

ENERGY STAR® Draft 4 Computer Server Online Stakeholder Meeting
March 16, 2009, 1:00 – 3:00 p.m. EDT

Q&A Summary

Provided below is a summary of the Q&A session following EPA's online presentation of the ENERGY STAR Draft 4 Computer Server specification. Questions were submitted through the LiveMeeting console and then addressed by EPA in the order that they were received. To view the Power Point presentation and Draft 4 specification documents visit the ENERGY STAR Web site at: www.energystar.gov/productdevelopment (Click on New Specifications in Development).

- **Question:** Can you please explain the rules and repercussions around using the ENERGY STAR logo before the release of the Version 1.0 specification?
 - **Response:** EPA has been pleased with past efforts by ENERGY STAR partners to be careful about how and when the ENERGY STAR mark is used to promote qualified products. Leading up to a new specification, manufacturers often discuss the ability of their products to meet the ENERGY STAR requirements privately with customers, which is acceptable. However, manufacturers may not publicly identify or promote any servers as ENERGY STAR qualified in public communications or promotional materials until the May 1, 2009 effective date proposed in the Draft 4 specification. Manufacturers are encouraged to share examples of public communications or promotional materials prior to release with EPA to make sure they do not violate this rule.

- **Question:** So there will be no legal repercussions for going to market early with ENERGY STAR products? We want a clear statement of the EPA response to violators.
 - **Response:** EPA will distribute separate correspondence regarding this issue over the next 2-3 weeks. It's important that manufacturers who have made a significant investment in the ENERGY STAR program and this specification development process have a fair opportunity to use the ENERGY STAR platform to promote qualified products. The effective date seeks to protect this investment. For products to be labeled on May 1, 2009, manufacturers will need to be signed up as Partners of the server program and product qualification data submitted to EPA for review. Manufacturers who are already Partners of the ENERGY STAR program don't need to sign a new Partnership Agreement but will need to complete a new commitment form to join the servers program.

More information on joining the ENERGY STAR program and qualifying products will be sent along with the Final Draft specification.

- **Question:** Does the utilization, or the lack thereof, impact qualifying for the adders?
 - **Response:** EPA does not currently consider utilization to be a parameter that would impact the ability of a system or component to qualify for adders. However, EPA is interested in learning more about this issue if stakeholders believe it should be a consideration in server Idle characterization.

- **Question:** Related to the utilization/adder question, consider a network adapter with multi-speed capability, e.g., 10G/1Gbps Ethernet. Would the system have to be separately evaluated at each speed state using the relevant adder, or would just the maximum speed (10G) adder be relevant?
 - **Response:** Currently as written, the system would simply be tested and evaluated as configured for shipment to the customer, but may use the appropriate adder for the maximum network speed. If a manufacturer wants to qualify a server with a 10 GB I/O device that can also run at 1 GB, the system would need to be tested in its default configuration. If in that configuration the product can automatically reduce its network speed and the associated power related to that device, then the product may take advantage of that reduced power for qualification.

- **Question:** Why not also require processor level power management for 1S and 2S servers?
 - **Response:** EPA may consider adding power management requirements for 1S and 2S servers if data is made available. Currently, 1S and 2S servers are not required to have processor power management such as dynamic voltage and frequency scaling (DVFS) or processor or core low power states, because these products offer lower energy consumption through Idle power allowances. The decision not to require these capabilities in no way precludes manufacturers from incorporating power management into product offerings to reduce active and Idle power consumption. In fact, manufacturers are encouraged to utilize all forms of power management to reduce the energy consumed by their servers. EPA is requiring power management for 4S servers in lieu of Idle requirements, which have been removed under Tier 1, to ensure energy savings in active mode.

- **Question:** What does "enabled on the hardware level" on slide 32 mean? Please clarify. The draft says "enabled through the BIOS or management controller upon shipment".
 - **Response:** EPA's intention is for these products to achieve energy savings through advanced power management. There are many power management techniques available on the market; some achieved through hardware, some achieved through software, and others through a combination of the two. Since many servers are sold without software installed (e.g., operating systems or hypervisors), there is a need to ensure that these products will achieve energy savings through power management regardless of the software installed. To this end, EPA must require that these features are enabled and implemented at the hardware level. EPA may need to clarify this language and is open to suggestions from stakeholders on how to guarantee the intention of these requirements.

- **Question:** Would there be any gap between the server specification and small-scale servers covered by the ENERGY STAR computer specification (i.e. will there be relevant servers that are not covered by either of the specifications)? For example, under which specification would a web managed server without ECC and/or buffered memory be addressed?

