

T10/06-202r2 SAS-2 SMP CONFIGURE ZONE PERMISSION function.

To: T10 Technical Committee
From: Tim Symons, PMC-Sierra (Tim_Symons@pmc-sierra.com)
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Subject: 06-202r2 SAS-2 SMP CONFIGURE ZONE PERMISSION functions

Revision Information

- Revision 0: Proposal extracted from 06-019r5 SAS-2 Zoning proposal.
- Revision 1: Added further description and function result fields.
- Revision 2: Added rules for devices that receive requests, and more function result fields to provide additional information in responses.

Referenced Document

Sas2r03a Serial Attached SCSI – 2 (SAS-2) revision 3
06-019r5 SAS-2 Zoning (Tim Symons, PMC-Sierra)
[06-203r1 SAS-2 SMP Report zone permission \(Tim Symons, PMC-Sierra\)](#)
06-215r1 SAS-2 Zone management proxy device (Tim Symons, PMC-Sierra)

Overview

SMP CONFIGURE ZONE PERMISSION is a function that allows any management device with access permission to special zone group 2 to revise the access permissions in a zone permission table of a zoning expander device. Table entry updates may take many clock cycles to execute and a full table revision requires several frames to issue all of the necessary requests.

[Suggested addition to SAS-2. Changes between revisions shown in red]

10.4.3.1 SMP function request frame format

Table 195 – SMP functions (FUNCTION field)

Code	SMP function	Description	Reference
83h	CONFIGURE ZONE PERMISSION	Change entries within a zone permission table	10.4.3.16

10.4.3.2 SMP function response frame format

Table 197 – FUNCTION RESULT field

Code	Name	SMP function(s)	Description
23h	SMP FINAL REQUEST ACCEPTED	CONFIGURE ZONE PERMISSION	The SMP target received an SMP CONFIGURE ZONE PERMISSION request with the FINAL REQUEST bit set to one.

10.4.3.17 CONFIGURE ZONE PERMISSION function

The CONFIGURE ZONE PERMISSION function requests a change to the zone permissions table entries. This function shall be supported by all zoning devices.

A CONFIGURE ZONE PERMISSION request should only be originated by devices that have zone access permission to zone group 2. A zoning expander device that is not the active zone proxy device should only send a CONFIGURE ZONE PERMISSION request to the active zone proxy device.

When a CONFIGURE ZONE PERMISSION request is received by a zoning expander device, the ZONE PERMISSION CONFIGURING bit shall be set to one in the REPORT ZONE PERMISSION response (see 10.4.3.18). When zoning expander device receives a response with the FUNCTION RESULT field set to SMP FINAL REQUEST ACCEPTED from all request destinations then ZONE PERMISSION CONFIGURING bit shall be set to zero in the REPORT ZONE PERMISSION response.

Editors Note: 10.4.3.18 refers to proposal 06-203

The active zone proxy device shall send CONFIGURE ZONE PERMISSION requests to all zoning expander devices within the ZPSDS (i.e., attached to the active zone proxy device by ports with the ZONE PARTICIPATING bit set to one).

When a CONFIGURE ZONE PERMISSION request causes a change to a zone group then the zoning expander device shall:

- a) originate a BROADCAST (Change) on each expander port that has access permission to the zone group before the change, and after the change based on the zone permission table; or
- b) originate a BROADCAST (Change) to zone group 1 on all ports.

If the active zone proxy device receives another CONFIGURE ZONE PERMISSION request when it is executing a change, and has not received a response with the FUNCTION RESULT field set to SMP FINAL REQUEST ACCEPTED from all request destinations (i.e., the ZONE PERMISSION CONFIGURING bit is set to one in the REPORT ZONE PERMISSION response (see 10.4.3.18)), then the new request shall be rejected and the FUNCTION RESULT field shall be set to SMP FUNCTION FAILED.

A request to change zone permission to zone group 0 or zone group 1 shall be ignored.
A request to change reserved zone group shall be ignored (e.g., zone groups 4,5,6 and 7)

Table 1 defines the CONFIGURE ZONE PERMISSION request format.

