

PRELIMINARY



The ATTO XstreamCORE FC 7600 storage controller adds enterprise Fibre Channel connectivity to SAS JBOD, JBOF and RAID storage with data acceleration and capacity aggregation technology.

TECHNICAL FEATURES

- Connects SAS/SATA storage to a 32Gb Fibre Channel SAN
- Adds Enterprise Fibre Channel features to up to 960 SAS/SATA devices
- Separate data and control path processing
- xCORE Data Acceleration manages the data path and assures that all reads and writes are processed as fast as possible. xCORE is a key ATTO technology that enables sub-four microsecond added latency.
- eCORE Control Engine manages the control path so XstreamCORE can handle all non-data requests from the host and process them in the background while xCORE handles data transfers.
- Host mapping technology provides dedicated, secure paths to storage
- Adds only four microseconds of latency to each read and write, up to 250X more efficient than controllers that advertise one millisecond latency.
- ATTO data mover technology improves storage performance for copying and moving data while reducing compute, memory and network resource utilization while allowing applications.
- Highly programmable FPGA technology allows OEMs to integrate their features and IP onto XstreamCORE.
- Patented Drive Map Director™ simplifies LUN installation and reduces maintenance costs
- Built in diagnostic tools to analyze data path for performance optimization
- Available in standard 1U 19" rackmount with custom form factors available to OEM customers
- Two year standard product warranty

ATTO XstreamCORE™ FC 7600

32Gb GEN 6 FIBRE CHANNEL TO 12Gb SAS STORAGE CONTROLLER

ENGINEERED TO BE OPEN WITH A MODULAR DESIGN

The XstreamCORE™ has an advanced architecture that pushes the envelope on performance adding less than four microseconds of latency to storage. ATTO storage controllers do not alter the data path and improve data flow by creating a higher performing shared storage network using off-the-shelf SAS JBOD, JBOF and RAID arrays. The XstreamCORE offloads compute, memory and network resources from client servers to allow those resources to process more transactions, dedicate more resources to application usage and better utilize server resources for virtualization. The XstreamCORE allows IT administrators to build a complete, modular, open storage solution using all flash SSDs, all capacity HDDs or a hybrid mix of SSDs and HDDs with faster flash storage shared among all attached clients.

xCORE HARDWARE ACCELERATION AND DATA MOVER TECHNOLOGY

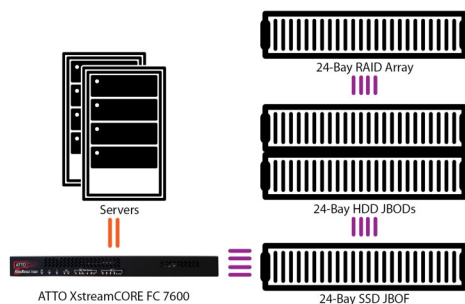
The XstreamCORE is a solid state plug and play controller that sits external to off-the-shelf-storage. ATTO has developed a hardware acceleration engine that accelerates all read and write data to an extreme level. Higher storage latency slows real-world performance while smaller amounts of latency allows more completed transactions in the available performance footprint. ATTO's acceleration technology achieves up to 2.4M 4K IOPS or 12GB/s throughput per controller pair while adding a consistent sub four microseconds of latency. Leveraging hardware acceleration for normal data transfers, the ATTO XstreamCORE also includes a hardware data mover that offloads read and write traffic from server CPU, storage and network resources to move data in the background. Since this is an open platform this technology can be used with any attached storage and overcomes limitations of data mover technology by allowing data movement between RAID arrays when installed behind ATTO storage controllers.

DRIVE MAP DIRECTOR™ STORAGE AND HOST LUN MAPPING

Drive Map Director™ storage mapping is patented technology which discovers the physical layout of storage devices and creates a virtual topology with device maps corresponding to the physical layout. This eliminates the need to remap storage if a shelf is moved for maintenance or experiences a failure. SAS drives are automatically assigned to a Fibre Channel LUN with a static, predictable configuration. The XstreamCORE also gives the IT administrator the ability to identify LUNs by flashing the device LEDs so that they can match physical storage to the assigned map. ATTO's host group mapping feature allows IT administrators to zone clients and servers to allow or deny access to SAS JBOD, JBOF or RAID storage attached behind the FC 7600. This provides security and gives administrators the ability to assign unique boot disks to physical server hardware.

DATA CENTER READY FOR REDUCED MAINTENANCE COSTS

ATTO's storage controller products are engineered to lower data center maintenance costs and comply with international regulations while delivering high performance and low latency. XstreamCORE products save up to 25% in power over using native Fibre Channel components and feature a front to rear cooling flow to integrate with cooling systems that expel heat from the data center. The XstreamCORE enables users to manage storage infrastructures with features not found in direct connect technologies. XstreamVIEW™ system manager is a remote management interface for configuration, monitoring and management of ATTO storage controllers. Advanced tuning and troubleshooting features include a built-in PCIe analyzer, performance monitoring, diagnostic and troubleshooting capabilities, phone home email notification and robust trace and event logging. Several management interfaces are available including GUI, CLI, Telnet, SNMP and FTP.



