IT plugs into the green agenda

Linda More, Computing 03 Jul 2008

In the first of our four-part guide to green computing, we look at why the datacentre is the best starting point

Being green may once have been considered a luxury, but times have changed, and there are clear financial benefits and corporate advantage to be gained.

Simon Mingay, research vice principal at analyst Gartner, says IT is central to many green innovations. "Operating in a low-carbon economy is not about doing the same things with less energy and lower carbon dioxide emissions, but about doing different things and thinking differently about how things can be done," he says.

There is a big opportunity for IT to contribute towards the reduction of greenhouse gases and the energy integrity of organisations. But how many really understand where the first easy hits are to be found and how to measure the real savings?

The good news is that recent research by DMW Group has revealed that 82 per cent of businesses do have a generic green policy, including areas such as recycling and using low-energy light bulbs. However, respondents also admitted that the area of technology largely remains untouched.

Given that IT can be responsible for up to 40 per cent of a typical firm's carbon footprint, it is a good place to start - – and many organisations are already recognising that significant efficiencies can be made in the datacentre.

Professor Andy Hopper, head of the University of Cambridge Computer Laboratory, says computers need not have a negative effect on the environment. "Datacentres and server farms play an important role in the modern information infrastructure," he says.

"They provide highly available web sites for users, support day-to-day business processes, and execute offline jobs such as indexing and backup. However, ever-increasing amounts of energy are being consumed to keep them running, and researchers have found that there is only a minor energy reduction when reading the news online as opposed to buying a newspaper."

The need for faster processing and smaller systems, combined with increased energy costs and heightened global awareness regarding greenhouse gas emissions, have made managing power, cooling, space and carbon dioxide a major priority for organisations running their own datacentres.

The University of Wales College Cardiff (UWCC) has recently invested £3m in an advanced datacentre environment to support one of the UK's most powerful new supercomputers within strict energy efficiency parameters. Hugh Beedie, chief technology officer for UWCC, says the infrastructure operates in line with an overall commitment to environmental sustainability.

To achieve this, the tender process specified that the supporting datacentre environment takes full advantage of available technologies and techniques to minimise energy consumption.

"We have energy-efficient quad-core processors, larger common power supplies, the first of a new generation of UPS with 98 per cent efficiency and very expensive cooling systems that cool the hot air straight out of the servers," says Beedie.

In addition, the university has specified power metering everywhere in the new datacentre to identify excess use. "Our old datacentre is currently being retrofitted with power meters, so I should be able to prove from the first month the economies achieved by the new one," says Beedie.

With energy costs on his older datacentre running at about £300,000 a year, of which cooling accounts for a third, there are plenty of potential savings to be made. Virtualisation is another key word in the green IT vocabulary, with a recent report to the US Congress claiming five-fold savings can be made in energy terms.

Graham Elliot, infrastructure services manager at Allied Irish Bank, has recently been involved in a project to migrate its datacentre out of the bank headquarters to a new location to the north of Dublin.

"Moving into the new datacentre was an opportunity to remove all the legacy hardware," says Elliot. "We looked at virtualisation as a smarter way of doing things, plus there were improvements in availability, disaster recovery and business continuity."

The bank has virtualised 220 servers, decommissioned 200 production servers, removed the need for another 200 business continuity servers and calculates the strategy will save 3,000 tonnes of carbon dioxide emissions a year, the equivalent of 665 1.8 litre diesel engine cars.

The adoption of virtualisation can dramatically reduce power consumption, simply by decreasing the number of physical machines and their associated cooling requirements. And while virtual machines tend to use bigger servers with more memory, disks and power consumption, the overall savings can be significant.

"Taking into account staff time, energy differences and licensing costs, we calculate that the potential savings for consolidating 36 of our servers into virtual systems will be in the region of £53,000 a year," says UWCC's Beedie. "That's a saving of almost £1,500 per server."

Virtualisation takes server utilisation up from about 20 per cent to more than 80 per cent and, even taking into account the added power and cooling requirements, it still offers better value than using smaller dedicated servers.

While intelligent buildings, unified communications and remote working can all add to the energy efficiency of an organisation, one of the easiest ways to save money is to turn off all redundant IT equipment.

Jim Houghton, former vice president of corporate investment bank Wachovia and chief technology officer of consultancy Adaptivity, says an understanding of what you have - – and how much of it is being used - – is really important. "Most companies have thousands of physical infrastructure boxes and they have lost track of what is actually on the floor and plugged in," he says.
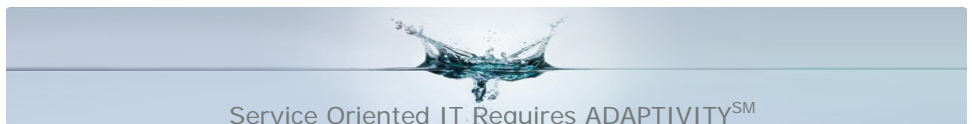
"A typical datacentre costs about $1.5m (£762,000) a year to run, and good design may drop 20 per cent off the bottom line. However, finding 200 obsolete servers and turning them off could save a good deal more."

When Wachovia consolidated and optimised its IT resources as part of a wider corporate effectiveness initiative, one of the first tasks the firm undertook was an audit of its technology, and a measurement of its use.

"We thought we had already removed a lot of the wastage and unused systems," says Houghton. "Quite late in the project we employed Tideway's dependency mapping software, and on its initial scan of 3,000 servers we found another 90 redundant machines."

Energy costs, climate change and social responsibility are now big strategic drivers within organisations, with IT being viewed as the enabler for conducting business in an environmentally-friendly manner.

The good news is that there are environmental and strategic, as well as commercial, advantages to adopting a green approach.

"The big message is that there is money to be saved," says Beedie.

"Going green actually saves money. However, to win you have to take a holistic approach and if you can't buy kit with a contractual commitment to levels of efficiency then you have to start measuring it yourself. Measuring gives you the confidence that you really do know what you are doing."

Next week: The second part of our definitive guide to green computing looks at how UK businesses are reducing carbon emissions