

6Gb SAS: Performance, Flexibility, ROI

Upgrade to ATTO ExpressSAS 6Gb SAS/SATA RAID



Challenge

The need to provide a better, faster and more efficient storage infrastructure without increasing cost continues to be a challenge for IT professionals.

Solution

Upgrading to an ATTO ExpressSAS 6Gb SAS/SATA RAID controller is an ideal way to overcome this hurdle. ATTO 6Gb SAS/SATA offers a variety of new features that increase performance, provide more flexibility for connecting storage and make it easier to manage the overall storage infrastructure - all at a lower total cost of ownership.

Pure Speed

Data transfer rates for 6Gb SAS/SATA are up to 600 MB/s per connection; simply put it is twice as fast as 3Gb SAS/SATA. This allows users to run faster backups, complete more On-Line Transactions in a given period of time or simultaneously stream more video.

Lower Total Cost of Ownership

The ability to move twice as much data also means one controller instead of two 3Gb controllers to accomplish the same tasks. This results in lower initial hardware costs, lower management costs, lower power consumption, lower heat output, fewer cables and use of fewer PCI slots.

Real World Performance Benefits

Most benchmarking tools focus on measuring raw MB/s transfers between a host and drives without a file system or any interaction from an actual application. A better test is to focus on real world performance (Figure 1 & 2) by measuring the throughput from an application through the operating system to the RAID controller and then to the file system on the drives. ATTO leads the industry in real-world performance by managing latency through our exclusive Advanced Data Streaming™ (ADS) Technology. Combined with the latest 6Gb SAS/SATA technology, ExpressSAS controllers maintain a high performance pipeline of data flow with extremely low latency. When working with video, this results in higher concurrent video stream counts and no dropped frames. Using ATTO 6Gb RAID adapters results in up to a 50 percent increase in performance (up to 3 additional streams of 10-bit hi-definition) by simply replacing an existing 3Gb controller with an ATTO 6Gb SAS controller.

Make the Switch to 6Gb

- ✓ Twice the performance of 3Gb
- ✓ Scalable growth through multiplexing
- ✓ Backwards compatible with 3Gb and 1.5Gb devices
- ✓ Better management through improved zoning support
- ✓ Enhanced diagnostics results in less down time
- ✓ More flexibility with longer cable lengths

Up to a 50% Increase in Stream Counts

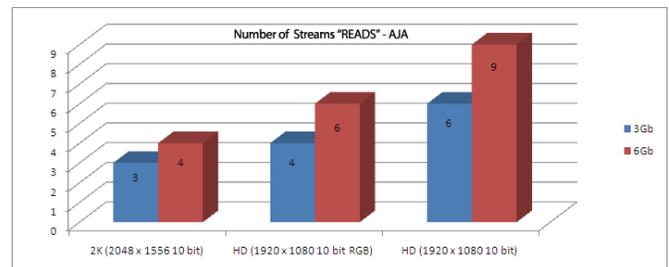


Fig. 1

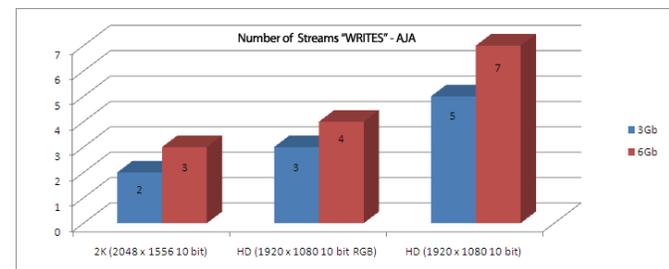


Fig. 2

Figures 1 and 2 represent actual stream counts taken with AJA's Benchmark tool using a MacPro and 16 drives.



