

Build a Better Data Center with 24G SAS

STA WEBCAST

Presented by:

Rick Kutcipal, Dennis Martin and Bill Martin

This webcast available at https://www.brighttalk.com/webcast/663/290969

Dennis Martin, President, Demartek

Bill Martin, Co-chair, SNIA Technical Council; Chair, INCITS T10; SSD/IO Standards, Samsung Electronics

Association; Product Planner, Broadcom Ltd.

Rick Kutcipal, President, SCSI Trade

Today's Experts



SCSI Trade Assoc





SNIA at-a-glance





160

unique member

companies



3,500 active contributing members



50,000 IT end users & storage pros worldwide





STA at-a-glance



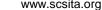


- 20 Year Old Industry Alliance of Key Ecosystem Partners
- STA Promotes Small Computer System Interface ("SCSI")
- We Welcome All to Join STA & Promote / Contribute to the Evolution of SCSI

Storage industry leaders are members of STA









Build a Better Data Center with 24G SAS – Dennis Martin

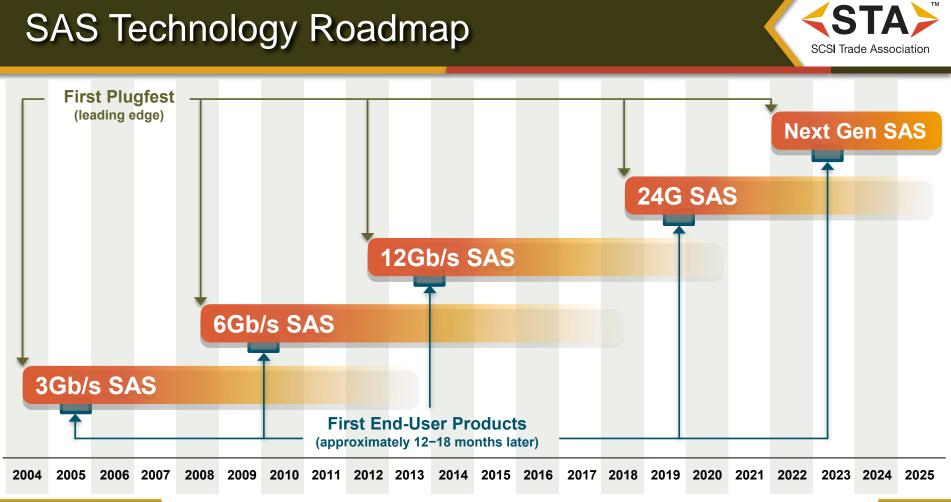
What's New – Rick Kutcipal

Today's Webinar



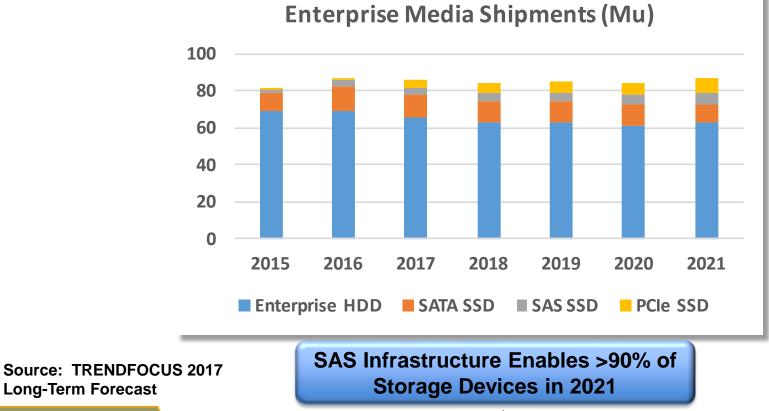
24G SAS Update – Rick Kutcipal





www.scsita.org

Enterprise Media Shipments by Interface



www.scsita.org

SCSI Trade Association

24G SAS – What's New?

- ♦ 22.5 Gbaud
- Efficient Encoding 128b/130b
- 20 Bit Forward Error Correction
 - Targeting a 30dB channel
- APTA (Active PHY Transmitter Adjustment) Continuous Adaptation
- Fairness Enhancements
- Other Features Aligning with 24G SAS
 - MultiLink SAS[™] wide port SAS for increased performance
 - Storage Intelligence optimized for solid state storage
 - Zoned Block Commands enhancements for capacity-optimized media (SMR)





About Demartek



- Industry analysis and ISO 17025 accredited test lab
- Lab includes enterprise servers, networking and storage (6/12Gb SAS, 10/25/40/50/100GbE, 8/16/32GFC, NVMe)
- We prefer to run real-world applications to test servers and storage solutions (databases, Hadoop, etc.)
- Demartek is an EPA-recognized test lab for ENERGY STAR data center storage testing
- Website: <u>www.demartek.com/TestLab</u>

