

Device Statistics – Transport

T13 Technical Proposal – e07168r6

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[This document is a proposal for the T13 to describe the Device Statistics for the device to report. The device transport statistics is the information for the device interface information history. The statistics supported are optional, and only applicable to the applicable devices.]

A.5 Device Statistics (Log Address TBDh)

A.5.1 Overview

The Device Statistics log contains selected statistics about the device. This log shall be read-only, and shall only be accessed via the GPL feature set. This log is supported if there is a non-zero length for log address TBDh in the General Purpose Log Directory. The format of the data is defined in table TBD. If the Device Statistics log is supported, only the Structure Version field is required. Each statistic is composed of a 1-byte flag field and a value field. If the bit 7 of the flag field is set to one then the value field of that statistic is valid. Each statistic shall be a multiple of 8 bytes long. The number of log pages may be greater than one.

A.5.2 Device Transport Statistics (Page TBD)

A.5.2.1 Overview

Device Statistics log page TBD contains interface transport information about the device as described in table TBD.

The summary of this transport statistics is as followed:

- a) Structure Version
- b) Number of Signature FIS's Sent due to a COMRESET (Lifetime)
- c) Number of ASR (Asynchronous Signal Recovery) Events (Lifetime)
- d) Number ASR (Asynchronous Signal Recovery) Events (Short Term)
- e) Number of Interface CRC Errors (Lifetime)
- f) Number of Interface CRC Errors (Short Term)

Table TBD – Transport Statistics

Offset	Type	Content								
0-7	QWord	Structure Version								
		<table border="0"> <tr> <td>Bit</td> <td>Meaning</td> </tr> <tr> <td>63:56</td> <td>Reserved</td> </tr> <tr> <td>55:48</td> <td>Device Statistics Version Number = 0001h</td> </tr> <tr> <td>47:16</td> <td>Reserved</td> </tr> <tr> <td>15:0</td> <td>TBDh, Page Number</td> </tr> </table>	Bit	Meaning	63:56	Reserved	55:48	Device Statistics Version Number = 0001h	47:16	Reserved
Bit	Meaning									
63:56	Reserved									
55:48	Device Statistics Version Number = 0001h									
47:16	Reserved									
15:0	TBDh, Page Number									
8-15	QWord	Number of Signature FIS's Sent due to a COMRESET (Lifetime)								
		<table border="0"> <tr> <td>Bit</td> <td>Meaning</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 Signature FIS's Sent due to a COMRESET (Lifetime)</td> </tr> </table>	Bit	Meaning	63:56	Device Statistics Flags, (See Table TBD)	55:32	Reserved	31:0	Number of Signature FIS's Sent due to a COMRESET (Lifetime)
Bit	Meaning									
63:56	Device Statistics Flags, (See Table TBD)									
55:32	Reserved									
31:0	Number of Signature FIS's Sent due to a COMRESET (Lifetime)									
16-23	QWord	Number of ASR (Asynchronous Signal Recovery) Events (Lifetime)								
		<table border="0"> <tr> <td>Bit</td> <td>Meaning</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 ASR Events (Lifetime)</td> </tr> </table>	Bit	Meaning	63:56	Device Statistics Flags, (See Table TBD)	55:32	Reserved	31:0	Number of ASR Events (Lifetime)
Bit	Meaning									
63:56	Device Statistics Flags, (See Table TBD)									
55:32	Reserved									
31:0	Number of ASR Events (Lifetime)									
24-31	QWord	Number ASR (Asynchronous Signal Recovery) Events (Short Term)								

Offset	Type	Content
		<p>Bit Meaning</p> <p>63:56 Device Statistics Flags, (See Table TBD)</p> <p>55:32 Reserved</p> <p>31:0 Number ASR Events (Short Term)</p>
32-39	QWord	Number of Interface CRC Errors (Lifetime)
		<p>Bit Meaning</p> <p>63:56 Device Statistics Flags, (See Table TBD)</p> <p>55:32 Reserved</p> <p>31:0 Number of Interface CRC Errors (Lifetime)</p>
40-47	QWord	Number of Interface CRC Errors (Short Term)
		<p>Bit Meaning</p> <p>63:56 Device Statistics Flags, (See Table TBD)</p> <p>55:32 Reserved</p> <p>31:0 Number of Interface CRC Errors (Short Term)</p>
48-511	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 statistics. The structure is defined by the T13 committee. When a new structure is defined the version number will be assigned.

