

To: INCITS T10 Committee
From: Paul Entzel, Quantum
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Document: T10/07-088r1
Subject: ADT-2: Clarify handling of errors in an ADT initiator port



1 Revision History

Revision 0:
Initial revision posted to the T10 web site on 26 February 2007.

Revision 1:
Updated the proposal based on feedback from the March 2007 working group meeting (see 07-107).

2 Reference

T10/ADT-2 revision 4
T10/SAS-2 revision 8
T10/SAM-3

3 General

In some of the subclauses of 7.1 in ADT-2, there are sentences that describe what a SCSI initiator port should do when an exception is detected. Several of these sentences include the phrase or sentence "it may abort the command". This phrase is ambiguous in that it may be interpreted several ways. One possible interpretation is that the ADT port may abort the command internally and release any resources used by the exchange. Another interpretation could be that the ADT port may generate and send an ABORT TASK task management function to the other ADT port involved in the link. Both of these interpretations are incorrect and even contrary to SAM-3.

In truth, when the transport layer detects a protocol error from which it cannot recover, the only option available to it per SAM-3 is to return SERVICE DELIVERY OR TARGET FAILURE Service Response to the application client and let the application client deal with it. At this point, the application client should abort the task by calling the ABORT_TASK SCSI transport protocol service to allow both ports and the target device server the opportunity to clean-up resources consumed by the failed task.

SAS-2 does a good job of describing this procedure, so it was used as a model for the changes proposed here. Proposed additions to the ADT-2 standard are shown in [blue text](#); proposed deletions are shown in ~~red crossed out text~~.

4 Changes to ADT-2

4.1 *In clause 7.1.5*

If an ADT initiator port receives a SCSI Transfer Ready IU that is not 8 bytes long, then it shall send an ACK IU and discard the frame. ~~It may then abort the command.~~ The ADT initiator port shall use the **Command Complete Received** transport protocol service (see 8.2.4) to return a service response value of SERVICE DELIVERY OR TARGET FAILURE to the application client that generated the command. The application client should abort the command (see 8.4).

If an ADT target port receives a SCSI Transfer Ready IU that is not 8 bytes long, then it shall send an ACK IU, discard the frame, and terminate the command with CHECK CONDITION status, with the sense

key set to ABORTED COMMAND, and the additional sense code set to INFORMATION UNIT TOO SHORT or INFORMATION UNIT TOO LONG.

If an ADT initiator port receives a SCSI Transfer Ready IU requesting zero bytes, ~~then it may abort the command.~~ then it shall send an ACK IU and discard the frame. The ADT initiator port shall use the **Command Complete Received** transport protocol service (see 8.2.4) to return a service response value of SERVICE DELIVERY OR TARGET FAILURE to the application client that generated the command. The application client should abort the command (see 8.4).

If an ADT target port receives a SCSI Transfer Ready IU requesting zero bytes, then it shall send an ACK IU, discard the frame, and terminate the command with CHECK CONDITION status, with the sense key set to ABORTED COMMAND, and the additional sense code set to DATA PHASE ERROR.

If an ADT initiator port receives a SCSI Transfer Ready IU with a requested offset that was not expected, then it shall send an ACK IU and discard the frame, ~~and it may abort the command.~~ The ADT initiator port shall use the **Command Complete Received** transport protocol service (see 8.2.4) to return a service response value of SERVICE DELIVERY OR TARGET FAILURE to the application client that generated the command. The application client should abort the command (see 8.4).

4.2 In clause 7.1.6

If an ADT initiator port receives a SCSI Data IU with more read data than expected, then it shall send an ACK IU, and discard the frame, ~~and it may abort the command. Due to a race condition, the ADT initiator port may receive a SCSI Response IU for the command before being able to abort the command.~~ The ADT initiator port shall use the **Command Complete Received** transport protocol service (see 8.2.4) to return a service response value of SERVICE DELIVERY OR TARGET FAILURE to the application client that generated the command. The application client should abort the command (see 8.4).

If an ADT initiator port receives a SCSI Data IU with zero bytes, then it shall send an ACK IU, and discard the frame, ~~and it may abort the command. Due to a race condition, the ADT initiator port may receive a SCSI Response IU for the command before being able to abort the command.~~ The ADT initiator port shall use the **Command Complete Received** transport protocol service (see 8.2.4) to return a service response value of SERVICE DELIVERY OR TARGET FAILURE to the application client that generated the command. The application client should abort the command (see 8.4).

If an ADT initiator port receives a SCSI Data IU with a data offset that was not expected, then it shall send an ACK IU, and discard that frame and any subsequent SCSI Data IUs received for that command, ~~and it may abort the command. Due to a race condition, the ADT initiator port may receive a SCSI Response IU for the command before being able to abort the command.~~ The ADT initiator port shall use the **Command Complete Received** transport protocol service (see 8.2.4) to return a service response value of SERVICE DELIVERY OR TARGET FAILURE to the application client that generated the command. The application client should abort the command (see 8.4).

4.3 Add new subclause 8.4

Add a new subclause 8.4 between existing sub clauses 8.3 and 8.4, changing the current 8.4 to 8.5:

8.4 Application client error handling

If an application client receives a service response of SERVICE DELIVERY OR TARGET FAILURE from an ADT initiator port via the **Command Complete Received** transport protocol service (see 8.2.4), then the application client should abort the command by sending an ABORT TASK task management function (i.e., call **Send Task Management Request** specifying the ABORT TASK task management function (see 8.3.1)).