Demartek Storage Interface Comparison

Free reference page on demartek.com

- www.demartek.com/Demartek_Interface_Comparison.html
- Search engine: "storage interface comparison"
- Includes transfer rates, history, roadmaps, cabling, connectors, etc.
- Demartek is NOT a product vendor
 - We use these technologies in our lab:



24G SAS



Bandwidth

- Each 24G SAS lane has 19.2 Gbps of bandwidth
- Each PCIe 4.0 lane has 15.8 Gbps of bandwidth

Compatibility

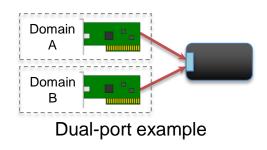
- 24G SAS is compatible with SATA, 6Gb/s SAS and 12Gb/s SAS
- Backwards compatibility allows mix-and-match
- Scales to thousands of devices
 - Built-in support from very small to very large-scale implementations

24G SAS Dual-port & MultiLink SAS™



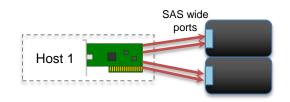
Dual-ported

- Typically used for redundancy in either active/active or active/passive configurations
- Devices have an "A" and "B" channel



♦ MultiLink SAS™

- Provides the option for additional bandwidth and additional host connections
- Can provide 2, 3, 4, 8 or more SAS lanes



MultiLink example

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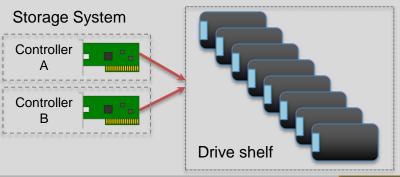
24G SAS Use Cases

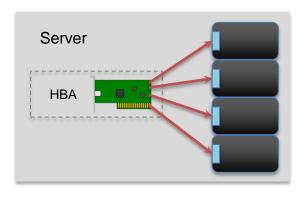
Server Use Case

 Typically want matching number of HBA ports and devices to have balanced bandwidth between HBA and device ports

Storage Array Use Case

- Bandwidth oversubscription possible because devices typically are not generating full bandwidth I/O all the time
- System architected to handle this







24G SAS Support



- Hot-swap (surprise insert/removal)
- Multi-path I/O (MPIO)
- Broad operating system and hypervisor support
 - OEMs are moving to 24G SAS
- Management infrastructure

Benefits of SAS White Paper

- Public white paper
- SAS ecosystem
- Expanders, JBODs
- Dual-ported drives
- MPIO, Hot-swap
- Power consumption
- Cabling and connectors

| July 2017 | |
|---|--|
| AS provides a robust, mature ecosystem for the enterph | ±€€§ |
| Executive Summary | SAS and its Ecosystem |
| scala distructed SCR, or SSR has been an industry and address of the test years, and the underlying exchancing scalar scalar SSR handles and the scalar methan titing years. SSR handles and the scalar methan titing years. SSR handles are tradition for star with an industry start and the scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar sc | Modi serves found in data centes include S45 adoptients that an accommodate S45 and S47A hand disk direks/HDO3 and solid state direks S505A. It is relatively integrations to add S45 support to a serve, configurations. Desending on the number of rark knins the server communes, a simple direk ages cuid support four S45 or S47A direks or a large set of direk bays could the server communes als support to 10.43 hinth small form factor (S47) edites or a large set of direk bays could configurations. Desending on to 12.3.5 mich large form- factor (S47) direks or up to 12.3.5 mich large form- factor (S47) direks of up to 12.3.5 mich large form- support as many add of the direks. |
| drives RHDDa and solid state drives SSDB, and 545 is commonly float of a data cetter servers from ready every manufacturer. | bus adapter (HBA) or SAS BNID controller either mounted directly on a server motherbaard in the form of a chip or on an adein-card (AQ) installed in one of the PCIe bus slots. In either form factor, the storage processing softmaded to the SAS processor, reducing host CPU utilization. |
| | SVS support is provided the body with virtually every operanding system turk runs in data convex, supporting a large number of SVS devices. SVS support in operaning systems includes interoperability with divects from wirous manufactures. Interoperability subgress are held with each new generation of SVS and as required as these new generations mature and addisonal components because available. |

http://www.demartek.com/Demartek Benefits of SAS 2017-07.html

http://www.scsita.org/content/library/the-benefits-of-sas/

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Questions and Answers

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