Bit 56:48 is used for the revision number of the statistics structure. Bit 15:0 is used for the page number of the Log Page for this statistics.

A.5.2.2.2 Update Interval

Update interval is not applicable to the Structure Version field.

A.5.2.2.3 Measurement Unit

Measurement unit is not applicable to the Structure Version field.

A.5.2.2.4 Initialization

Structure Version shall be initialized to the corresponding number at the time of manufacture.

A.5.2.3 Number of Signature FIS's Sent due to a COMRESET (Lifetime)

A.5.2.3.1 Description

Number of Signature FIS's Sent due to a COMRESET (Lifetime) is a counter that records the number of Signature FIS's sent by the device since the device was manufactured. See xxx. (SATA PHY Event Counter Page, xxx will be the section of the Annex.) Number of Signature FIS's Sent due to a COMRESET (Lifetime) is incremented by one for Signature FIS sent due to a COMRESET.

A.5.2.3.2 Update Interval

Number of Signature FIS's Sent due to a COMRESET (Lifetime) is updated on the following events. When the device is operational the counter is updated and stored in a non-volatile location at a minimum interval of ten minutes.

A.5.2.3.3 Measurement Unit

Measure Unit: Event

A.5.2.3.4 Initialization

Number of Signature FIS's Sent due to a COMRESET (Lifetime) shall be initialized to zero at the time of manufacture.

A.5.2.4 Number of ASR (Asynchronous Signal Recovery) Events (Lifetime)

A.5.2.4.1 Description

Number of ASR Events (Lifetime) is a counter that records the number of successful ASR events since the device was manufactured. See SATA 2.6, Section 8.2 for the ASR event. Number of ASR Events (Lifetime) is incremented by one for each ASR event detected.

A.5.2.4.2 Update Interval

Number of ASR Events (Lifetime) is updated on the following events. When the device is operational the counter is updated and stored in a non-volatile location at a minimum interval of ten minutes.

A.5.2.4.3 Measurement Unit

Measure Unit: Event

A.5.2.4.4 Initialization

Number of ASR Events (Lifetime) shall be initialized to a vendor specific number at the time of manufacture.

A.5.2.5 Number ASR (Asynchronous Signal Recovery) Events (Short Term)

A.5.2.5.1 Description

Number ASR Events (Short Term) is a counter that records the number of ASR events since the last 5 minute. This counter is calculated by accumulating the count of ASR on every minute and record the sum of the last ten minutes into this statistic. See SATA 2.6, Section 8.2. Number ASR Events (Short Term) is incremented by one for each ASR event detected.

A.5.2.5.2 Update Interval

Number ASR Events (Short Term) is updated on the following events. When the device is operational the counter is updated and stored in a non-volatile location at a minimum interval of ten minutes.

A.5.2.5.3 Measurement Unit

Measure Unit: Event

A.5.2.5.4 Initialization

Number ASR Events (Short Term) shall be initialized to zero at the time of manufacture.

A.5.2.6 Number of Interface CRC Errors (Lifetime)

A.5.2.6.1 Description

Number of Interface CRC Errors (Lifetime) is a counter that records the number of Interface CRC errors detected since the device was manufactured. Number of Interface CRC Errors (Lifetime) is incremented by one for each interface CRC error is detected.

A.5.2.6.2 Update Interval

Number of Interface CRC Errors (Lifetime) is updated on the following events. When the device is operational the counter is updated and stored in a non-volatile location at a minimum interval of five minutes.

A.5.2.6.3 Measurement Unit

Measure Unit: Event

A.5.2.6.4 Initialization

Number of Interface CRC Errors (Lifetime) shall be initialized to zero at the time of manufacture.

A.5.2.7 Number of Interface CRC Errors (Short Term)

A.5.2.7.1 Description

Number of Interface CRC Errors (Short Term) is a counter that records the number of Interface CRC errors detected by the device in the last 5 minutes. The counter is calculated by accumulating the count of Interface CRC errors on every minute and record the sum of the last ten minutes into this statistic. Number of Interface CRC Errors (Short Term) is incremented by one for each interface CRC error is detected.

A.5.2.7.2 Update Interval

Number of Interface CRC Errors (Short Term) is updated on the following events. When the device is operational the counter is updated and stored in a non-volatile location at a minimum interval of ten minutes.

A.5.2.7.3 Measurement Unit

Measure Unit: Event

A.5.2.7.4 Initialization

Number of Interface CRC Errors (Short Term) shall be initialized to zero at the time of manufacture.