

## XstreamCORE® intelligent Bridge

- Hardware Acceleration bridge
- Over 1.1 million 4K IOPs per controller
- Less than 4 seconds of latency
- Up to 6.4 GB/s throughput
- 32Gb and 16Gb Fibre Channel to 12Gb SAS
- Parallel data processing
- All reads/writes hardware accelerated
- Use with all SSD or SSD/HDD mix
- Add up to 240 SSD or HDD devices
- Input 85-264 VAC, 0.5A (typical), 47-63 Hz

## Features

- Ethernet based GUI
- Phone Home
- Patented SMP Mapping
- Read/Write Buffer commands
- Robust Event Logging
- Secure Protocols (future)
- PCIe analyzer
- SNMP, SNTIP
- IPv6, IPv4
- Passthrough for self-encrypted drives

## Reduced CapEx and OpEx

- Use low cost COTS SAS JBOD and JBOF Storage
- Create high density storage
- Integrates with software defined storage (SAS) solutions
- Lower maintenance costs
- Pay as you grow
- Longer useful life
- Plug and play

## ATTO XstreamCORE® intelligent Bridge Build Your Own Private Cloud Storage

A private cloud is a networked storage solution deployed for internal users in a single organization, with access blocked by that organization's firewall in order to keep data secure. It can exist either in an enterprise data center, or at a collocation facility owned and operated by a service provider. The benefit to a private cloud is that it provides flexibility and simplicity by enabling users to set up and manage their own environment.

ATTO XstreamCORE® intelligent Bridge serves as a platform for IT system integrators to build out a Private Cloud. XstreamCORE® intelligent Bridges incorporate off-the-shelf SAS JBOD storage into a Fibre Channel storage area network (SAN), an infrastructure that centralizes storage for shared server cluster access, supports server virtualization and provides guaranteed data delivery, low latency and scalability. The XstreamCORE adds robust management and monitoring features to that list, along with a common set of services when used with software-defined storage (SDS) software from companies including Nexenta Systems, DataCore and Maxta.

## Lower TCO

ATTO XstreamCORE enables lower total cost of ownership in comparison with proprietary flash and hybrid storage appliances that are costly to scale and create vendor lock-in. With XstreamCORE, a system integrator can build high-performance and high-capacity storage solutions that aggregate up to 240 SAS/SATA solid-state drive (SSD), hard disk drive HDD or hybrid SSD/HDD devices. Costs for an all-flash SSD system including JBOD enclosures and SSD drives can be as low as \$.79/GB, and \$.09/GB for an all-HDD implementation. XstreamCORE also lowers TCO by allowing servers to share SSDs as read and/or write cache, and it provides the option to boost existing storage performance by adding an SSD flash tier instead of using expensive All-Flash-Arrays.

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## About ATTO

For over 30 years, ATTO Technology, has been a global leader across the IT and media & entertainment markets, specializing in network and storage connectivity and infrastructure solutions for the most data-intensive computing environments. ATTO works with partners to deliver end-to-end solutions to better store, manage and deliver data.

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## High Performance, Low Latency

XstreamCORE delivers industry-leading performance: over 2.2M 4K IOPS and less than four microseconds latency in a dual-controller configuration. This is enabled by ATTO's exceptionally fast acceleration architecture, which provides dedicated memory modules and data paths for performance-critical commands. With all reads and writes accelerated in hardware, commands don't have to compete for shared system resources, resulting in more data transfers at faster transfer rates.

The XstreamCORE's high throughput and vanishingly low latency has quantifiable cost benefits: When used as a platform to build a storage solution with off the shelf components, \$/IOP cost is as low as .09 per IOP for All-SSD implementations, and an even lower \$.05/IOP for SSD/HDD combinations.

## Benefits

- Enables system integrators to build high-performance/high-capacity storage solutions that aggregate up to 240 SAS SSD, HDD or hybrid SSD/HDD devices—up to 1.4PB total
- Optimal platform for database acceleration, analytics and other high-performance applications
- Brings benefits of Fibre Channel SAN technology, including guaranteed data delivery, low latency and server and site clustering to SAS JBOD or JBOF storage

- Modular solution enables easy data migration and software/hardware component upgrades
- High availability configuration adds reliability to storage shared by multiple servers

Figure 1

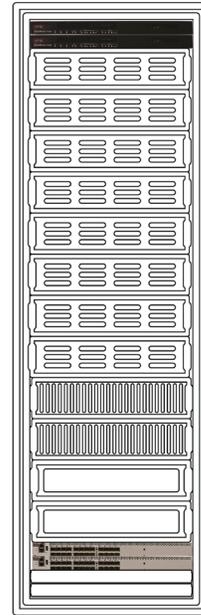


Figure 2

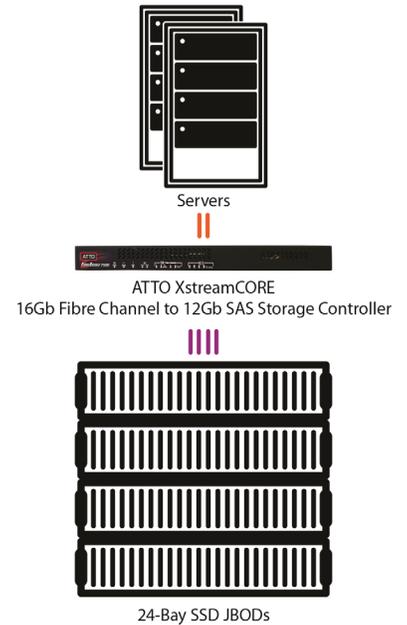


Figure 1 - Dual XstreamCORE bridges with 10 shelves of SSD/HDD storage connected to a server via 32Gb Fibre Channel

Figure 2 - All SSD configuration with a single XstreamCORE bridge achieving up to 1.1M 4K IOPS

	XstreamCORE w/ SSD	XstreamCORE w/ HDD	Hybrid Storage	All Flash Array	PCIe Flash
<b>Performance</b>	1.1M 4K IOPS	1.1M 4K IOPS	10,000s 4K IOPS	1M 4K IOPS	500,000 4K IOPS
<b>Throughput</b>	6.4 GB/s	6.4 GB/s	1 – 6GB/s	1 – 12GB/s	Up to 3 GB/s
<b>Usage</b>	Shared Storage	DAS, Shared	DAS, Shared	DAS, Shared	Single Server storage
<b>Controllers</b>	Dual	Dual	Single Node	Single Node	Single
<b>Latency</b>	Controller <4 microsecond, Overall solution latency depends on SSDs used	Controller <4 microsecond, Overall solution latency depends on HDDs used	5-10 millisecond	<1 millisecond	100s microseconds
<b>Cost</b>	As low as \$.79/GB	As low as \$.09/GB	\$3-12/GB	\$5-20/GB	\$4-10/GB, per server
<b>Scalability</b>	Up to 480TB (2TB SSDs)	Up to 2.4PB (6TB HDDs)	100s of TB	5-20TB usable	500GB - 5TB
<b>Build Your Own</b>	Scale storage, servers as needed	Scale storage, servers as needed	Fixed Configurations	Fixed Configurations	Fixed Configurations
<b>Services &amp; Features</b>	In Server	In Server	In Storage	In Storage	In Server