Storage Management Profile
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Symbios Logic
State of Storage Management

• SCC Developed 1992 - 1996
  – Introduced Many Useful Concepts
    • Flexible RAID Configuration and Status
    • Flexibility => Complexity
  – Not Widely Accepted

• SCC 2 Developed 1996 - 1997
  – Introduced Simpler, Attribute Configuration

• SES Developed 1996
  – Introduced Enclosure Services for 1 or More Enclosure Devices
Goal of Storage Management Profile

- Enable Storage Providers and Vendors to Provide Tools that Use a Minimal Set of Commands to Configure, Manage, and Monitor Compliant Storage Management Devices (such as RAID Systems, JBODs)
- Knobs Control of Whiz-Bangs are Left to the Providers of Said Knob
The Cycle of User Interaction with New Technology

Time

Knob Fetish

Degrees of Control

New Technology: What Can It Do?

Cool! I can get 00.09% if I change this widget to 47.3

Storage Management?

Just Plug It In & Let the Product Do the Work
Storage Management Profile

Why?

• Basic Configuration & Monitoring of Storage Systems in Open Systems Environments is Being Demanded by the User Community

• Desire to Increase the Markets Readily Available to Storage Vendor Suppliers and Third Party Storage Management Vendors

• Enable Rapid Technology Evolution Acceptance In the Market Place by Defining Attribute Oriented Storage Management/Monitoring

• Provide a Standard Set of Configuration/Monitoring Attributes that may be Used in DMI (and other similar interface) Definitions
Profile Topics?

• Device Discovery Requirements
  – WWN Usage Specification
  – Mandate of Commands (i.e. REPORT LUNs, etc.)
  – Storage System Configuration Entry Point Specification
    • LUN 0?
    • Other Compatible Scheme?

• RAID Configuration/Monitoring Requirements
  – Simplified SCC-2 Configuration + Monitoring
  – Redundant Controller Management?

• Enclosure Management/Monitoring
  – SES Usage, Sub-Enclosure
Consistent Use of Globally Unique World Wide Name

1 Volume (Logical Unit)

Original Controller

WWN = 5A CD E4 8B 17 34 F6 2D

Configuration after controller replacement and

WWN = 6A CD E4 8B 17 34 F6 2D 12 34 56 78 9A BC DE 31

2nd Volume (Logical Unit)

Created by Replacement

WWN = 5A CD E4 8B 17 34 F6 2D 12 34 56 78 9A BC DE 95

WWN = 6A CD E4 8B 17 34 F6 2D 12 34 56 78 9A BC DE 98
Entry Point for Configuration/Monitoring

• SCC Defines LUN 0 as Config/Monitoring LUN
  – Clean Definition - Always Available
  – Requires Significant Changes in Existing Drivers

• Alternate Proposals?
  – Allow Direct Access Device Access to SCC Command Set per SES precedent
  – Others?
Simplified SCC-2 Configuration

- Simplified SCC Attributes
  - Capacity of Volume
  - Redundancy Group Method
  - Rebuild/Reconstruct Priority
  - Bus Protection Requirement
  - Performance Hints
    - Normal Data Transfer Rate
    - % Sequential READs, % Sequential WRITEs
Redundant Controller Volume Mapping

- Assign/Deassign Volume
- Report Volumes/Report Deassigned Volumes

```
VOLUME = BILL
VOLUME = SUE
VOLUME = BOB
VOLUME = SARAH
VOLUME = KIM
```
Enclosure Management

- SES Provides Needed Mechanisms
  - Sub-Enclosure Model Required
Where to Go From Here?

- Proposed Profile Outlining Agreed Upon Parameters?
- Meet as Part of T10 Week?