- **Response:** The ENERGY STAR computer and server teams are working collaboratively to ensure that these specifications provide for a clear and consistent coverage across the entire computer market. The vast majority of servers will fall under this new server specification, including some computer types that have previously fallen under the Version 4.0 computer specification (i.e., desktop-derived servers). However, EPA is open to additional comments regarding the proposed definitions to ensure minimal overlap and/or gaps between the two specifications. Manufacturers are encouraged to review both specifications (i.e., definitions and overall scope) to determine if there continues to be ambiguity. It is important to clearly identify those products that fall under the server specification prior to finalization. Misuse of the ENERGY STAR logo could come with significant cost implications as manufacturers are asked to remove materials from distribution due to errors in qualification.
- **Question:** In regards to Tables 3 & 4 in the specification, has EPA considered servers without hard drive vs. with hard drive? Perhaps EPA should consider excluding drives for the Idle power requirements and allowing the adder for 1 hard drive and above (i.e., any hard drives over zero)?
 - **Response:** Using the current Idle test procedure it would be difficult to test servers without hard drives. Similarly, DC powered servers that are not designed with an internal power supply have been excluded in recent versions of this specification.
- **Question:** In regards to Table 4 in the specification, should the PSU adders be different according to server category? An adder of 20 W may be acceptable for a 150 W server but too generous for a 55 W server.
 - **Response:** EPA may consider scaling the PSU adder with the size of the system if data is made available that justifies this change in approach.
- **Question:** In regards to product families, we are a bit concerned if the current proposal will work in practice. It would be good to have the industry's comments.
 - **Response:** The Draft 4 proposal for qualifying servers within product families is intended to reduce the testing and reporting burden on manufacturers while ensuring individual configurations meet ENERGY STAR requirements. EPA realizes there may be some challenges in working out the details of this approach and encourages manufacturers to provide suggestions on how to structure the requirements that meet both EPA and stakeholder needs.
- **Question:** As written, it looks like Tier 2 will eliminate the Idle requirement. Is this true?
 - **Response:** All potential criteria are still on the table for consideration under Tier 2. At a minimum, EPA will want manufacturers to continue disclosing this information to help educate end users about the energy that is wasted when operating systems at low utilization. Although Tier 2 may include several requirements, the main focus will be on developing a specification based not only on the energy consumed by the server, but also on the useful work performed by

the server as well as the time required to perform that work. Idle power will be addressed in some capacity, hopefully as part of a more holistic metric which includes active energy when accessing efficiency of the overall system. EPA's goal is to illustrate the trade off between energy consumption and additional performance, which will help end users better understand the energy and cost implications for choosing different configurations.

- **Question:** Can EPA adjust the Power Supply specification for Power Factor from 0.9 lag/lead to 0.9 lagging and 0.95 leading? Going lower than 0.95 leading may cause problems for the UPS, generators, and utilities. Certainly 0.9 is better than some of the very poor units we have seen with 0.7 leading PF but a 0.95 would be much better for the system overall.

- **Response:** Power factor levels were determined based on data submitted to EPA. However, any resulting impact that server power factor may have on the larger system is also of interest to EPA. As such, EPA will follow up with the submitter following the call to learn more about this issue and determine if changes need to be made to better support the overall data center.

- **Question:** We assert that Idle servers should be turned off with advance power management. This should be done with system level capabilities but a missing component is the timing it takes to turn on a server from the OFF position (at the plug) and from Sleep mode. Can this be added to the collection data sheet as optional or mandatory information?

- **Response:** The issue of latency has been discussed in great detail and clearly there are situations where this latency could be a challenge. However, EPA is also interested in helping to convey to end users that significant energy savings and reduced operating expenses can be achieved while introducing only a small amount of latency into the overall system. In most situations these small amounts shouldn't disrupt normal business operations. Ultimately it is up to the end user to decide the amount of latency that is acceptable but EPA believes at the very least, users should be informed of the benefits and trade-offs. Several manufacturers claim that power management techniques are becoming more sophisticated and effective resulting in greater energy savings opportunities and lower levels of latency. EPA will consider requiring latency information along with power management features on the Power and Performance Data Sheet.

- **Question:** In regards to power supply testing (i.e., page 21 of the specification), what is the rationale for including fan power for multi-output power supplies, but not for single-output power supplies?

- **Response:** This approach was first proposed to EPA by several industry members early in the specification development process and is consistent with the industry accepted power supply test procedure referenced in the ENERGY STAR specification. Currently several programs are using this approach for measuring power supply efficiency including 80 Plus and the Climate Savers Computing Initiative. Multi-output power supplies tend to be designed in a fixed form factor that includes a fan to specifically cool the power supply. Single-output power supplies vary more widely and many designs include fans that cool the

overall system, or don't include fans at all. The challenge with these types of designs is how to compare them fairly for power conversion efficiency when the specific cooling design may have widely variable effects on the perceived efficiency of the system. EPA's intent is to develop a metric under Tier 2 that takes into account all efforts to reduce power consumption of the system including more efficient cooling designs.

- **Question:** The lack of a 1P/2S Idle power category is a problem. Most of the servers shipped through the supply chain are 1P and minimally configured, for business economic reasons, so it would be a huge problem for these not to be able to qualify for ENERGY STAR.
 - **Response:** The categories and adders proposed in the Draft 4 specification allow upgrading based on varying capabilities, as shipped. The creation of managed and standard servers recognizes the differences in supporting infrastructure due to increased capability. Based on data submitted to EPA, 1P/2S systems should be able to meet the proposed ENERGY STAR requirements, if configured efficiently. EPA believes that a 1P system should be compared to another 1P system because that is the capability that the end user is purchasing. This is also consistent with EPA's approach for other ENERGY STAR product specifications. Furthermore, the empty socket should not be consuming significant power when not populated. EPA understands that it is common practice to purchase a server under populated with the intention of expanding capability over time. However, end users should also understand that there is an implication for purchasing servers that are under populated (i.e., operating in a less efficient manner). Requiring that 1P/2S servers meet the same levels as 1P/1S servers provides an incentive to manufacturers to offer designs that give the end user flexibility in the most energy-efficient configuration.