

To: INCITS Technical Committee T10
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Subject: SPC4: ALUA/TPGS Disconnected state

Revisions:

- 0) Initial creation

Introduction:

ALUA/TPGS states. The ALUA/TPGS states are designed/intended to allow devices to report the states of it's ports to a host. The current list of states assumes that the host can always communicate with every port in some way or fashion (even unavailable state assumes communication can occur). Since all ports in a TPG must be in the same state at all times, there is no mechanisms to report to hosts that ports exist which are not available for access due to underlying transport layer issues. When ports are not available, the host can use this information to inform system administrators of the need for action. Ports can be in this state for many reasons (cable failure, other H/W faults, mis-configured cables, etc...). The current unavailable state may be usable for this state with some other possible issues (not all ports within a target port group would be in this state at the same time).

There are several ideas that could be used to deal with this issue.

- 1) Leave ports in this state totally out of any TPG. But this doesn't solve the manageability problem.
- 2) Create a special case for unavailable state which allows ports to independently transition in and out of that state (without all the other ports in their regular target port group going into that state together).
- 3) Create a new state which specifically describes this state (the disconnected state) and allows ports to independently transition into and out of this state.

Proposal:

To create a new disconnected TPG state:

5.8.2.1 Introduction to asymmetric logical unit access

Asymmetric logical unit access occurs when the access characteristics of one port may differ from those of another port. SCSI target devices with target ports implemented in separate physical units may need to designate differing levels of access for the target ports associated with each logical unit. While commands and task management functions (see SAM-4) may be routed to a logical unit through any target port, the performance may not be optimal, and the allowable command set may be less complete than when the same commands and task management functions are routed through a different target port. When a failure on the path to one target port is detected, the SCSI target device may perform automatic internal reconfiguration to make a logical unit accessible from a different set of target ports or may be instructed by the application client to make a logical unit accessible from a different set of target ports.

A target port characteristic called target port asymmetric access state (see 5.8.2.4) defines properties of a target port and the allowable command set for a logical unit when commands and task management functions are routed through the target port maintaining that state.

A target port group is defined as a set of target ports that are in the same target port asymmetric access state at all times. A target port group asymmetric access state is defined as the target port asymmetric access state common to the set of target ports in a target port group. The grouping of target ports is vendor specific.

A logical unit may have commands and task management functions routed through multiple target port groups. Logical units support asymmetric logical unit access if different target port groups may be in different target port group asymmetric access states.

Insert: '(with the exception of "Disconnected" state).'

5.8.2.4.5 Unavailable state

5.8.2.5 Transitions between target port asymmetric access states

Insert between these:

5.8.2.4.6 Disconnected state

Ports in the disconnected state can not be accessed. While in this state, the device server is not capable of receiving or responding to commands or task management functions. Ports may transition into or out of disconnected target port asymmetric access state independently of other ports in a target port group. The disconnected target port asymmetric access state is intended for situations when the target port is not capable of being accessed (such as when the port does not have a functioning transport layer e.g. Fabric Login).

6.24 REPORT TARGET PORT GROUPS command

<.....>

The ASYMMETRIC ACCESS STATE field (see table 165) contains the target port group's current asymmetric access state (see 5.8.2.4).

Table 165 — ASYMMETRIC ACCESS STATE field

Code	State
0h	Active/optimized
1h	Active/non-optimized
2h	Standby
3h	Unavailable
4h-Eh	Reserved
Fh	Transitioning between states

4h Disconnected
5h-Eh Reserved