



IDENTIFY DEVICE data log

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Revision 1

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Document Status

| Revision History | | |
|-------------------------|-------------------|---------------------|
| Rev | Date | Description |
| 0 | December 17, 2008 | 1) Initial Revision |

1 Introduction

The information which drive manufacturers need to report in IDENTIFY DEVICE data continues to grow and the available 512 bytes will soon be used up. This proposal provides an alternative reporting

2 Scope

This proposal defines a new log which preserves the format of legacy IDENTIFY DEVICE and provides new expansion areas through additional log pages.

3 Overview

This clause provides a high level description of the proposal.

The ACS document template contains all the necessary items for creating a proposal for an addition to ACS. The assumption for this proposal is that a new command or feature set is being added. All of the clauses listed here may not need to be changed. In that case, delete the subclause from the proposal.

4 Changes to ACS-2

4.1 Changes to clause 7

4.1.1 Command Definition

4.2 Changes to Annex A

A.1 Overview

Table of log address definitions.

Table A.2 — Log address definition

| Log Address | Log Name | Feature Set | R/W | Access |
|---|----------------------|-------------|-----|--------|
| TBD | IDENTIFY DEVICE data | General | R/W | GPL,SL |
| Key - RO - Log is read only. R/W - Log is read or written. VS - Log is vendor specific thus read/write ability is vendor specific. GPL - General Purpose Logging SL - SMART Logging The device shall return command aborted if a GPL feature set command accesses a log that is marked only with SL. The device shall return command aborted if a SMART feature set command accesses a log that is marked only with GPL. | | | | |

A.2 IDENTIFY DEVICE data log (Log Address TBD)

A.2.1 Overview

The optional IDENTIFY DEVICE data log reports device configuration information. This log shall be read-only. This log is supported if there is a non-zero length for log address TBD in the General Purpose Log Directory.

The number of log pages may be greater than one.

See table A.3 for a list of defined pages. Each page shall consist of a header field that may be followed by defined statistics fields. If the Revision Number field in the page header is 0000h, then that page is not supported. All page data following the last defined statistic for that page is reserved.

If an unsupported page is requested, then 512 bytes of all zeros shall be returned for that page.

Table A.3 — Defined Device Statistics pages

| Page | Description |
|----------|--|
| 00h | List of supported pages (see A.2.2) |
| 01h | Copy of IDENTIFY DEVICE data (see 7.17.7xxx) |
| 02h | Capacity |
| 03h | Supported Capabilities |
| 04h | Current Settings |
| 05h | ATA Strings |
| 06h | Security |
| 07h-EFh | Reserved |
| F0h | Serial ATA |
| F1h | Parallel ATA |
| F2h..FFh | Reserved |

[Editor's Note 1: Legacy/obsolete settings will only be in page 1.](#)

A.2.2 List of Supported IDENTIFY DEVICE data log pages (Page 00h)

IDENTIFY DEVICE data log page 00h contains a list of the supported pages as described in Table A.4xxx. Entries shall be in order of ascending page number.

Table A.4 — List of supported Device Statistics pages

| Offset | Type | Content |
|----------|-------|--|
| 0..7 | QWord | IDENTIFY DEVICE data log Information Header. This log page lists the numbers of the supported log pages Bit Meaning 63:24 Reserved 23:16 Page Number. Shall be cleared to zero. 15:0 Revision number. Shall be set to 0001h |
| 8 | Byte | Number of entries (n) in the following list |
| 9 | Byte | Page number of first supported IDENTIFY DEVICE data log page (00h) |
| 10 | Byte | Page number of second supported IDENTIFY DEVICE data log page |
| | | ... |
| n+8 | Byte | Page number of nth supported IDENTIFY DEVICE data log page |
| n+9..511 | | Reserved |

A.2.3 Copy of IDENTIFY DEVICE data (page 01h)

This page is a copy of IDENTIFY DEVICE data words 0-255.

NOTE 1 — This page does not have the header QWord which is present on all the other pages in this log.

A.2.4 Capacity (page 02)

A.2.4.1 Overview

The Capacity page provides information about the capacity of the device.

