

To: T10 Technical Committee
From: Robert Sheffield (Robert.L.Sheffield@intel.com), Intel Corporation
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Subject: T10/04-029r0, SAS-1.1: Close Port Selector Detection Gap

Revision History

Revision 0 (December 29, 2003) first revision

Related Documents

SAS1.1-r02 – Serial Attached SCSI-1.1 revision 012

Overview

The current text says that the ATTACHED SATA PORT SELECTOR bit in the DISCOVER response is cleared each time the SAS Phy state machine returns to the SP0:COMINIT state. This occurs in response to a reset event, or in response to a hot-plug timeout event (every 500 ms when no device is present). If a SATA port selector is present, during the short time between a transition to SP0:COMINIT and the subsequent detection of a SATA port selector (receipt of COMWAKE in response to the initial COMINIT), the an SMP DISCOVER request may arrive, with the corresponding DISCOVER response indicating, incorrectly, that no SATA port selector is present.

There may be other information in the DISCOVER response that could be misinterpreted by an SMP initiator without knowing the state of the phy it applies to.

The suggested solution is to report the state of the SP state machine in the DISCOVER response. This allows the SMP initiator to evaluate the validity of the information returned based on the reported state of the phy and reissue the DISCOVER request if necessary to retrieve the information when the phy is in a relevant state.

Suggested Changes

Add a new function result to table 145 as follows:

Code	Name	SMP function(s)	Description
14h	PHY INITIALIZING	DISCOVER and REPORT PHY SATA	The SMP target port supports the SMP function; the ADDITIONAL RESPONSE BYTES field contains the requested information. The phy may be in a transient state. If stable information is required the SMP initiator should reissue the command.

Modify the DISCOVER response (Table 151 in subclause 10.4.3.5) as follows:

Table 151 – DISCOVER response

Byte\Bit	7	6	5	4	3	2	1	0	
0	SMP FRAME TYPE (41h)								
1	FUNCTION (10h)								
2	FUNCTION RESULT								
3	Reserved								
4	Ignored								
7	Ignored								
8	Reserved								
9	PHY IDENTIFIER								
10	Ignored								
11	Reserved								
12	Ignored	ATTACHED DEVICE TYPE			Ignored				
13	Reserved			NEGOTIATED PHYSICAL LINK RATE					
14	Reserved				ATTACHED SSP INITIATOR	ATTACHED STP INITIATOR	ATTACHED SMP INITIATOR	ATTACHED SATA HOST	
15	ATTACHED SATA PORT SELECTOR	Reserved			ATTACHED SSP TARGET	ATTACHED STP TARGET	ATTACHED SMP TARGET	ATTACHED SATA DEVICE	
16	SAS ADDRESS								
23	SAS ADDRESS								
24	ATTACHED SAS ADDRESS								
31	ATTACHED SAS ADDRESS								
32	ATTACHED PHY IDENTIFIER								
33	Reserved				SP STATE				
34	Reserved								
39	Reserved								
40	PROGRAMMED MINIMUM PHYSICAL LINK RATE				HARDWARE MINIMUM PHYSICAL LINK RATE				
41	PROGRAMMED MAXIMUM PHYSICAL LINK RATE				HARDWARE MAXIMUM PHYSICAL LINK RATE				
42	PHY CHANGE COUNT								
43	VIRTUAL PHY	Reserved			PARTIAL PATHWAY TIMEOUT VALUE				
44	Reserved				ROUTING ATTRIBUTE				
45	Reserved								

49	
50	
51	Vendor Specific
52	(MSB) _____ CRC _____ (LSB)
55	

Add a description of the SP STATE field in section 10.4.3.5 on page 346 before the paragraph describing the PROGRAMMED MINIMUM PHYSICAL LINK RATE, and after the paragraph describing ATTACHED PHY IDENTIFIER as follows:

The SP STATE field contains the state, in hexadecimal, that corresponds to the state of the SP (phy layer) state machine (see subclauses 6.7.3, 6.7.4, 6.7.5 and 6.7.6). The SMP management client may use the state to identify when information reported in the DISCOVER response may be transient. The SMP management client should normally repeat the DISCOVER request until the the SP STATE field indicates OOB has completed. Table xxx shows the non-transient states of the SP state machine:

Table xxx – Non-Transient SAS Phy States reported in SP STATE field

State	Hex Value	Comment
SP1:OOB_AwaitCOMX	01h	No device detected (no COMINIT)
SP2:OOB_NoCOMSASTimeout	02h	Device not initializing (no COMSAS)
SP15:SAS_PHY_Ready	0fh	SAS Device OOB complete
SP22:SATA_PHY_Ready	16h	SATA Device OOB complete

If the phy is not in one of the states listed in Table xxx, the Discover response should contain a function result of PHY INITIALIZING.