

Command Cleared Notification Proposal

- **Summary**
 - A new SCSI Status value of **0x40 - Command Cleared**
 - Sent by the target whenever an I/O is canceled by a task management function.
 - Sent for **each** I/O canceled - even to initiator that sent task management function.
 - Indicates the command was cleared by a task management function.
 - e.g. Target Reset, Clear Queue, Lun Reset, Persistent Reserve w/Preempt, etc.
 - Not applicable to Abort Task.

Reason for Change

- Desire to restart I/Os canceled by other initiators quickly
 - e.g. Wolfpack uses resets in resource management: used to clear reservations
 - currently first indication is Power Up Unit Attention on **next** I/O (which may never come)
- **OR**
 - I/O timeout - 30, 60, 90 seconds typical
- Avoid “ambiguous” exchange problem in FC

Rules

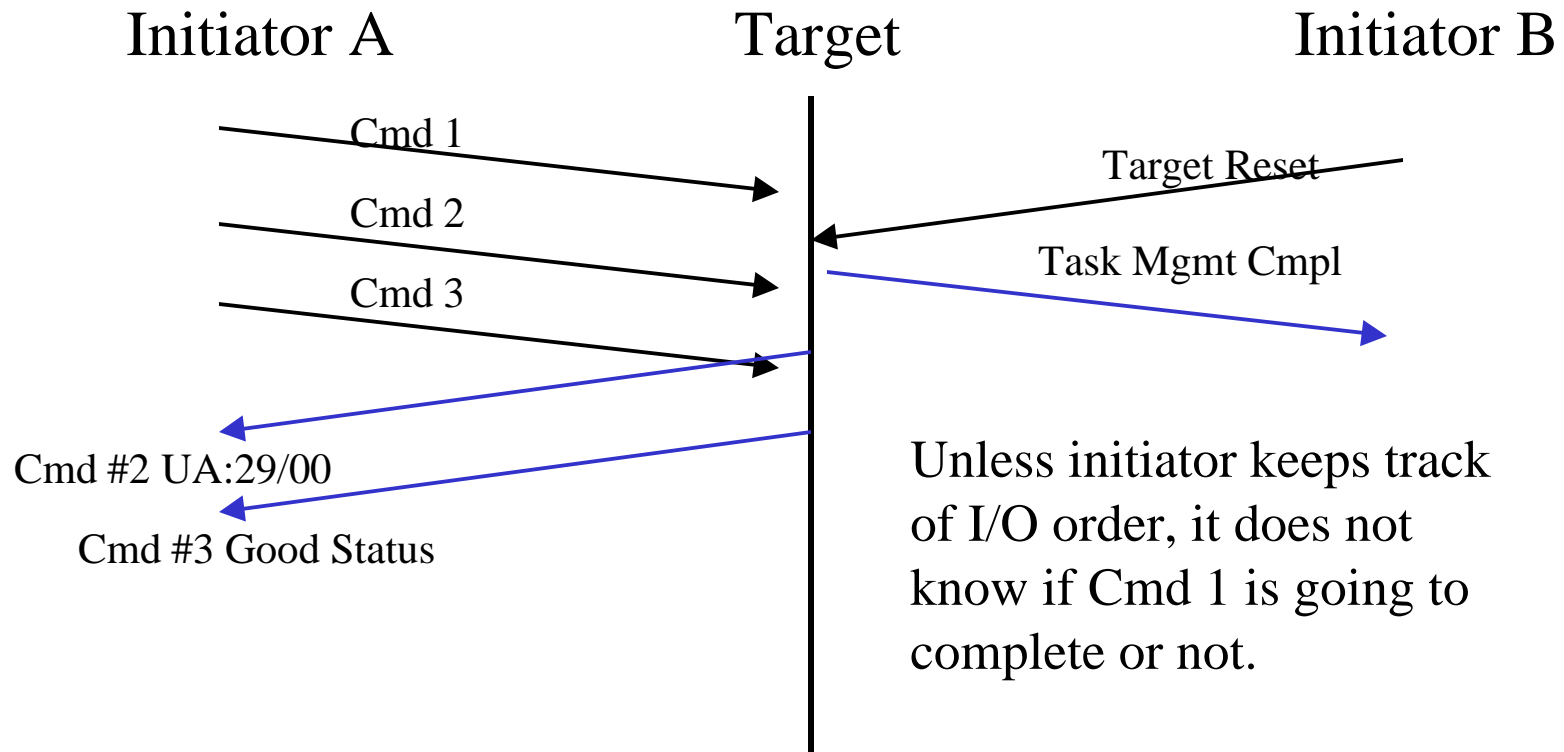
- Sent for all I/Os canceled
 - even to initiator that sent the Task Management function
- Sent **before** any target initiated action on “newer” commands
 - I.e. must cleanup all canceled commands before processing new commands
 - For example, after Target reset a Power Up Unit Attention must be delivered **after** all Command Cleared statuses.
- Target must still send Power Up UA (if applicable), but **not** Commands Cleared by other Initiator UA (redundant).

