

**To: T10 SAS Protocol Working Group**

**From: Brian Day**

**Subject: SAS 2 : 08-426 Port selector discovery wording fix**

**Revision History**

Revision 0 - Initial draft

**Related Documents**

sas2r14f - Serial Attached SCSI - 2 Draft revision 14f

**Overview**

The wording for the DISCOVER response relative to the ATTACHED SATA PORT SELECTOR is still not correct.

Two different options are proposed:

Option A : just fix the wording in Table 282 to match the existing SP state machine behavior. This option continues to degrade the usefulness of the ATTACHED SATA PORT SELECTOR.

Option B : Modify the SP state machine behavior slightly relative to the ATTACHED SATA PORT SELECTOR to provide more useful information.

**Proposed Changes for Option A (just fix the wording for Table 282)**

**Table 282 — ATTACHED SATA PORT SELECTOR and ATTACHED SATA DEVICE bits**

ATTACHED SATA PORT SELECTOR bit value <sup>a, b, d</sup>	ATTACHED SATA DEVICE bit value <sup>c, d</sup>	Description
0	0	Either: a) the phy is a virtual phy; or b) the phy is a physical phy, and <del>neither a SATA port selector nor a SATA device is attached and ready</del> <u>a SATA device is either not present or not ready</u> on the selected phy.
0	1	The phy is a physical phy and the attached phy is neither a SAS phy nor an expander phy (i.e., the attached phy did not respond with COMSAS within the COMSAS timeout). <del>No SATA port selector is present (i.e., the SP state machine did not detect COMWAKE in response to the initial COMINIT, but sequenced through the normal (non-SATA port selector) SATA device OOB sequence).</del>
1	0	The phy is a physical phy, the attached phy is a SATA port selector host phy, and either: a) the attached phy is the inactive host phy, or b) the attached phy is the active host phy and a SATA device is either not present or not ready behind the SATA port selector (i.e., the SP state machine detected COMWAKE while waiting for COMINIT).
1	1	Obsolete

<sup>a</sup> The ATTACHED SATA PORT SELECTOR bit shall be ignored if the NEGOTIATED LOGICAL LINK RATE field is set to UNKNOWN (i.e., 0h), DISABLED (i.e., 1h), or RESET\_IN\_PROGRESS (i.e., 5h).

<sup>b</sup> Whenever the ATTACHED SATA PORT SELECTOR bit changes, the phy shall originate a Broadcast (Change)(see 7.12).

<sup>c</sup> For the purposes of the ATTACHED SATA DEVICE bit, a SATA port selector is not considered a SATA device.

<sup>d</sup> The ATTACHED SATA PORT SELECTOR bit and the ATTACHED SATA DEVICE bit are updated as specified in the SP state machine (see 6.8).

Editor's Note 0: These changes are needed because the active port of a SATA port selector results in these bit combinations.

Here is example sequence of states for active port of port selector:  
(Note ASPS = ATTACHED SATA PORT SELECTOR, and ASD = ATTACHED SATA DEVICE)

SP0 : transmit COMINIT; ASPS = 0 (really whatever previous value was); ASD = 0;  
 SP1 : receive COMWAKE; ASPS = 1; ASD = 0;  
 SP1 : receive COMINIT; ASPS = 1; ASD = 0; transition to SP4 (clears ASPS);  
 SP4 : transmit COMSAS; ASPS = 0; ASD = 0;  
 SP7 : COMSAS timeout; ASPS = 0; ASD = 0;  
 SP16; transmit COMWAKE; ASPS = 0; ASD = 1;

**Proposed Changes for Option B (Changing SP state machine)**

In Section 6:

**6.8.3.3.3 Transition SP1:OOB\_AwaitCOMX to SP4:OOB\_COMSAS**

This transition shall occur after receiving a COMINIT Detected message or a COMSAS Detected message. If COMSAS Detected was received, then this transition shall include a COMSAS Detected argument.

~~If the ATTACHED SATA PORT SELECTOR bit is set to one in the SMP DISCOVER response (see 10.4.3.10), then the state machine shall, before the transition:~~

- ~~a) set the ATTACHED SATA PORT SELECTOR bit to zero in the SMP DISCOVER response; and~~
- ~~b) send a SATA Port Selector Change confirmation to the link layer.~~

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Editor's Note 1: This bit is still/already cleared on the SP4 to SP5, and SP4 to SP6 transitions, when COMSAS was detected.

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In Section 10:

**Table 282 — ATTACHED SATA PORT SELECTOR and ATTACHED SATA DEVICE bits**

ATTACHED SATA PORT SELECTOR bit value <sup>a, b, d</sup>	ATTACHED SATA DEVICE bit value <sup>c, d</sup>	Description
0	0	Either: a) the phy is a virtual phy; or b) the phy is a physical phy, and neither a SATA port selector nor a SATA device is attached and ready on the selected phy.
0	1	The phy is a physical phy and the attached phy is neither a SAS phy nor an expander phy (i.e., the attached phy did not respond with COMSAS within the COMSAS timeout). No SATA port selector is present (i.e., the SP state machine did not detect COMWAKE in response to the initial COMINIT, <del>but sequenced through the normal (non-SATA port selector) SATA device OOB-sequence</del> , detected COMINIT, and then timed out waiting for COMSAS).
1	0	The phy is a physical phy, the attached phy is a SATA port selector host phy, and either: a) the attached phy is the inactive host phy, or b) the attached phy is the active host phy and a SATA device is either not present or not ready behind the SATA port selector (i.e., the SP state machine detected COMWAKE while waiting for COMINIT, and did not detect COMINIT).
1	1	<del>Obsolete</del> <u>The phy is a physical phy, the attached phy is a SATA port selector's active host phy, and neither a SAS phy nor an expander phy is present behind the SATA port selector (i.e., the SP state machine detected COMWAKE while waiting for COMINIT, detected COMINIT, and then timed out waiting for COMSAS).</u>
<p><sup>a</sup> The ATTACHED SATA PORT SELECTOR bit shall be ignored if the NEGOTIATED LOGICAL LINK RATE field is set to UNKNOWN (i.e., 0h), DISABLED (i.e., 1h), or RESET_IN_PROGRESS (i.e., 5h).</p> <p><sup>b</sup> Whenever the ATTACHED SATA PORT SELECTOR bit changes, the phy shall originate a Broadcast (Change)(see 7.12).</p> <p><sup>c</sup> For the purposes of the ATTACHED SATA DEVICE bit, a SATA port selector is not considered a SATA device.</p> <p><sup>d</sup> The ATTACHED SATA PORT SELECTOR bit and the ATTACHED SATA DEVICE bit are updated as specified in the SP state machine (see 6.8).</p>		