PRODUCT FEATURES AND SPECIFICATIONS ARE SUBJECT TO CHANGE



PRELIMINARY

xCORE ACCELERATION TECHNOLOGY

xCORE data acceleration technology features multiple parallel I/O acceleration engines with end to end I/O processing, hardware buffer allocation management and real-time performance and latency analytics. These features combine to provide very high, reliable throughput and IOPS while adding less than four microseconds of latency.

- Performance-critical commands and all reads/writes are accelerated in hardware
- End-to-end data protection in the acceleration technology and control functions to safeguard data throughout the controller and also enables max login management capabilities
- Eliminates bottlenecks with parallel processing for up to a 10Xs performance improvement over standard SAN storage
- Maximizes large block transfer sizes from Fibre Channel to SAS/SATA devices for optimal streaming performance (GB/s)

OEM CUSTOMIZATION

- Hardware configuration options allow for unique board ID to define initialization and characteristics of the OEM product
- Built on highly reliable architecture with an extremely low fallout rate in terms of manufacturing with a negligible field failure rate
- Configuration options accommodate features which interact with OEM's custom software to enhance the hardware
- OEM configuration files store OEM specific parameters in NVRAM which enable features, product naming and look and feel of the user interface for the OEM product
- Product labeling allows OEM logo and naming to appear on the front of the rack mount enclosure and GUI

eCORE CONTROL ENGINE

The eCORE control engine adds common, open storage services, integrates with industry standard APIs, handles reservations, storage routing and host and LUN mapping functions. The eCORE control engine also manages traffic for data mover offload functions with added error handling and diagnostic tools. These features add value to JBOD, JBOF or RAID storage while providing tight integration with server based software.

- Provides common services such as multi-initiator access, data mover, reservations and vendor

ATTO XstreamCORE™ FC 7600

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specific commands that are applied to all attached enclosure and disk devices.

- Maintains priority for data transfers while providing management of memory and cooperative multi-tasking capabilities.

CONNECTIVITY

FIBRE CHANNEL CONNECTIONS:

- Two 32Gb SFP+ Fibre Channel connectors (7600)
- Optical SFP+ modules included
- Full support for FC-AL, FC-AL2, FC-FLA, FC-FS, FCP-3, FC-PLDA
- Fibre Channel retry logic for FLOGI, PLOGI

SAS CONNECTIONS:

- Four 12Gb x4 mini-SAS HD connectors
- Auto negotiates to 12Gb/6Gb/3Gb
- Supports SAS and SATA devices

MANAGEMENT TOOLS

- Web based XstreamVIEW™ system manager
- Local diagnostics supported via Command Line Interface (CLI) via RS-232 and Ethernet
- Monitor SCSI Enclosure Services (SES) information provided by attached enclosures
- Persistent event log gathers at least 40,000 hardware, software and network events
- Dual firmware image support for protection from firmware update failures
- Performance and temperature monitoring
- Data mover copy manager and performance metrics
- Identify LUN by flashing device LEDs
- Core dump error analysis
- Drive Map Director and host group mapping
- SNMP, SNTIP, Telnet, FTP, iCMP

DATA ROUTING FABRIC TOPOLOGY

- Incorporates advanced ASIC, firmware and interface Incorporates advanced ASIC, firmware and interface technologies that enable users to fine tune ATTO controllers for specific applications.
- ATTO Embedded Operating System (AEOS) provides an integrated, multitasking environment that self optimizes to changing I/O patterns for maximum performance while maintaining priority for data transfers.
- Standard read buffer commands allow the collection of inquiry data, event logs, port statistics, phy statistics, SFP and SAS connector

information, trace log, core dump, configuration and status information.

- Write buffer commands are also supported to update controller firmware, clear the event log, clear Fibre Channel and SAS port and phy statistics and to also write a message to the event log.

PRODUCT DIMENSIONS

- Height 1.735" - Length 9.90" - Width 17.31"
- Weight 9.7 pounds (unboxed) 12.9 pounds (boxed)

OPERATING ENVIRONMENT

CONTROLLER OPERATION:

- Temperature 5 to 40° C at 10,000 feet
- Humidity 10 to 90% non-condensing

CONTROLLER STORAGE:

- Temperature -40° to 70° C
- Humidity 5 to 95% non-condensing

POWER AND AIRFLOW

- Input 85-264 VAC, 0.5A, 47-63 Hz
- 11 CFM (Ambient Air not to exceed 40° C)
- Front to rear cooling

AVAILABLE FORM FACTORS

- 1U Rackmount
- microATX embedded
- Custom embedded

ATTO XstreamCORE™	FC 7600
Input Connectors	(2) 32Gb FC (SFP+)
Output Connectors	(4) 12Gb mini-SAS HD (x4)
Architecture Latency	<4 microseconds
Initiators	Up to 64 supported
SAS/SATA HDDs supported	Up to 960 per controller
Form Factor	1U rackmount
Power Supplies	2
Power Supply Type	Hot Swap
Product SKU	XCFC-7600-002