

From: Rongere, Francois [mailto:FxRg@pge.com]
Sent: Monday, March 17, 2008 4:20 PM
To: Duff, Rebecca M.
Cc: Bramfitt, Mark J; Dunckel, William C; Cole, Randall C (CEE); Lesh, Michael
Subject: RE: ENERGY STAR Draft 1 Server Specification

Hi Rebecca,

Referring to your e-mail dated on February 14, please find here PG&E's remarks and comments about the ENERGY STAR Draft 1 Server Specification.

We apologize for the delay and wish that our comments will contribute to the success of this project.

Do not hesitate to contact me for more information.

Best regards,

Comments:

1. We highly appreciate that EPA takes the lead to drive energy efficiency for computer servers, nation wide.
2. We agree that the industry has not converged yet on an energy performance assessment standard. Nevertheless we want to encourage this effort and consider that the objective as "Tier 2" in the proposal is the final goal. Tier 1, focusing on components, will be a first step in that direction.
3. We agree that storage is a growing energy consumer in DataCenters, especially because of the improvement of server energy performance. Yet, we are concerned by the additional complexity brought by including storage equipment in the current requirements.
4. We will be happy to discuss how the study that we led in 2006-2007 with other utilities, Ecos-Consulting, and EPRI can contribute to the EPA requirements.
5. We recommend developing separate requirements for single and multi-voltage power supplies, knowing that most servers use single voltage power supplies. Alternative choices of server voltages need also to be considered – including DC, to encourage optimization of the entire data center power distribution system, not just power distribution within the server.
6. We agree on the importance of including Power Factor requirement for power supplies as it has been done by the 80PLUS program.
7. The Power Supply Sizing and Redundancy management as presented in page 6, brings complexity by including systemic consideration. We question its feasibility in the Tier1 of the EPA requirements.
8. We agree on the importance of including the cooling fans in the performance assessment of the power supplies. A correction may be considered if the fans aim to cool other server components.
9. We found that power supplies are slightly less efficient at 120 VAC than at 230 VAC. A correction should then be done to calculate actual savings in the USA. In Europe frequency is different as well: 50Hz rather than 60Hz and this may impact the power supply efficiency.

10. The required information in paragraph C is much broader than the requirements and the scope of tests. The information provided by the manufacturers may be difficult to verify. On the other hand, fans airflow rate would be very useful to adjust the air flow in the DataCenter and optimize the air-conditioning system. Flow rates will be critical if the architecture of servers changes enough that the typical 28 Fahrenheit degree delta T across servers can no longer be assumed when designing cooling solutions.
11. In paragraph D, inlet and outlet temperature are very useful, adding the fan flow rate (set by the fan rotation speed) would be a good complement in order to monitor the heat released by the servers. We consider as very important to encourage development and adoption of standard open architecture protocol to allow easy access to temperatures, fan speeds, and other server data by the datacenter's energy management system. This is a key barrier to current efforts to develop data centers that take advantage of dynamic interaction between components and infrastructure.
12. Virtualization performance is very application dependant. It is perhaps not a function that an efficient server should have for all applications.
13. We agree on defining a calendar for the transition to a full performance based efficiency requirement through a standard set of tests to lead the industry toward this ultimate goal.

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