



July 2010 Issue # 16

## Latest Developments in SNIA Green Storage Initiative

*SNIA Green Storage Initiative*

### International Alliances and Collaboration on Green Storage

SNIA Europe is now recognized as an Endorser of the European Union Code of Conduct for Data Centres.

SNIA US has actively engaged with the US Environmental Protection Agency (EPA) over the past year on development of an ENERGY STAR Data Center Storage Specification. The SNIA has submitted 31 datasets to the EPA for their data collection project and continues to work closely with the EPA to ensure efforts, initiatives and industry resources are complementary for users. Several member companies use the SNIA as a way to anonymously submit data to the EPA. The SNIA has also shared test data with the EPA for validating power supply efficiency measurement methods, a joint project with Climate Savers Computing Initiative and Ecos and the 80 PLUS® program with work performed by EPRI.

### Technical Developments

The Capacity Optimization subgroup of the SNIA Green Technical Work Group (TWG) has developed heuristics for determining whether systems are using capacity optimizing technologies such as delta snapshots, thin provisioning, advanced RAID, data deduplication and compression. These heuristics will be contributed as input to the EPA ENERGY STAR Storage Specification in the near future.

### Green Storage Power Measurement Technical Specification v0.0.18 DRAFT

The initial draft Green Storage Power Measurement Specification defines a baseline standard for idle power metrics which can be applied as a uniform method for collecting idle power consumption measurements. It also includes a “Green Storage Taxonomy” for classifying storage products based on energy consumption characteristics and application environments.

[http://www.snia.org/tech\\_activities/publicreview/GreenPower\\_v018.pdf](http://www.snia.org/tech_activities/publicreview/GreenPower_v018.pdf)

### Creating a Common Language and Definitions

The GSI and the SNIA Green TWG have contributed terminology to the SNIA Dictionary. New terms include Effective Capacity and Storage Efficiency, which can be used to describe the amount of data that can be stored in a system with a given raw capacity. These terms are also shared with the EPA for the terminology sections of their planned ENERGY STAR Data Center Storage Specification.

## Education and Training

The GSI has continued to educate IT professionals and data center managers on Green Storage issues via SNIA tutorials and presentations at worldwide events. These include SNW and the Storage Developer Conference (SDC) in the USA, and SNW and the SNIA Europe Academies. Other events included INTEROP, both in New York and Las Vegas, Next Generation Data Center (NGDC) in San Francisco, Data Storage Expo in Tokyo, Green Data Center Conference in San Diego, as well as interviews and webcasts. The SNIA Tutorials are available at: [www.snia-europe.org/education/tutorials](http://www.snia-europe.org/education/tutorials). SDC presentations are available at: [www.snia.org/events/storage-developer2009/presentations](http://www.snia.org/events/storage-developer2009/presentations).

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## 6 Gb/s SAS: What is It and Why Do I Need It?

*By Cameron T. Brett, SCSI Trade Association*

You're an IT manager. Your job is to ensure the network, and more importantly the data, assuring it is always available. This is company-critical data: database, transactions, records, E-mail and web operations. SCSI or SAS is the disk drive of choice because it's more reliable, faster and manageable in your IT framework. It works well, but you're always monitoring it closely.

6Gb/s SAS is here today and is the follow-on to 3Gb/s SAS and improves an already reliable and robust technology. Features have been added to the new SAS specification which enhances reliability, performance, manageability and security.

### 6Gb/s SAS Environment

The 6Gb/s SAS ecosystem is made up of several familiar devices. Controllers, sometimes referred to as initiators, are typically I/O or RAID-on-Chip (ROC) controllers embedded on the system motherboard or on a PCIe add-in card.

On the other end of the SAS link are disk drives and expanders. Expanders take a single SAS link and connect it to many disk drives and are typically used in servers and external storage arrays. SAS expanders are also used as switches, which connect any server to any disk array—similar to Ethernet or Fibre Channel switches.

Other SAS products include multi-port muxes, which allow a SAS controller to select between two outputs and disk drive multiplexers, allowing a single SAS/SATA disk drive to be connected to two SAS controllers.

See Figure 1 for a comparison of 3 Gb/s SAS and 6 Gb/s SAS features.

