



Sustainable DataCentres: energy efficiency is no longer enough. Let's stop scrambling for PUE !

France, January 22nd, 2010. If we are to reach beyond the limits of eco-responsibility and truly embrace the notion of sustainable development, DataCentres must be designed taking into account their effect on society and therefore should be designed to operate for twice their current lifespan.

In 2020, DataCentres worldwide will consume about 450 billion kWh and their CO² emissions (at about 330 million tonnes) will be equal to those of Portugal, Switzerland, Greece and Sweden combined. Their electricity bills will amount to nearly \$45 billion. Faced with these astronomical figures, together with an unavoidable increase in the cost of electricity and the inevitable consequences of climate change, data centre operators are improving the energy efficiency of their facilities to cut their running costs and reduce damage to the environment.

By reducing their energy needs, and particularly those due to server cooling, data center operators are looking to reach an average PUE¹ of 1.5, compared with the current 2.5. Although this scramble for PUE is essential in the short term, it is far from enough in the long run. It does not significantly reduce the carbon footprint resulting from data center construction and energy consumption, however low this may be. If pollutants are to be effectively reduced and a guarantee given for low running costs over the next 10 years, data centre lifespan will have to double, or even triple, from the current average of 5 to 7 years to 10 or 15 years, and they will have to be integrated into their urban surroundings.

Doubling a data centre's lifespan cuts the environmental impact of its construction by half. From an operational viewpoint, the sustainability of a data center is directly related to its flexibility. How can the density of computer rooms ultimately be multiplied fivefold, without investing today in the solutions necessary for tomorrow? Basically: by better design. For example, no cables run through the raised floor at our new Etix DataCenter, meaning that we can add an ice-water cooling system if necessary. This flexibility ensures that our customers will not have to move their servers 5 years hence because of a lack of cooling capacity. This also means that a customer with 400 m² of space will save €30 million in migration costs.

If we are sustainable in reducing ecological and financial running costs, we will also need to work on integrating DataCentres within their ecosystem. What services can the data centre provide for its immediate surroundings? To start with, we can "depollute" 70% of our operations by putting our waste energy to good use. For instance, we are working with the town of Bobigny in France to supply 40,000 homes in a nearby green neighborhood with heating and hot water. The energy for this is derived from the heat generated by our servers. If unused, this energy is essentially a needless environmental and financial cost. In other words, a luxury we can no longer afford in a truly society-based approach.

Ultimately, by working on the long-term flexibility of our facilities, and by integrating our DataCentre into its urban surroundings, we arrive at running costs similar to those of a facility which, although it has already optimized its energy efficiency, is still 70% more polluting.

In addition to more stable running costs in the long term, efforts made to improve the sustainability of our facilities guarantees their longer lifespan for our customers and less exposure to risks arising from future environmental regulations.

¹ Power Usage Effectiveness: this indicator is calculated by dividing the total electricity consumed in a building by the amount delivered to its IT equipment. A PUE of 2.5 means that it takes 2.5 kWh of electricity for 1kWh of computing.



As shown by the example of our Etix DataCenter, lifespan and social aspects must be taken into account when planning a data centre if sustainable progress is to be made.

By Charles-Antoine BEYNEY, President of Carinae Group.

*Carinae Group, a technical excellence company, was founded in 2009 by Charles-Antoine Beyney and Michael Ourabah and offers expertise in 3 main business sectors: Network services, Hosting & IT Integration (BSO Network Solutions), Consulting and Engineering (Eres Technologie) and Telecom security and authentication solutions (Nexims). Following its foundation, the group launched its most ambitious hosting project with construction of the Etix DataCenter, a Green Generation data center providing more than 10,000m² of premium hosting in Paris-France. The Group is headquartered in Ireland and, through its subsidiaries, conducts operations in France, the UK and Asian Pacific. www.carinaegroup.com
www.etixdatacenter.com - www.bsonetwork.com - www.erestech.com - www.nexims.com - www.certificall.fr*

Etix DataCenter ID

- Service quality: Tier 4
- Surface area: 10,000 m² - 16 private or sharable spaces
- Total electrical power: 32 MW
- Energy density: 2kW / m²
- First section (3,850 m²) to be completed for December 2010

The design principals behind the Etix DataCenter, the first "sustainable" datacenter in France, are based on the three aspects of sustainable development:

1/ Environment

Design / construction

- Pre-existing building meeting HEQ standards, thus reducing the carbon footprint of construction work
- Lifespan twice that of a conventional design thanks to greater flexibility. 10-year energy and cooling needs taken into account right from the design phase. For example, no electric cables in the raised floor, elevated coffering for the addition of an ice-water cooling system: allows density to be multiplied by 5 over 10 years, thereby prolonging the datacenter's lifespan.
- Cold corridors throughout
- Renewable energy supplies: 20% of the electricity is provided by an EDF *Equilibre+* contract

Energy efficiency

- PUE less than 1.5: energy consumption 35% lower than a current data center.
- Free cooling system using outside air.
- Rationalized power supplies
- Optimized power usage levels and real-time monitoring of center performance and energy consumption

Energy efficiency

- Good use made of surplus energy by transfer of server heat to the heating system of the adjacent green neighborhood. This "depollute" 70% of the CO₂ emissions and radioactive waste produced in relation to the electricity consumed.

Saving

- Running costs identical to a data center that is 70% more polluting.

2/ Society

- ISO 14001 certification
- Member of the Green Grid consortium
- Signatory to the European Code of Conduct for Data Centers
- Raised customer awareness of responsibilities: cold corridors and equipment less than 5 years old mandatory.

3/ Social

- Creation of 25 non-relocatable local jobs from May 2010

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