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Feedback to EPA's ENERGY STAR for Servers, Draft 3
Rackable Systems, Inc.
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We have reviewed the latest draft of ENERGY STAR for Servers and have the following feedback. These are organized by line number of the Draft 3 specification to make it easy to understand our feedback.

Top concerns:

- Lines 434-436: We fully agree that small PSUs should be exempt from the 10% of rated load requirement. Our servers with 250W PSUs at idle run at approx. 40% of rated load and do not want to add cost to the supply to make it more efficient in ranges that the supply simply will never run at. The sample proposal is a good approach that we would support.
- Lines 442-489: The idle power limits listed seem overly restrictive. As an example, standard availability systems with two Intel L-series low-wattage processors, one hard drive, and eight FB DIMMs would have an idle power of approximately 180W. So the current definition would either eliminate Intel processor configurations (allowing only AMD Opteron configurations to pass because of their use of DDR2 memory) or at least eliminate high memory configurations. We would recommend that you split standard availability systems into two lines like you did for high availability systems. The 151 Watts would work if you specified "<16 GB" but you need another line at ~197W for standard availability >16GB systems.
- Lines 553-610: Low-end, cost-optimized servers without dedicated management processors are now able to qualify for ENERGY STAR for Servers -- however these data measurement requirements are also not typically included in such servers as they increase cost and can even increase power consumption. While it is definitely useful for server users to be able to get these metrics directly from the server, there are other ways as well including intelligent rack power distributions strips, clamp meters, and other such approaches. The requirement for the server to be capable of reporting these metrics means unnecessary cost burden for the server when that functionality may be duplicated elsewhere. And ironically the most energy efficient server configurations may be ones that are not burdened by these reporting requirements. At the very least, the requirement of availability of

rolling averages for these data should be eliminated in favor of a simple instantaneous reading. Finally, including air flow and/or thermals seems to go beyond the main objective of ENERGY STAR for Servers which is increasing the industry's energy efficiency and lowering power consumption.

- Lines 671-676: There is no difference between single output and multiple output power supply based servers when it comes to input voltages. The vast majority of AC servers in the United States (and worldwide) operate on >200VAC input power but support low-line input as well. Servers with multi-output power supplies should be tested at the same input voltage as single-output power supplies (230VAC). Eliminating the testing requirement for servers at 115VAC would also make it easier to harmonize ENERGY STAR with Europe which the EPA has indicated it wants to do. If the EPA still wants to require that servers qualifying at 115VAC, that same requirement should be made of servers with both single-output and multi-output power supplies since both types typically are capable of running at 115VAC in addition to standard data center power.
- Lines 746-754: The requirement that all units be tested "as shipped" represents a huge burden for manufacturers. In practice most server models have a range of hard drive models, equivalent memory DIMMs from different manufacturers that are substituted in and parts can change monthly in the fast-moving commodity space. There needs to be a way for equivalent parts to be substituted without invalidating the ENERGY STAR qualification. Otherwise ENERGY STAR risks becoming a niche, legacy configuration whereas the current energy efficiency model with very slightly different set of components will more available, lower cost, and possibly even more efficient. All that would be needed would be to allow substitutions of substantively equivalent parts with equivalent power draws.

Additional comments:

- Lines 54-58: While allowing the label to be temporary, this still entails serious risks. Our servers ship preconfigured in racks so the only visible surface is the front of the server. The only way we could put a label on the front of the server would be to block crucial air vent holes. If the customer didn't remove the label before using the servers it might cause the server to overheat. As a result, we would probably need to put a bright red warning label around the ENERGY STAR label warning that the label must be removed prior to use. Visually this is probably not what the EPA would prefer. We recommend that the label be allowed on the inside lid or inside side of the server where it can be permanent.
- Lines 175-180: We agree with the EPA's desire to support servers without power supplies that take direct DC input power – both in the interest of pursuing higher efficiency and lowering idle power. Because most such designs would involve an external power supply in the rack distributing 12VDC power to 12 VDC servers without power supplies, such systems could be qualified as Blade Systems – the rack with AC-12VDC power supply would be the Blade Chassis and each 12 VDC server would be considered a Blade Server since it depends on the rack-level power supply).

- Lines 182-189: We applaud the decision not to require a dedicated management controller. This will allow the most low-end / cost-conscious server configurations to still qualify for ENERGY STAR and that is an important part of the server market.
- Lines 290-294: Use of “single-voltage” and “multi-voltage” terms is clear and an improvement over the last revision.
- Line 366: We support the break-out of ≤ 1000 watts vs. > 1000 watts and believe this to be fair and appropriate. We are surprised that the bar isn’t being set higher on power factor, however and would have expected something in the 0.95-0.96 range under 50-100% load.
- Line 381-387: We were surprised by this stakeholder comment mentioned. If anything we would think that the cutoff line would be more in the range of 600-700W between large and small.
- Line 396-412: We support the inclusion of DC-DC and were glad to see them formally included in the latest draft. Requiring DC-DC power supplies to meet the same standards as AC-DC makes sense from a competitive business standpoint even though we see DC-DC as typically yielding higher efficiencies than AC-DC.
- Lines 442-489: Has the EPA considered specifying number of memory sticks rather than a GB amount? It would help future proof the spec if you said “up to four populated DIMMs” as “low memory” and “more than four populated DIMMs” as “high memory”.
- Lines 442-489: Note that manufacturers could easily get around these limits by shipping less memory installed and either install the rest in the field or ship the memory with the systems for customers to install and still qualify for ENERGY STAR on the basis of what’s installed. The EPA may want to consider how to close this loophole?
- Lines 719-722: This is unclear. “All voltages” is confusing since power supplies support a range of input voltages and two specific voltages are being discussed.
- Lines 716-717: It would be good to be clear that publishing SPECpower results with the SPEC organization is not a requirement to qualify for ENERGY STAR for Servers and that SPECpower is merely a test to use for the purposes of qualification.
- Lines 765-771: We are investigating the SPEC Run and Reporting Rules to see what we can advise on the application to DC-DC Servers.

We hope this feedback will be useful as the EPA revises the Draft 3 specification further. Please contact me if you have any questions about our comments and I will be happy to clarify or provide further input as appropriate.

Respectfully submitted,

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