SAS Generation (T10 Specification)	3Gb/s SAS (SAS-1 & SAS1.1)	6Gb/s SAS (SAS-2)
<b>Distinguishing Features</b>	<ul style="list-style-type: none"> <li>• Preserves legacy SCSI</li> <li>• SATA compatibility</li> <li>• Change from parallel to serial</li> </ul>	<ul style="list-style-type: none"> <li>• 3Gb/s compatible</li> <li>• Improved signaling</li> <li>• Zoning management</li> <li>• Improved scalability</li> </ul>
<b>Storage Features Supported/Enabled</b>	<ul style="list-style-type: none"> <li>• RAID 6</li> <li>• Small Form Factor</li> <li>• HPC</li> <li>• High Capacity SAS</li> <li>• Drives:                             <ul style="list-style-type: none"> <li>Ultra320 SCSI</li> <li>replacement</li> <li>Customer Choice</li> <li>Blade servers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• RAS (Data Protection - DIF)</li> <li>• Security (FDE)</li> <li>• Clustering</li> <li>• Larger Topologies</li> <li>• SSDs</li> <li>• Virtualization</li> <li>• External storage</li> <li>• 4K Sector sizes</li> <li>• Multi-core complex</li> </ul>

**Figure 1: SAS Features Evolve to Support Key Storage Trends**

### Improved Reliability and Manageability

The IT manager adventure continues – a disk drive in a storage array gets too many errors and begins to go off-line periodically. The storage array is one of several in a rack connected to servers and a SAN. It’s managed through a management console in another room. 6Gb/s SAS expanders can detect when the disk drive connection acquires too many errors and can send a message to the management console that the disk drive is having problems. It can be replaced before it fails – overnight when network use is low.

Managing SAS connections has become easier with 6Gb/s SAS. Technical improvements include better connectivity with SAS and SATA drives where “hot plugging” is used. SAS cabling has become more flexible with support for longer cables and a simplified connector scheme; only one type, not two, as it was with 3Gb/s SAS. (See Mini-SAS connectors below.)



**Figure 2: Mini-SAS 4X Connectors**

### Increased Security

As business grows, more disk storage is needed and more servers are added. Whether they’re tower rack or blade servers, 6Gb/s SAS can control the access that each server has, so only specific data can be accessed by certain servers. Securing zoning is standardized in 6Gb/s SAS implementations, specifically

defined to increase security in a server and storage environment. A “zone” is similar to a hardware firewall that compartmentalizes a group of disk drives to create secure zones, segregating data. It works with 6Gb/s and 3Gb/s SAS and SATA disk drives within a 6Gb/s SAS environment.

### **Faster Performance and Investment Protection**

Network user demands keep growing. More users mean more data and faster performance is necessary to keep up with demand. 6Gb/s SAS helps overcome the increased demands by doubling the throughput capability of SAS. Each SAS connection now supports up to 600MB/sec of throughput. Common SAS controllers come with four or eight ports, which creates connections up to 2.4GB/s and 4.8GB/sec of throughput, respectively.

Moving to 6Gb/s SAS means faster data throughput yet it works with 3Gb/s SAS, which protects any current investment in SAS disk drives and storage systems. With the use of 6Gb/s SAS expanders, twice as many 3Gb/s disk drives can be connected with 6Gb/s SAS multiplexing capability.

### **And a little “green” too**

The amount of performance per dollar increases as well with 6Gb/s SAS. As the cost of running a data center is directly related to power consumption, savings will come from higher performing storage at the same, or lower, power consumption. Fewer disk drives are needed to achieve performance targets with 6Gb/s SAS, which means less power and cost.

### **Summary**

6Gb/s SAS is more than an improved set of features over the 3Gb/s SAS. It offers IT managers highly tangible benefits that will make their data more reliable, secure and faster.

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## **the ‘Must-Attend’ European IT Event of the Year**

Now in its seventh year, SNW Europe is the largest fully-independent conference where IT managers and professionals can attend SNIA-endorsed education tracks, get hands-on access to a wide range of technologies, and mix with industry peers.

SNW’s unique association with the European storage user community enables us to bring you a conference program that addresses all of the highest priority issues shared among all types of organisation, large and small, public and private.

Attend SNW Europe and chose from over 100 conference sessions, meet over 50 leading vendors and mix with over 1,000 of your peers in the heart of Europe.

