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Sent: Friday, June 26, 2009 3:09 PM
To: 'Storage@energystar.gov'; 'AHoward@icfi.com'
Cc: Tom McDorman; Doug Pickford; 'fanara.andrew@epa.gov'; 'rduff@icfi.com'; Curtis Stevens
Subject: FW: Final ENERGY STARR Version 1.0 Computer Server Specification
Importance: High

Hi AJ and the Energy Star team,
as always, thank you for the opportunity to include WD feedback in this process.

Reviewing the information, my Enterprise HDD level comments are fairly minimal at this point, and the 'tiering' comment below ties back into our discussions from our May 1st meeting where we discussed these Tiers which sounded of interest to you.

- Pg 4: "operational states". You probably should understand the new T10 and T13 plans for Power Management which include Idle and Standby modes which can be automated/timer-based/or commanded within both SAS and SATA drives. Although these may not be a direct translation of states into the storage system environment, these HDD power saving provisions may lead to define more than a single idle state at the storage level. By example, the HDDs of the future will allow for some modes as follows:
 1. In addition to HDD idle, there are also states of: Idle_a, idle_b, idle_c, standby_y, standby_z: for different levels of power savings as compared to the recovery times and the power required to recover from these states to the active state. For instance, the recovery power from the idle_a/b/c savings modes must be within the envelope of the ACTIVE current rating, as compared to the STANDBY recoveries which allows the MAXIMUM current recovery.
 - Also, I'm not sure about the expected differentiation that you show for the categories of Maximum and Full which probably need some additional discussion, and perhaps there is a STARTUP state which could/should be discussed as well.
 - I have discussed with our T13 focal point (Curtis Stevens, also on copy) on whether he can send to you the latest specification mentioned above; he is instrumental in defining these specifications within the industry and is actually in charge of modifying the industry level spec over the next couple of weeks. He will look into how we might be able to share this information with you (hopefully prior to the July 20th meeting you have planned). He may also have some additional ideas and feedback on these documents as well.
- pg 6: "questions and discussion": Some of the typical discussions we have w/ OEMs on the segmentation of the storage market as they apply to their applications and often the HDD which is utilized within these

environments are as follows: (this will hopefully be similar with definition/feedback that the OEMs are also providing)

- Tier 0: highest performance, typically SSD
- Tier 1: very high performance, highest reliability, typically 10K/15K traditional enterprise products (SAS, SCSI)
- Tier 2: Nearline, High capacity, high reliability
- Tier 3 / Offline: backup medium, often removable storage such as tape

I plan to attend your July 20 meeting for review of the draft 1 spec. I will watch for the additional information mentioned on how to RSVP.

Thank you again and have a Great 4th of July,

Dan Reno, Director Technical Marketing, Enterprise

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