Build a Better Data Center with 24G SAS

STA WEBCAST
 Presented by:
 Rick Kutcipal, Dennis Martin
 and Bill Martin

Today’s Experts

Rick Kutcipal, President, SCSI Trade Association; Product Planner, Broadcom Ltd.

Dennis Martin, President, Demartek

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

160 unique member companies
3,500 active contributing members
50,000 IT end users & storage pros worldwide

Learn more: snia.org/technical

STA at-a-glance

Celebrating 20 Years - 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

Learn more: scsita.org
Today’s Webinar

- 24G SAS Update – Rick Kutcipal
- What’s New – Rick Kutcipal
- Build a Better Data Center with 24G SAS – Dennis Martin

SAS Technology Roadmap

First Plugfest (leading edge)

- 3Gb/s SAS
- 6Gb/s SAS
- 12Gb/s SAS
- 24G SAS (approximately 12–18 months later)

Next Gen SAS

www.scsita.org
Enterprise Media Shipments by Interface

Source: TRENDFOCUS 2017
Long-Term Forecast

SAS Infrastructure Enables >90% of Storage Devices in 2021

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: www.demartek.com/TestLab

Demartek Storage Interface Comparison

- Free reference page on demartek.com
  - www.demartek.com/Dematkek_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

Dual-port example

MultiLink example
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

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

Questions and Answers

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