

# Device Statistics – General Errors Statistics and Rotating Media Statistics

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T13 Technical Proposal – e06181r12

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## A.5 Device Statistics (Log Address TBD)

### A.5.1 General Errors Statistics (Page TBD)

#### A.5.1.1 Overview

General Errors Statistics log page TBD contains general error information about the device as described in table TBD.

The summary of this error statistics is as followed:

- a) Structure Version;
- b) Number of Reported Uncorrectable Errors; and
- c) Number of Resets Between Command Acceptance and Command Completion.

**Table TBD – General Errors Statistics**

| Offset     | Type   | Content   |            |                |       |  |       |          |       |  |
|------------|--|---|------------|----------------|-------|--|-------|----------|-------|--|
| 0          | QWord  | Structure Version   |            |                |       |  |       |          |       |  |
|            |  | <table border="0"> <tr> <td><b>Bit</b></td> <td><b>Meaning</b></td> </tr> <tr> <td>63:56</td> <td>Device Statistics Flags, (See Table TBD)</td> </tr> <tr> <td>55:24</td> <td>Reserved</td> </tr> <tr> <td>23:16</td> <td>TBD, Page Number</td> </tr> <tr> <td>15:0</td> <td>Device Statistics Version Number = 0001h</td> </tr> </table> | <b>Bit</b> | <b>Meaning</b> | 63:56 | Device Statistics Flags, (See Table TBD) | 55:24 | Reserved | 23:16 | TBD, Page Number   |
| <b>Bit</b> | <b>Meaning</b>   |   |            |                |       |  |       |          |       |  |
| 63:56      | Device Statistics Flags, (See Table TBD)                                   |   |            |                |       |  |       |          |       |  |
| 55:24      | Reserved   |   |            |                |       |  |       |          |       |  |
| 23:16      | TBD, Page Number   |   |            |                |       |  |       |          |       |  |
| 15:0       | Device Statistics Version Number = 0001h                                   |   |            |                |       |  |       |          |       |  |
| 8          | QWord  | Number of Reported Uncorrectable Errors   |            |                |       |  |       |          |       |  |
|            |  | <table border="0"> <tr> <td><b>Bit</b></td> <td><b>Meaning</b></td> </tr> <tr> <td>63:56</td> <td>Device Statistics Flags, (See Table TBD)</td> </tr> <tr> <td>55:32</td> <td>Reserved</td> </tr> <tr> <td>31:0</td> <td>Number of Reported Uncorrectable Errors (DWord)</td> </tr> </table>  | <b>Bit</b> | <b>Meaning</b> | 63:56 | Device Statistics Flags, (See Table TBD) | 55:32 | Reserved | 31:0  | Number of Reported Uncorrectable Errors (DWord)                            |
| <b>Bit</b> | <b>Meaning</b>   |   |            |                |       |  |       |          |       |  |
| 63:56      | Device Statistics Flags, (See Table TBD)                                   |   |            |                |       |  |       |          |       |  |
| 55:32      | Reserved   |   |            |                |       |  |       |          |       |  |
| 31:0       | Number of Reported Uncorrectable Errors (DWord)                            |   |            |                |       |  |       |          |       |  |
| 16         | QWord  | Number of Resets Between Command Acceptance and Command Completion  |            |                |       |  |       |          |       |  |
|            |  | <table border="0"> <tr> <td><b>Bit</b></td> <td><b>Meaning</b></td> </tr> <tr> <td>63:56</td> <td>Device Statistics Flags, (See Table TBD)</td> </tr> <tr> <td>55:32</td> <td>Reserved</td> </tr> <tr> <td>31:0</td> <td>Number of Resets Between Command Acceptance and Command Completion (DWord)</td> </tr> </table>                   | <b>Bit</b> | <b>Meaning</b> | 63:56 | Device Statistics Flags, (See Table TBD) | 55:32 | Reserved | 31:0  | Number of Resets Between Command Acceptance and Command Completion (DWord) |
| <b>Bit</b> | <b>Meaning</b>   |   |            |                |       |  |       |          |       |  |
| 63:56      | Device Statistics Flags, (See Table TBD)                                   |   |            |                |       |  |       |          |       |  |
| 55:32      | Reserved   |   |            |                |       |  |       |          |       |  |
| 31:0       | Number of Resets Between Command Acceptance and Command Completion (DWord) |   |            |                |       |  |       |          |       |  |
| 40-511     | Byte   | Reserved  |            |                |       |  |       |          |       |  |

#### A.5.1.2 Structure Version

##### A.5.1.2.1 Description

Structure Version defines the version of the data structure arrangement for this page.