**Register today and save €120 by using the promo code: M16S10**

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## **Channel Community Program for SNIA Europe**

SNIA Europe is working on building a strong Channel Community program, one that will stimulate collaborative, working relationships with companies that resell, consult on, or influence storage technology in order to increase the level of integrated storage solutions in general business and IT environments.

It is the goal of the SNIA Europe to continue building our network of partners. The channel community provides significant benefits to the industry as a whole, fostering the dissemination of information on storage

networking technology, increasing IT industry awareness about trends, technologies and standards in storage networking, advancing the adoption of data storage solutions across all business and technology boundaries, establishing a strong international presence to address the needs and requirements of the local storage and information management marketplace.

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## Follow the SNIA Blogs on Cloud, Solid State & Ethernet Storage

Solid State Storage: <http://www.sniasssiblog.org>

Ethernet Storage: <http://www.sniaesfblog.org/>

Cloud Storage: <http://www.sniacloud.com/>

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## Latest Publications

[SNIA Europe Welcomes New Member to Board of Directors](#) (June 2010 - 60KB)

[Storage Performance Benchmarking Guidelines – Part 1: Workload Design](#) (May 2010 - 94 KB)

## Upcoming Educational Events

### SNIA Symposium Summer 2010

July 19, 2010 - July 22, 2010

San Jose, CA

The 2010 Summer Symposium is an opportunity for SNIA members to participate in various Committee, Forum, Technical Work Group and Birds of a Feather Sessions. We also have some informative keynote speakers on the agenda.

**Click here** for more info or to register.

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### 2010 Storage Developer Conference

20-23 September 2010

Santa Clara, CA

Now in its seventh year, and again expected to draw more than 250 developers and engineers, the Storage Developer Conference (SDC) is the only event created by storage developers for storage developers.

SDC provides the information and know-how to further advance solutions with features that shorten time to market for a developed solution, increase acceptability and interoperability in production environments, and help participants understand where storage technologies are heading. In addition, plans are being finalized for a CIFS/SMB/SMB2 plugfest.

[Click here](#) for a list of session topics planned.

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### **SNIA Europe @ IDC Roadshow**

22 September, 2010

Venue TBC, Ekaterinburg, Russia

**SNIA Speaker: Konstantin Andreyenko, Vice Chair, Russia Committee & HP**

[www.idc-cema.com](http://www.idc-cema.com)

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### **SNIA Europe @ 360° IT**

22 - 23 September, 2010

Earls Court, London, UK

**Supported by SNIA Europe UK Committee**

*UK Committee activities around 360IT:*

- Booth at the event promoting SNIA Europe with collateral and expert advise
- **Keynote Speaker: Bob Plumridge**, SNIA Europe Chairman & HDS

[www.360itevent.com](http://www.360itevent.com)

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### **SNW**

11 - 14 October, 2010

The Gaylord Texan, Dallas, TX

SNW is the one place that brings together top information technology executives, leading product and service providers and key industry influencers for the world's largest conference on storage, infrastructure and the data center.

Produced by Computerworld and co-owned by Computerworld and SNIA (The Storage Networking Industry Association), SNW features more than 150 educational sessions and presentations by top IT management experts covering today's most compelling IT topics, including cloud computing, green storage, virtualization and business continuity.

[www.snwusa.com](http://www.snwusa.com)

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## **SNIA Europe @ IP Expo**

20 - 21 October, 2010  
Earls Court 2, London, UK

### **Supported by the UK Committee**

*The SNIA Europe UK Committee will be present at IP Expo to offer educational resources and expert advice. A SNIA Europe speaker is also planned for the conference program.*

[www.ipexpo.co.uk](http://www.ipexpo.co.uk)

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## **SNW Europe, Datacenter Technologies & Virtualization World**

26 - 27 October, 2010  
The Congress Center, Frankfurt

The **'Power of 3'** events over 2 days under 1 roof in the heart of Europe continues to rank among the 'must attend' events in the European IT calendar.

[www.snweurope.net](http://www.snweurope.net)

[www.datacentertechnologies.net](http://www.datacentertechnologies.net)

[www.virtualizationworld.net](http://www.virtualizationworld.net)

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