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Storage Device Interface Evolution

Tom Heil
Senior Systems Architect
LSI

Historical Perspective

Mission Critical Enterprise → Flash Latency → SCSI Express

Parallel SCSI → Multiple Drivers → Serial SCSI – SAS

Clients, Value Servers, Cloud Servers → Flash Latency → SATA Express *AHCI or NVMe*

Parallel ATA → Multiple Drivers → Serial ATA – SATA

Flash-enabled latency reduction is *THE* catalyst driving PCIe storage emergence

PCIe vs. SAS/SATA for Storage

	PCIe	SAS/SATA
Latency	Advantage	
IOPs / BW / Capacity *per Watt*		
IOPs / BW / Capacity *per Slot*		Slot can host 10's to 100's of devices
Scalability	Limited Scalability w/PCIe switches	100's of devices
RAS (Reliability, Availability, Serviceability)	Efforts to Close Gaps Underway	
Maturity (for Storage Devices)		

Key Takeaways

- PCIe flash ideal for latency-sensitive applications
  - NVMe overcomes AHCI limitations
  - SCSIe unleashes flash performance in enterprise
- Long SAS/SATA SSD role in less latency sensitive apps
  - Accelerate existing infrastructures
- SAS/SATA dominates rotating media through decade
  - 12G SAS has headroom for multiple HDD generations
  - 6G SATA adequate for low-cost, hi-capacity storage

LSI is Accelerating Mobility at the Flash Memory Summit 2012!

- **Visit us at the booth 624-626 to:**
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  - See live demos of LSI SandForce Driven SSDs
  - Discuss the latest trends in flash and SSD solutions
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