

ENERGY STAR Storage Specification Draft 2 Comments from the European Commission

We provide in the following comments from the European Commission to ENERGY STAR program requirements for Data Center Storage Eligibility Criteria Version 1.0 draft 2.

We agree in the proposed approach for the qualification requirements that combines strict requirements with disclosure of active state efficiency, standard information reporting requirements and standard performance data measurements.

As a general comment we recommend to check against the most recent SNIA development reported in SNIA Emerald™ documents e.g. regarding the metrics and testing approaches for different types of equipment which are not only the online type (near online etc.), active metric and secondary metrics for the COM features.

Detailed Comments

Line 121 – Definition of Product Types: We appreciate that some effort has been made to improve the definition of the different types of hardware elements relevant for the specific ENERGY STAR requirements. However, we believe that the definitions are still not as clear and transparent as possible and that they would benefit from a further revision.

The following paragraph provides rather vague explanations not adding to clarity: “In contrast, components that are normally associated with a storage environment at the data centre level (e.g., devices required for operation of an external SAN) are not considered to be part of the storage product. A storage product may be composed of integrated storage controllers, storage media, embedded network elements, software, and other devices.” For example the text introduces the term “storage media” which is not defined and seems to be identical with the term “storage device” defined in another paragraph. Furthermore, the indication of other devices seems rather vague.

Line 167 – Storage Taxonomy: The Near-online Storage seems not to be clearly defined regarding the moderate response time. How long may the moderate response time be?

Virtual Media Library seems further not to be clearly defined regarding the limit to Online Storage.

Line 254 – Operational States: Deep Idle has been defined, however, without any requirements to this state apart from being part of the configurable energy efficiency features. The other energy efficiency features have however not been defined. All the energy efficiency features included in the Section 3.6 should be defined. In addition to the ones mentioned in Table 4, other features allowing significant energy savings exist e.g. step-wise reduction of disk speed, parking of disk heads, batching requests and intelliseek.

Line 261 – Ready Idle and taxonomy: The definition is linked to “...the MaxTTFD limits for its taxonomy category...” however, this is not defined. We assume that it refers to the SNIA taxonomy and we recommend including a clear reference to this taxonomy to avoid any misunderstanding.

Line 299 – Product Family: We support the product family approach for product testing based on defined boundaries for highest and lowest power consumption configurations in the product family. We recommend applying a more consistent concept compared to the first version proposed for server equipment.

Line 378 – Qualifying Products: It is unclear why the ENERGY STAR requirements shall only address online data storage products and exclude all other types of storage indicated in the definitions chapter. We believe that also other types of data storage products besides the online category play a significant role in efficient tiered storage concepts and provide good options for efficient storage management (e.g. MAIDS etc.). SNIA does already address near-online and other equipment.

We recommend considering more data storage products besides the specified online types at least for a later second tier specification. Meaningful exemptions listed in the definitions are the adjunct storage products, interconnect elements and probably tape based long term storage products.

Line 416 – Qualification criteria of power supplies: We support the proposed power supply efficiency requirements and requirements for power factor.

Besides specific power supply efficiency also right sizing of power supplies is crucial to achieve high overall efficiency. There may be a larger saving potential here compared to strengthening the power supply efficiency.

As a basis for right sizing, manufacturers should provide online power calculation tools that support buyers and consultants in choosing the right power supply. If a certain product model respectively product family covers a wide range of hardware configurations with largely differing power demand (to be declared in the product family approach), the supplier should offer several power supply models serving different load respectively configuration levels (low, mid and high configuration) and thus supporting right sizing of power supplies.

We are unsure though how this could be included in the specification. It may be through the partner agreements or as part of the information criteria.

Products equipped with redundant power supplies should offer the opportunity to switch the redundant power supply into standby when not used. Such power saving standby circuitry is already offered by some manufacturers for servers.

Line 438 – Efficiency and Power Factor in Embedded Equipment: It is difficult to exempt part of the embedded third party equipment because of the difficulty in defining the equipment to be exempted. In any case, all embedded equipment covered by an ENERGY STAR specification should as a minimum be ENERGY STAR qualified.

Line 457 – Active State Efficiency Disclosure: We agree to include a disclosure requirement of this first version of the specification. To address active state but also idle state efficiency criteria it may be necessary to cate-

gorize data storage technologies and define more than one set of requirements. For example SSD technology may allow significantly higher efficiency. It is not clear if a single requirement can serve all types of storage technologies unless the requirements are rather weak so everything would fit in.

A concept from SNIA is currently proposed for the active state efficiency criteria (SNIA Emerald™ Power Efficiency Measurement). As active state criteria are still at a state of basic assessment we propose also to evaluate the approaches by SPC and others in the meantime.

Line 475 – Idle state efficiency requirement: We agree to include a ready idle requirement. If adders should be included they should be clearly defined, not be too many and there should be a certain limit on the maximum number of adders. A deep sleep requirement has not been included. Either it should be included as a requirement or it should be included in the definition of the deep sleep state.

Line 488 – Power Management Requirements: The power management requirements are important for the energy efficiency of the storage products. We recommend requiring that the most important power management features should be enabled.

Line 504 – Energy Efficiency Feature Requirements: The indicated COM and power management tools are appreciated. Power down and sleep mode features should be defined in the section on definitions. Default active setting for all types of capacity and power management features will not always be possible respectively does not always make sense. It seems primarily important that for qualified products all the features listed are also indicated and explained in product information and promotion material in addition to the PPDS. Often this type of information is hidden in the product documentation and therefore not used as effectively as possible. It should be mandatory that information on these features is to be shown on product websites and all essential product information documents.