

To: T10 Technical Committee
 From: Tim Symons, PMC-Sierra (Tim_Symons@pmc-sierra.com)
 Date: 10 Aug 2006
 Subject: 06-326r1 SAS-2 Zone Locked Timer

Revision Information

- Revision 0: First draft.
- Revision 1: added field for setting the zone lock timer value, and description on behavior of the timer.

Referenced Document

Sas2r05b Serial Attached SCSI – 2 (SAS-2) revision 5b
 06-358r4 SAS-2 Zone Configuration model (Tim Symons, PMC-Sierra)

Overview

To ensure that locked zoning expander devices do not remain locked if there is a connection failure to the active zone manager, the zoning expander device has a zone locked timer that causes the zoning expander device to unlock if the timer expires.

[Suggested addition to SAS-2 existing text (included in black), new additional text (included in blue) and changes between revisions shown in red]

10.4.3.3 REPORT GENERAL function

...
 Table 199 defines the response format.

Table 199 - REPORT GENERAL response

Byte\ Bit	7	6	5	4	3	2	1	0
...	...							
3	RESPONSE LENGTH (0Ch)							
...	...							
48	(MSB)	MAXIMUM ZONE LOCK IDLE TIME						(LSB)
49								
50	Reserved							
51								
52	(MSB)	CRC						(LSB)
55								

...
 The RESPONSE LENGTH field shall be set to 0Ch. For compatibility with previous versions of this standard, a RESPONSE LENGTH field set to 00h indicates that there are 6 dwords before the CRC field.

...
 The MAXIMUM ZONE LOCK IDLE TIME field contains the maximum time between any SMP zone configuration function requests, or SMP ZONE LOCK requests from the active zone manager. This value shall be the number of 100 μs increments that a locked zoning expander device remains locked without processing any zone locked function (e.g., a value of one in this field means that the time is less than or equal to 100 μs and a value of two in this field means that the

time is less than or equal to 200 μs). This value may be rounded as defined in SPC-4. A value of zero in this field shall specify that there is no maximum connection time limit.

...

10.4.3.x ZONE LOCK function

...

Table 1 defines the ZONE LOCK request format.

Table 1 – ZONE LOCK request

Byte\Bit	7	6	5	4	3	2	1	0
0	SMP FRAME TYPE (40h)							
1	FUNCTION (86h)							
2	Reserved							
3	REQUEST LENGTH (01h)							
4	(MSB)	EXPECTED EXPANDER CHANGE COUNT						(LSB)
5								
6	(MSB)	MAXIMUM ZONE LOCK IDLE TIME						(LSB)
7								
8	(MSB)	CRC						(LSB)
11								

...

The MAXIMUM ZONE LOCK IDLE TIME field is defined in 10.4.3.3

...

 Editors Note: New text shown in black and changes between revisions shown in red.

4.7.5.x Zone locked timer model

The zone locked timer is supported by all zoning expander devices. The use of a timer ensures that if any locked device, including the zone management client device, fails to respond before the zone locked timer expires then all locked zoning expander devices unlock.

When a zoning expander device processes an SMP ZONE LOCK request (see 10.4.3.18) then the zone lock timer is initialized to the value of the MAXIMUM ZONE LOCK IDLE TIME field.

The zone locked timer is stopped if:

- a) the MAXIMUM ZONE LOCK IDLE TIME is set to zero; or
- b) the ZONE LOCKED bit is set to zero.

The zone locked timer is started if:

- a) the MAXIMUM ZONE LOCK IDLE TIME is set to a non-zero value; and
- b) the ZONE LOCKED bit is set to one.

The zone locked timer is initialized and continues running (if it is already running) when the zoning expander device receives any SMP zone configuration function request from the active zone manager.

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If a zone locked timer expires occurs then the zoning expander device shall abort any outstanding SMP zone configuration requests and unlock (see 4.7.5.x.5).

If the zone locked timer expires then the zoning expander device:

- a) sets the ZONE LOCKED bit to zero;
- b) sets the CONFIGURING bit to zero; and
- c) sends Broadcast (Change) on all ports.

If the active zone manager receives a response with the function result of ZONE LOCK VIOLATION from a zoning expander device that it locked, then it should unlock all locked zoning expander devices.