

T10/08-420 Revision 2

Date: January 12, 2009

To: T10 Committee

From Brad Besmer, LSI

Subject: SPL Power Management Reporting and Control

Revision History

r0 - Original revision

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

r2 - Changed SAS SLUMBER ENABLE to ENABLE SAS SLUMBER, SAS PARTIAL ENABLE to ENABLE SAS PARTIAL, SATA SLUMBER ENABLE to ENABLE SATA SLUMBER, SATA PARTIAL ENABLE to ENABLE SATA PARTIAL. Fixed field name in SMP DISCOVER Response.

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) _____							
5	EXPECTED EXPANDER CHANGE COUNT _____ (LSB)							
6	Reserved							
8	Reserved							
9	PHY IDENTIFIER							
10	PHY OPERATION							
11	Reserved							UPDATE PARTIAL PATHWAY TIMEOUT VALUE
12	Reserved							
23	Reserved							
24	Reserved							
31	ATTACHED DEVICE NAME _____							
32	PROGRAMMED MINIMUM PHYSICAL LINK RATE				Reserved			
33	PROGRAMMED MAXIMUM PHYSICAL LINK RATE				Reserved			
34	ENABLE SAS SLUMBER		ENABLE SAS PARTIAL		ENABLE SATA SLUMBER		ENABLE SATA PARTIAL	
35	Reserved							
36	Reserved				PARTIAL PATHWAY TIMEOUT VALUE			
37	Reserved							
39	Reserved							
40	(MSB) _____							
43	CRC _____ (LSB)							

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[Table 337 defines the ENABLE SAS SLUMBER field.](#)

[Table 337 — ENABLE SAS SLUMBER field](#)

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

[If the ENABLE SAS SLUMBER 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 ENABLE SAS PARTIAL field.](#)

[Table 338 — ENABLE SAS PARTIAL field](#)

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

[If the ENABLE SAS PARTIAL 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 ENABLE SATA SLUMBER field.](#)

[Table 339 — ENABLE SATA SLUMBER field](#)

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

[If the ENABLE SATA SLUMBER 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 [ENABLE SATA PARTIAL](#) field.

Table 340 — [ENABLE SATA PARTIAL](#) field

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

If the [ENABLE SATA PARTIAL](#) 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 to SMP Response:

33	Reserved	ATTACHED SLUMBER CAPABLE	ATTACHED PARTIAL CAPABLE	ATTACHED INSIDE ZPSDS PERSISTENT	ATTACHED REQUESTED INSIDE ZPSDS	ATTACHED BREAK_REPLY CAPABLE
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The [ATTACHED SLUMBER CAPABLE](#) bit indicates that 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 that 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 that the power management condition for the phy and is described in table xxx.

[Table <xxx> — PHY POWER MANAGEMENT CONDITION field](#)

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 indicate that the corresponding phy power management mode is supported on the indicated phy.](#)

[The SAS SLUMBER ENABLED bit, SAS PARTIAL ENABLED bit, SATA SLUMBER ENABLED bit and SATA PARTIAL ENABLED bit indicate that the corresponding phy power management mode is enabled on the indicated phy.](#)

Editor's Note 1: Need SATA power management control functionality to be more defined.
