



# Performance Benchmark

ATTO's FastStream SC 5300 Data Protection Storage Solution for Avid Storage Solutions

## Configuration

### ATTO FastStream SC 5300 Appliance

- RAID Storage Controller
- 2 DVRAID Virtual Drives
- 12 Hitachi SCSI 72GB, 15k RPM drives
- Dual 4 Gb Fibre Channel Host Interface
- Firmware Version 2.1

### Host Configuration

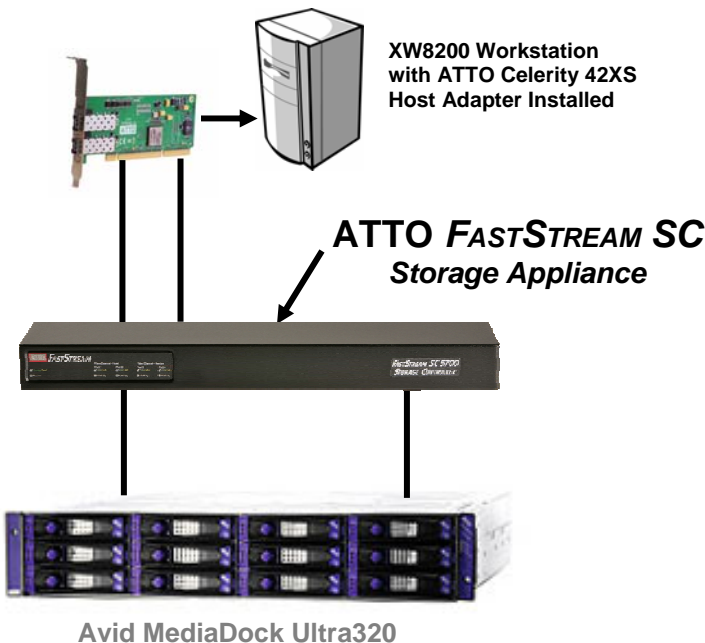
- Host Machine – HP XW8200
- Host Processor – 2.8 GHz Intel Xeon
- RAM – 2 GB
- Host Adapter - ATTO Celerity 42XS Fibre Channel
- ATTO Express Power Center Software

### Application Details

- IOMeter
- ATTO Benchmark Tool
- ATTO Express Power Center Software
- 128 kB Interleave
- Operating on MS Windows XP Pro

### Application Metrics

- **Supports 11 Streams of Uncompressed Standard Definition video via Avid Media Composer Adrenaline**
- **Supports 2 Streams of Uncompressed 10-bit High Definition Video plus Alpha Channel title**
- **Supports 11 streams of Avid DNx HD Video**



## Framework

In today's non-linear editing environments media assets are becoming more and more critical. The ATTO FastStream Storage Solution provides customers with existing non-RAID protected solutions a new level of protection while ensuring that the project workflow remains unaffected. This solution also allows customers to leverage their existing investment in SCSI based storage while adding data protection. This ensures that Video Editors will have constant, reliable access to their media even in the event of a drive failure. Global Hot Spares are available and provide customers a higher level of data integrity.

FastStream SC appliances solve the challenge of non-protected data while maintaining or exceeding current performance. By using ATTO's exclusive Digital Video RAID (DVRAID™) your digital video and audio assets are kept safe, keeping your edits intact in case of a drive failure. In addition, ATTO's Audio Track Streaming (ATS™) technology allows the FastStream SC to support the editing of multiple tracks of audio in stressful editing environments while managing latency.

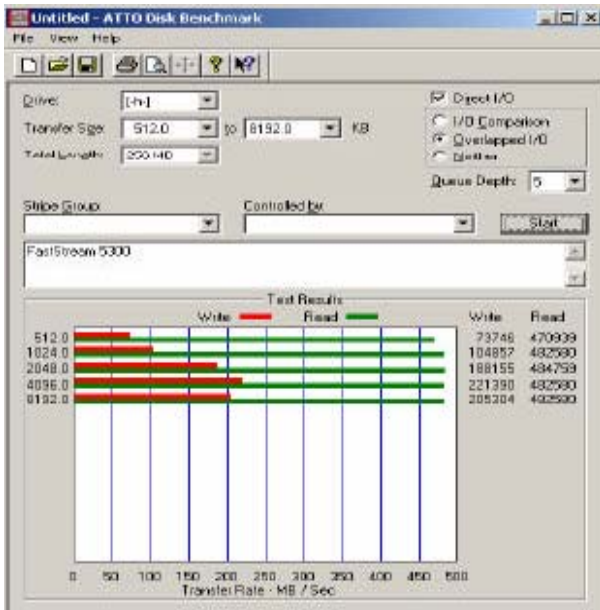
The FastStream SC Appliance line features a mature RAID stack used in ATTO products for over five years. Improving on industry-certified technology to create the FastStream SC, performance enhancing features such as caching, deferred writes, write coalescing and host transfer scatter combine to give the FastStream blazing fast performance.

