

To: T10 Technical Committee
From: Rob Elliott, HP (elliott@hp.com)
Date: 26 July 2003
Subject: T10/03-266r0 Delay AIP (NORMAL) in XL state machine

Revision History

Revision 0 (26 July 2003) first revision

Related Documents

sas1r00 - Serial Attached SCSI 1.1 revision 0

Overview

An expander should not send AIP (NORMAL) until it has forwarded the incoming OPEN address frame to the ECM (expander connection manager). If it returns AIP (NORMAL) before forwarding, there is a time window where the ECM can forward a different (outgoing) request to the expander phy.

Unless the XL state machine performs special checks, this rule could be violated:

7.12.5 Expander devices and connection requests

7.12.5.1 All expander devices

After an expander device transmits an AIP, it shall not transmit an OPEN address frame unless it has higher arbitration priority than the incoming connection request.

Delaying the time AIP (NORMAL) is sent makes the ECM the sole decider of priority, not a combination of the ECM and the XL state machine's following of the post-AIP rule (any OPEN after an AIP always wins).

Suggested Changes

4.6 Expander device model

4.6.6 Expander device interfaces

4.6.6.2 Expander device interfaces detail

Table 11 — ECM to expander phy confirmations

Add:

Arbitrating (Normal): Confirmation that the ECM has received the Request Path request.

7.15 XL (link layer for expander phys) state machine

7.15.4 XL1:Request_Path state

7.15.4.1 State description

This state is used to arbitrate for connection resources and to specify the destination of the connection.

~~Upon entry into this state, if an Arbitrating (Normal) confirmation is received,~~ this state shall repeatedly send a Transmit AIP (Normal) parameter to the XL transmitter.

If an Arbitrating (Waiting On Partial) or Arbitrating (Blocked On Partial) confirmation is received, this state shall repeatedly send a Transmit AIP (Waiting On Partial) parameter to the XL transmitter.

If an Arbitrating (Waiting On Connection) confirmation is received, this state shall repeatedly send a Transmit AIP (Waiting On Connection) parameter to the XL transmitter.

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