Flexibility

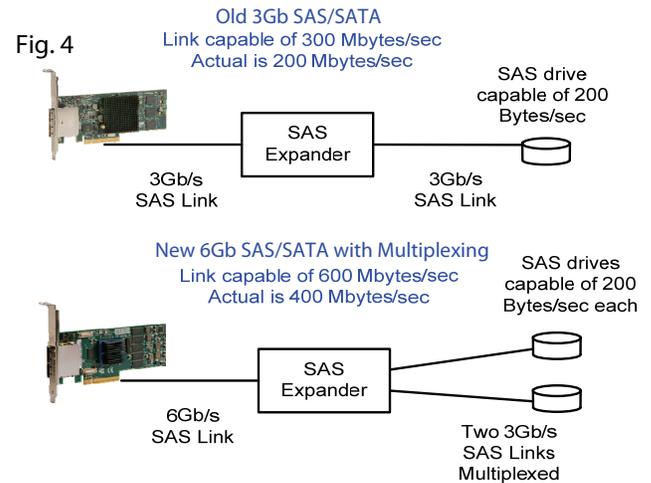
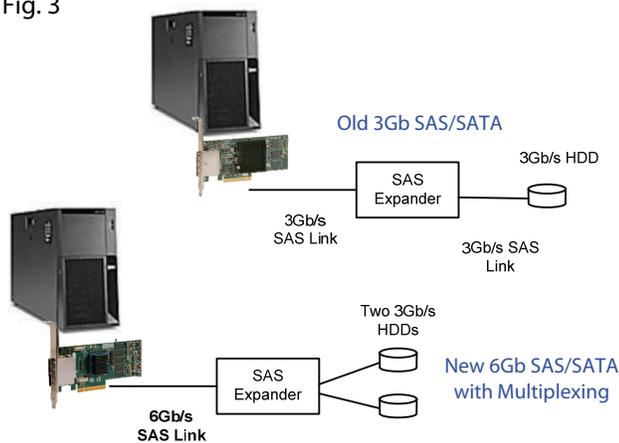
In addition to the benefits of increased performance, migrating from 3Gb to 6Gb SAS/SATA can easily be implemented by means of a gradual process. 6Gb SAS/SATA is completely backward compatible with 3Gb and 1.5Gb SAS/SATA. A current 3Gb RAID adapter can be upgraded to one that supports 6Gb, but the 3Gb drives don't need to be replaced. The RAID group and data on the drives remains intact once the 6Gb adapter is substituted.

A new feature called *multiplexing* is now available with ATTO 6Gb SAS/SATA adapters. This is where the RAID adapter uses a time division technique to multiplex, or share two 3Gb/s links on a single 6Gb/s link. This opens up a few use case opportunities to get more out of a storage system. The first allows for more drives to be working in parallel, at the same time, using the same number of SAS links. Figure 3 shows how two 3Gb drives can share a single 6Gb RAID adapter link. With 3Gb SAS/SATA, people used expanders to physically "connect" more drives, but those drives had to share the available links on the adapter. Now with multiplexing, up to 16 drives can communicate simultaneously on 8 adapter links.

The second multiplexing use case (Fig. 4) is the ability to increase the "performance usability" of a SAS/SATA link. With 3Gb SAS/SATA, each link is capable of 300 MB/s of data throughput. With

the exception of Solid State Drives, there are no SAS or SATA devices that can come anywhere close to using the available 300 MB/s of available bandwidth. With 6Gb multiplexing, two drives can now share the available bandwidth effectively doubling the efficiency.

Fig. 3



ATTO 6Gb SAS/SATA RAID Controllers are interoperable with 3Gb and 6Gb drive enclosures from many companies including:

HP	LSI Engenio	Maxx Digital
Dell	Supermicro	Ci Design
Intel	Chenbro	AIC

Name	Type	Port Configuration
R680	RAID Adapter	8 external
R608	RAID Adapter	8 internal
R644	RAID Adapter	4 external, 4 internal
R60F	RAID Adapter	16 internal
H680	Host Adapter	8 external
H608	Host Adapter	8 internal
H644	Host Adapter	4 external, 4 internal
H6F0	Host Adapter	16 external
H60F	Host Adapter	16 internal

The Bottom Line

Upgrading from 3Gb SAS/SATA RAID Adapters to ATTO 6Gb/s SAS/SATA RAID Adapters is not only a good investment for the future, but also a simple way to improve the overall value of a storage system at minimal cost.

- ✓ Instant performance enhancement
- ✓ More concurrent streams of video
- ✓ Seamless transition from 3Gb to 6Gb SAS/SATA

ATTO's family of 6Gb SAS/SATA RAID Adapters help maximize your productivity through the cutting edge technology associated with 6Gb SAS, plus users will receive the added benefits including ADS™, DriveAssure™, Data Recovery Mode and optional CacheAssure™ Technology. To learn more, visit www.attotech.com or contact an ATTO sales representative.

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