

Dundee City Council builds an energy-efficient infrastructure with IBM

Overview

■ The Challenge

To meet its environmental objectives, reduce operational costs and save data centre space, the IT department at Dundee City Council wanted to revolutionise its infrastructure through the use of server virtualisation and thin-client architectures.

■ The Solution

IBM helped Dundee consolidate more than 50 application servers to a pair of energy-efficient IBM System z9 Business Class mainframes with IBM System Storage DS6800 storage, and introduced thin-client devices using Windows terminal services software running on IBM BladeCenter server farms.

■ The Benefits

System z9 mainframes, thin-client devices and BladeCenter servers are designed to increase Dundee's computing resources while decreasing electricity and air-conditioning requirements – reducing operational costs and carbon footprint. Server consolidation to compact mainframe and BladeCenter architectures saves space in the data centre and should facilitate the Council's move to a new location in 2010.



Glamis Castle, Dundee, Scotland

Dundee is Scotland's fourth largest city, home to 145,000 people. A former industrial centre, Dundee has transformed itself into a UK centre for life sciences and digital media. As a result, the city has been named one of the world's top seven intelligent communities for two years running (www.intelligentcommunity.org), and has just been chosen to become Scotland's first "Fibre City". Fibre optic cables will be installed in Dundee sewers beginning early next year, which will provide high-speed Internet access, clocking in around 100 Mbps (megabits per second), to homes, businesses and organisations throughout the city. Dundee City Council provides a wide range of municipal services for citizens, many of which rely on IT support. The council runs numerous applications to support both internal processes and public-facing systems, such as its Web portal, which provides information and online services.

"Like all local government organisations, Dundee is committed to a number of environmental objectives," says Tim Simpson, IT Support Manager. "In the IT department, we are increasingly interested in finding ways to reduce our carbon footprint by creating a more energy-efficient infrastructure. If we can reduce the amount of power and cooling required by our systems, it's not only good for the environment – it can also save serious amounts of public money on the Council's electricity bill."

Several years ago, Dundee took an important first step in its move towards a greener IT environment by consolidating more than 50 application servers to the IBM System z mainframe platform. The Council now runs these applications and databases on two System z9 Business Class servers, supported by virtualised IBM System Storage DS6800 disk systems.

With its proven ability to run hundreds of virtual servers side-by-side in a single physical footprint, the IBM System z platform is ideally positioned as a solution to shrinking space, power and air conditioning capacity in the typical data centre.

“The z9 mainframes give us a significant increase in processing power and scalability, while reducing the amount of electricity and air conditioning we require,” explains Simpson. “Instead of 50 under-utilised boxes, all with their own power supplies and air conditioning requirements, we have two physical machines hosting 50 virtual servers – making optimal use of our resources.

“Storage virtualisation makes a big difference too, helping us to make the optimal use of the available capacity and limit the ‘white space’. With help from IBM, we are making sure we are using every system to its full potential, which makes both economic and environmental sense.”

Slimming down the desktop environment

Dundee has also committed to a thin-client strategy for its estate of desktop devices. Multiple IBM BladeCenter servers provide desktop applications to thousands of highly efficient thin-client terminals using Windows terminal services and Softgrid application virtualisation software.

“The thin-client approach is a tremendous improvement in terms of power consumption,” says Simpson. “Most standard desktop PCs are very under-utilised and spend most of their time heating the office rather than handling workload. Instead, we concentrate all the processing power

in the BladeCenter servers, which is a much more efficient solution. We have in excess of 2,000 thin client devices, which have half the carbon footprint of traditional PCs – they also have a lifetime of seven years as opposed to the four or five years of a standard PC.”

The thin-client approach also ensures that all information is held centrally, helping the Council to satisfy the requirements of the Freedom of Information Act, and minimises the need for engineers and support staff to travel between sites.

A greener future

Dundee’s next project will be to rationalise a number of outlying Intel-based servers and consolidate them onto a virtualised IBM System x3650 platform, using Parallels Virtuozzo software.

“The primary driver for this new virtualisation exercise is to create a clustered environment split across our two data centres, so that we can fail over in case of disaster,” says Simpson. “But as a secondary advantage, the improvement in utilisation and the reduction in the number of servers will help us increase efficiency even further.”

He concludes: “IBM has been involved in promoting Green IT for many years, and its credentials in the fields of energy efficiency and virtualisation are second to none. By building an energy-efficient IT infrastructure on leading-edge IBM hardware technologies, Dundee is taking its place in the front rank of local authorities that are proactive on environmental issues – while also making more effective use of taxpayers’ money.”



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