SCSI MIB Liaison Report

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Agenda

• MIB Team intro
• Requirements Statement
• Review of Object Model
• Latest Developments
• Object Statistics
• Open Issues
Team Intro

- Lead: Yaron Lederman, Siliquent;
- Editor: Michele Hallak–Stamler, SANRAD;
- MIB Advisor: Keith McClogether, Cisco
- iSCSI Advisors: Mark Bakke, Cisco; Marjorie Krueger, HP;
- SCSI Advisor: George Penokie, Tivoli (we hope)
- Troops: Ron Roberts, Adaptec; Satish Mali, Stonefly Networks; Kha-Sin Teow, Brocade; Sajay Selvaraj, Hcl Technologies, myself.
Requirements Statement

SCSI MIB should enable the representation of SCSI entities and their respective status, including error and performance-monitoring statistics. It should be possible to perform a limited number of configuration modification and diagnostic actions. This MIB is not required to provide comprehensive configuration capabilities.
UML notation

Association - There are zero or more Thing2 instances associated with each Thing1. A Thing2 is associated with exactly one Thing1.

Aggregation - Each Thing3 contains zero or more Thing4 instances. A Thing4 belongs to exactly one Thing3 and cannot exist without a Thing3.
UML Notation

Inheritance (Logical OR) - Each instance of Thing10 or Thing9 is also a Thing8. A Thing8 must be either a Thing9, a Thing10, or both.

Reflexive Relationship - Each ReflexiveThingy can be related to zero or one "parent" ReflexiveThingy; each ReflexiveThingy can be the parent of zero or more other ReflexiveThingies. This basically specifies a tree structure.
Object Model (Top Half)

The SCSI instance is the top-level object to which everything else belongs. An SNMP agent could represent more than one instance if it represents either a stack of independent devices, or independent virtual partitions of a larger device.
Object Model (Bottom Half)

To ScsiTargetDevice

1..N

ScsiLogicalUnit
-ScsiInstIndex : ScsiInstance
+ScsiDeviceIndex : ScsiDevice
+ScsiLuIndex
-LuName
-VendorId
-ProductId
-RevisionId
-Statistics

1

0..*

ScsiLunParent

0..^ 1

ScsiLun
-ScsiInstIndex : ScsiInstance
+ScsiDeviceIndex : ScsiDevice
+ScsiLuIndex : ScsiLogicalUnit
+ScsiLunIndex
-ScsiLun

For logical units with more than one LUN, one of these entries exists for each additional LUN.

To ScsiPort

ScsiTargetPort
+ScsiInstIndex : ScsiInstance
+ScsiDeviceIndex : ScsiDevice
+ScsiPortIndex
-TargetPortName
-TargetPortIdentifier
-Statistics

0

ScsiAttachedInitiator
+ScsiInstIndex
+ScsiDeviceIndex
+ScsiPortIndex
+ScsiAttIdName
+ScsiAttIdIdentifier
-Statistics

This association allows dependent LUNs (page 38) to be modeled. If ScsiLuParent is 0, the LU belongs directly to the target. If non-zero, it is the LuIndex of the parent LU within the target to which it belongs.

To ScsiPort

ScsiInitiatorPort
+ScsiInstIndex : ScsiInstance
+ScsiDeviceIndex : ScsiDevice
+ScsiPortIndex
-InitiatorPortName
-InitiatorPortIdentifier
-Statistics

0..*

ScsiAttachedTarget
+ScsiInstIndex
+ScsiDeviceIndex
+ScsiPortIndex
+ScsiAtttIdName
+ScsiAtttIdIdentifier
-Statistics

1
Object Model

• ScsiInstance allows agent to represent more than one independent device
  – Supports different implementation boundaries between MIB agents and devices

• Note that in this model ScsiInitiator refers to a “local” Initiator, not the remote one connected to ScsiTarget
  – That’s modeled by ScsiAttached Initiator object
Latest Updates

• Suggestion that ScsiLogicalDevice to have:
  – ScsiAttachedInitiator object (0..N) aggregation to collect per-initiator statistics
Suggested Device Statistics

• Initial list:
  – number of scsi target ports
  – number of scsi initiator ports
  – count of commands
  – count of good status returns
  – count of aborts sent by initiator
  – count of commands completed with check condition
  – count of aborts made by the device server
  – count of resets
  – count of illegal requests
  – count of I/O process terminations by the target
  – count of Recover Buffered Data commands
• What have we missed??
Suggested Port Statistics

• Initial list:
  – Read transfer rate
  – Write transfer rate
  – Number of packets/frames transmitted by this port
  – Number of packets/frames received by this port
  – Count of octet/bytes transmitted by this port
  – Octets or bytes received by this port
  – Number of bytes/octets received with wrong parity

• What else would be useful??
Open Issues

• Number of identifiers per Logical Unit? Is 4 enough?
• Do we need per initiator statistics in a ScsiLogicalUnit??
• How many Device Names are there per (Initiator or Target) Device??
  – And in a device that is both an Initiator and a Target are the Device Names identical?
Open Issues

• Should there be support for resetting SCSI Initiator elements?

• What should this MIB include about:
  – SCSI Domain?
  – Service Delivery Subsystem?
  – Interconnect?
Summary

• The object model is not yet finalized
• Appropriate statistics are still be identified
• Feedback from T10 on both aspects is requested at this time
  – And is anything else being missed ????