Table A.5 — Capacity

| Offset | Type | Content |
|---------|-------|---|
| 0..7 | QWord | Capacity page information header. |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one.</p> <p>62:24 Reserved</p> <p>23:16 Page Number. Shall be set to two.</p> <p>15:0 Revision number. Shall be set to 0001h</p> |
| 8..15 | QWord | Device Capacity [was 100..103] |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one.</p> <p>62:48 Reserved</p> <p>47:0 Total Number of User Addressable Logical Sectors</p> |
| 16..23 | QWord | Physical/Logical Sector Size [was words 106 and 209] |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one</p> <p>62 1 = Device has multiple logical sectors per physical sector</p> <p>61 1 = Device has a logical sector size greater than 256 words</p> <p>60:19 Reserved</p> <p>19:16 2^x logical sectors per physical sectors</p> <p>15:0 Logical sector offset within the first physical sector where the first logical sector is placed</p> |
| 24..511 | | Reserved |

A.2.4.2 Device Capacity

Device Capacity is a mandatory field which contains a value that is one greater than the maximum LBA in user accessible space when. The maximum value that shall be placed in this field is FFFF_FFFF_FFFFh.

A.2.5 Supported Capabilities (page 03h)

A.2.5.1 Overview

Supported Capabilities provides a mechanism for the device to report support for feature sets, features, commands and other device capabilities.

Table A.6 — Supported Capabilities

| Offset | Type | Content |
|--------|-------|--|
| 0..7 | QWord | Supported Capabilities page information header. |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one.</p> <p>62:24 Reserved</p> <p>23:16 Page Number. Shall be set to three.</p> <p>15:0 Revision number. Shall be set to 0001h</p> |

Table A.6 — Supported Capabilities

| Offset | Type | Content |
|--------|-------|---|
| 8..15 | QWord | Supported Capabilities |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one.</p> <p>62 1 = CFAST Specification Support</p> <p>61 1 = Deterministic read after TRIM is supported</p> <p>60 1 = Long Physical Sector Alignment Error Reporting Control is supported</p> <p>59 1 = DEVICE CONFIGURATION IDENTIFY DMA and DEVICE CONFIGURATION SET DMA are supported</p> <p>58 1 = READ BUFFER DMA is supported</p> <p>57 1 = WRITE BUFFER DMA is supported</p> <p>56 1 = SET MAX SET PASSWORD DMA and SET MAX UNLOCK DMA are supported</p> <p>55 1 = DOWNLOAD MICROCODE DMA is supported</p> <p>54 1 = The NOP command is supported</p> <p>53 1 = The READ BUFFER command is supported</p> <p>52 1 = The WRITE BUFFER command is supported</p> <p>51 1 = The HPA feature set is supported</p> <p>50 Shall be cleared to zero to indicate that the DEVICE RESET command is not supported</p> <p>49 1 = The SERVICE interrupt is supported</p> <p>48 1 = The release interrupt is supported</p> <p>47 1 = Read look-ahead is supported</p> <p>46 1 = The volatile write cache is supported</p> <p>45 Shall be cleared to zero to indicate that the PACKET feature set is not supported</p> <p>44 Shall be set to one to indicate that the mandatory Power Management feature set is supported</p> <p>43 1 = The Security feature set is supported</p> <p>42 1 = The SMART feature set is supported</p> <p>41 1 = The FLUSH CACHE EXT command is supported</p> <p>40 Shall be set to one to indicate that the mandatory FLUSH CACHE command is supported</p> <p>39 1 = The DCO feature set is supported</p> <p>38 1 = The 48-bit Address feature set is supported</p> |

