Forward Thinker

ISSUE 1 THE BENEFITS OF GOING GREEN

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TAKE ANOTHER LOOK AT DISASTER RECOVERY

The traditional methods of tape backup and restore that are used by many organisations as a key part of their corporate disaster recovery (DR) plans are both obsolete and inadequate, according to research that was published recently by marketing analysts Burton Group.

In the report, which is entitled 'Survival of the fittest: disaster recovery design for the data centre', Burton Group claims that advances in business continuity technologies, together with a major reliance upon IT systems to meet competitive and e-commerce needs and regulatory legislation, are forcing many enterprises to re-evaluate and reformulate their DR solutions.

According to the study, DR plans should be given a more prominent position than ever on the data centre management agenda. However, the findings of the research indicated that, on average, more than a third of corporations have not tested their DR plans this year.

The report points to data bloat as one of the biggest challenges, adding that while tape capacities have been doubling every two years, hard disk drive technology capacities has been increasing tenfold every five years.

ZODIAC OFFERS MORE CARBON SERVICES

IBM has expanded its Zodiac consultancy service (now called the Environmental Study) to advise on how to reduce heat and power with the aim of improving the carbon footprint of companies' IT infrastructures.

The tools work across devices and servers from any manufacturer and the data provided is then used to determine a strategy for reducing power consumption and environmental impact.

The strategies typically entail server consolidation or virtualisation, to ensure hardware runs close to full capacity. Early findings show average industry usage is below 8 percent on x86 servers and 20 percent on Unix servers. The service has been used to analyse previous Zodiac consultancy projects retrospectively. One project was found to have cut a department's annual carbon footprint by 156 tonnes of CO_2.

WELCOME

Welcome to the first edition of Forward Thinker, the newsletter that takes a fresh and pragmatic approach to real business debates. In this issue, we look at the true cost of not being green. Average commercial electricity prices are rising between 23 and 39 percent annually, so cutting energy consumption as part of a policy to reduce your carbon footprint can directly affect your bottom line.

One way to cut power consumption is by switching to blade servers and we would like to invite you to a free online seminar – 'The environmental, IT performance and business advantages of blade servers' – hosted by *Computer Weekly*. You'll find out how companies like yours are benefiting from blade technology. Listen to the webinar at www.ibm.com/itsolutions/uk/blade

To talk about how IBM can help support your green strategy, or to discuss other technology-related issues, please contact your IBM Client Manager.

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Green benefits

Moving your company over to a more environmentally friendly way of working doesn't mean reducing your bottom line or adding bottlenecks to your IT system. Going green can save revenue and improve throughput. What's more, you can generate income from your old IT equipment

Switching to a greener way of working is gaining pace, but perhaps it would happen a little faster if more businesses realised that it doesn't necessarily mean increased costs. Moving to a greener IT solution, for instance, can produce savings, and could actually reduce your overall running costs. So, it's no longer about growing your business, improving your profitability and going green; it's about going green in order to grow your business and improve your profitability.

Before we examine the solutions, let's look at the main problem areas: the data centre and server technology.

Today, for every £1 spent on new hardware, an extra 50p goes on power and cooling, according to analysts IDC – and that's more than double the amount of five years ago.

Another factor is that UK commercial electricity prices are rising by between 23 and 39 percent annually, and soon power will outstrip hardware as a key business cost, leaving it second only to staffing.

Meanwhile, in the US firms spent a staggering $29 billion on just powering and cooling IT systems in 2006. It is predicted that this cost will rise by 54 percent over the next three years.

What's more, it is estimated that only half the power consumed in a typical data centre is actually used by equipment, with 25 percent going on cooling, 12 percent on air movement, 10 percent on electricity transformation, and three percent on lighting.

The message is clear: energy costs are rising, supply is limited and your ability to meet business demands is at stake.

START WITH THE DATA CENTRE

There has been an over trivialisation and simplification on greening the IT enterprise. It's not just about hardware and software, but rather the complex intersection of hardware, software, functional architecture, operational architecture, people, culture, regulation, ethics and corporate responsibility. In view of this complexity, it can be hard to know where to begin. However, a simple and manageable starting point, which can also offer measurable returns on investment, is your data centre.

Deploying a study, such as those carried out by the Environmental Consultancy, will provide a clear carbon emission position on your current server. It will also offer advice on how to lower heat emissions and power consumptions, such as improving the amount of useful computing work done per unit of energy by implementing virtualisation technologies and/or reducing power usage through consolidation projects. The outcome should be a substantial cost saving to your organisation. Initially, the following analysis is suggested:

vox pop

Replacing 60 physical servers with a virtualised IBM z9 platform or approximately three x86 servers could save more than £8000 per year in power costs.

Source: IBM website ibm.com/systems/uk/green/literature

• Conduct a hardware and power audit
• Calculate which devices use the most energy
• Establish peaks and troughs in utilisation.

Carrying out a hardware audit will tell you exactly what you have in your data centre. But don't just limit the audit to servers. Find out what processors you have and how much disk space is available, along with their levels of utilisation. You should also look at your storage devices, printers, uninterruptible power supplies (UPS) and cooling devices, as they all contribute to the costs of running the data centre.

