Comments on Draft 1 ENERGY STAR® Program Requirements for Computer Servers
Fujitsu Siemens Computers
14/03/2008

Page	Requirement / Definition	Comment
1	Provide clear and consistent labeling of ENERGY STAR qualified computer servers. The ENERGY STAR mark must be clearly displayed on the front or side of the product, …	For some server types this is impossible and also not needed. Example: the front side of a 1U rack server or a blade server is very small and every bit of space that is not covered by functional elements should be used for air flow. The side of a 1U rack server is completely taken by a sliding mechanism. A rack or blade server in a data center might be completely invisible due to a rack door anyway and would be seen by a very small group of service personnel anyway.
3	Dedicated management controller, such as Baseboard Management Controller (BMC) or service processor	We can imagine applications where a BMC is not necessary, e.g. when a server is used in big server farms. In such applications a server will be replaced completely if it fails. A BMC would be of very limited use in such a scenario. By leaving it out, the power consumption of the server can be reduced. Nevertheless a general purpose server would usually contain a BMC.
3	Designed and capable of having dual processor or more capability (i.e., two or more microprocessor sockets on board)	We think that single processor servers should be included in the definition as well. Especially with multi core technology a single socket server is sufficient for many server applications.
3	Support for > 16 GBytes error-correcting code (ECC) and/or buffered memory.	The necessary memory size of a server is very much depending on the application it is used for. We propose to not mention any limit for the memory size. ECC memory is a characteristic server feature.
3	Multiple LAN and/or WAN networking ports, such as Ethernet	With high bandwidth LAN ports (e.g. 10GbE) the bandwidth requirements could easily be met by a single port. Therefore there should not be a definition for a minimum number of LAN ports.
3	Designed and placed on the market as a Class A product as per EN55022:1994 under the EMC Directive 89/336.	A server could also be designed as a Class B product. Such servers should not be excluded by default from the Energy Star certification.
3	Blade Server: A computer consisting of, at minimum, a processor, memory and hard drive that relies on certain shared resources, contained in a blade chassis, such as power supply(s), cooling, networking, system management, and storage. Blade servers are incapable of operating independent of the blade chassis.	In many applications diskless blade servers are used. Such blade servers should not be excluded by default from the Energy Star certification just for being diskless.

Page	Requirement / Definition	Comment
4	Small Floor Standing or Rack Mounted: Medium Floor Standing or Rack Mounted: Floor-Standing and Multiplex Large Scale Servers:	We are not sure about the intention behind the definition of those different server classes. If there is no intention to define separate efficiency values for the different server classes, we propose to eliminate this differentiation completely. Otherwise the definitions should be as generic as possible to be prepared for future design changes. Criteria like number of DIMMs, number of processor cores, number of disks or number of option slots are very much dependent on chip technologies and the degree of motherboard integration, as well as intended server application. We would propose to leave such criteria out of the definition. We could imagine the following generic definition: Small Floor Standing or Rack Mounted • 1 or 2 Processor Sockets • Optional redundancy for power supply and cooling Medium Floor Standing or Rack Mounted: • >2 and <16 processor sockets • Typically redundant power supply and cooling Floor-Standing and Multiplex Large Scale Server: • ≥16 processor sockets • Typically proprietary and modular design of CPU, memory, I/O, and storage subsystems • Redundant power supply and cooling capabilities
5	Computer Server Power Supply:	In many server designs the cooling fan(s) contained in the computer's power supply unit (PSU) take over a significant amount of cooling capability for other components within the server (e.g. CPU, memory, hard drives). Depending on the amount of additional cooling capability the PSU provides, the formal efficiency of the PSU may look very poor compared to a PSU where internal fans are merely used to cool the PSU itself. We propose to measure the PSU efficiency without the integrated fan(s). For the duration of the measurement the integrated fan(s) should be turned off and the PSU should be cooled externally.
5	Single-Voltage Power Supply:	Does this type of power supply include standby power generation?

Page	Requirement / Definition	Comment
5	A. Power Supply Efficiency Requirements Server power supplies must meet the minimum efficiency requirements contained in Table 1, below. Power supply efficiency must be tested and reported at 230 VAC/60Hz.	We propose to define the primary voltage frequency in the range from 50Hz to 60Hz for testing purposes. Line frequency has only marginal impact on the efficiency.
5	Table 1: Efficiency Requirements for Computer Server Power Supplies	We would propose to leave out the 10% column. This is not a realistic operating point and might cause an optimization of power supplies into the wrong direction. The power supply load is mainly determined by the server's hardware configuration and only to a limited extent by the CPU utilization. If the power supply is properly designed for a server, the load should be significantly above 10%, even if the system is idle.
7	B. Idle Power	Idle power is extremely dependent on hardware configuration (e.g. regarding I/O components, number of hard disks, amount of memory, ...) and even OS and applications loaded. We believe that it will be difficult to define a server configuration which has to fulfill the maximum idle power requirement. Our proposal is to drop this requirement.
8	5. Power and Performance Data - Idle power from SPECpower output - Maximum power and throughput (using manufacturer selected benchmark) - Estimated yearly kWh and $ consumed (based on an agreed upon set of assumptions)	We recommend not to include a cost. Electricity cost varies so much between regions and businesses and over time, that a standardized assumption is way off any individual situation. Consumption in kWh per year is a meaningful number if the assumptions for a usage profile are defined reasonably.
9	E. Power Management and Virtualization Requirements	Hardware power management needs to be defined in more detail. The definition of virtualization capabilities might be very hard, as there are a lot different flavours, e.g. virtualization support in CPUs, chipsets, I/O components, integrating a hypervisor in firmware. Not all of these features make sense for all applications. The technology is still in rapid development. Therefore we recommend that virtualization requirements are omitted from the specification in the first release.