

**Proposed
Draft**

**Serial ATA
International Organization**

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**Serial ATA Revision 3.2 Technical Proposal 067
Title : FPDMA Zone Management Commands**

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Document History

Version	Date	Comments
0	2 December, 2014	Initial release.
1	4 December, 2014	Incorporation of comments from technical integration chair. Moves description of management commands to ZAC/ACS-4. Corrects the contents of FEATURES[3:0] to contain the subcommand.
2	12 December, 2014	Incorporation of comments from 8 December Digital WG meeting.
3	23 December, 2014	Addition of ZAC MANAGEMENT subcommands to FPDMA SEND/RECEIVE, per comments from 15 December Digital WG meeting.
4	26 January, 2015	Copy the simplified parameters as in READ LOG EXT, rather than the generic SEND/RECEIVE, per comments from 5 January Digital WG meeting.
5	26 January, 2015	Approved version per 26 January Digital meeting. Change non-data subcommand to be ZAC MANAGEMENT OUT to match forthcoming ACS-4. Remove reference to ZAC & add reference to ACS-4. Change field in SEND from Count to Sector Count.
6	26 January 2015	Member review, changed D193 to TPR067.

Introduction

This proposal adds queued commands to support zone management for zoned ATA devices.

1 Technical Specification Changes

1.1 <Title of section being changed>

[editor note: Existing text is black. New text is marked as underlined in blue color. Material to be deleted ~~is red with strikethrough markings.~~]

3.3 References under development

The following ANSI standards under development are referenced.

Draft versions of these standards are available from <http://www.T10.org> or <http://www.T13.org>:

- a) ATA/ATAPI-8 Serial Transport (ATA8-AST) [ANSI INCITS T13/1697-D];
- b) ATA/ATAPI-8 Parallel Transport (ATA8-APT) [ANSI INCITS T13/1698-D];
- c) ATA Host Adapter Standards - 2 (HBA-2) [ANSI INCITS T13/2014D];
- d) ATA/ATAPI Command Set - ~~34~~ (ACS-~~34~~) [~~ANSI INCITS BSR T13/5292161-D~~]; and
- e) Serial Attached SCSI-3 (SAS-3) [ANSI INCITS T10/2212-D]; and
- f) Zoned-device ATA Commands (ZAC) [INCITS BSR T13/537].

Editor's note: ACS-3 was changed to ACS-4 by TPR063.

Editor's note: ZAC was added by TPR057.

13.6.6.2 NCQ NON-DATA subcommands

Table 106 – Subcommands for NCQ NON-DATA

	Description	Reference
0h	ABORT NCQ QUEUE	Error! Reference source not found.
1h	DEADLINE HANDLING	13.6.6.4
2h	HYBRID DEMOTE BY SIZE	13.6.6.7
3h	HYBRID CHANGE BY LBA RANGE	13.6.6.5
4h	HYBRID CONTROL	13.6.6.6
5h	SET FEATURES	13.6.6.8
<u>6h</u>	<u>ZERO EXT</u>	<u>13.6.6.9</u>
<u>7h</u>	<u>ZAC MANAGEMENT OUT</u>	<u>13.6.6.10</u>
67 8h..Fh	Reserved	

Editor's note: Subcommand 6h ZERO EXT was added in TPR064.

13.6.6.10 ZAC MANAGEMENT OUT subcommand (7h)

13.6.6.10.1 ZAC MANAGEMENT OUT subcommand overview

The ZAC MANAGEMENT OUT subcommand functionality and behavior is defined in ACS-4.

13.6.6.10.2 Inputs

The format of the command is defined in Figure 1.

Field	7	6	5	4	3	2	1	0
Features(7:0)	Reserved				7h			
Features(15:8)	Sector Count(7:0)							
LBA(7:0)	LBA(7:0)							
LBA(15:8)	LBA(15:8)							
LBA(23:16)	LBA(23:16)							
LBA(31:24)	LBA(31:24)							
LBA(39:32)	LBA(39:32)							
LBA(47:40)	LBA(47:40)							
Auxiliary(7:0)	Features(7:0)							
Auxiliary(15:8)	Features(15:8)							
Auxiliary(23:16)	Reserved							
Auxiliary(31:24)	Reserved							

Figure 1 – ZAC MANAGEMENT OUT subcommand = 7h

See ZAC for the definitions of the Features(15:0) field, Sector Count(7:0) field, and the LBA(47:0) fields.

