To: T10 SAS Protocol Working Group
From: Brian Day, LSI Logic
Subject: SAS-2 : Minor correction to STP flow control formula

Revision History
Revision 0 - Initial draft (Feb 15, 2006)

Related Documents
sas2r02 - Serial Attached SCSI - 2 Draft revision 02

Overview
The formula shown in Note 47 is incorrect. The values of “n” need to start at zero instead of one.
A value of n=3 for 6.0 Gbps link rates results in a value of 36 dwords of receive buffering.

Proposed Changes
Change Note 47 in section 7.17.3 to:

NOTE 47 - The receive buffer requirements are based on (20 + (4 × 2^n)) where n is 40 for 1.5 Gbps and 21 for 3.0 Gbps. The 20 portion of this equation is based on the frame transmitter requirements (see ATA/ATAPI-7 V3). The (4 × 2^n) portion of this equation is based on:
a) One-way propagation time on a 10 m cable = (5 ns/m propagation delay) × (10 m cable) = 50 ns;
b) Round-trip propagation time on a 10 m cable = 100 ns (e.g., time to send SATA_HOLD and receive SATA_HOLDA);
c) Time to transmit a 1.5 Gbps dword = (0.667 ns/bit unit interval) × (40 bits/dword) = 26,667 ns; and
d) Number of 1.5 Gbps dwords on the wire during round-trip propagation time = (100 ns / 26,667 ns) = 3.75.
Receivers may support longer cables by providing larger buffer sizes.