

COOL IT

Overall optimisation of data centre energy consumption



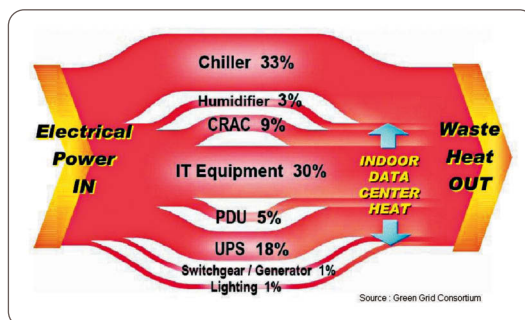
The whole electrical power consumption of a data centre may go beyond twice the sole electrical power needed by processor's units it houses. The project aims at optimising the total energy needed by a data processing plant, through the four following progresses :

- ▶ new server's cooling methods
- ▶ new strategies in control, integration and optimisation of the electrical power paths
- ▶ collecting and merging energetic information in order to improve the efficiency of the data centre management
- ▶ optimising hardware resources allocation with regards to the processing needs

The best resolution of these four areas of improvement could lead to energy savings up to 20%.

TECHNOLOGICAL OR SCIENTIFIC INNOVATIONS

- ▶ Integration of liquid cooling pipes within server's hardware, while still allowing their serviceability (repair, upgrade and maintenance).
- ▶ Stabilisation of laminar air flows in specific areas of the server.
- ▶ Integration of supercapacitors in each server, along with their monitoring software. This can avoid using huge equipments (batteries, generators) currently in charge of overcoming short electrical power cuts.
- ▶ Energy savings shall be designed with no compromise to performance, reliability, availability and serviceability of the data centre. This calls for identification and modelling of the relationships between these four requirements and the energy footprint of the data centre.
- ▶ Design and development of management softwares that dynamically detect any configuration evolution of the hardware resources, and that allows to merge all these inputs in a unique application.
- ▶ Optimisation of all the hardware resources with regards to the overall energy consumption of the data centre. This calls for methods that allocate loads throughout the hardware resource, in a dynamic, real-time manner.
- ▶ Management of the processors internal frequency within a multi-server system.



STATUS - MAIN PROJECT OUTCOMES

Specifications currently being issued (June 2011).

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PROJECT DATA

Coordinator:
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Call:
FUI10

Start date:
January 2011

Duration:
24 months

Global budget (M€):
7.7

Funding (M€):
2.5

Related Systematic project(s):
DESKOLO