The tested hardware / software storage solution consisted of a FastStream SC 5300 Storage Appliance connected to an Avid MediaDock 12 bay Ultra320 SCSI array in split bus mode. The MediaDock contained 12 Hitachi disk drives with 6 connected to each U320 bus of the FastStream SC 5300. The FastStream was configured as two virtual DVRAID devices and mapped to individual 4 Gb Fibre Channel ports. The FastStream SC 5300 was then connected to the Celerity 42XS PCI-X Host Adapter. The FC ports were then striped with ATTO's Express Power Center software. This software allows for large block transfers in a Windows striped environment. This increases overall performance while maintaining the data protection of the FastStream SC 5300.

Additionally, performance was measured with IOMeter using a RAW disk system with no file system installed.

## Summary of Results – Filesystem

The FastStream was setup in a dual DVRAID configuration, mapped to two independent Fibre Channel 4 Gb ports using **ATTO Express Power Center**. This resulted in breakthrough performance for a parity protected solution. The following benchmarks were run in the provided configuration through an NTFS file system. ATTO Disk Benchmark was used to perform read and write operations using the most popular video transfer sizes. The transfer sizes ranged from 512 kB up to 8 MB. The maximum performance that was achieved in this configuration was **483 MB/sec reads** and **221 MB/sec writes**. This performance provides users the data delivery standards they expect from an Avid storage solution while providing a new level of data protection.



## Summary of Results – Iometer

In this configuration, raw performance numbers were measured. These numbers do not include a file system and show raw performance to the disk drives without the aid of any additional software. The maximum performance that was achieved in this configuration was **433 MB/sec reads** and **247 MB/sec writes**.

### 100% Sequential Reads

Queue Depth	1 MB Transfers	2 MB Transfers	4 MB Transfers	8 MB Transfers
1	280.22 MB/sec	324.06 MB/sec	325.87 MB/sec	349.81 MB/sec
2	346.37 MB/sec	425.32 MB/sec	427.19 MB/sec	426.39 MB/sec
4	350.47 MB/sec	422.53 MB/sec	429.25 MB/sec	431.03 MB/sec
8	371.95 MB/sec	433.37 MB/sec	430.35 MB/sec	433.11 MB/sec

### 100% Sequential Writes

Queue Depth	1 MB Transfers	2 MB Transfers	4 MB Transfers	8 MB Transfers
1	175.53 MB/sec	221.27 MB/sec	241.01 MB/sec	247.72 MB/sec
2	185.02 MB/sec	217.34 MB/sec	230.56 MB/sec	215.75 MB/sec
4	179.13 MB/sec	206.68 MB/sec	230.85 MB/sec	213.45 MB/sec
8	170.35 MB/sec	194.90 MB/sec	221.43 MB/sec	221.60 MB/sec

## Conclusion

For transfer sizes common for today's video applications (512 kB – 8 MB), the FastStream SC 5300 provides the throughput necessary for today's demanding editor. This performance coupled with the advanced features of the FastStream such as data protection, online capacity expansion and ease of configuration allows customers to leverage their existing storage infrastructure. This performance difference becomes even more dramatic at greater queue depths which are now supported in the latest Operating Systems.

The FastStream SC achieves faster overall performance by implementing ATTO's advanced RAID algorithms and conversion technology. This allows the customer to benefit from advanced data protection, thus decreasing lost project time and better utilizing valuable resources.

## About the FastStream SC 5300

The ATTO FastStream SC 5300 Storage Appliance is a mid-range storage appliance optimized for bandwidth-intensive applications and is capable of delivering the high data-transfer rates required to support uncompressed HD, multi-stream real-time uncompressed SD video and multi-track audio editing. The ATTO FastStream SC also offers a unique combination of performance and flexibility by enabling your direct attached SCSI storage to become part of a storage area network while remaining storage agnostic. Connect individual disks, JBOD's or RAID systems and instantly increase performance and reliability. In addition, you can easily add new storage as your needs grow with the capacity expansion feature. The ATTO FastStream SC Appliance is available in an industry standard 19" 1U rack-mount or desktop unit, provides high-performance features such as hardware-based RAID, DVRAID™, multi-host connectivity, ATS™ technology, field serviceable design and simple management and configuration with ATTO's ExpressNAV™ GUI. ExpressNAV also features a built-in performance tool for the remote monitoring of application performance from the GUI.