

**Proposed  
Draft**

**Serial ATA  
International Organization**

**Version 3  
17 September 2014**

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**Serial ATA Revision 3.2 Technical Proposal 064  
Title : Queued version of ACS-4 ZERO EXT  
command**

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## Document History

Version	Date	Comments
0	23 August 2014	Initial release, sans correct D number
1	26 August 2014	Added the Trim bit as wisely advised to do by the 25 August 2014 Digital group call.
2	2 Sept 2014	Added intro sentence for figure 366+1, as per the rap on the knuckles from the SATA editor.
3	17 Sept 2014	Member review. Changed D190 to TPR064

## Introduction

During its August Plenary T13 approved the addition of a ZERO EXT command which writes zeros. This proposal creates a queued version of ZERO EXT as subcommand of the SEND NCQ NON-DATA command.

Text removals are shown as ~~red-strikeout~~. Text additions are show as blue underline.

## 1 Technical Specification Changes

### 1.1 13.6.6.2 NCQ NON-DATA subcommands

Table 106 – Subcommands for NCQ NON-DATA

Subcommand	Description	Reference
0h	ABORT NCQ QUEUE	13.6.6.3
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
6h	<a href="#">ZERO EXT</a>	<a href="#">13.6.6.n</a>
<del>6h</del> 7h..Fh	Reserved	

### 1.2 [13.6.6.n ZERO EXT subcommand \(6h\)](#)

#### [13.6.6.n.1 ZERO EXT overview](#)

The ZERO EXT subcommand functionality and behavior is defined in [ACS-4](#).

#### [13.6.6.n.2 Inputs](#)

The format of the command is defined in [Figure 366+1](#).

Field	7	6	5	4	3	2	1	0
Features(7:0)	Reserved				6h			
Features(15:8)	Sector Count(7:0)							
Count(7:0)	TAG				Reserved			
Count(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)	Reserved						Trim	
Auxiliary(15:8)	Reserved							
Auxiliary(23:16)	Reserved							
Auxiliary(31:24)	Reserved							

Figure 366+1 – ZERO EXT QUEUED subcommand = 6h

See [ACS-4](#) for the definitions of the Sector Count field, the LBA(47:0) field, and the Trim bit in the ZERO EXT command.

#### [13.6.6.n.3 Success outputs](#)

See [13.6.8.3](#)

#### [13.6.6.n.4 Error outputs](#)

See [13.6.8.4](#)

...

### 1.3 13.7.5 NCQ NON-DATA log (12h)

...

Dword	Bits	Description
0	Subcommand 0h	
	31..5	Reserved
	4	Supports Abort Selected TTAG (see 13.7.5.6)
	3	Supports Abort Non-Streaming (see 13.7.5.5)
	2	Supports Abort Streaming (see 13.7.5.4)
	1	Supports Abort All (see 13.7.5.3)
	0	Supports Abort NCQ (see 13.7.5.2)
1	Subcommand 1h	
	31..3	Reserved
	2	Supports Read Data Not Continue (see 13.7.5.9)
	1	Supports Write Data Not Continue (see 13.7.5.8)
	0	Supports DEADLINE HANDLING (see 13.7.5.7)
2	Subcommand 2h	
	31..1	Reserved
	0	Supports HYBRID DEMOTE BY SIZE (see 13.7.5.10)
3	Subcommand 3h	
	31..1	Reserved
	0	Supports HYBRID CHANGE BY LBA RANGE (see 13.7.5.11)
4	Subcommand 4h	
	31..1	Reserved
	0	Supports HYBRID CONTROL (see 13.7.5.12)
5	Subcommand 5h	
	31..1	Reserved
	0	Supports Set Features (see 13.7.5.13)
6	<a href="#">Subcommand 6h</a>	
	<a href="#">31..1</a>	<a href="#">Reserved</a>
	<a href="#">0</a>	<a href="#">Supports Zero Ext (see 13.7.5.s)</a>
...	...	...
15	Subcommand Fh	
	31..1	Reserved
	0	Supports subcommand Fh
16..128	31..0	Reserved

**Figure 382 – NCQ NON-DATA log (12h) data structure definition**

#### 1.4 [13.7.5.s Supports Zero Ext](#)

If the Supports Zero Ext bit is set to one, then the device supports the ZERO EXT subcommand (see 13.6.6.n) of the NCQ NON-DATA command. If the Supports Zero Ext bit is cleared to zero, then the device does not support the ZERO EXT subcommand of the NCQ NONDATA command.