Bit 23:16 is the page number of the Log Page. Bit 15:0 is the revision number of the statistics structure.

##### A.5.1.2.2 Update Interval

NA

**A.5.1.2.3 Measurement Unit**

NA

**A.5.1.2.4 Initialization**

Structure Version shall be set to 0001h.

**A.5.1.3 Number of Reported Uncorrectable Errors**

**A.5.1.3.1 Description**

The Number of Reported Uncorrectable Errors statistic is a counter that records the number of errors that are reported as an Uncorrectable Error (See 6.3.13 xxx). This statistic shall be incremented by one for each event. Uncorrectable errors that occur during background activity shall not be counted. Uncorrectable errors reported by reads to flagged uncorrectable (see 7.78.2 xxx) logical blocks should not be counted.

**A.5.1.3.2 Update Interval**

One hour

**A.5.1.3.3 Measurement Unit**

Events

**A.5.1.3.4 Initialization**

This statistic shall be initialized to zero at the time of manufacture.

**A.5.1.4 Number of Resets Between Command Acceptance and Command Completion**

**A.5.1.4.1 Description**

The Number of Resets Between Command Acceptance and Command Completion statistic is a counter that records the number of Software Reset or Hardware Reset events that occur when one or more commands have been accepted by the device but have not reached command completion. This statistic shall be incremented by one for each event.

**A.5.1.4.2 Update Interval**

One hour

**A.5.1.4.3 Measurement Unit**

Events

**A.5.1.4.4 Initialization**

This statistic shall be initialized to zero at the time of manufacture.

## A.5.2 Rotating Media Statistics (Page TBD)

### A.5.2.1 Overview

The Rotating Media Statistics log page TBD contains rotating media error information about the device as described in table TBD.

The summary of this error statistics is as followed:

- a) Structure Version
- b) Number of Reallocated Logical Sectors;
- c) Read Recovery Attempts; and
- d) Number of Mechanical Start Failures.

**Table TBD – Rotating Media Statistics**

| Offset     | Type  | Content   |            |                |       |  |       |          |       |   |
|------------|---|---|------------|----------------|-------|--|-------|----------|-------|---|
| 0-7        | QWord   | Structure Version   |            |                |       |  |       |          |       |   |
|            |   | <table border="0"> <tr> <td><b>Bit</b></td> <td><b>Meaning</b></td> </tr> <tr> <td>63:56</td> <td>Device Statistics Flags, (See Table TBD)</td> </tr> <tr> <td>55:24</td> <td>Reserved</td> </tr> <tr> <td>23:16</td> <td>TBD, Page Number</td> </tr> <tr> <td>15:0</td> <td>Device Statistics Version Number = 0001h</td> </tr> </table> | <b>Bit</b> | <b>Meaning</b> | 63:56 | Device Statistics Flags, (See Table TBD) | 55:24 | Reserved | 23:16 | TBD, Page Number                              |
| <b>Bit</b> | <b>Meaning</b>                                |   |            |                |       |  |       |          |       |   |
| 63:56      | Device Statistics Flags, (See Table TBD)      |   |            |                |       |  |       |          |       |   |
| 55:24      | Reserved                                      |   |            |                |       |  |       |          |       |   |
| 23:16      | TBD, Page Number                              |   |            |                |       |  |       |          |       |   |
| 15:0       | Device Statistics Version Number = 0001h      |   |            |                |       |  |       |          |       |   |
| 8          | QWord   | Number of Reallocated Logical Sectors   |            |                |       |  |       |          |       |   |
|            |   | <table border="0"> <tr> <td><b>Bit</b></td> <td><b>Meaning</b></td> </tr> <tr> <td>63:56</td> <td>Device Statistics Flags, (See Table TBD)</td> </tr> <tr> <td>55:32</td> <td>Reserved</td> </tr> <tr> <td>31:0</td> <td>Number of Reallocated Logical Sectors (DWord)</td> </tr> </table>  | <b>Bit</b> | <b>Meaning</b> | 63:56 | Device Statistics Flags, (See Table TBD) | 55:32 | Reserved | 31:0  | Number of Reallocated Logical Sectors (DWord) |
| <b>Bit</b> | <b>Meaning</b>                                |   |            |                |       |  |       |          |       |   |
| 63:56      | Device Statistics Flags, (See Table TBD)      |   |            |                |       |  |       |          |       |   |
| 55:32      | Reserved                                      |   |            |                |       |  |       |          |       |   |
| 31:0       | Number of Reallocated Logical Sectors (DWord) |   |            |                |       |  |       |          |       |   |
| 56-63      | QWord   | Read Recovery Attempts  |            |                |       |  |       |          |       |   |
|            |   | <table border="0"> <tr> <td><b>Bit</b></td> <td><b>Meaning</b></td> </tr> <tr> <td>63:56</td> <td>Device Statistics Flags, (See Table TBD)</td> </tr> <tr> <td>55:32</td> <td>Reserved</td> </tr> <tr> <td>31:0</td> <td>Read Recovery Attempts (DWord)</td> </tr> </table>   | <b>Bit</b> | <b>Meaning</b> | 63:56 | Device Statistics Flags, (See Table TBD) | 55:32 | Reserved | 31:0  | Read Recovery Attempts (DWord)                |
| <b>Bit</b> | <b>Meaning</b>                                |   |            |                |       |  |       |          |       |   |
| 63:56      | Device Statistics Flags, (See Table TBD)      |   |            |                |       |  |       |          |       |   |
| 55:32      | Reserved                                      |   |            |                |       |  |       |          |       |   |
| 31:0       | Read Recovery Attempts (DWord)                |   |            |                |       |  |       |          |       |   |
| 80-87      | QWord   | Number of Mechanical Start Failures   |            |                |       |  |       |          |       |   |
|            |   | <table border="0"> <tr> <td><b>Bit</b></td> <td><b>Meaning</b></td> </tr> <tr> <td>63:56</td> <td>Device Statistics Flags, (See Table TBD)</td> </tr> <tr> <td>55:32</td> <td>Reserved</td> </tr> <tr> <td>31:0</td> <td>Number of Mechanical Start Failures (DWord)</td> </tr> </table>  | <b>Bit</b> | <b>Meaning</b> | 63:56 | Device Statistics Flags, (See Table TBD) | 55:32 | Reserved | 31:0  | Number of Mechanical Start Failures (DWord)   |
| <b>Bit</b> | <b>Meaning</b>                                |   |            |                |       |  |       |          |       |   |
| 63:56      | Device Statistics Flags, (See Table TBD)      |   |            |                |       |  |       |          |       |   |
| 55:32      | Reserved                                      |   |            |                |       |  |       |          |       |   |
| 31:0       | Number of Mechanical Start Failures (DWord)   |   |            |                |       |  |       |          |       |   |
| 104-511    | Byte  | Reserved  |            |                |       |  |       |          |       |   |

