Dundee City Council delivers value through new technologies

Creating a cost-effective IT architecture with IBM System z and IBM XIV Storage System technologies

Overview

Business challenge

Like all UK local authorities, Dundee City Council needs to handle increasing demand for IT and eGovernment services, while also reducing costs in line with central government targets. When the lease on its server and storage hardware needed to be renewed, the Council saw an opportunity to enhance its capabilities and increase value for money.

Solution

Dundee worked with IBM to upgrade its mainframe environment with two powerful IBM System z10 servers, and introduced the IBM XIV Storage System to replace a mixed storage environment. The new infrastructure runs a range of Linux applications and Oracle databases – supporting key systems such as social services 24x7.

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 three of the past four years (see **www.intelligentcommunity.org**).

Dundee City Council employs around 10,000 people, and 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 (**www.dundeecity.gov.uk**), which provides information and online services.

Linux on System z

For several years, the council has run all its core IT systems (mostly Oracle databases and applications) on SUSE Linux Enterprise Server, running on IBM System z servers.

"Running Linux on the System z platform is a cost-efficient approach, especially for software like Oracle, which is licensed on a per-processor basis," explains Tim Simpson, IT Support Manager at Dundee City Council. "We can run 60 virtual machines on just four System z processors – whereas an equivalent x86-based architecture might require several processors for each server! So the savings can be considerable."

Leasing leading-edge hardware

The council's existing servers – a pair of z9 Business Class machines – were leased from IBM, and the existing lease was due to expire.

"The best thing about our leasing strategy is that it allows us to continually upgrade to the latest, fastest IBM hardware, while maintaining our costs at a steady level," says Simpson. "When our latest lease was coming up for renewal, we realised it was a good opportunity to rethink our storage architecture too."

At the time, the council's storage infrastructure was based on a mixture of SGI and IBM storage arrays, virtualised using a solution from LSI.

Business Benefits

- Improves performance by more than 50 percent, providing capacity for growth without increasing IT costs
- Enables very rapid provisioning of virtualised server and storage resources, enabling the IT team to respond more quickly to end users' needs
- Provides excellent availability and disaster recovery capabilities: in the event of a disaster at the main site, all systems can be restored at another location within 20 minutes
- Reduces Oracle licensing costs, as numerous virtual Linux servers can run on each IFL processor

Choosing a storage solution

"We knew that LSI was planning to take its virtualisation product off the market, so we needed to find an alternative solution before it went off-support," comments Simpson. "Moreover, the storage arrays themselves were about six years old, and we noticed that disks were starting to fail fairly frequently.

"We started looking for a new solution, and when the IBM sales team presented the IBM XIV Storage System, we were immediately interested. It promised to deliver excellent performance and resilience, and with all the software that comes as part of the package, it would give us a lot of flexibility in terms of virtualisation and management."

Working with IBM, Dundee's IT team negotiated a deal to upgrade its two existing IBM System z9 machines to new z10 Business Class servers, and replace the four existing storage arrays with a pair of IBM XIV Storage Systems. The z10 machines each contain two IBM Integrated Facility for Linux (IFL) processors, and run approximately 60 virtual Linux servers in total.

Business resilience

Each z10 is directly attached to one of the XIV systems, and the council uses the XIV remote mirroring software to synchronously mirror data between the two storage systems – providing a high level of business resilience.

"One of the most impressive things about the new solution is that XIV mirroring enables us to fail over all our workload from one site to another within about 20 minutes – so we can maintain availability even in the event of a major outage at one of our data centres," says Simpson. "Fortunately, however, we haven't had any need to use this so far: IBM System z servers have always been designed for excellent reliability, and the grid architecture of the XIV, which stripes data across multiple disks, is also very robust."

Solution Components

Servers

- IBM® System z10® Business Class
- IBM XIV® Storage System

"The combination of the z10 processors and the XIV grid architecture gives us 50 percent better performance than our previous infrastructure – which means we can run 50 percent more workload for the same price."

— Tim Simpson, IT Support Manager at Dundee City Council

Simpler storage management

He adds: "The XIV also provides a number of features that are useful in terms of day-to-day storage management. For example, the user interface is very intuitive, and hides most of the complexity of traditional storage management – such as setting up RAID arrays and planning where to store which types of data. Provisioning new storage volumes is really easy – we can do it in seconds. And the XIV snapshot feature allows us to back up or clone systems that contain hundreds of GB of data in seconds, seamlessly, which gives us a lot of flexibility."

The council is also using XIV Thin Provisioning, which allows the IT team to allocate storage more flexibly to meet business needs.

"When a department requests 200 GB of storage for a new system, it's more than likely that they will only actually use 20 GB of that allocation in the first year," explains Simpson. "With thin provisioning, instead of reserving all 200 GB, we can give them 20 GB of real disk space, and add the rest later as their system expands. As a result, storage utilisation increases, and we don't have to spend money on purchasing, powering and maintaining disks until we actually need them."

Better value for money

In terms of power supply, air conditioning and data centre floorspace, the new server and storage landscape also delivers significant savings. The XIV systems are more compact and, according to the IBM team's calculations, should use an estimated 30 to 40 percent less electricity than Dundee's old storage arrays.

"Above all, though, the biggest benefit of the new infrastructure is the improvement in performance that it delivers," says Simpson. "The combination of the z10 processors and the XIV grid architecture gives us 50 percent better performance than our previous infrastructure – which means we can run 50 percent more workload for the same price. As a result, we can deliver more, faster online services and better value for tax-payers' money, without increasing the IT budget."

For more information

To learn more about IBM server and storage hardware, contact your IBM sales representative or visit: ibm.com

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