To: T10 Technical Committee
From: Bob Sheffield (Robert.L.Sheffield@intel.com)
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Subject: 07-166r0: SAS-2 Clarify scope of retransmitted XFER_RDY

Revision history
Revision 0 (3 April 2007) First revision

Related documents
SAS-2-r08 - Serial Attached SCSI - 2 (SAS-2) revision 08

Overview

It is the intent but not clearly stated in the subclause describing retransmission of XFER_RDY frames that an SSP target port is only permitted to retransmit an XFER_RDY frame that corresponds to the immediately preceding XFER_RDY frame that did not receive an ACK (i.e., either received a NAK or the connection was closed with an ACK/NAK timeout before receiving an ACK or NAK for that frame). This proposal makes it clear.

Suggested changes

Modify subclause 9.2.4.4.2 as follows:

9.2.4.4.2 XFER_RDY frame with transport layer retries enabled

If an SSP target port transmits an XFER_RDY frame and receives a NAK for that frame, the SSP target port retransmits, in the same or a new connection, the XFER_RDY frame with a different value in the TARGET PORT TRANSFER TAG field and with the RETRANSMIT bit set to one (see 9.2.6.3.3.5).

If an SSP target port transmits an XFER_RDY frame and does not receive an ACK or NAK for that frame (e.g., times out, or the connection is broken):

1) the SSP_TF state machine closes the connection with DONE (ACK/NAK TIMEOUT) (see 7.16.8.6.5); and
2) the SSP target port retransmits, in a new connection, the XFER_RDY frame with a different value in the TARGET PORT TRANSFER TAG field and with the RETRANSMIT bit set to one (see 9.2.6.3.3.5).

An SSP target port shall not retransmit an XFER_RDY frame except one that corresponds to the immediately preceding XFER_RDY that did not receive an ACK (i.e., the XFER_RDY frame received a NAK or the connection was closed with ACK/NAK timeout before the XFER_RDY received an ACK or NAK).

If an SSP initiator port receives a new XFER_RDY frame with the RETRANSMIT bit set to one while processing the previous XFER_RDY frame for that I_T_L_Q nexus, the ST_ITS state machine stops processing the previous XFER_RDY frame (i.e., stops transmitting write DATA frames) and starts servicing the new XFER_RDY frame (see 9.2.6.2.3). The ST_ITS state machine does not transmit any write DATA frames for the previous XFER_RDY frame after transmitting a write DATA frame for the new XFER_RDY frame.

The SSP target port may reuse the value in the TARGET PORT TRANSFER TAG field from the previous XFER_RDY frame after it receives a write DATA frame for the new XFER_RDY frame.

An SSP target port retransmits each XFER_RDY frame that does not receive an ACK at least one time.