

To: INCITS T10 Committee
From: Paul Entzel, Quantum
Date: 29 October 2004
Document: T10/04-348r1
Subject: Add more error handling to ADT encapsulated SCSI protocol

1 Revision History

Revision 0:
Posted to the T10 web site 20 October 2004.

Revision 1:
Updated using suggestions from ADI working group after being reviewed at the 28 October 2004 conference call.

2 General

ADT letter ballot comment IBM-124 requests that more error handling description be added to the encapsulated SCSI protocol. The working group agreed that this error handling should be modeled after the error handling described in SAS 1.1. This proposal does just that.

3 Proposed additions

Add the following paragraphs to ADT.

3.1 Add to subclause 7.1.2 SCSI Command IU

If an ADT target port receives a SCSI Command IU and the payload of the frame is not 24 bytes, the ADT target port shall return a SCSI Response IU with the RESPONSE CODE set to INVALID FIELD IN ENCAPSULATED SCSI IU (EXCLUDES CDB).

The task manager is required to detect overlapped commands and handle them as described in SAM-2.

3.2 Add to subclause 7.1.3 SCSI Task Management IU

If an ADT target port receives a SCSI Task Management IU and the payload of the frame is not 4 bytes, it shall return a SCSI Response IU with the RESPONSE CODE set to INVALID FIELD IN ENCAPSULATED SCSI IU (EXCLUDES CDB).

If an ADT target port receives a SCSI Task Management IU with a **tag** that is already in use, it may return a SCSI Response IU with the RESPONSE CODE set to INVALID FIELD IN ENCAPSULATED SCSI IU (EXCLUDES CDB).

Editor's note: From the ADI conference call of 28 October 2004: "tag" should probably be "exchange identifier" but then we need to investigate how to deal with overlapped exchange identifiers from different protocols. See FCP-3.". FCP-3 calls the FQXID (fully qualified exchange ID) the tag. The FQXID is defined as the I port ID, T Port ID, OX_IS, and RX_ID. In cases where the RX_ID is unknown to the I Port, it uses 0xFFFF. Since the tag contains a piece assigned by the target, it is the target's responsibility to not overlap, at least that's the way I interpret it, since FCP-3 gives no indication of what to do on overlap I_T and OX_ID with a different protocol.

3.3 Add to subclause 7.1.5 SCSI Transfer Ready IU

If an ADT initiator port receives a SCSI Transfer Ready IU that is not 8 bytes long, it shall send an ACK IU and discard the frame. It may then abort the command.

If an ADT target port receives a SCSI Transfer Ready IU that is not 8 bytes long, it shall send an ACK IU, discard the frame and terminate the command with a CHECK CONDITION status with a sense key of ABORTED COMMAND and an additional sense code of INFORMATION UNIT TOO SHORT or INFORMATION UNIT TOO LONG.

If an ADT initiator port receives a SCSI Transfer Ready IU requesting zero bytes, it may abort the command.

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

Editor's note: Does anyone have a problem with this ASC/ASCQ?

If an ADT initiator port receives a SCSI Transfer Ready IU with a requested offset that was not expected, it shall send an ACK IU and discard the frame, and it may abort the command.

If an ADT target port receives a SCSI Transfer Ready IU with a requested offset that was not expected, it shall terminate the command with a CHECK CONDITION status with a sense key of ABORTED COMMAND and an additional sense code of DATA OFFSET ERROR.

3.4 Add to subclause 7.1.6 SCSI Data IU

If an ADT target port receives a SCSI Data IU for which there is no SCSI Transfer Ready IU outstanding or with a data offset that was not expected, it shall send an ACK IU and discard that frame and any subsequent SCSI Data IUs

received for that command and, shall terminate the command with a CHECK CONDITION status with a sense key of ABORTED COMMAND and an additional sense code of DATA OFFSET ERROR.

If an ADT target port receives a SCSI Data IU with more write data than expected (i.e., the length of the SCSI Data IU extends past the end of the expected write data length), it shall send an ACK IU, discard the frame and terminate the command with a CHECK CONDITION status with a sense key of ABORTED COMMAND and an additional sense code of TOO MUCH WRITE DATA.

If an ADT target port receives a zero length SCSI Data IU, it shall send an ACK IU, discard the frame and terminate the command with a CHECK CONDITION status with a sense key of ABORTED COMMAND and an additional sense code of INFORMATION UNIT TOO SHORT.

If an ADT initiator port receives a SCSI Data IU with more read data than expected, it shall send an ACK IU, 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.

If an ADT initiator port receives a SCSI Data IU with zero bytes, it shall send an ACK IU, 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.

If an ADT initiator port receives a SCSI Data IU with a data offset that was not expected, 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.

3.5 Remove from ADT

Remove the following sentence from subclause 7.1.5:

“A port that receives a SCSI Data IU containing data out of order shall send a NAK IU with a status code of INVALID BUFFER OFFSET (see table 14).”

Remove the following sentence from subclause 7.1.6:

“A port that receives a SCSI Data IU containing data out of order shall send a NAK IU with a status code of INVALID BUFFER OFFSET (see table 14).”

Remove the INVALID BUFFER OFFSET field from table 14.