We recommend that you look at the power consumption for each device at different times through the day and the month to plot peaks in usage. This will allow you to work out when cooling is needed and when it is not.

IMPROVING ENERGY EFFICIENCY

Improvements can range from major infrastructure upgrade projects, such as improving cooling systems or UPS, to simple and inexpensive measures, including:
• Removing under-floor cable blockages that impede airflow
• Turning off servers that are not being utilised
• Switching off Computer Room Air Conditioning (CRAC) units in areas that are over-provisioned for cooling
• Deploying virtual client solutions in distributed computing environments.

Of course, any analysis of your current situation needs to recognise the likelihood that business needs will change. For example, it would be wise to take a modular approach to the design of future power and cooling capacity, allowing for easy expansion or modification.

COOLING THE PACE

Around half of the energy used by a typical data centre is dedicated to cooling, so any reduction in this area will cut your utility bills. Energy efficiency for cooling equipment has improved by up to 50 percent in recent years, so replacing old CRAC units can result in substantial savings.

New CRAC plants can also be installed with variable-speed drives, which reduce your pumping system's energy usage, and water-side economisers, which use outside air to cool the chilled water and can further cut the energy required to run CRACs.

The capacity and efficiency of chilled water systems can be augmented with thermal storage devices that hold energy generated at night, when chillers typically operate more efficiently, and then release this during the day, when energy costs are higher.

In addition, optimising the airflow in the data centre can also help – often the cabling systems are blocking or reducing the ability to keep the data centre cool. What's more, by replacing standard cabling with high-performance fibre transport systems, you reduce the number of cables in the building and therefore the number of boxes with attendant power supplies required to service those cables. This means that not only do you get faster speeds, but you also reduce your energy use.

The actual difference in electricity consumed and heat produced between a server idling and one working flat out is quite small

SOFTWARE AND SERVICES

Moving to a greener IT infrastructure will not be achieved by simply looking at your hardware; you also need to review your software and services. Another way of reducing costs and your carbon footprint is to consider virtualisation. By making a single server do the work of several, through virtualisation software, you can reduce hardware and management costs, and by data replication and virtualising your storage, you can also build in disaster recovery.

Virtualisation can be a tremendous ally in reducing heat and expense,

simply because it means you will need fewer servers. Servers use energy and give off heat whether they're in use constantly or just 15 percent of the time, and the actual difference in electricity consumed and heat produced between a machine idling and one working flat out is quite small. This means a server that is only operating at 15 percent of capacity will cost almost as much to run as one that's being fully utilised.

As an example, replacing 60 physical servers with a virtualised IBM z9 platform or approximately three x86 servers could save more than 160,000kWh each year, cutting 69 tonnes of CO_2 emissions – as much as an area of mature forest the size of 17 football fields can remove from the atmosphere in the same period.

Virtualisation can also reduce the need to purchase new hardware, not only removing the acquisition and running costs, but also eliminating the emissions generated during manufacture, delivery and installation.

The advantages of virtualisation are not limited to servers. Storage virtualisation can be used to combine storage capacity into a single device that can be managed from a central point.

Just as server virtualisation reduces the number of servers needed, storage virtualisation means fewer disks are required, increasing the total amount of available disk space for any server on the network, and optimising utilisation rates.

OTHER AREAS TO CONSIDER

There are other parts of your business that can benefit from a green audit. Looking at the way you use printers and copiers can reduce the number of machines you run (by moving to workgroup multi-function devices), lower consumables spend, cut paper use and save on maintenance costs.

UK commercial electricity prices are rising by between 23 and 39 percent annually, and soon power will outstrip hardware as a key business cost

The final area to consider when reducing your carbon footprint is IT equipment disposal. Good IT products can be discarded without causing too much damage to the environment. Ideally, IT equipment should be easy to dismantle into its component parts, which should then be labelled so they can be disposed of correctly. Good IT suppliers will help you with this process.

IBM began offering product take-back schemes in Europe in 1989 through its Global Asset Recovery Service (GARS). A bonus of the GARS programme is that, if the assets are still useful, it will pay you for any assets sold. In 2006, Global Financing sold more than £800 million ($1.6 billion) in pre-owned equipment, and a portion of this money was returned to the asset owners. Globally, the GARS programme receives almost 40,000 machines a week weighing nearly 1.8 million pounds, most of which is recycled (47.8 percent in 2005), resold (37.3 percent) or reused (8.7 percent), with very little sent to landfill (1.6 percent).

So, cutting your carbon footprint can also shrink your cost base. Of course, greening your business properly can take a lot of time and effort, and you are likely to face some short-term costs. However, the long-term benefits for both your company and the environment are worth more than all the initial time, expense and effort put together.

• For more on IBM's green technology, visit www.ibm.com/systems/uk/green

WHERE NEXT?

To download thought leadership papers on green issues, virtualisation and blade servers from sources such as Forrester, IDC and IBM, visit ibm.com/itsolutions/uk/move

You'll also find information on webinars, events and customer references to help you explore the subject matter more fully.

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