TO: T10 Membership
FROM: Paul A. Suhler, Quantum Corporation
DATE: 12 September 2006
SUBJECT: T10/05-049r6, 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.

Revision 1:

- Revisions based upon discussion in SSC-3 working group meeting, 9 March 2005, T10/05-111r0.

Revision 2:

- Revisions based upon Rod Wideman's email of 21 March 2005.
- Added Dave Peterson's UML figure.

Revision 3:

- Updated SSC-3 references.

Revision 4:

- Revised UML.

Revision 5:

- Changes from feedback via e-mail and at the SSC-3 WG meeting, 12 September 2006., and via e-mail.

Revision 6:

- Added missing change suggested by WG.

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: An object in a SCSI target device that performs operations on a volume (e.g., reading, writing, 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 (e.g., loading, unloading, positioning, writing and reading the medium, and reading and writing medium auxiliary memory).

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

    a)   One or more SCSI device servers (e.g., SSC and ADC);
    b)   An operator interface;

    c)   A management interface; and
    d)   A media changer.

A media changer may control the physical device by inserting a medium into or removing a medium from the physical device. When inserting a medium into or removing a medium from the physical device, the operator acts in the role of a media changer.

These entities perform operations that change various attributes of the physical device. These attributes affect the operations on a volume. Figure X shows in UML notation an example of the entities in a SCSI target device, and shows the attributes which comprise the physical device.
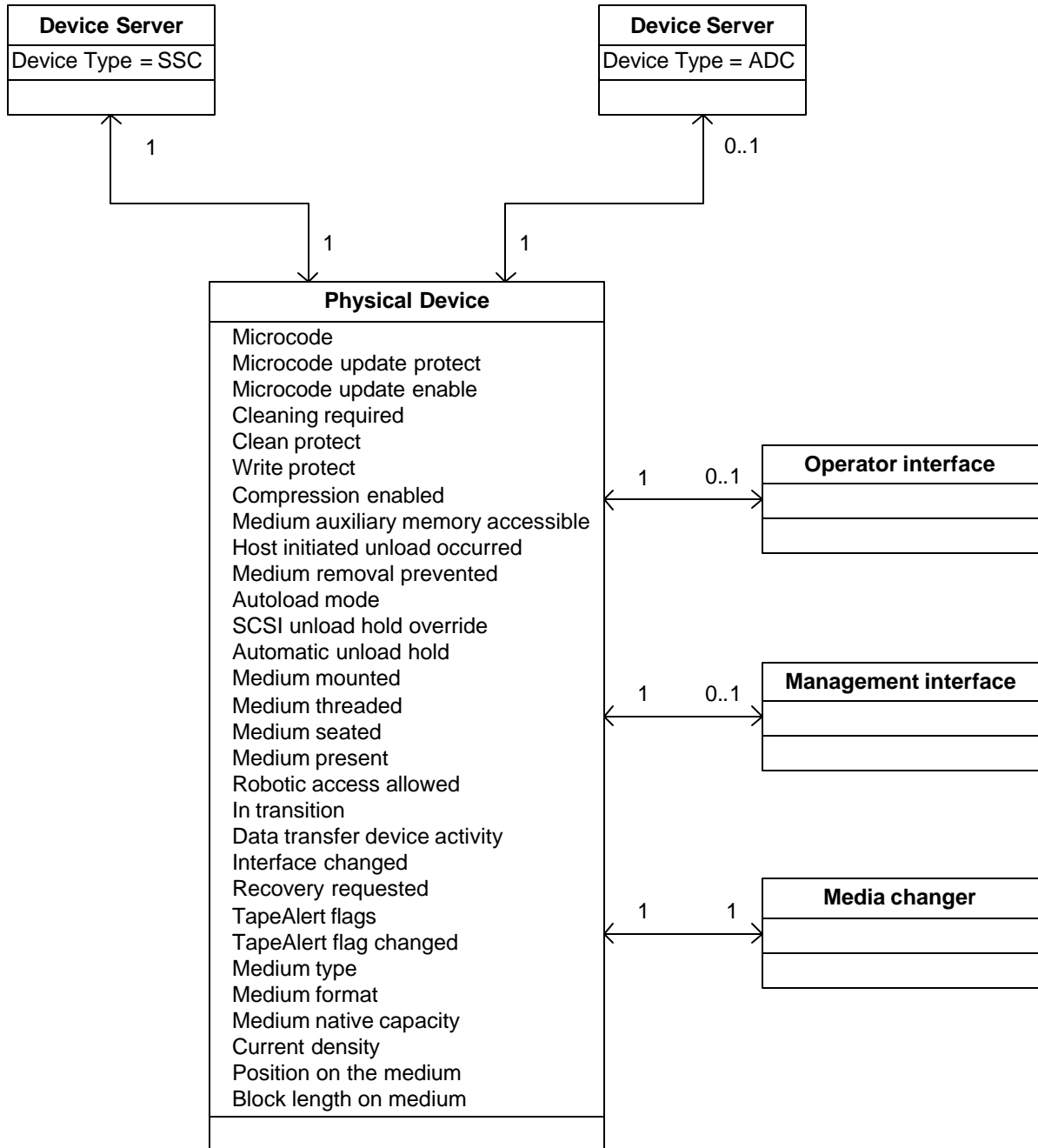

Figure X –   UML description of physical device

Table X lists which INCITS standard defines each attribute.

Table X – Physical device attributes

Attribute	Reference
Microcode	SPC-4
Microcode update protect	ADC-2
Microcode update enable	ADC-2
Cleaning required	ADC-2
Clean protect	ADC-2
Write protect	ADC-2
Compression enabled	ADC-2
Medium auxiliary memory accessible	ADC-2
Host initiated unload occurred	ADC-2
Medium removal prevented	ADC-2
Autoload mode	SPC-4
SCSI unload hold override	ADC-2
Automatic unload hold	ADC-2
Medium mounted	ADC-2
Medium threaded	ADC-2
Medium seated	ADC-2
Medium present	ADC-2
Robotic access allowed	ADC-2
In transition	ADC-2
Data transfer device activity	ADC-2
Interface changed	ADC-2
Recovery requested	ADC-2
TapeAlert flags	Table 9
TapeAlert flag changed	ADC-2
Medium type (e.g., non-WORM data, WORM data, cleaning, microcode)	7.8.4
Medium format (e.g., LTO-1, LTO-2, SDLT-x, etc.)	8.3.4
Medium native capacity [1]	7.8.3
Current density	ADC-2
Position on the medium	4.2
Block length on medium	SPC-4
[1] Medium native capacity is the value reported in the CAPACITY field of the density support data block descriptor, when the MEDIA bit is one and a SET CAPACITY command has not been used to affect the capacity of the medium.	