Rules

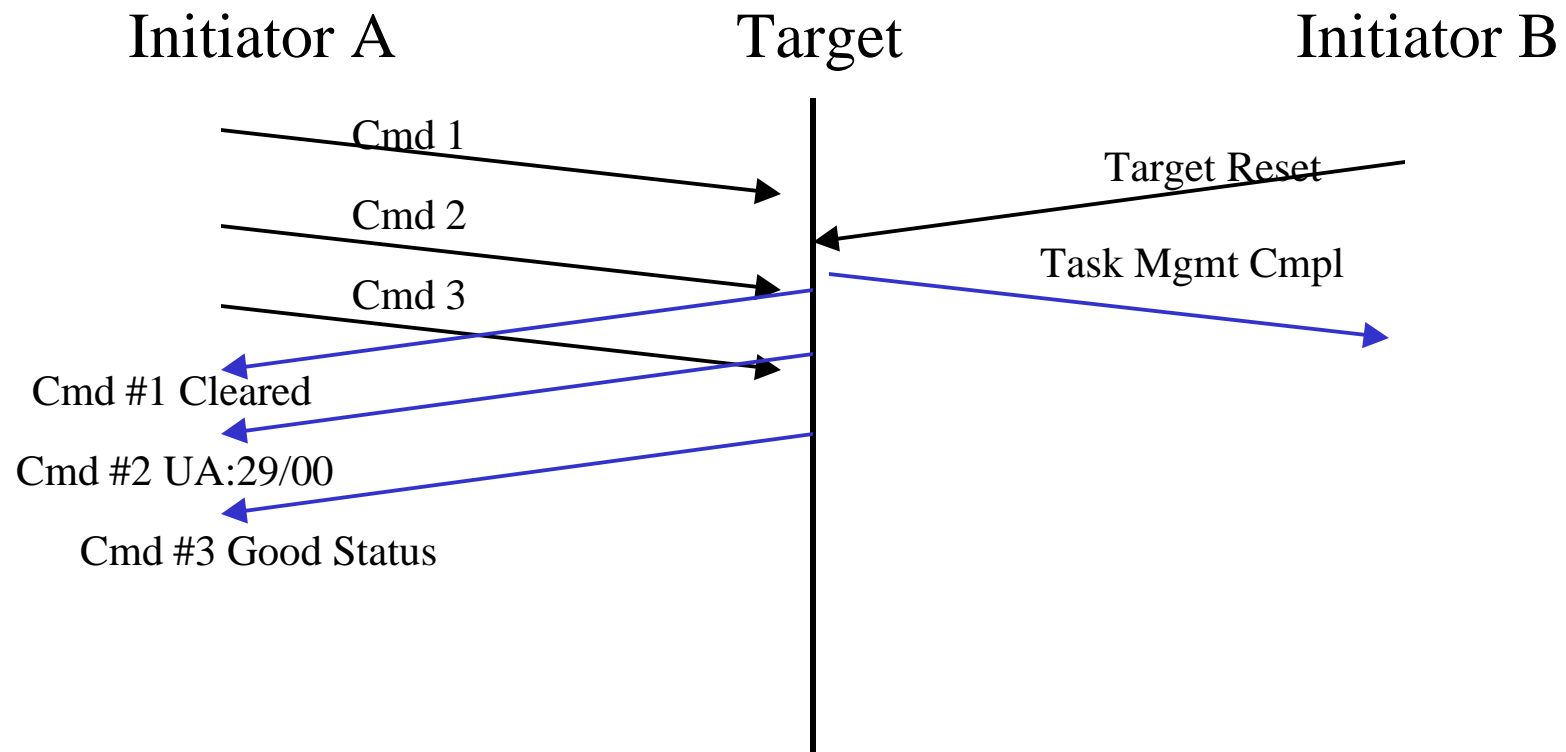
(continued)

- FC Details
 - Target must have Sequence Initiative (SI) to send.
 - Small window (on time scale) during life of command where initiator has SI. Target must wait for SI before sending FCP_RESP.
 - Free resources after RR_TOV
 - Initiator running with Command Cleared enabled should ABTS any I/O not completed with status.
 - Order of returning Command Cleared status on canceled I/Os and Task Management Function Complete not specified

Example 1



Example 2



After Command Cleared Status

- Host Action: Retry I/O
 - simple!
- Target reaction to retry - choice:
 - queue I/O, process after sending all Command Cleared Statuses
 - may lead to premature Queue-Full
 - Busy I/Os until after sending all Command Cleared Statuses
 - causes more retries by host

Mode page to Enable

- Obviously this will cause problems if target uses new status and host is not aware.
- Enable via new bit in Control Mode Page (0x0A)
 - Suggest byte 3, bit 3

SAM 2 Status Codes

(for reference)

Table 13 — Status codes

Status Code	Status
0h	GOOD
2h	CHECK CONDITION
4h	CONDITION MET
8h	BUSY
10h	INTERMEDIATE
14h	INTERMEDIATE-CONDITION MET
18h	RESERVATION CONFLICT
22h	Obsolete
28h	TASK SET FULL
30h	ACA ACTIVE
All other codes	Reserved