Flintshire County Council invests in a more sustainable future with IBM

Overview

■ ***The Challenge***

With the Carbon Reduction Commitment coming into force in April 2010, Flintshire County Council is ramping up its efforts to monitor and control energy consumption both in the IT infrastructure and across the broad set of facilities it manages.

■ ***The Solution***

Flintshire has almost completely virtualised its server landscape on several different IBM platforms (IBM Power Systems, IBM System x, IBM BladeCenter), creating a flexible and scalable infrastructure that requires less energy and emits less CO2. The Council's Property Services and IT departments are working together to identify new areas for energy savings and to see where technology can play its part in reducing consumption.

■ ***The Benefits***

Eliminated capital and operational costs associated with 80 physical servers; reduced energy consumption by allowing data centres to run hotter; delivered a larger set of computing services within the same power envelope; introduced more detailed monitoring of energy consumption to ease future CRC reporting.

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Energy Manager
Flintshire County Council

Flintshire County Council (www.flintshire.gov.uk) provides public services to 150,000 citizens, and has a combined annual revenue/capital budget of £285 million. As a unitary authority, Flintshire offers around 750 distinct public services, and runs some 350 business-critical systems to support them.

In addition to its five major office sites and 350 smaller sites, Flintshire County Council has ultimate responsibility for the energy consumption and CO2 emissions of 80 primary schools, 12 secondary schools and six leisure centres. The Council has been engaged in green initiatives for a number of years, and is focused on improving the measurement, management and control of energy consumption across all of its facilities.

"The Welsh Assembly has set ambitious targets for energy reduction in the public sector, and Flintshire aims to be a leader in initiatives to cut energy expenditure and reduce emissions," says Will Pierce, Energy Manager, Flintshire County Council. "We in Property Services are working closely with Corporate IT to share ideas and discuss new technologies – striving both to reduce the energy bills related to IT and to improve our ability to cut energy usage in other parts of the organisation."

He adds, "The Carbon Reduction Commitment will drive the need for greater granularity and detail in reporting, but this has always been our aim in any case. A key part of what we do is to minimise wastage by getting Council employees to take ownership of the energy issue. To that end, we have appointed 'energy champions' in each Council office building and are looking to extend the role to as many buildings as possible, providing education and support to them. It's all the simple things like switching off unused equipment rather than leaving it on standby – but these can add up to significant cost savings and improved sustainability."

John Thomas, ICT Operational Services Manager, comments: "The broad set of ICT services that we deliver continues to expand. And yet our focus on energy efficiency has enabled us to cap growth in energy consumption even as we increase the scale of equipment within the IT infrastructure."

Flexible, scalable, efficient

The Corporate ICT Service at Flintshire is aiming to make a 20 percent reduction in its energy consumption over the next three years, and has already made significant efficiency improvements through server virtualisation, working with IBM Premier Business Partner REAL Solutions. As a result of this work, Flintshire won the Common Europe Innovations Award for 2009 in the Power Systems Energy Efficiency category.

"Our aim has always been to create a highly available, flexible and scalable architecture to support a growing range of services," says John Thomas. "By virtualising a total of 80 physical servers to a handful of IBM System x3950 M2 servers, we are helping to cut energy consumption and carbon emissions, as well as significantly reducing the amount of hardware we need to buy, run, and ultimately dispose of."

Flintshire uses Citrix to deliver most applications to the desktop, centralising much of the workload on efficient IBM BladeCenter servers. "IBM BladeCenter gives us a compact environment in which each blade has only the components it needs, with shared power, networking and cooling," says John Thomas.

Following an audit conducted with the Carbon Trust, Flintshire is already running its data centres two degrees warmer, and plans ultimately to run at 24 degrees Centigrade. The Council will also extend its use of "free air cooling" in the data centre – filtering cold air from the outside whenever possible to reduce energy consumption. "The latest hardware from IBM can tolerate much higher operating temperatures with no loss of reliability, minimising the need to keep the data centre cool," says John Thomas. "We are benchmarking our energy consumption, so that we can demonstrate year-on-year reductions even as we extend the services we offer to the business."

Active energy management

Flintshire is rolling out IBM Director Active Energy Manager software, which will enable it to set policies for energy saving. For example, the organisation will be able to throttle back server resources, shutting down processing cores or even entire servers as workload falls. Overnight and at other times of low demand, Active Energy Manager will work with VMware VMotion to migrate all active virtual servers to the smallest possible number of physical servers, and shut down all the remaining machines to save energy.

"We are already more efficient in the data centre with the new IBM POWER6 processors in our Power Systems servers: these offer much better environmentals, and the ability to monitor and manage our energy consumption," says John Thomas. "Active Energy Manager will extend these kinds of capabilities to our Intel environment."

Tackling CRC

Beyond making specific improvements in the IT infrastructure, Flintshire has a broader programme of energy efficiency initiatives, led by the Property Services department. The 2008 spike in global oil prices moved energy consumption even higher up the corporate agenda at Flintshire, and encouraged the Council to focus more on sustainability and good environmental stewardship. An additional driver is the Carbon Reduction Commitment (CRC), a UK government scheme that comes into force in April 2010. Under the CRC, Flintshire will be required to report on its energy usage and the corresponding emissions, and will purchase a £12 allowance for each tonne of CO2 it emits. Together with other large public and private sector organisations affected by the CRC, Flintshire will then be incentivised to reduce its energy consumption and emissions.

In addition to managing the energy contracts, the Council has an advisory role in reducing energy consumption across the County's entire buildings portfolio, including its education and leisure sites. The Property Services team is rolling out more detailed monitoring of all sites, aiming to target and challenge those that are using the most energy.

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The Corporate ICT Service at Flintshire has recently introduced software to measure the energy coming into the data centre, as part of a longer-term plan to demonstrate its ability to continually push down consumption. "IT is not directly responsible for its share of the electricity bill, but we are very focused on working more efficiently," says John Thomas. "Investing in the infrastructure is a cost for the IT department that pays dividends for the whole organisation. IT's ability to replace inefficient manual and paper-based business processes means that we can play a key role in helping Flintshire meet its requirements under the CRC."

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