

Google Comments on Draft 1 Version 2 Server Specification

May 21, 2010

Google has completed a basic review of this specification and appreciates this opportunity to provide comments for your consideration. We applaud the expansion of this specification to more server types and particularly appreciate the inclusion of new detailed power labeling (Power and Performance Data Sheet) as well as in-system power and thermal monitoring and capabilities detailed in section 5.

We would like to point out a few areas of the specification that Google believes could be further enhanced:

Scope and Server Appliances

Google appreciates the expansion of scope to include blades and blade servers, but the specification still omits important classes of server equipment. In particular, “server appliances” represent a growing portion of the market and should be included. As appliances get more complex and capable, many tasks that were previously run on “servers” can now be run on server appliances. For example, some manufacturers offer read-to-run database machines.

Though such systems are enclosed “turn-key” machines, from a hardware perspective they are not significantly different from traditional servers: they have power conversion, processors, memory, etc and there is no fundamental reason they cannot participate in an appropriate Energy Star specification.

PSU Efficiency Requirements

The overall PSU efficiency requirements in this draft are the same as they were in Version 1 of the specification. Google has significant experience working directly with PSU manufacturers, and has seen that the power conversion industry’s products have been constantly improving. Moreover, in conversation with several manufacturers, we have seen product roadmaps that go to 95% and beyond. There is ample room for the EPA to set a more ambitious target. Google recommends matching the Energy Star PSU requirements to the Climate Savers Computing Gold standard for systems with multi-output PSUs and Climate Savers Computing Platinum standard for systems using single-output PSUs.

SERT

The proposed inclusion of score results from the SPEC SERT tool is interesting, but there are unresolved issues, including:

1. The SERT tool is not yet available for evaluation. It makes sense for the industry to become familiar with such a tool before it is written into the Energy Star specification. Moreover, there appear to be conflicts between SPEC’s SERT documentation (found here: <http://www.spec.org/sert/>) and this draft specification. In particular, SPEC claims that the rating tool will provide pass/fail scores to different levels, rather than an overall score, and that reporting of overall scores is disallowed, but this specification states that scores will be provided in the PPDS and that these scores will be informational only.

2. Google is concerned about the interpretability of SERT scores, which are normalized, dimensionless scalars. The EPA should consider designing the tool so that it provides a more direct measurement of useful work (worklet iterations) per Joule or iterations/s per W. At a minimum, we hope the EPA will provide guidance for users trying to interpret the new PPDS, including descriptions of the benchmarks themselves.

3. The SERT reporting requirement may penalize system manufacturers who create highly tuned or novel system architectures. For example, a server with special hardware acceleration for a specific algorithm, or a system with resources provisioned carefully for a particular application may fare poorly on the benchmarks, even if the system's efficiency on its intended application is excellent. In fact, even a benchmark matched to the system's intended purpose may perform poorly if it cannot be modified and/or recompiled to take advantage of a system's special resources.

Thank you for the opportunity to provide input. We hope you find these suggestions helpful.

Regards,
Google Green Operations Team