

**SNIA Response to the  
ENERGY STAR® Data Center Storage V2.0  
Discussion Guide and Webinar July 2019  
Questions**

This document presents the response of the SNIA Green Storage Technical Working Group and SNIA Green Storage Initiative to the questions posed in the ENERGY STAR Data Center Storage V2.0 Discussion Guide July 2019.

*Response dated 08/14/2019*

## About SNIA

The Storage Networking Industry Association is a not-for-profit global organization, made up of member companies spanning the global storage market. SNIA's mission is to lead the storage industry worldwide in developing and promoting standards, technologies, and educational services to empower organizations in the management of information. To this end, the SNIA is uniquely committed to delivering standards, education, and services that will propel open storage networking solutions into the broader market. For additional information, visit the SNIA web site at [www.snia.org](http://www.snia.org).

The SNIA responses represent the technical work and viewpoints of the Green Storage Initiative (GSI) <http://www.snia.org/forums/green> and the Green Storage Technical Working Group (TWG) [http://www.snia.org/tech\\_activities/work/twgs/](http://www.snia.org/tech_activities/work/twgs/). Collectively, the TWG and GSI represent over 19 companies and several individual subject matter experts. Collectively, the SNIA is a well-established subject matter voice for the multi-billion dollar a year global storage and information management industry. SNIA is also the developer of the SNIA Emerald™ Specification and the SNIA Emerald™ Program, which are test and measurement method underpinnings for the EPA Energy Star Data Center Storage Specification.

Contacting SNIA for further discussion about this response can be arranged through SNIA Green Storage TWG and GSI leaders Herb Tanzer, Don Goddard, and/or Wayne Adams, with contact information on file with the ENERGY STAR Program Management Team. Alternatively, email can be sent to [emerald@snia.org](mailto:emerald@snia.org)

These are the questions raised in the ENERGY STAR Data Center Storage V2.0 Discussion Guide July 2019 and the ENERGY STAR Version 2.0 Data Center Storage Discussion Guide Webinar July 24, 2019. The SNIA Green Storage Initiative and SNIA Green Storage Technical Working Group responses follow each of the questions.

## Simplification

1. Do stakeholders agree with the rationale behind this proposal which emphasizes efficiency of the controller and associated software?
  - Yes, we agree with the rationale behind the proposal.
2. Are there alternative approaches that stakeholders would like EPA to consider when developing the Draft 1 specification?
  - No, there are none that we can think of at this time.
3. Do stakeholders agree with the simplified testing approach? Are there scenarios that stakeholders foresee that are not covered by this approach?
  - Yes, we agree with the simplified testing approach. The only scenario that we see as not covered by this is the case of memory attached persistent storage. At present we do not have a methodology for testing this type of storage as it is new and developing and we will not be including it in Emerald V4.0.
4. Is there a reason to suspect the more recent linear behavior observed in storage product's performance/watt over a large range of device counts will not continue through the life of Version 2.0?
  - We do not see any reason for this behavior to change.

## Variations and Drive Requirements

2. Would removal of Sections 3.6.1 and 3.6.2 cause any confusion or conflict with other elements of the specification?
  - We do not foresee any issues with this proposal. It is a further simplification that we believe is reasonable.
3. Does the removal of any of this content create unanticipated gaps or loopholes in other requirements in the specification?
  - We cannot think of any at this time.

## Revisions and Additions

### Questions – Internal Power Supplies

1. What is the typical efficiency of IPSs used in today's storage products?
  - Currently Gold in Multi-output (MO) & Platinum in Single-output (SO) are becoming achievable for storage products.
2. What, if any, hindrances are there to moving to 80Plus Platinum or Titanium?
  - Currently Titanium is out of reach and will be for the next 2-3 years for SO & 4-5 years for MO. One of the challenges that exist is for low power (<500W) single output. The other challenge that exists is for multi output as we lose about 1% in efficiency when we go to a multi output design. Currently the single output Titanium PSUs that have recently become available for servers are all high powered and are ranging from 96% to 96.5% efficiency. Until they can achieve greater than 97% efficiency, multi output PSUs will not be achievable.

3. How do the savings of requiring greater IPS efficiency for a limited number of IPS load points representing the most common load conditions compare to those requiring Platinum or Titanium across all load points?
  - Our preference is to stay with the standard 80Plus requirements. The PSU vendors now understand these requirements and their reference designs are all set up to meet these. Any variation will not provide any benefit to us in our procurement efforts.
4. What load points of those currently tested (10%, 20%, 50%, 100%) best represent a typical operating load for a storage product?
  - It is estimated that HA systems range from 20%-45% operating load and non-HA systems range from 40%-80%.

### Questions – COMs

1. Are there any other COMs that EPA should be considering beyond thin provisioning, data deduplication, compression, and delta snapshots?
  - We are not aware of any additional COMs.
2. Are there file I/O based storage COMs that EPA is not covering that should be included in the specification?
  - No, file system and block systems use the same COMs.
3. Would it be clearer to stakeholders if EPA required thin provisioning for all products and maintained the current number of required COMs (with thin provisioning no longer applicable)?
  - No, because lower end systems may not have or need thin provisioning. Many Online 2 and Online 3 systems are being built for targeted applications where only one or 2 of the COMs would be appropriate, and it would burden the system to have any available that would never be used.
4. Is it appropriate for EPA to consider making all listed COMs available at the point of sale in the Draft 1 specification?
  - No, for the same reason as stated above. Requiring additional COMs for the higher end systems (Online 4 and above) might make more sense. Increasing the number of COMs required as the system increases in complexity would make the most sense.

### Questions – Energy Efficiency Requirements

1. Do stakeholders have any additional energy and performance data they can share on non-certified products to aid in level setting?
  - This need is especially great for file I/O based storage products where EPA currently has a limited data set.
  - We do not have any additional data available at this time.
2. Are there any other considerations EPA should factor into setting efficiency requirements for storage products in Version 2.0?
  - There are none that we are aware of.

## Additional Information

### Vdbench Questions:

1. What is the latest status of Vdbench accessibility?
  - SNIA is working with Oracle to enable UPL open source license, which will enable SNIA to distribute and maintain the Vdbench software tool for the foreseeable future. As negotiations proceed, further details will become available.
2. Are SNIA or any other industry organizations planning to use alternative benchmarks for block I/O products if Vdbench becomes unavailable?
  - SNIA regards this as “Plan B” should the above not come to fruition.

### Emerald 4.0 Questions:

1. Are there any concerns regarding implementing the new Emerald taxonomy in Version 2.0?
  - No, assuming that testing of memory accessed persistent storage is excluded.
2. EPA is interested in including Online 5 and 6 in scope of Version 2.0. Do stakeholders have any feedback on the inclusion of these products within ENERGY STAR scope?
  - These high-end categories are very low volume and incur prohibitively high test cost due to rendering the disk drives non-saleable. One possibility is to eliminate the test requirement and only include the other requirements.
3. What is the expected timeline for finalization of Emerald Version 4.0?
  - New Taxonomy white paper by end Sept'19
  - V4.0 1<sup>st</sup> draft by end Dec'19; final by end Q2'20

## Version 2.0 Revision Schedule

### EPA schedule (as presented)

EPA expects to release a Draft 1 specification by late summer 2019.

EPA expects Draft 2 will release in the fall of 2019.

EPA expects the final specification to be published in early 2020 with an effective date nine months after finalization.

1. Are there any market issues that impact the anticipated timing of the proposed development timeline above that warrant consideration?
  - SNIA is not aware of any.