Table A.6 — Supported Capabilities

| Offset | Type | Content |
|--------|-------|---|
| | | <p>Bit Meaning</p> <p>37 1 = The AAM feature set is supported</p> <p>36 1 = The SET MAX security extension is supported</p> <p>35 1 = SET FEATURES subcommand is required to spin-up after power-up</p> <p>34 1 = The PUIS feature set is supported</p> <p>33 1 = The APM feature set is supported</p> <p>32 1 = The CFA feature set is supported</p> <p>31 1 = The TCQ feature set is supported</p> <p>30 1 = The DOWNLOAD MICROCODE command is supported</p> <p>29 1 = The IDLE IMMEDIATE command with UNLOAD feature is supported</p> <p>28 1 = The 64-bit World wide name is supported</p> <p>27 1 = The WRITE DMA QUEUED FUA EXT command is supported</p> <p>26 1 = The WRITE DMA FUA EXT and WRITE MULTIPLE FUA EXT commands are supported</p> <p>25 1 = The GPL feature set is supported</p> <p>24 1 = The Streaming feature set is supported</p> <p>23 1 = The Media Card Pass Through Command feature set is supported</p> <p>22 1 = Media serial number is supported</p> <p>21 1 = The SMART self-test is supported</p> <p>20 1 = SMART error logging is supported</p> <p>19 1 = Extended Status Reporting feature set is supported</p> <p>18 1 = The Free-fall Control feature set is supported</p> <p>17 1 = The DOWNLOAD MICROCODE command with mode 3 is supported</p> <p>16 1 = The READ LOG DMA EXT and WRITE LOG DMA EXT commands are supported</p> <p>15 1 = The WRITE UNCORRECTABLE EXT command is supported</p> <p>14 1 = The Write-Read-Verify feature set is supported</p> <p><u>13 SET FEATURES Spin-Up is supported</u></p> <p>12:0 Reserved</p> |
| 16..23 | QWord | <p>DOWNLOAD MICROCODE limits [words 234,235]</p> <p>Bit Meaning</p> <p>63 Shall be set to one</p> <p>62:32 Reserved</p> <p>31:16 Maximum number of 512-byte data blocks per DOWNLOAD MICROCODE command mode 03h</p> <p>15:0 Minimum number of 512-byte data blocks per DOWNLOAD MICROCODE command mode 03h</p> |

Table A.6 — Supported Capabilities

| Offset | Type | Content |
|---------|--------|---|
| 24..31 | QWord | Nominal Media Rotation Rate [was word 217] |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one</p> <p>62:16 Reserved</p> <p>15:0 Nominal Media Rotation Rate</p> |
| 24..31 | QWord | Nominal Nominal Form Factor [was word 168] |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one</p> <p>62:4 Reserved</p> <p>3:0 Nominal Media Rotation Rate</p> |
| 32..39 | QWord | Write-Read-Verify Sector Count Mode 3 [was word 210] |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one</p> <p>62:32 Reserved</p> <p>31:0 Write-Read-Verify Sector Count Mode 3</p> |
| 40..47 | QWord | Write-Read-Verify Sector Count Mode 2 [was word 212] |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one</p> <p>62:32 Reserved</p> <p>31:0 Write-Read-Verify Sector Count Mode 2</p> |
| 48..57 | DQWord | World wide name [was word 108] |
| | | <p>Bit Meaning</p> <p>127 Shall be set to one</p> <p>126:64 Reserved</p> <p>63:0 World wide name</p> |
| 16..511 | | Reserved |

A.2.6 Current Setting (page 04h)

A.2.6.1 Overview

Current Settings provides a mechanism for the device to report the current settings for feature sets, features, and other device capabilities.

Table A.7 — Current Settings

| Offset | Type | Content |
|--------|-------|---|
| 0..7 | QWord | Current Settings page information header. |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one.</p> <p>62:24 Reserved</p> <p>23:16 Page Number. Shall be set to four.</p> <p>15:0 Revision number. Shall be set to 0001h</p> |
| 8..15 | QWord | Current Settings |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one.</p> <p>62 1 = The SERVICE interrupt is enabled</p> <p>61 1 = The release interrupt is enabled</p> <p>60 1 = Read look-ahead is enabled</p> <p>59 1 = The volatile write cache is enabled</p> <p>58 1 = The Security feature set is enabled</p> <p>57 1 = The SMART feature set is enabled</p> <p>56 1 = The AAM feature set is enabled</p> <p>55 1 = the SET MAX security extension is enabled by SET MAX SET PASSWORD</p> <p>54 1 = The PUIS feature set is enabled</p> <p>53 1 = The APM feature set is enabled</p> <p>52 1 = The CFA feature set is supported</p> <p>51 1 = The TCQ feature set is supported</p> <p>50 1 = The Free-fall Control feature set is enabled</p> <p>49 1 = The Write-Read-Verify feature set is enabled</p> <p>48:0 Reserved</p> |

