Maxtor®

Maxtor Corporation
500 McCarthy Boulevard
Milpitas, CA 95035 USA

To: **T10 Serial Attached SCSI PHY Working Group**
From: **Steve Byan**
           Email: stephen_byan@maxtor.com
Contact: Mark Evans
           Email: mark_evans@maxtor.com
           408-894-5310
Date: **17 June 2002**
Subject: Dealing with extra ACK and NAK primitives in SAS

Introduction

The wording in the latest revision of the SAS draft does not specify the behavior of an SAS device when it receives extra ACK or NAK primitive during a connection. This proposal clarifies the behavior. The following are the changes in SAS-r00a required to implement this proposal.

7.13.6.13 SSP_TIM1:Tx_interlock_monitor state

The tx_interlock_monitor state monitors the number of ACKs and NAKs received and the number of frames transmitted. The tx_interlock_monitor indicates to the ACK/NAK_wait state using the ACK/NAK rcv = EOF tx parameter when the number of ACKs and NAKs received is equal to the number of frames transmitted. The tx_interlock_monitor indicates to the ACK/ NAK_wait state using the ACK/NAK rcv ne EOF tx parameter when the number of ACKs and NAKs received is ~~not equal~~less than to the number of frames transmitted.

The ACK/NAK/frame_cnt state keeps track of the number of frames transmitted using the EOF transmitted parameter received from the indicate_frame_tx state.

The ACK/NAK/frame_cnt state keeps track the number of frames confirmed received using the ACK received parameter and NAK received parameter from the receive state (i.e., for every frame transmitted it is required a ACK or NAK be received).

If the number of ACKs and NAKs received is less than the number of frames transmitted, ~~Every time~~and an ACK received parameter or a NAK received parameter is received from the receive state. the ACK/NAK_wait state shall send a confirmation to the port layer using the ACK received parameter or the NAK received parameter that an ACK or a NAK was received.

If the number of ACKs and NAKs received is equal to the number of frames transmitted, and an ACK received parameter or a NAK received parameter is received from the receive state, the ACK/NAK_wait state shall shall ignore the ACK received parameter or the NAK received parameter. Notification that this parameter has been received shall not be passed to the port layer state machine.

On entry into the connected state the number of ACKs and NAKs received shall be set equal to the number of EOFs transmitted.