 4, 8, 16, and 32 TB capacities)
System	Management Software Purpose-built Architecture Redundant Hot-swap Components Built-in Management Ports	Vantage web management, command line interface, REST API Patented stateless internal fabric with 144 Gbps total bandwidth Controllers, SSDs, power/cooling modules, and transceivers 2 x Ethernet (primary mgmt, BMC mgmt), 1 x console port
Platform Support	Operating System Support* Virtualization Support*	Windows 2012/2016/2019/10, Linux, MacOS VMware vSphere, Citrix XenServer, RHEV, Microsoft Hyper-V, KVM
Dimensions	Height Width Depth Weight (maximum)	2U (3.5 in or 89 mm) 17.6 in or 447 mm 19.5 in or 495 mm 75.0 lbs or 34 kg
Power	Voltage Frequency Power Consumption	100 - 240 VAC 48 - 62 Hz 500 W typical (650 W max)
Environmental	Ambient Temperature Relative Humidity Altitude	Operating: 10 to 50 °C, Non-operating: 0 to 70 °C Operating: 10% to 80%, Non-operating: 5% to 95% (non-condensing) Operating: -50 to 3000 m, Non-operating: -100 to 12,192 m
Shock & Vibration	Operational Shock Operational Vibration Non-operational Shock Non-operational Vibration	5G for 11ms, 1/2 sine wave pulse 0.15G at 5-500 Hz 10G for 11ms, 1/2 sine wave pulse 0.5G for 5-500 Hz
Agency Approvals	CE Mark, EN55022/EN61000 Class A, FCC Class A, Canadian IECS-003, VCCI Class A, ISO 9002 manufacturing	
Warranty & Support	Up to 10 years of Nimbus Data Tectonic, including all AFX software, updates, 24 x 7 x 365 support, rapid parts replacement, free controller upgrade after 3 years, and zero emissions pledge	

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