

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Radiation
1200 Pennsylvania Ave NW
Washington, DC 20460

ENERGY STAR® Enterprise Storage Specification

Dear Sirs,

I attached with this letter Hitachi Data Systems' comments on Version 1 of the ENERGY STAR® Enterprise Storage specification document.

Sincerely,

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APPENDIX A

1. Operational vs. Energy Savings States

A challenge in the definitions of power modes is to ascertain the objective and function of that specific mode setting. Maximum levels for operational modes will determine best practice for specific activities such as online, archiving or write-pending. Energy-savings modes aim to provide the maximum levels of power savings between phases of operational requirements (Idle, Standby, power-off). To that effect there is more than one classification of idle as determined by Hitachi Global Storage Technologies:

- Active Idle
- Performance Idle
- Low Power Idle

2. Datasheet

Taxonomies of storage products and various benchmarks may risk complicating and confusing the end-user decision making process. End-users typically determine the energy-efficient product decisions based on power saving features. Simple qualification based datasheets are required by end-users to make informed and clear decisions against their requirements. To satisfy this requirement metrics a *power savings* feature matrix in the datasheet with two qualifications (1) Shipped Enabled (2) End-User Enabled. This may include:

- Low power I/O states
- Variable Speed Fan Control
- Heat Sinks

Examples include the Energy Star Power and Performance Data Sheet for Servers, ECMA 370 Eco-Declaration

3. Thermal Information

The ASHRAE (American Society of Heating, Refrigeration and Air-Conditioning Engineers) Technical Committee 9.9 in 2004 provided an extended environmental envelope that included:

- Expansion of the recommended data center temperature range, which should be taken at the server inlets. They should now be 18 degrees Celsius to 27 degrees expanded from 20 degrees to 25 degrees
- Data center humidity levels should now be measured by dew point and fall within 5.5 degrees Celsius to 15 degrees

Consistently data centre and infrastructure managers are optimizing their thermal parameters of their IT environments as part of a Green IT roadmap. For a mature data centre environmental, the thermal cooling may present >40% of the actual power costs. Thermal management of the hardware is an important energy saving feature. Key decisions for end-users are to assess storage, server and network hardware that are compliant with this extended environmental envelope. There is strong case for the datasheet to include parameters related to thermal information related to each operational and energy saving steps.

4. Higher Utilization As A Criteria for Test Procedure

The EPA/US Senate 2007 Report on Data Centers reported the low levels of storage volumes utilization found across data centres (<40%). Slack management of storage volume allocation contributes significantly to the inefficient energy use by storage infrastructure. It is recommended that the Energystar energy efficiency test procedures determine a minimal threshold of utilization on each storage taxonomy, dependent on the application performance. This will influence end-users behavior to replicated the use case scenarios as operational best practice