Date: December 26, 2008

To: T10 Committee

From Brad Besmer, LSI

Subject: SPL Power Management Reporting and Contro

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Revision History

r0 - Original revision

r1 - Added ATTACHED SLUMBER CAPABLE, ATTACHED PARTIAL CAPABLE and PHY POWER MANAGMENT CONDITION to DISCOVER. Changed bytes used in DISCOVER, since bytes 66 & 67 are reserved for self-config

Overview

This proposal adds SMP reporting and control of SAS and SATA Power Management (see 08-015, 08-206 and 08-249).

SPL Changes

SMP PHY CONTROL Changes:

Table 336 defines the request format.

Table 336 — PHY CONTROL request

Byte\Bit	7	6	5	4	3	2	1	0
0	SMP FRAME TYPE (40h)							
1	FUNCTION (91h)							
2	ALLOCATED RESPONSE LENGTH							
3	REQUEST LENGTH (00h or 09h)							
4	(MSB)			EXPECTED EXPANDER CHANGE COUNT				
5								(LSB)
6				Reserved				
8								
9	PHY IDENTIFIER							
10	PHY OPERATION							
11	Reserved							UPDATE PARTIAL PATHWAY TIMEOUT VALUE
12				Reserved				
23								
24				ATTACHED DEVICE NAME				
31								
32	PROGRAMMED MINIMUM PHYSICAL LINK RATE				Reserved			
33	PROGRAMMED MAXIMUM PHYSICAL LINK RATE				Reserved			
34	SAS SLUMBER ENABLE		SAS PARTIAL ENABLE		SATA SLUMBER ENABLE		SATA PARTIAL ENABLE	
35	Reserved							
36	Reserved				PARTIAL PATHWAY TIMEOUT VALUE			
37				Reserved				
39								
40	(MSB)			CRC				
43								(LSB)

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Table 337 defines the SAS SLUMBER ENABLE field.

Table 337 — SAS SLUMBER ENABLE field,

Code	Description
00b	No change
01b	Enable SAS slumber phy power condition
10b	Disable SAS slumber phy power condition
11b	Reserved

If the SAS SLUMBER ENABLE field is set to an unsupported or reserved value, then the management device server shall not change the SAS slumber power management and shall return a function result of SMP FUNCTION FAILED in the response frame (see table 247 in 10.4.3.3) If the management device server returns a function result of SMP FUNCTION FAILED, then it shall not perform the requested phy operation.

Table 338 defines the SAS PARTIAL ENABLE field.

Table 338 — SAS PARTIAL ENABLE field,

Code	Description
00b	No change
01b	Enable SAS partial phy power condition
10b	Disable SAS partial phy power condition
11b	Reserved

If the SAS PARTIAL ENABLE field is set to an unsupported or reserved value, then the management device server shall not change the SAS partial power management and shall return a function result of SMP FUNCTION FAILED in the response frame (see table 247 in 10.4.3.3) If the management device server returns a function result of SMP FUNCTION FAILED, then it shall not perform the requested phy operation.

Table 339 defines the SATA SLUMBER ENABLE field.

Table 339 — SATA SLUMBER ENABLE field,

Code	Description
00b	No change
01b	Enable SAS slumber phy power condition
10b	Disable SAS slumber phy power condition
11b	Reserved

If the SATA SLUMBER ENABLE field is set to an unsupported or reserved value, then the management device server shall not change the SATA slumber power management and shall return a function result of SMP

FUNCTION FAILED in the response frame (see table 247 in 10.4.3.3) If the management device server returns a function result of SMP FUNCTION FAILED, then it shall not perform the requested phy operation.

Table 349 defines the SAS PARTIAL ENABLE field.

Table 340 — SATA PARTIAL ENABLE field,

Code	Description
00b	No change
01b	Enable SATA partial phy power condition
10b	Disable SATA partial phy power condition
11b	Reserved

If the SATA PARTIAL ENABLE field is set to an unsupported or reserved value, then the management device server shall not change the SATA partial power management and shall return a function result of SMP FUNCTION FAILED in the response frame (see table 247 in 10.4.3.3) If the management device server returns a function result of SMP FUNCTION FAILED, then it shall not perform the requested phy operation.

SMP DISCOVER Changes:

33	Reserved	ATTACHED SLUMBER CAPABLE	ATTACHED PARTIAL CAPABLE	ATTACHED INSIDE ZPSDS PERSISTENT	ATTACHED REQUESTED INSIDE ZPSDS	ATTACHED BREAK_REPLY CAPABLE

The ATTACHED SLUMBER CAPABLE bit indicates the value of the SLUMBER CAPABLE bit received in the IDENTIFY address frame (see x.x.x) from the attached phy during the identification sequence.

The ATTACHED PARTIAL CAPABLE bit indicates the value of the PARTIAL CAPABLE bit received in the IDENTIFY address frame (see x.x.x) from the attached phy during the identification sequence.

48	PHY POWER MANAGEMENT CONDITION	Reserved	SAS SLUMBER CAPABLE	SAS PARTIAL CAPABLE	SATA SLUMBER CAPABLE	SATA PARTIAL CAPABLE
49	Reserved		SAS SLUMBER ENABLED	SAS PARTIAL ENABLED	SATA SLUMBER ENABLED	SATA PARTIAL ENABLED

The PHY POWER MANAGEMENT CONDITION field indicates the power managment condition for the phy and is described in table XXX.

Table <xxx> — PHY POWER MANAGEMENT CONDITION

Code	Description
00b	Active power condition
01b	Partial power condition
10b	Slumber power condition
11b	Reserved

The SAS SLUMBER CAPABLE bit, SAS PARTIAL CAPABLE bit, SATA SLUMBER CAPABLE bit and SATA PARTIAL CAPABLE bit indicates if the corresponding phy power management mode is supported on the indicated phy.

The SAS SLUMBER ENABLED bit, SAS PARTIAL ENABLED bit, SATA SLUMBER ENABLE bit and SATA PARTIAL ENABLED bit indicates if the corresponding phy power management mode is enabled on the indicated phy.