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Proposal for the Device Statistic Information Additions
Device Error Statistics Group

To: T13 Technical Committee
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This document shows the list of candidates of device error statistic 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 Reallocation Sectors Used (Lifetime)
3. Number of Remaining Spare Sectors for Reassign
4. Number of Reallocation Candidate Sectors
5. Number of Reported Uncorrectable Errors (Lifetime)
6. Number of Retry Revolutions (Lifetime)
7. Number of Soft Errors (Lifetime)
8. Number of Write Faults (Lifetime)
9. Number of Seek Error (Lifetime)
10. Number of Spin-up Failures (Lifetime)
11. Number of Commands Terminated by Resets (Lifetime)
12. Number of Aborted Disk Write due to Power Loss (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:	NA
		Measurement Units:	NA
		Initialization:	At the time of manufacture
	63:48	Revision number	0001h
	47:16	Reserved	
	15:0	Page Number	xxxxh
8		Number of Reallocation Sectors Used (Lifetime)	
		Description:	This statistics reports the number of sectors (LBA blocks) that has been reallocated after the device is manufactured.
		Update Criteria:	Update on Timer: Yes (= 1 hour)

		Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes Measurement Units: Number of Sectors Initialization: Cleared to 0 at the time of manufacture = yes Preserve over all resets = yes	
	63	1=valid statistic data	
	62:56	Reserved	
	55:32	Reserved	
	31:0	Number of Reallocation Sectors Used (Lifetime)	
16		Number of Remaining Spare Sectors for Reassign	
		Description: This statistics reports the number of sectors (LBA blocks) that are available to be used for the bad sector reallocated after the device is manufactured. Update Criteria: Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes Measurement Units: Number of Sectors Initialization: Initialized at the time of manufacture to a vendor specific number Preserve over all resets = yes	
	63	1=valid statistic data	
	62	Minimum Count Flag. When this bit is cleared 0, the remaining spare sector is exactly number of sectors remaining for spare. When this bit is set to 1, the remaining spare sector is a minimum count for spare.	
	61:56	Reserved	
	55:32	Reserved	
	31:0	Number of Remaining Spare Sectors for Reassign	
24		Number of Reallocation Candidate Sectors	
		Description: This statistics reports the number of sectors (LBA blocks) that are candidate for the reallocation. Criteria for adding or removing sectors from the candidate list are vendor specific. Update Criteria: Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes Measurement Units: Number of Sectors Initialization: Cleared to 0 at the time of manufacture = yes Preserve over all resets = yes	
	63	1=valid statistic data	
	62:56	Reserved	
	55:32	Reserved	

	31:0	Number of Reallocation Candidate Sectors
32		Number of Reported Uncorrectable Errors (Lifetime)
		Description: This statistics reports the number of errors that are reported as Uncorrectable (UNC) errors in the error response of a command. UNC errors occur during background activity are not counted. Update Criteria: Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes Measurement Units: Number of Errors Initialization: Cleared to 0 at the time of manufacture = yes Preserve over all resets = yes
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	Number of Reported Uncorrectable Errors (Lifetime)
40		Number of Reported Device Errors that are not UNC Errors (Lifetime)
		Description: This statistics reports the number of errors reported in the error response of a command that are of these types: CCTO, MED, APRRR, INCS, ILRER and Special Error for Request Sense. The UNC error is not counted in this statistics. Update Criteria: Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes Measurement Units: Number of Errors Initialization: Cleared to 0 at the time of manufacture = yes Preserve over all resets = yes
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	Number of Reported Device Errors that are not UNC Errors (Lifetime)
48		Number of Retry Revolutions (Lifetime)
		Description: This statistics reports the number of extra revolutions due to device retry. This statistic is valid for rotational media. Update Criteria: Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes Measurement Units: Number of Revolutions Initialization: Cleared to zero at the time of manufacture Preserve over all resets = yes
	63	1=valid statistic data

	62:56	Reserved
	55:32	Reserved
	31:0	Number of Retry Revolutions (Lifetime)
56		Number of Soft Errors (Lifetime)
		Description: This statistics reports the number of soft errors device encountered during the read operation. Soft error is defined as error that requires more than two reads attempts. The error correction that does not require retry is not counted. This counter is incremented by one for each sector that encounters the soft error. Update Criteria: Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes Measurement Units: Number of Errors Initialization: Cleared to 0 at the time of manufacture = yes Preserve over all resets = yes
	63	1=valid statistic data
	62:56	Reserved
	55:48	Reserved
	47:0	Number of Soft Errors (Lifetime)
64		Number of Write Faults (Lifetime)
		Description: This statistics reports the number of events that the device has to abort its write operation due to detection of write fault conditions. The aborting of write is occurring on the operation that device is writing to the media. The aborted write maybe recovered by retries or other recovery procedure. The fault condition is defined as the normal write has to be retried to ensure write operation is performed correctly. This event can be but not limited to off track write prevention or power noise. In case of power loss, the event may not be recorded. Update Criteria: Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes Measurement Units: Number or Events Initialization: Cleared to 0 at the time of manufacture = yes Preserve over all resets = yes
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	Number of Write Faults (Lifetime)
72		Number of Seek Error (Lifetime)
		Description: This statistics reports the number of seek errors

		detected since the device is manufactured.	
		Update Criteria:	Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes
		Measurement Units:	Number of Errors
		Initialization:	Cleared to 0 at the time of manufacture = yes Preserve over all resets = yes
	63	1=valid statistic data	
	62:56	Reserved	
	55:32	Reserved	
	31:0	Number of Seek Error (Lifetime)	
80		Number of Spin-up Failures (Lifetime)	
		Description:	This statistics reports the number of spin-up errors since the device is manufactured. The criteria for spin-up failure are vendor specific.
		Update Criteria:	Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes
		Measurement Units:	Number or Errors
		Initialization:	Cleared to 0 at the time of manufacture = yes Preserve over all resets = yes
	63	1=valid statistic data	
	62:56	Reserved	
	55:32	Reserved	
	31:0	Number of Spin-up Failures (Lifetime)	
88		Number of Commands Terminated by Resets (Lifetime)	
		Description:	This statistics reports the number of events that command is terminated by a reset before it reports the command completion. The reset can be either Soft Reset, Device Reset if the device is ATAPI, or Hard Reset. This statistics is for device to record the number of events host has generated reset to terminate the command execution.
		Update Criteria:	Update on Timer: Yes (= 1 hour) Update on entering Standby state: Yes Update on entering Sleep state: Yes Update on Device Statistics Page Read: Yes
		Measurement Units:	Number or Events
		Initialization:	Cleared to 0 at the time of manufacture = yes Preserve over all resets = yes
	63	1=valid statistic data	
	62:56	Reserved	
	55:32	Reserved	
	31:0	Number of Commands Terminated by Resets (Lifetime)	
96		Number of Aborted Disk Write due to Power Loss (Lifetime)	

		Description: This statistics reports the number of events that the device has to abort its write operation due to power loss. The aborting of write is occurring on the operation that device is writing to the media. The power loss aborted write cannot be reported to the host due to loss of power. Device support this statistics needs to shall track of aborted write at the time when power is lost. Update Criteria: Update on Timer: No Update on entering Standby state: No Update on entering Sleep state: No Update on Device Statistics Page Read: No Update on Power-up: Yes Measurement Units: Number or Events Initialization: Cleared to 0 at the time of manufacture = yes Preserve over all resets = yes
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	Number of Aborted Disk Write due to Power Loss (Lifetime)