

## Proposal for the Device Statistic Information Additions Device Solid State Media~~NV Cache~~ Statistics Group

To: T13 Technical Committee  
From: Joseph Chen,  
Samsung  
Steve Livaccari, IBM  
75 W. Plumeria Drive  
San Jose, CA 95134  
Phone: 408-544-5766  
Email: joseph.chen@samsung.com  
Date: March 25~~Feb 20~~, 2007

This document shows the list of candidates of device Solid State Media ~~NV Cache~~ 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.  
Support~~Supporting~~ of each of the item on the list is optional.

The Solid State Media includes the Non-Volatile FLASH memory in the NV Cache and the Non-Volatile Solid State Media in a Solid State Disk. The statistics shows the status of the Non-Volatile memory. The statistics indicates the erase cycle and defected condition of the device.

Summary of Device Statistic Information Candidates:

1. Device Statistic Information Header
2. Number of Defect Blocks~~Sectors~~ in the Solid State Media  
~~NV Cache~~
3. Percentage of Defect Block~~Sectors~~ in the Solid State Media~~NV Cache~~
4. Number of Solid State Media~~NV Cache~~ Erase/Program Cycles
5. Percentage of the Solid State Media Remaining Endurance
6. Percentage of Spare Blocks Remaining in Solid State Media

Device Statistic Information Table

Byte Offset	Bit	Description
0		Device Statistic Information Header Description: <u>When</u> <del>Device Statistic revision information</del> <u>Updated:</u> <del>when</del> T13 decides to make a new revision to this structure <u>Update Criteria:</u> <u>When event occurs</u> <u>Measurement Units:</u> <u>Number sequence</u> <u>Initialization:</u> <u>Set to 0001h at the factory</u> <u>Units:</u> <del>unsigned integer</del> <u>Initialized:</u> <del>0001h</del>

	63:48	Revision number
	47:0	Reserved
*8		Number of Defect <a href="#">BlockSectors in the Solid State MediaNV-Cache</a> Description:                 _____This counter is incremented by one when a _____defect <a href="#">blocksector</a> is detected Update Criteria:            When event occurs Measurement Units:        Defect <a href="#">blocksector</a> Initialization:             _____Cleared to zero at the factory
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	Unsigned DWORD Number of Defect Sectors in the NV Cache
*8		Percentage of Defect <a href="#">BlockSectors in the Solid State MediaNV-Cache</a> Description:                 _____This <a href="#">numberecounter</a> is incremented by the percentage _____when defect <a href="#">blocksector</a> is detected Update Criteria:            When event occurs Measurement Units:        Percentage of defects in <a href="#">Solid State MediaNV-Cache</a> Initialization:             _____Cleared to zero at the factory
	63	1=valid statistic data
	62:56	Reserved
	55:8	Reserved
	7:0	<a href="#">Unsigned CHAR</a> Percentage of <a href="#">NV-Defect BlockSectors in the Solid State MediaNV-Cache</a>
*8		<a href="#">Number of Solid State MediaNV-Cache Erase/Program Cycles</a> Description:                 _____This counter is incremented by one when a _____erase or program cycle is completed Update Criteria:            When event occurs Measurement Units:        erase or program event Initialization:             _____Cleared to zero at the factory
	63	1=valid statistic data
	62:56	Reserved
	55:32	Reserved
	31:0	<a href="#">Unsigned DWORD</a> <a href="#">Number of Solid State MediaNV-Cache Erase/Program Cycles</a>
<u>*8</u>		<a href="#">Percentage of the Solid State Media Remaining Endurance</a> Description:                 This number is decremented by the percentage when an erase/program cycle is completed Update Criteria:            When event occurs Measurement Units:        Percentage of remaining endurance Initialization:             Set to 100 percent at the factory
	<u>63</u>	<u>1=valid statistic data</u>
	<u>62:56</u>	<u>Reserved</u>

	<u>55:8</u>	<u>Reserved</u>
	<u>7:0</u>	<u>Unsigned CHAR</u> <u>Percentage of the Solid State Media Remaining Endurance</u>
<u>*8</u>		<u>Percentage of Spare Blocks Remaining in Solid State Media</u> <u>Description: This number is decremented by the percentage</u> <u>when defect block is reassigned to a spare block</u> <u>Update Criteria: When event occurs</u> <u>Measurement Units: Percentage of spare blocks remaining in Solid</u> <u>State Media</u> <u>Initialization: Set to 100 percent at the factory</u>
	<u>63</u>	<u>1=valid statistic data</u>
	<u>62:56</u>	<u>Reserved</u>
	<u>55:8</u>	<u>Reserved</u>
	<u>7:0</u>	<u>Unsigned CHAR</u> <u>Percentage of Spare Blocks Remaining in Solid State Media</u>