

To: T10 Technical Committee
 From: Steve Johnson, LSI (steve.johnson@lsi.com)
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 Subject: 07-121r0 SAS-2 Add REASON field to DISCOVER and DISCOVER LIST

Revision history

Revision 0 (9 March2007) First revision

Related documents

sas2r08 - Serial Attached SCSI - 2 (SAS-2) revision 8
 07-084r0 SAS-2 Add ATTACHED REASON field

Overview

A REASON field was added to the IDENTIFY address frame for a phy to indicate the reason it ran the link reset sequence.

An ATTACHED REASON field was included in the DISCOVER response (in byte 12, next to the ATTACHED DEVICE TYPE field) and is being proposed (see 07-084r0) to be added to the DISCOVER LIST function and port mode page. The corollary of this is needed to convey the reason for the link reset sequence initiated by an expander to an end device since this information can not be retrieved in any other manner.

Add REASON field to the following SMP responses to convey this information:

- a) DISCOVER response
- b) DISCOVER LIST function SHORT FORMAT descriptor

Suggested changes to SAS-2

10.4.3.7 DISCOVER function

Table 1 defines the response format.

Table 1 — DISCOVER response (part 1 of 3)

Byte\Bit	7	6	5	4	3	2	1	0
0	SMP FRAME TYPE (41h)							
1	FUNCTION (10h)							
2	FUNCTION RESULT							
3	RESPONSE LENGTH (17h)							
4	(MSB)	EXPANDER CHANGE COUNT						(LSB)
5								
6	Reserved							
8								
9	PHY IDENTIFIER							
10	Reserved							
11								
12	Reserved	ATTACHED DEVICE TYPE			ATTACHED REASON			
13	Reserved REASON			NEGOTIATED LOGICAL LINK RATE				

Table 1 — DISCOVER response (part 2 of 3)

Byte\Bit	7	6	5	4	3	2	1	0
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								
24	ATTACHED SAS ADDRESS							
31								
32	ATTACHED PHY IDENTIFIER							
33	Reserved					ATTACHED INSIDE ZPSDS PERSISTENT	ATTACHED REQUESTED INSIDE ZPSDS	ATTACHED BREAK_REPLY CAPABLE
34	Reserved							
39								
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	CONNECTOR TYPE						
46	CONNECTOR ELEMENT INDEX							
47	CONNECTOR PHYSICAL LINK							
48	Reserved							
49								
50	Vendor specific							
51								
52	ATTACHED DEVICE NAME							
59								
60	Reserved	REQUESTED INSIDE ZPSDS CHANGED BY EXPANDER	INSIDE ZPSDS PERSISTENT	REQUESTED INSIDE ZPSDS	ZONE ADDRESS RESOLVED	ZONE GROUP PERSISTENT	INSIDE ZPSDS	ZONING ENABLED
61	Reserved							
62								

Table 1 — DISCOVER response (part 3 of 3)

Byte\Bit	7	6	5	4	3	2	1	0	
63	ZONE GROUP								
64	SELF-CONFIGURATION STATUS								
65	SELF-CONFIGURATION LEVELS COMPLETED								
66	Reserved								
67	Reserved								
68	SELF-CONFIGURATION SAS ADDRESS								
75	Reserved								
76	Reserved								
91	Reserved								
92	Reserved								
93	Reserved								
94	Reserved				NEGOTIATED PHYSICAL LINK RATE				
95	Reserved							HARDWARE MUXING SUPPORTED	
96	(MSB)	CRC							
99								(LSB)	

The REASON field indicates the value of the REASON field transmitted in the IDENTIFY address frame (see 7.8.2) during the identification sequence. If a SATA phy is attached, the REASON field indicates the reason for the link reset sequence (see 7.8.2).

10.4.3.13.4 DISCOVER LIST response SHORT FORMAT descriptor

Table 2 defines the SHORT FORMAT descriptor.

Table 2 — SHORT FORMAT descriptor

Byte\Bit	7	6	5	4	3	2	1	0
0	PHY IDENTIFIER							
1	FUNCTION RESULT							
2	Restricted	ATTACHED DEVICE TYPE			Restricted for DISCOVER response byte 12			
3	Restricted for DISCOVER response byte 13 REASON				NEGOTIATED LOGICAL LINK RATE			

Table 2 — SHORT FORMAT descriptor

Byte\Bit	7	6	5	4	3	2	1	0
4	Restricted for DISCOVER response byte 14				ATTACHED SSP INITIATOR	ATTACHED STP INITIATOR	ATTACHED SMP INITIATOR	ATTACHED SATA HOST
5	ATTACHED SATA PORT SELECTOR	Restricted for DISCOVER response byte 15			ATTACHED SSP TARGET	ATTACHED STP TARGET	ATTACHED SMP TARGET	ATTACHED SATA DEVICE
6	VIRTUAL PHY	Reserved			ROUTING ATTRIBUTE			
7	Reserved							
8	ZONE GROUP							
9	Restricted for DISCOVER response byte 60	INSIDE ZPSDS PERSISTENT	REQUESTED INSIDE ZPSDS	ZONE ADDRESS RESOLVED	ZONE GROUP PERSISTENT	INSIDE ZPSDS	Reserved	
10	ATTACHED PHY IDENTIFIER							
11	PHY CHANGE COUNT							
12	ATTACHED SAS ADDRESS							
19								
20	Reserved							
23								

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