Changes to Storage Standards

" The great thing about standards is that there are so many to choose from! "

Douglas Gilbert
Linux File System + IO Workshop
San Jose, February 2007

Standards shops

- t10.org   SCSI command sets & SPI+SAS
  - scsita.org   marketing + policy

- t11.org   Fibre Channel + management

- t13.org   ATA command sets & PATA
  - sata-io.org   SATA

- sffcommittee.org   small form factor, plugs etc
- IETF(iSCSI,iSER), IEEE, Infiniband, SNIA(RAID)

SAM-4, SSC-3, OSD-2

- SAM-4: initiator_port -> I_T nexus

  - address more than 16384 logical units

- SSC-3

  - security, security and security

- OSD-2: obsolete all OSD-1 cdbs

  - replacement cdbs have 4 byte alignment

SPC-4

- I_T NEXUS (concept + RESET tmf)

- Log subpages

  - LOG SELECT cdb has page + subpage

  - statistics + performance log pages

- REPORT IDENTIFYING INFORMATION

  - user can tag device with user defined name

- security goals and threat model (ESC)

- obsolete: linked commands, basic tm

SBC-3

- Background media scan

- Validation protection additions

- Large sector support (4K)

- Statistics and performance log pages

- Groups

- ORWRITE

- Write uncorrectable

SAS-2

- 6 Gbps by mid-year
  - drop back to 3 Gbps or 1.5, 10 metre cables
- multiplexing
- zoning
- self configuring expanders
  - SMP more efficient
- multiple affiliations

SATA-2.6 (March '07)

- internal slimline cable + connector
- internal micro connector for 1.8" hdd
- mini SATA internal multilane (SFF8087)
- mini SATA external multilane (SFF8088)
- NCQ priority + unload
- enhance BIST Activate FIS
- enhance reception of Signature FIS

SAT -> SAT-2

- SAT-1 being voted on now
- SAT-2:
  - ATAPI translations
  - NCQ control via mode pages
  - persistent reservations (+reserve/release)
  - ATA security mode translations
  - lun to port multiplier mappings
  - large block + ORWRITE translation
  - non-volatile cache translation
  - end to end data protection