

Input and comments on the server framework document dated 20 July 2007 from EU experts

General remark

The energy consumption of computer servers has increased continuously during the last years. This development will probably continue if no counteractive measures are implemented. Additional energy consumption results from the use of air conditioning for rooms where servers are operated. Due to this rising impact of computer servers for energy consumption and costs especially for the procurement of IT equipment it is necessary to identify the most efficient computer server models available on the market to save energy and money. The ENERGY STAR as an established energy efficiency label is successfully applied for computers. For this reason ENERGY STAR specifications for enterprise computer servers should be established.

Input based on the "**E-Server**" project (co-financed by the Intelligent Energy Europe programme):

Server-Framework_EPA_AEA_31082007_VSF.pdf:

http://www.eu-energystar.org/downloads/specifications/20070904/Server-Framework_EPA_AEA_31082007_VSF.pdf

Remark on desktop derived servers: the view to put desktop derived servers into a server specification is questioned, since functionality wise, they belong to the server spec, but hardware wise they belong to computer spec. It should be open until we have more work on computers Tier 2 and servers.

Further comments

General remark related to virtualization and consolidation:

The document seems to consider only hardware servers. With the promising techniques of consolidation (partitioning) and virtualization, the concept of virtual server could be an approach to take into account too, though it seems obvious that energy efficiency of a virtual server may depend upon the hardware hosting the virtual servers. In general virtual servers and consolidation are very important for energy savings. The specification should therefore not hamper the use of virtualisation, however, it is difficult to include it in the specs apart from a general recommendation.

Building Block #1: Definitions

General:

- Definitions should be sufficiently broad to cover all types of servers.
- A key question is if storage should be included. Probably it should, because it is an integral part of the server functionality.

Question #2: are there hardware, software, and/or functionalities specific to enterprise servers?

It is obvious that the hardware specifications for a web server is not the same than the one for a database server. So depending on the service, daemon, software, etc., the server is sized differently.

Question #3: are there new technologies or functionalities to take into account?

Yes, to be further elaborated (see also e-Server project background page <http://www.efficient-server.eu/index.php?id=6&L=0>)

Question #4: should blade servers be addressed in the specification?

Yes, as big servers too (not based on Intel compatible processors). This has to be defined in the eligible product categories (block #2)

Question #5: should desktop derived servers be addressed in the specification?

It depends on the test criteria. If we go for a duty cycle approach, chances are the cycle to be used for enterprise servers would be different from the one used in v 4.0 of the PC spec. And there are still many companies SMEs mainly, but many enterprise datacentres where you can still find this kind of servers.

Question #6: storage or networking to be included?

For storage, definitely yes; consolidation of disks is very important with 1U or 2U rack servers. For blade server, very often each blade has its own disk, and consolidation is less common. For networking equipment it could be interesting, but there is a lot of standardization work already done by ETSI (contact: Denis Marquet from France Telecom on this topic).

Building Block #2: Eligible product categories

General remark

- As far as possible, the categories should not be technology dependent, but rather connected to the services they provide

Question #2: subcategorizing following the vendor categories (or IDC's ones)?

It is true that these subcategories 'high-end', 'mid-range', 'volume servers' correspond to different kind of hardware. Energy Star may be "strong" enough (not linked to the industry or the vendors) to change these categories to ones that are more convenient to its purpose if necessary.

Building Block #3: Energy efficiency criteria and test procedures

General remarks

- The proposed two-tiered approach similar to the current ENERGY STAR Computer specifications seems reasonable and applicable, in particular the proposed Tier 2 specifications on the basis of total energy consumption by the computer servers allow for individual server configuration.
- Tier 1 needs to be launched as soon as possible
- Tier 1 could comprise a reporting of energy consumption and performance data based on a preliminary measurement method, e.g. based on the protocols for servers and storage from Denmark attached below. This could provide valuable data for the Tier 2 development.

Power consumption of storage v1.0 – DEST.pdf:

http://www.eu-energystar.org/downloads/specifications/20070904/Power_consumption_of_storage_v1.0_-_DEST.pdf

Power consumption of servers v1.0 - DEST1.pdf:

http://www.eu-energystar.org/downloads/specifications/20070904/Power_consumption_of_servers_v1.0_-_DEST1.pdf

Question #3: on redundancy

Redundancy may have a major influence on energy efficiency of the systems, be it for power supplies, but also for other components (e.g. disks) or other data centre equipment (UPS, electric generators, air-conditioning, fire safety systems) probably that won't be studied in this specification.