TO: T10 Membership
FROM: Paul A. Suhler, Quantum Corporation
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SUBJECT: T10/05-049r0, SSC-3 Physical Device Model

Revision 0:

- Initial proposal based upon discussion in SSC-3 working group meeting, 19 January 2005, T10/05-048r0, discussion item 6.4.

Background

In the course of developing the Automation/Drive Interface – Commands (ADC) standard, the ADI working group found that it was necessary to separate the concept of the physical device from that of the device server, mainly because it was necessary to have two different device servers controlling a single physical device. However, the concept of a physical device has never been formalized.

Actions from outside the device server can affect its execution of commands. Examples include insertion of media by a media changer, automatic cleaning, inputs from a front panel, and commands executed by an ADC device server.

Proposed Changes

1. Add the following to clause 3.1 Definitions:

3.1.X physical device: The mechanism in a SCSI target device which performs operations on a storage medium, including reading and writing, and in a removable device loading and unloading.

2. Add the following to clause 4.2 Sequential-access device model:

4.2.X Physical device

A sequential-access device contains one or more physical devices. A physical device performs operations upon the medium, such as loading and unloading, positioning, writing, and reading the medium, and reading and writing medium auxiliary memory.

The following figure shows the location of the physical device in the SCSI target device model.
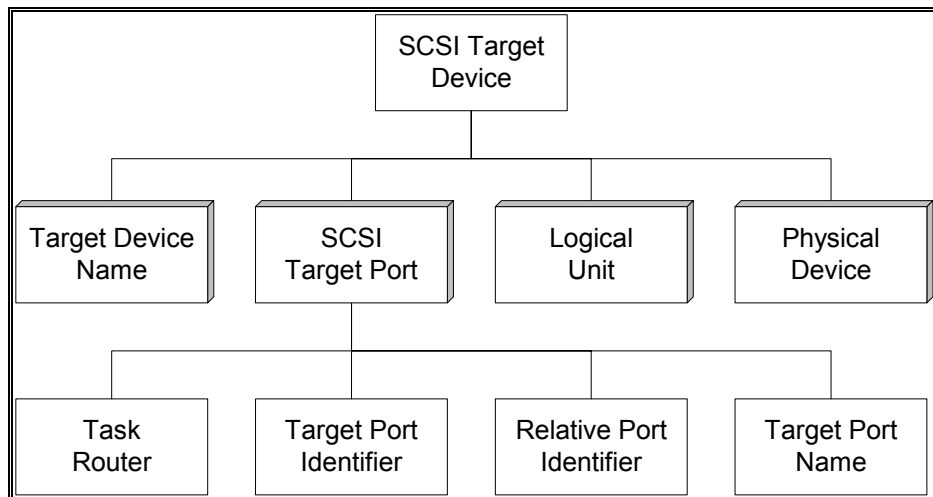

Figure X – Physical Device in SCSI Target Device

Editor's Note: I chose SAM-3 Table 11 as the basis (rather that 14, Logical unit model) because multiple device servers can access the physical device. And I've shown multiple physical devices, even though I can't name a tape drive that has them.

The physical device is controlled by various entities, which may include:

   a) One or more SCSI device servers (e.g., SSC and ADC);
   b) A front panel;
   c) A networked management server; and
   d) A media changer.

These entities perform operations which change various attributes of the physical device. These
attributes affect the operations on the medium, routing of tasks from SCSI target ports to logical units,
and the identifiers and names presented by the ports. The following table contains examples of
attributes which may be present in a physical device, and which component of the target device is
affected by each attribute. The set of attributes implemented by a physical device is vendor-specific.

Table X – Physical device attributes

Attribute	Reference
Microcode	SPC-3
Very high frequency data	ADC
TapeAlert flags	A.1
Position on the medium	4.2
Number of blocks	SPC-3
Block length	SPC-3
Autoload mode	SPC-3
SCSI unload hold override	ADC
Automatic unload hold	ADC
Write protect	ADC
Disaster recovery mode	ADC
Clean protect	ADC
Manual disaster recovery off	ADC
Microcode update protect	ADC
Microcode update enable	ADC
Current density	ADC
Logical unit number (one value per logical unit per SCSI target port)	SAM-3
Target port identifier	SAM-3
Relative port identifier	SAM-3
Target port name	SAM-3

Editor's Note: This table *could* show who reads and who writes each attribute. For example, microcode and
autoload mode are written by device server and read by physical device. VHF data written by physical device and
read by device server. LUNs are written by device server and read by target port (task router). Or is this a useless
effort that's going to lead to unending hairsplitting?