Table A.7 — Current Settings

| Offset | Type | Content |
|--------|-------|--|
| 16..23 | QWord | Feature Settings |
| | | <p>Bit Meaning</p> <p>63 1 = This QWord is supported, 0 = This QWord is not supported</p> <p>62 1 = 8-bit PIO data transfers are enabled. 0 = 32-bit PIO data transfers are enabled</p> <p>61 1 = Volatile write cache is enabled. 0 = Volatile write cache is disabled</p> <p>60:53 APM Level (see table 55, APM levels) [was word 91]</p> <p>52 1 = CFA Power Mode 1 is enabled. 0 = CFA Power Mode 1 is disabled</p> <p>51 1 = Reverting to defaults is enabled. 0 = Reverting to defaults is disabled</p> <p>50 1 = Extended status reporting is enabled. 0 = Extended status reporting is disabled</p> <p>49:48 Alignment Error reporting. [was word 69 bit 13].</p> <p>47:40 AAM Level [was word 94]</p> <p>39:0 Reserved</p> |
| 24..31 | QWord | DMA Host Interface Sector Times [was word 96, name change matches SET FEATURES description] |
| | | <p>Bit Meaning</p> <p>63 1 = This QWord is supported, 0 = This QWord is not supported</p> <p>62:16 Reserved</p> <p>15:0 Host Interface Sector Times</p> |
| 32..39 | | PIO Host Interface Sector Times [was word 104 name change matches SET FEATURES description] |
| | | <p>Bit Meaning</p> <p>63 1 = This QWord is supported, 0 = This QWord is not supported</p> <p>62:16 Reserved</p> <p>15:0 Host Interface Sector Times</p> |
| 40..47 | | Streaming minimum request size [was word 95] |
| | | <p>Bit Meaning</p> <p>63 1 = This QWord is supported, 0 = This QWord is not supported</p> <p>62:16 Reserved</p> <p>15:0 Streaming minimum request size</p> |
| 48..55 | | Streaming access latency [was word 97] |
| | | <p>Bit Meaning</p> <p>63 1 = This QWord is supported, 0 = This QWord is not supported</p> <p>62:16 Reserved</p> <p>15:0 Streaming access latency</p> |

Table A.7 — Current Settings

| Offset | Type | Content |
|---------|------|---|
| 56..63 | | Streaming Performance Granularity [was word 98] Bit Meaning 63 1 = This QWord is supported, 0 = This QWord is not supported 62:16 Reserved 15:0 Streaming access latency |
| 64..71 | | Free-fall Control Sensitivity [was word 53] Bit Meaning 63 1 = This QWord is supported, 0 = This QWord is not supported 62:16 Reserved 7:0 Free-fall Control Sensitivity |
| 72..511 | | Reserved |

A.2.7 Strings (page 05h)

A.2.7.1 Overview

The Strings page provides a mechanism for the device to report ATA String based information.

Table A.8 — Strings

| Offset | Type | Content |
|---------|------------|--|
| 0..7 | QWord | Strings page information header. Bit Meaning 63 Shall be set to one. 62:24 Reserved 23:16 Page Number. Shall be set to five. 15:0 Revision number. Shall be set to 0001h |
| 8..17 | ATA String | Serial number [was 10-19] |
| 18..23 | | Reserved |
| 24..27 | ATA String | Firmware revision [was 23-26] |
| 28..31 | | Reserved |
| 32..51 | ATA String | Model number [was 27-46] |
| 52..55 | | Reserved |
| 56..59 | ATA String | Additional Product Identifier [was 170-173] |
| 60..63 | | Reserved |
| 64..93 | ATA String | Current media serial number [was 176-205] |
| 94..511 | | Reserved |

A.2.8 Security (page 06h)

A.2.8.1 Overview

The Security page provides a mechanism for the device to report Security based information.

Table A.9 — Security

| Offset | Type | Content |
|---------|-------|--|
| 0..7 | QWord | Security page information header. |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one.</p> <p>62:24 Reserved</p> <p>23:16 Page Number. Shall be set to Six.</p> <p>15:0 Revision number. Shall be set to 0001h</p> |
| 8..15 | QWord | Master Password Identifier [was word 92] |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one.</p> <p>62:16 Reserved</p> <p>15:0 Master Password Identifier</p> |
| 16..23 | QWord | Security Status [was word 128] |
| | | <p>Bit Meaning</p> <p>63 1 = This QWord is supported, 0 = This QWord is not supported</p> <p>62 Mater Password Capability: 0 = High, 1 = Maximum</p> <p>61 1 = Enhanced security erase supported</p> <p>60 1 = Security count expired</p> <p>59 1 = Security frozen</p> <p>58 1 = Security locked</p> <p>57 1 = Security enabled</p> <p>56:0 Reserved</p> |
| 24..31 | QWord | Time required for SECURITY ERASE UNIT [was word 89, 90] |
| | | <p>Bit Meaning</p> <p>63 1 = This QWord is supported, 0 = This QWord is not supported</p> <p>62:40 Reserved</p> <p>39:32 Time required for an Enhanced Erase mode SECURITY ERASE UNIT command</p> <p>31:8 Reserved</p> <p>7:0 Time required for Normal Erase mode SECURITY ERASE UNIT command</p> |
| 32..39 | | Trusted Computing feature set [was word 48] |
| | | <p>Bit Meaning</p> <p>63 1 = This QWord is supported, 0 = This QWord is not supported</p> <p>62 1=Trusted Computing feature set is supported</p> <p>61:50 Reserved for TCG</p> <p>49:0 Reserved</p> |
| 40..511 | | Reserved |

A.2.9 Parallel ATA (page F1h)

A.2.9.1 Overview

The Parallel ATA page provides information about the Parallel ATA Transport.

