

ACS-2: Obsolete TCQ Feature Set

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Document Status

Revision History		
Rev	Date	Description
0	December 15, 2008	1) Initial Revision
1	February 15, 2008	1) Revisions for comments received
2	April 15, 2008	1) Revisions from February meeting as well as comments from April meeting. Added missing DCO coverage. Added missing SERVICE command removal

1 Introduction

The TCQ feature set has become unused in modern ATA drives with NCQ instead taking the lead for development of queued commands and features. Carrying TCQ forward requires us to consider interactions between TCQ and other features unnecessarily. TCQ should be obsoleted in order to freeze it in place and make no further changes. It will also simplify the ACS-2 document and reduce complexity of new features.

2 Changes to ACS-2

2.1 Changes to clause 3

2.1.1 Changes to Definitions and abbreviations

- 2.1.2 Queued Command:** A NCQ command that has reported command acceptance but not command completion.
- 2.1.3 read command:** A command that causes the device to transfer data from the device to the host. The following commands are read commands: READ DMA, READ DMA EXT, READ DMA QUEUED, READ FPDMA QUEUED, READ MULTIPLE, READ MULTIPLE EXT, READ SECTOR(S), READ SECTOR(S) EXT, READ STREAM EXT, READ STREAM DMA EXT, READ VERIFY SECTOR(S), or READ VERIFY SECTOR(S) EXT.
- 2.1.4 write command:** A command that causes the device to transfer data from the host to the device. The following commands are write commands: SCT Write Same, SCT Write Long, WRITE DMA, WRITE DMA EXT, WRITE DMA FUA EXT, WRITE FPDMA QUEUED, WRITE MULTIPLE, WRITE MULTIPLE EXT, WRITE MULTIPLE FUA EXT, WRITE SECTOR(S), WRITE SECTOR(S) EXT, WRITE STREAM DMA EXT, or WRITE STREAM EXT.

Delete command released and release definitions.

2.2 Changes to clause 6

Delete clause service bit definition (6.2.9).

Change 6.4.1 to:

The Interrupt Reason field is one byte, is conveyed as an output from the device to the host for commands in the PACKET and NCQ feature sets and is defined in table 18.

Delete 6.4.4 and 6.4.5. Mark rows in table 18 for release and tag as obsolete. Mark tag bits in table 19 as obsolete (7:2).

2.3 Changes to clause 4

2.3.1 Overview - Changes to the Feature Set Summary Table

Delete tagged command queuing from feature set table.

2.3.2 Long Logical Sector (LLS) feature set

Delete READ DMA QUEUED, READ DMA QUEUED EXT, WRITE DMA QUEUED, WRITE DMA QUEUED EXT, and WRITE DMA QUEUED FUA EXT from the LLS feature set command table.

2.3.3 Security Mode feature set - Changes to the Security Mode Command Actions Table

Delete READ DMA QUEUED, READ DMA QUEUED EXT, WRITE DMA QUEUED, WRITE DMA QUEUED EXT, and WRITE DMA QUEUED FUA EXT from the security mode command actions table.

2.3.4 TCQ Feature Set

Delete this clause

2.3.5 WRITE-READ-VERIFY Feature Set

Remove WRITE DMA QUEUED, WRITE DMA QUEUED EXT, and WRITE DMA QUEUED FUA EXT from commands affected by the Write-Read-Verify feature set.

2.4 Changes to clause 7

2.4.1 Deletions

Delete clauses for READ DMA QUEUED, READ DMA QUEUED EXT, WRITE DMA QUEUED, WRITE DMA QUEUED EXT, WRITE DMA QUEUED FUA EXT, and SERVICE.

2.4.2 Changes to DEVICE CONFIGURATION OVERLAY SET

Change definition of word 7, bit 11 to:

disable support for the WRITE DMA FUA EXT command and the WRITE MULTIPLE FUA EXT command; and

Change definition of word 7, bit 5 to:

This field is obsolete.

2.4.3 Changes to IDENTIFY DEVICE data

Mark word 83, bit 1 obsolete.

Mark word 86, bit 1 obsolete.

Mark word 84, bit 7 obsolete.

Mark word 87, bit 7 obsolete.

Change the definition of Word 75 to:

Bits (4:0) of word 75 indicate the maximum queue depth supported by the device. The queue depth includes all commands for which command acceptance has occurred and command completion has not occurred. The value in this field equals (maximum queue depth - 1) (e.g., a value of zero indicates a queue depth of one, and a value of 31 indicates a queue depth of 32). If bit 6 of word 76 is cleared to zero indicating that the device does not support NCQ feature set commands, the value in this field shall be zero. Support of this word is mandatory if the NCQ feature set is supported.

Change definition of words 83, 84, 86, and 87 to change the definition of the respective bits to obsolete.

2.5 Changes to Normal and Error Outputs

2.5.1 Changes to Normal Outputs

Delete Table 107 (Queued Normal Output)

2.5.2 Changes to Error Outputs

Delete Table 144 (READ DMA QUEUED Error)

Delete Table 145 (READ DMA QUEUED EXT Error)

Delete Table 152 (WRITE DMA QUEUED Error)

2.6 Changes to Annex A - Command Set Summary

2.6.1 Changes to the Command Matrix Table

Change opcodes C7h, 26h, CCh, 36h, 3Eh to O.

2.6.2 Changes to the Command Codes Table

Change entries for READ DMA QUEUED, READ DMA QUEUED EXT, WRITE DMA QUEUED, WRITE DMA QUEUED EXT, WRITE DMA QUEUED FUA EXT, SERVICE to B (Obsolete)

2.6.3 Changes to the Historical Command Assignments

In ACS-2 column for C7h, 26h, CCh, 36h, and 3Eh mark them as O.