

PCle and NVM

Security for a New Class of Storage

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A New Class of Storage

- **PCIe + SOP/PQI + NV Memory**
 - A New Class of Storage
- **PCIe and NVM**
 - Each provides new storage capabilities
 - End Users want this
 - SCSI protocols take advantage of new capabilities

A New Class of Storage

- **Significant implementation differences**
 - Not RAID and not rotating media
 - Fast, non-volatile storage close to processor
- **Activities**
 - STA SCSI-Express
 - T10 SOP/PQI
 - SNIA SSSI PCIe Task Force
 - SNIA NVM Programming TWG

Why Security?

- **Portability**
 - HDD, SSD have done this
 - Now a new class of PCIe NVM devices
- **Compliance**
 - At least 46 States have data privacy laws
 - All have encryption safe harbors
 - Exempts lost encrypted data from public disclosure

Why Security?

- **Protect the Data**
 - Obsolete
 - Failed
 - Stolen
 - Misplaced
 - Decommissioned
 - Reprovisioned

- **Secure Erase**
 - Log-Append mechanism requires attention
 - All un-erased data must be cleared
 - Unmapped data must be cleared
 - Areas scheduled for garbage collections must be cleared
 - Any area that may have contained user data must be cleared
- **Accessibility**
 - Current NVM technologies easier to examine
 - No spin stand required
 - Common (and inexpensive) mechanisms available

- **Is self-encryption appropriate?**
- **Best security practices for NVM**
 - Encryption
 - Key Management
- **Manufacturing**
 - Requirements and best practices
- **Performance**
 - Cryptographic module suitability for NVM speeds
- **Applicability of requirements**
 - FIPs
 - Common Criteria
 - Others?



Thanks !

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