Table A.10 — Parallel ATA

| Offset | Type | Content |
|--------|-------|--|
| 0..7 | QWord | Parallel ATA page information header. |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one.</p> <p>62:24 Reserved</p> <p>23:16 Page Number. Shall be set to F1h.</p> <p>15:0 Revision number. Shall be set to 0001h</p> |
| 8..15 | QWord | Parallel ATA Capabilities [was 49, 63, 88, 93] |
| | | <p>Bit Meaning</p> <p>63 Shall be set to one.</p> <p>62 1 = IORDY supported, IORDY may be supported</p> <p>61 1 = IORDY may be disabled</p> <p>60 1 = DMA supported</p> <p>59 1 = Multiword DMA mode 2 is selected. 0 = Multiword DMA mode 2 is not selected</p> <p>58 1 = Multiword DMA mode 1 is selected. 0 = Multiword DMA mode 1 is not selected</p> <p>57 1 = Multiword DMA mode 0 is selected. 0 = Multiword DMA mode 0 is not selected</p> <p>56 1 = Multiword DMA mode 2 and below are supported</p> <p>55 1 = Multiword DMA mode 1 and below are supported</p> <p>54 1 = Multiword DMA mode 0 and below are supported</p> <p>53 1 = Ultra DMA mode 6 is selected, 0 = Ultra DMA mode 6 is not selected</p> <p>52 1 = Ultra DMA mode 5 is selected, 0 = Ultra DMA mode 5 is not selected</p> <p>51 1 = Ultra DMA mode 4 is selected, 0 = Ultra DMA mode 4 is not selected</p> <p>50 1 = Ultra DMA mode 3 is selected, 0 = Ultra DMA mode 3 is not selected</p> <p>49 1 = Ultra DMA mode 2 is selected, 0 = Ultra DMA mode 2 is not selected</p> <p>48 1 = Ultra DMA mode 1 is selected, 0 = Ultra DMA mode 1 is not selected</p> <p>48 1 = Ultra DMA mode 0 is selected, 0 = Ultra DMA mode 0 is not selected</p> <p>47 1 = Ultra DMA mode 6 and below are supported</p> <p>46 1 = Ultra DMA mode 5 and below are supported</p> <p>45 1 = Ultra DMA mode 4 and below are supported</p> |

Table A.10 — Parallel ATA

| Offset | Type | Content |
|---------|-------|--|
| | | <p>Bit Meaning</p> <p>44 1 = Ultra DMA mode 3 and below are supported</p> <p>43 1 = Ultra DMA mode 2 and below are supported</p> <p>42 1 = Ultra DMA mode 1 and below are supported</p> <p>41 1 = Ultra DMA mode 0 is supported</p> <p>40:33 Hardware result</p> <p>32:0 Reserved</p> |
| 16..23 | QWord | <p>PIO Modes Supported [was word 64]</p> <p>Bit Meaning</p> <p>63 Shall be set to one</p> <p>62:8 Reserved</p> <p>7:0 PIO Modes supported</p> |
| 24..31 | QWord | <p>Multiword DMA transfer cycle time per word [was word 65,66]</p> <p>Bit Meaning</p> <p>63 Shall be set to one</p> <p>62:32 Reserved</p> <p>31:16 Manufacturer's recommended Multiword DMA transfer cycle time</p> <p>15:0 Minimum Multiword DMA transfer cycle time per word</p> |
| 32..39 | QWord | <p>Minimum PIO transfer cycle time [was word 67, 68]</p> <p>Bit Meaning</p> <p>63 Shall be set to one</p> <p>62:32 Reserved</p> <p>31:16 Minimum PIO transfer cycle time with IORDY flow control</p> <p>15:0 Minimum PIO transfer cycle time without flow control</p> |
| 40..511 | | Reserved |