

Proposal for the Device Statistic Information Additions Device Usage Length Statistics Group

To: T13 Technical Committee
From: Joseph Chen, Samsung
Steve Livaccari, IBM
Date: March 30, 2007

This document shows the list of candidates of device usage length information to be included in the Device Statistic Information Log. Each of the candidates will be reviewed and included in the standard after approval. Supporting of each of the item on the list is optional.

Summary of Device Statistic Information Candidates:

1. Device Statistic Information Header
2. Number of Power-on Resets (Lifetime)
3. Number of Power-on Hours (Lifetime)
4. Number of Spin-ups Hours (Lifetime)
5. Number of Head-Loaded Hours (Lifetime)
6. Number of Head Loaded Events (Lifetime)
7. Number of Head Loaded Events Since the Last Power-on Reset was Processed
8. Number of Urgent Head Retract Events (Lifetime)
9. Number of COMRESET/D2H Initial Register FIS Received (Lifetime)

Device Statistic Information Table

Byte Offset	Bit	Description
0		Device Statistic Information Header
		Description: When T13 decides to make a new revision to this structure
		Update Criteria: When event occurs
		Measurement Units: Number sequence
		Initialization: Set to 0001h at the factory
	63:48	Revision number
	47:0	Reserved
8		Number of Power-on Resets (Lifetime)

		<p>Description: This value records number of power-on resets since the device's operation. The power-on reset is defined as when the power on the device is established and the device completes its power-on reset procedure. The time of recording the power-on reset event after the device is power-on is vendor specific. This value does not include the Hard Reset Event such as COMRESET in the transport layer.</p> <p>Update Criteria: After device receives power and completes its power-on reset procedure</p> <p>Measurement Units: Number of Power-on Reset Events</p> <p>Initialization: Cleared to zero at the factory</p>
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	Unsigned DWORD Number of Power-on Resets (Lifetime)
16		Number of Power-on Hours (Lifetime)
		<p>Description: This value records number of power-on hours since the device's operation. The power-on hours is defined as when the power of the device is established and the device is in operation. The operation of the device is defined when the device is power-up in Normal or Idle state. The counting of power-on hours when the device is in the Standby state is vendor specific. The time of recording the power-on hour value after the device is power-on is vendor specific. The normal counting of the power-on hours is on every hour. The accumulation of fractional power-on hours is vendor specific.</p> <p>Update Criteria: After device receives power and completes its power-on reset procedure. The update frequency is every one hour.</p> <p>Measurement Units: Number of hours for the device operation</p> <p>Initialization: Cleared to zero at the factory</p>
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	Unsigned DWORD Number of Power-on Hours (Lifetime)
24		Number of Spin-ups Hours (Lifetime)

		<p>Description: This value records number of power-on hours since device's operation. The power-on hours is defined as when the power of the device is established and the device is in operation. The operation of the device is defined when the device is power-up in Normal or Idle state. The counting of power-on hours when the device is in the Standby state is vendor specific. The time of recording the power-on hour value after the device is power-on is vendor specific. The normal counting of the power-on hours is on every hour. The accumulation of fractional power-on hours is vendor specific.</p> <p>Update Criteria: After device detects the spin-up for more than one hour. The update frequency is every one hour.</p> <p>Measurement Units: Number of hours for the device operation</p> <p>Initialization: Cleared to zero at the factory</p>
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	Unsigned DWORD Number of Spin-ups Hours (Lifetime)
32		<p>Number of Head-Loaded Hours (Lifetime)</p> <p>Description: This value records number of hours the device head is loaded on the surface of the media since the device's operation. The time of recording the head-loaded hour value is vendor specific. The normal counting of the head-loaded hours is on every hour. The accumulation of fractional head-loaded hours is vendor specific.</p> <p>Update Criteria: After device detects the head loading on the media for more than one hour. The update frequency is every one hour. After device detects the head loading on the media for more than one hour. The update frequency is every one hour.</p> <p>Measurement Units: Number of hours for the head-loaded</p> <p>Initialization: Cleared to zero at the factory</p>
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	Unsigned DWORD Number of Head-Loaded Hours (Lifetime)
40		Number of Head Loaded Events (Lifetime)

		<p>Description: This value records number of events the device loads its head on the surface of the media.</p> <p>Update Criteria: After device loads its head on the media.</p> <p>Measurement Units: Number of events for the head loads</p> <p>Initialization: Cleared to zero at the factory</p>
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	<p>Unsigned DWORD</p> <p>Number of Head Loaded Events (Lifetime)</p>
48		<p>Number of Head Loaded Events Since the Last Power-on Reset was Processed</p> <p>Description: This value records number of events the device loads its head on the surface of the media since last power-on reset was processed.</p> <p>Update Criteria: After device loads its head on the media.</p> <p>Measurement Units: Number of events for the head loads</p> <p>Initialization: Cleared to zero after the power-on reset is processed</p>
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	<p>Unsigned DWORD</p> <p>Number of Head Loaded Events Since the Last Power-on Reset was Processed</p>
56		<p>Number of Urgent Head Retract Events (Lifetime)</p> <p>Description: This value records number of urgent read/write head retracts events. The urgent head retract event is for the protection of the data when the device experience sudden power loss.</p> <p>Update Criteria: After device executes urgent retract</p> <p>Measurement Units: Number of events for the head retract</p> <p>Initialization: Cleared to zero at the factory</p>
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	<p>Unsigned DWORD</p> <p>Number of Urgent Head Retract Events (Lifetime)</p>
64		<p>Number of COMRESET/D2H Initial Register FIS Received (Lifetime)</p> <p>Description: This value records number of COMRESET received by the device that the device responses with the Initial D2H Register FIS to the host.</p> <p>Update Criteria: After device sends the Initial D2H Register FIS to the host</p> <p>Measurement Units: Number of the Initial D2H Register FIS</p> <p>Initialization: Cleared to zero at the factory</p>

63	1=valid statistic data
62:56	Reserved
55:32	Reserved
31:0	Number of COMRESET/D2H Initial Register FIS Received (Lifetime)