To: T10 Technical Committee
From: Tim Symons, PMC-Sierra (Tim_Symons@pmc-sierra.com)
Date: 3 August 2006
Subject: 06-203r5 SAS-2 SMP REPORT ZONE PERMISSION function.

Revision Information

- Revision 0 : Proposal extracted from 06-019r5 SAS-2 Zoning proposal.
- Revision 1 : Revised text
- Revision 2 : Improved definition of zone configuring bit
- Revision 3 : Added expander change count field per 06-197r3 (Rob Elliott, HP)
- Revision 4: Added function result priorities
- Revision 5: Added bit to enable reading shadow zone permission registers.

Referenced Document

sas2r05a Serial Attached SCSI – 2 (SAS-2) revision 5a
06-358r1 SAS-2 Zone Configuration model (Tim Symons, PMC-Sierra)

Overview

The SMP REPORT ZONE PERMISSION function is used by a management application client to read the zone permission table and the zone shadow zone registers permission table values of a zoning expander device.

[Start of suggested additions to SAS-2 existing text (included in black), new additional text (included in blue) and changes between revisions shown in red]

10.4.3.1 SMP function request frame format

Table 196 – SMP functions (FUNCTION **field)**

Code	SMP function	Description	Reference
		…	
04h	REPORT ZONE PERMISSION	Return zone permission table entries or shadow zone permission table entries	10.4.3.18
		…	

10.4.3.2 SMP function response frame format
…

Table xx - Function result priority per SMP Function

SMP Function (per table 197)	SMP Function Result Priority
	…
REPORT ZONE PERMISSION	1) INVALID REQUEST FRAME LENGTH; 2) SMP FUNCTION FAILED; and 3) SMP FUNCTION ACCEPTED
	…

…

10.4.3.x REPORT ZONE PERMISSION function

The REPORT ZONE PERMISSION function returns a set of zone permission table entries. This function shall be supported by all zoning expander devices.

Table 1 defines the REPORT ZONE PERMISSION request format.

Table 1 – REPORT ZONE PERMISSION request

Byte\Bit	7	6	5	4	3	2	1	0
0	SMP FRAME TYPE (40h)							
1	FUNCTION (03h)							
2	Reserved							
3	REQUEST LENGTH (01h)							
4	Reserved							REPORT SHADOW REGISTERS
5	Reserved							
6	STARTING SOURCE ZONE GROUP INDEX							
7	NUMBER OF ZONE PERMISSION DESCRIPTORS							
8	(MSB)			CRC				
11								(LSB)

The SMP FRAME TYPE field shall be set to 40h.

The FUNCTION field shall be set to 03h.

The REQUEST LENGTH field shall be set to 01h.

The REPORT SHADOW REGISTERS bit set to zero specifies that the report values shall be read from the active zone permission table. The REPORT SHADOW REGISTERS bit set to one specifies that the report values shall be read from the zoning expander shadow registers.

The STARTING SOURCE ZONE GROUP INDEX field specifies the first source zone group, s (see table 23) to be reported. If the value in this field exceeds the end of the zone permission table then the FUNCTION RESULT field shall be set to SMP INDEXED STARTING SOURCE ZONE GROUP INDEX DOES NOT EXIST.

The NUMBER OF ZONE PERMISSION DESCRIPTORS field specifies the number of zone source groups to be reported.

The CRC field is defined in 10.4.3.2.

Table 2 defines the REPORT ZONE PERMISSION response format.

Table 2 – REPORT ZONE PERMISSION response

Byte\Bit	7	6	5	4	3	2	1	0
0	SMP FRAME TYPE (41h)							
1	FUNCTION (03h)							
2	FUNCTION RESULT							
3	RESPONSE LENGTH ((n - 7) / 4)							
4	(MSB)	EXPANDER CHANGE COUNT						
5								(LSB)
6	Reserved							REPORT SHADOW REGISTERS
7	Reserved							
13								
14	STARTING SOURCE ZONE GROUP INDEX							
15	ZONE PERMISSION CONFIGURING	NUMBER OF ZONE PERMISSION DESCRIPTORS						
	Zone permission descriptor list							
8	Zone permission descriptor (first)(see Table 3)							
23								
…	…							
n - 19	Zone permission descriptor (last)(see Table 3)							
n - 4								
n - 3	(MSB)	CRC						
n								(LSB)

The SMP FRAME TYPE field shall be set to 41h.

The FUNCTION field shall be set to 03h.

The FUNCTION RESULT field is defined in 10.4.3.2

The RESPONSE LENGTH field indicates the number of dwords that follow, not including the CRC field.

The EXPANDER CHANGE COUNT field is defined in the SMP REPORT GENERAL response (see 10.4.1.3).

The REPORT SHADOW REGISTERS bit set to zero indicates that the reported values are from the active zone permission table. The REPORT SHADOW REGISTERS bit set to one indicates that the reported values are read from the zoning expander shadow registers.

The STARTING SOURCE ZONE GROUP INDEX field indicates the first source zone group, s (see table 23) reported in the first ZONE GROUP PERMISSION descriptor and contains the same value as the STARTING SOURCE ZONE GROUP INDEX field in the request frame.

A ZONE PERMISSION CONFIGURING bit set to one indicates that the zone permission entries are in the process of being updated at the time of reporting the data. A ZONE PERMISSION CONFIGURING

bit set to zero indicates that the permission table is stable and not being updated. This bit provides status information and any response is user defined.

The NUMBER OF ZONE PERMISSION DESCRIPTORS field indicates the number of zone source groups being returned. Zone group values of 's' are reported sequentially from the value indicated in the START SOURCE ZONE GROUP INDEX field. If the sum of the value of the STARTING SOURCE ZONE GROUP INDEX field and the NUMBER OF ZONE PERMISSION DESCRIPTORS field exceeds 127 then the FUNCTION RESULT field should be INVALID REQUEST FRAME LENGTH.

Each zone group permission descriptor is 16 bytes long and follows the format in Table 3.

Table 3 - Zone permission descriptor format

Byte\Bit	7	6	5	4	3	2	1	0
0	ZP[s, 127]							ZP[s, 120]
…	…		Zone permission entries					…
14	ZP[s, 15]							ZP[s, 8]
15	ZP[s, 7] Reserved	ZP[s, 6] Reserved	ZP[s, 5] Reserved	ZP[s, 4] Reserved	ZP[s, 3]	ZP[s, 2]	ZP[s, 1] 1	ZP[s, 0] 0

Table 4 - Zone group permission descriptor

Byte\Bit	7	6	5	4	3	2	1	0
0	ZP [s, 7] Reserved	ZP [s, 6] Reserved	ZP [s, 5] Reserved	ZP [s, 4] Reserved	ZP [s, 3]	ZP [s, 2]	ZP[s,1] = 1	ZP[s,0] = 0
1	ZP [s, 15]							ZP [s, 8]
…	…		Zone permission entries					…
15	ZP [s,127]							ZP [s, 120]

Editors Note: The zone permission descriptor format is duplicated in the SMP CONFIGURE ZONE PERMISSION proposal (06-202)

The zone permission descriptor contains all of the zone group permission entries for the source zone group s, referenced from the STARTING SOURCE ZONE GROUP INDEX field in the request and response frames. This information is extracted from the zone permission table (see Table 23).

The CRC field is defined in 10.4.3.2.