### A.5.2.2 Structure Version

#### A.5.2.2.1 Description

Structure Version defines the version of the data structure arrangement for this page.

Bit 23:16 is the page number of the Log Page. Bit 15:0 is the revision number of the statistics structure.

**A.5.2.2.2 Update Interval**

NA

**A.5.2.2.3 Measurement Unit**

NA

**A.5.2.2.4 Initialization**

Structure Version shall be set to 0001h.

**A.5.2.3 Number of Reallocated Logical Sectors**

**A.5.2.3.1 Description**

The Number of Reallocated Logical Sectors statistic is a counter that records the number of logical sectors that have been reallocated after device manufacture. This statistic shall be incremented by one for each logical sector.

**A.5.2.3.2 Update Interval**

One hour

**A.5.2.3.3 Measurement Unit**

Logical sectors

**A.5.2.3.4 Initialization**

This statistic shall be initialized to zero at the time of manufacture.

**A.5.2.4 Read Recovery Attempts**

**A.5.2.4.1 Description**

Read Recovery Attempts is a counter that records the number of logical sectors that require three or more attempts to correctly read the data from the media for each read command. This statistic shall be incremented by one for each logical sector that encounters a read recovery attempt. These events may be caused by external environmental conditions (e.g., operating in a moving vehicle).

**A.5.2.4.2 Update Interval**

One hour

**A.5.2.4.3 Measurement Unit**

Events

**A.5.2.4.4 Initialization**

This statistic shall be initialized to zero at the time of manufacture.

#### **A.5.2.5 Number of Mechanical Start Failures**

##### **A.5.2.5.1 Description**

The Number of Mechanical Start Failures statistic is a counter that records the number of mechanical start failures after device manufacture. A mechanical start failure is a failure that prevents the device from achieving a normal operating condition. This statistic shall be incremented by one for each mechanical start failure event encountered.

##### **A.5.2.5.2 Update Interval**

One hour

##### **A.5.2.5.3 Measurement Unit**

Events

##### **A.5.2.5.4 Initialization**

This statistic shall be initialized to zero at the time of manufacture.