13.6.6.10.3 Success outputs

See 13.6.8.3

13.6.6.10.4 Error outputs

See 13.6.8.4

13.6.7.5 RECEIVE FPDMA QUEUED subcommands

Subcommands for the RECEIVE FPDMA QUEUED commands are contained within the Count(12:8) field. The allowed values are defined in Table 110.

Table 106 – Subcommands for RECEIVE FPDMA QUEUED

	Description	Reference
00h	Reserved	
01h	READ LOG DMA EXT (see 13.6.7.6)	13.6.7.6
02h..1Fh	Reserved	
02h	ZAC MANAGEMENT IN	13.6.7.7
03h..1Fh	Reserved	

13.6.7.7 ZAC MANAGEMENT IN subcommand (02h)

13.6.7.7.1 ZAC MANAGEMENT IN subcommand overview

The ZAC MANAGEMENT IN subcommand functionality and behavior is defined in ACS-4.

13.6.7.7.2 Inputs

The format of the command is defined in [Figure 1](#).

Field	7	6	5	4	3	2	1	0
Features(7:0)	Sector Count(7:0)							
Features(15:8)	Sector Count(15:8)							
LBA(7:0)	LBA(7:0)							
LBA(15:8)	LBA(15:8)							
LBA(23:16)	LBA(23:16)							
LBA(31:24)	LBA(31:24)							
LBA(39:32)	LBA(39:32)							
LBA(47:40)	LBA(47:40)							
Auxiliary(7:0)	Features(7:0)							
Auxiliary(15:8)	Features(15:8)							
Auxiliary(23:16)	Reserved							
Auxiliary(31:24)	Reserved							

Figure 2 – ZAC MANAGEMENT IN subcommand = 02h

See ZAC for the definitions of the Features(15:0) field, Sector Count(15:0) field, and the LBA(47:0) fields.

13.6.7.7.3 Success outputs

See 13.6.8.3

13.6.7.7.4 Error outputs

See 13.6.8.4

13.6.8.5 SEND FPDMA QUEUED subcommands

Subcommands for the SEND FPDMA QUEUED commands are contained within the Count (12:8) field. The allowed values are defined in Table 111. Support for each subcommand is reported in the NCQ Send and Receive log (see 13.7.6).

Table 106 – Subcommands for SEND FPDMA QUEUED

	Description	Reference
00h	DATA SET MANAGEMENT (see 13.6.8.6)	13.6.8.6
01h	HYBRID EVICT (see 13.6.8.7)	13.6.8.7
02h	WRITE LOG DMA EXT (see 13.6.8.8)	13.6.8.8
03h	ZAC MANAGEMENT OUT	13.6.8.9
03 04 h..01Fh	Reserved	

13.6.8.9 ZAC MANAGEMENT OUT subcommand (03h)

13.6.8.9.1 ZAC MANAGEMENT OUT subcommand overview

The ZAC MANAGEMENT OUT subcommand functionality and behavior is defined in ACS-4.

13.6.8.9.2 Inputs

The format of the command is defined in Figure 1.

Field	7	6	5	4	3	2	1	0
Features(7:0)	Sector Count(7:0)							
Features(15:8)	Sector Count(15:8)							
LBA(7:0)	LBA(7:0)							
LBA(15:8)	LBA(15:8)							
LBA(23:16)	LBA(23:16)							
LBA(31:24)	LBA(31:24)							
LBA(39:32)	LBA(39:32)							
LBA(47:40)	LBA(47:40)							
Auxiliary(7:0)	Features(7:0)							
Auxiliary(15:8)	Features(15:8)							
Auxiliary(23:16)	Reserved							
Auxiliary(31:24)	Reserved							

Figure 3 – ZAC MANAGEMENT OUT subcommand = 03h

See ZAC for the definitions of the Features(15:0) field, Sector Count(15:0) field, and the LBA(47:0) fields.

13.6.8.9.3 Success outputs

See 13.6.8.3

13.6.8.9.4 Error outputs

See 13.6.8.4