Deutsche Bank Reply - Draft 1 Version 2.0
May, 2010

Environmental Protection Agency
ENERGY STAR Program

Please find below our comments on the ENERGY STAR® Program Requirements for Computer Servers, Draft 1 Version 2.0 and accompanying documents.

ENERGY STAR Computer Servers Draft 1 Version 2.0

1. B. Computer Server Types
We do not consider it useful to explicitly include a volume server category, although we would be interested to understand what the purpose of such a categorisation might be. For example, the Managed Server definition might be sufficient to allow a separate category for "high-end" servers.
In principle, we consider server power efficiency (the amount of work a server does per Watt) to be the primary measure of interest, regardless of server classification.

1. B. 2. Blade System
We very much welcome the inclusion of blade servers to ensure a specification that will be of wide use by large corporate customers. We suggest that the definitions of Blade Storage and Blade Network Equipment may not be useful, and that the definitions of Blade Server and Blade Chassis are sufficient. Network and Storage Equipment are also covered under Other Data Center Equipment later in the document.

1. B. 4. Resilient Server
It would be interesting to understand what the goal of this category is (as well as if it would include significantly different server models to the Managed Server category). We understand that certain types of servers are designed to have higher resilience levels than others, and that some of this is at the cost of power consumption, but, again, we consider the power efficiency of a server to be the primary measure of interest.
We do not consider that Resilient Servers should necessarily be "often operated at higher levels of utilization compared to a standard server". While this may be true in practice, it is not our goal to allow standard servers to have lower utilisation. Indeed, and not limited to our organisation, many virtualised server environments today run on servers that may not fall into the Resilient Server category.

1. F. Computer Server Power States
We very much welcome the inclusion of an energy efficiency rating as part of the Version 2.0 specification to ensure the broadest use possible of the ENERGY STAR label in the data centre.
In addition to idle and active modes, discussions with other standards bodies involve the use of power management tools for sleep/standby, etc. To help support this and to ensure the relevant data is widely available, it would be of interest if the specification would require the sleep/standby, etc power saving data to be made available via the reporting template, rather than just the requirement to have these options enabled by default.

3. Energy Efficiency Criteria
Power supplies: ideally, we would like to see a very high minimum efficiency requirement for ENERGY STAR of over 90% and power factors of in the high 90's under real load conditions.
Load conditions: while we would like ideally to see good efficiency at all loads, we feel that it is realistic to target maximum efficiency at around 50 to 70% load since this would be a good target maximum server utilisation.

3.4. Blade System Criteria
Populating the Blade Chassis – a suggestion for the issue of deriving chassis power might be to treat this differently. The power consumption of the chassis on its own is actually uninteresting since it only exists to support the blade servers. It might therefore be more interesting for the ENERGY STAR label user to see blade power derived from a fully populated chassis divided by the number of blades. Blade servers would

therefore need to be certified in conjunction with a particular chassis, but that also seems to make logical sense, since the efficiency of "blades" is exactly through the use of this shared (chassis) infrastructure.
Comparing Blades to Other Server Types – we would support the option (1): that blade servers should be allowed to compete directly with other server types.
In general, in our experience blade servers are typically more power efficient than equivalent rack mount servers, and if this is generally true, then any testing or other requirements should allow this difference to be visible in the ENERGY STAR rating and documentation.

3. 5. Active Mode Efficiency Criteria
We consider it an essential step to a really useful ENERGY STAR rating for servers to include a "performance per Watt" measurement of some kind, and therefore very much welcome the inclusion of the SERT in the specification.
It is a concern that the development of the desired tool may not be achieved in the required timescales, since we consider ENERGY STAR to be of most use with such a power-performance measure included.
In general, power-performance data will be very useful if it is comparable between similar models or architectures and even more useful if it is directly comparable across all architectures and operating systems (OSs). We appreciate that this is a difficult task. However, if there is a way of reducing the number of combinations of architectures and OSs if that means that the tool will we available for inclusion in the ENERGY STAR specification, then we would consider that to be more useful than not having a power-performance rating at all. So, for example, if the tool was developed for the x86 architecture with only one standard OS, that would potentially still be useful for us to make comparisons between server models, even if that chosen OS were not one of the standard OSs we use.

5. Standard Performance Data Measurement and Output Requirements
Note on Processor Utilisation – we appreciate the difficulties of comparing CPU utilisation and welcome the EPA's support of "further industry research into processor utilisation measurement accuracy".
Sampling Requirements – we would support a ≥ 1 second sampling rate for input power and processor utilisation.

8. Effective Date
See SERT Draft Design Document comment 2.10.

Draft 1 Power and Performance Datasheet

The datasheet looks very comprehensive and we welcome this level of data being made publicly available for an ES certified server.

"Power and Performance" graph – suggest there should be a note explaining that the purple power bars are based on the model tested and (specifically) do not say anything about whether or not the max power at max load is good or bad relative to its peers (although we would also like to see this relative data).

While we understand that the values are based on ASHRAE guidelines, we would like to see the "Inlet Air Temp vs. Fan Power" values extend up to the manufacturers warranty limits (typically around 32-35 degrees C).

Suggest it should be a requirement for the manufacturer to provide data on power savings achieved by having "Power Saving Features" switched on and active under various scenarios. We understand that this would require an addition to the computer server specification.

SERT Draft Design Document

2.3 Environmental Conditions
Would be interested to see what can be done about tests that include higher ambient temperatures (at least up to the server manufacturer warranty limits). Higher ambient data centre temperatures can allow increasing use of outside air cooling and therefore increase overall power efficiency of the data centre and its IT contents.

2.8 Workload and 2.9 Server Options and Expansion Capabilities
The scope of the tests described seems very comprehensive. If there is an issue with completion of tool development by the EPA's deadlines, it might be worth considering a simpler set of tests in the initial v2.0 specification, and then adding more comprehensive tests to future versions.

2.10 Metric/Score
We anticipate SERT being a very useful rating tool both within and independent of ENERGY STAR. We welcome a tool that can be used to compare the relative power efficiency of different server models, also between categories. To this end, we like the idea of the tool enabling a bronze/silver/gold type ENERGY STAR rating.

3.4 Updates
SERT may have interesting applicability for energy efficiency rating of End User equipment, such as desktop computers, laptops, workstations and workstation blades.

Finally, we anticipate that the v2 ENERGY STAR rating for servers is a useful progression. As mentioned above, in future versions of the specification we would like to see a multi-tier rating in addition to the current pass/fail, whereby ENERGY STAR rated servers could be compared as good/better/best (or whatever levels are considered appropriate).

Thank you for continuing to keep us involved in ENERGY STAR specification development.

Mit freundlichen Grüßen / Best regards

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