Table 1 – CONFIGURE ZONE PERMISSION request

Byte\Bit	7	6	5	4	3	2	1	0
0	SMP FRAME TYPE (40h)							
1	FUNCTION (83h)							
2	Reserved							
3	REQUEST LENGTH $((n - 7) / 4)$							
4	Reserved							
5								
6	STARTING SOURCE ZONE GROUP INDEX							
7	FINAL REQUEST	NUMBER OF ZONE PERMISSION ENTRIES						
Zone permission entry descriptor list								
8	Zone permission entry descriptor (first)(see Table 2)							
23								
...	...							
n - 20	Zone permission entry descriptor (last)(see Table 2)							
n - 4								
n - 3	(MSB)	CRC						(LSB)
n								

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

The FUNCTION field shall be set to 83h.

The REQUEST LENGTH field shall be set to $((n - 7) / 4)$.

The STARTING SOURCE ZONE GROUP INDEX specifies the first source zone group to be written with the first zone permission entry descriptor.

A FINAL REQUEST bit set to one specifies that the current request is the last of a sequence of requests. A LAST REQUEST bit set to zero specifies that there is at least one more request frame to be issued by the originator to complete the total configuration change request.

The NUMBER OF ZONE PERMISSION ENTRIES field specifies how many zone permission entry descriptors follow $((n - 15) / 16)$.

Table 2 defines the ZONE PERMISSION ENTRY DESCRIPTOR field format.

Table 2 - Zone permission entry descriptor format

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

The zone permission entry descriptor contains access permission for a zone group (s) as defined in Table 23. For a CONFIGURE ZONE PERMISSION request the following rules apply:

- a) zone permission entries ZP[s, 1 and 0] shall be ignored;
- b) zone permission entries ZP[1 and 0, d] shall be ignored;
- c) zone permission entries ZP[s, 2 and 3] apply the same value to ZP [2 and 3, d];
- d) zone permission entries ZP[s, 4 thru 7] shall be ignored;
- e) zone permission entries ZP[4 thru 7, d] shall be ignored; and
- f) zone permission entries ZP[s, 8 to 127] apply the same value to ZP[8 to 127, d].

The CRC field is defined in 10.4.3.2.

The CONFIGURE ZONE PERMISSION response format is defined in Table 3.

Table 3 – CONFIGURE ZONE PERMISSION response

Byte\Bit	7	6	5	4	3	2	1	0	
0	SMP FRAME TYPE (41h)								
1	FUNCTION (83h)								
2	FUNCTION RESULT								
3	RESPONSE LENGTH (00h)								
4	(MSB)	CRC							
7							(LSB)		

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

The FUNCTION field shall be set to 83h.

If the request is originated by the active zone proxy device then the FUNCTION RESULT field shall contain the following values (see 10.4.3.2):

- a) SMP FUNCTION ACCEPTED if the LAST REQUEST bit is set to zero in the request; or
- b) SMP FINAL REQUEST ACCEPTED if the LAST REQUEST bit is set to one in the request.

If the request is received by the active zone proxy device from a source device with access permission to zone group 2 then the FUNCTION RESULT field shall contain the following values (see 10.4.3.2):

- a) SMP FUNCTION ACCEPTED if the LAST REQUEST bit is set to zero in the request; or
- b) SMP FINAL REQUEST ACCEPTED if the LAST REQUEST bit is set to one in the request.

If the request is received by the active zone proxy device from a source device that does not have access permission to zone group 2 defined in the zone permission table then the FUNCTION RESULT field shall contain ZONE PROXY DEVICE VIOLATION (see 10.4.3.2).



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Editors Note: 10.4.3.2 ZONE PROXY DEVICE VIOLATION and ZONE PROXY DEVICE BUSY function result definitions are in proposal 06-215r1 SAS-2 Zone management proxy device (Tim Symons, PMC-Sierra)

If a request is received by the active zone proxy device whilst it is processing a previous request and before the SMP FINAL REQUEST ACCEPTED response, then the FUNCTION RESULT field shall contain ZONE PROXY DEVICE BUSY (see 10.4.3.2).

In all other cases the FUNCTION RESULT field shall be set to SMP ZONE VIOLATION.

The RESPONSE LENGTH field shall be set to 00h.

The CRC field is defined in 10.4.3.2.