TO: T10 Membership
FROM: Paul A. Suhler, Certance
DATE: 5 May 2004
SUBJECT: T10/04-155r0, ADT - Proposed Resolution for Seagate LB Comment 23

Revision 0:

- Initial version

1. Background

The original comment was:

49	T	4.5.3 list item 1)	After sending a Logout, then the port will still be in P2:Logged In, pending receipt of the ACK for the Login. If EFS is set to one immediately, then IUs received before the Logout ACK may enter error recovery.	Two approaches: A) Change 4.3.2.4.2 to perform transition P2:P0 after sending the Logout IU, which means that received IUs will be discarded by the port; or B) Split list item 1) in 4.5.3 into three parts as follows: "1) It shall be set to one after sending or receiving a Port Login IU with the AOE bit set to one; 2) It shall be set to one after receiving a Port Logout IU; 3) It shall be set to one after receiving an ACK IU for a Port Logout IU;" The result of 3) will be to pass received IUs to the upper layer for discarding.

2. Investigation

A port can get into this problem if the automation port has not quiesced all commands before sending a Logout IU. It applies to 4.5.2 (Next Frame To Send counter), which was not cited in the comment, as well as 4.5.3 (Expected Frame Number counter), which was cited.

A DTD port receiving a Logout IU remains in P2:Logged In – with the error recovery behavior that implies – until it sends an ACK IU for the Logout IU. Prior to sending that ACK, it may send other IUs, including acknowledgement IUs. If EFN or NFTS is set to one as soon as the Logout IU is received, it may be changed by the arrival of other IUs before the ACK is sent.

Similarly, an automation device port sending a Logout IU remains in P2:Logged In until receiving an ACK IU for the Logout IU. Prior to receiving that ACK, it may continue to send other IUs, including acknowledgement IUs.

The solution is to set NFTS and EFN to one after the ACK to the Logout is sent or received. After that point, the sub state machines will have collapsed and there will be no further traffic that might change either counter. To avoid having to keep the descriptions of IU transmission and reception in the state transition text in 4.2.2 in sync with the counter setting text in 4.5.2 and 4.5.3, the latter should just refer to transitions of the Port state machine.

3. Suggested Resolution

Change 4.5.2 and 4.5.3 as follows:

4.5.2 Next Frame To Send counter: Change item 2) of the list to:

    2) It shall be set to one after the Port state machine transitions to P0:Initial or to P3:Logged-Out;

4.5.3 Expected Frame Number counter: Change item 1) of the list to:

    1) It shall be set to one after sending or receiving a Port Login IU with the AOE bit set to one;

    2) It shall be set to one after the Port state machine transitions to P0:Initial or to P3:Logged-Out;