



Thin-client Saves Energy Costs

A case study in Green ICT

Summary

The new Queen Margaret University (QMU) campus was designed from the ground up to be very sustainable. It now uses a biomass heating plant, and natural ventilation wherever possible, limiting air conditioning use. The introduction of a thin-client IT infrastructure to reduce energy consumption was core to the sustainable design of the new campus. As the campus was built on a new site, they could be as imaginative as they wanted in the design to meet the needs of their users for a purpose-built campus, including a state-of-the-art learning resource centre, sports facilities and a student village.

The challenge

The new campus needed to be as energy efficient as possible, not just to cut costs but also to make it a cleaner, healthier, and more pleasant place to be.

The innovative solution

Reduction in energy consumption was key to developing a sustainable campus, meaning the campus now has a biomass heating plant, natural ventilation, and thin-client IT. Fraser Muir, Director of Information Services and the Learning Resource Centre, and his team were responsible for taking the new thin-client project forward, having had little previous experience of this infrastructure. Fraser says:

‘Saving on air conditioning isn’t just about cutting power use, but about installation costs, maintenance, and all of the nasty chemicals that go into an air conditioning plant, too – it’s very much a ‘holistic’ view.’

The successful proof of concept, with 30 users migrating to a user interface designed to replicate Windows, thus making the change as smooth as possible, was implemented in the summer of 2005. By the summer of 2006, the team had made a successful major changeover of student PCs to thin-client and the remainder of staff PCs were migrated prior to the campus move in summer 2007.



Persuading academics of the benefits of the new system presented the hardest challenge. The IT team therefore ran thin-client ‘road shows’, where people could see how it would work. Fraser says:

‘The majority of our users did not notice the difference. If they did notice, it’s because their applications loaded and ran faster – not surprising, when they’re on a high-specification server instead of a PC.’

The project team used access to a remote desktop service, leveraging the thin-client infrastructure as an incentive, allowing users to log on from any computer, anywhere, and access all of their files and applications.

‘People were starting to hear good things about it, how they could work from home and so on. So we would say that, yes, they could have it, but they had to get thin-client on their desk as well. It was a good way to push the concept.’

Results and benefits

There are now some 1,250 thin-client terminals across the campus, with just over 600 on the student site and the remainder for staff. Some exceptions were made, as certain applications (such as audio-visual tools and those needing specialist hardware) are difficult to run over the current thin-client infrastructure, so there are open

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access PCs around the building for staff to go to, to use those tools.

The areas taught at QMU make this a more feasible set-up, as they specialise in subjects such as applied health sciences that do not need massive amounts of computing power or data analysis.

Thin-client costs about the same in infrastructure as a standard PC, but the saving is in ongoing costs. Thin-client devices should last up to eight years, whereas PCs are often refreshed after four years; a PC will typically use around 60-100 watts when in use, compared to 8-15 watts for thin-clients. With over 1,250 devices at QMU, that adds up to annual savings on IT electricity consumption alone of £50,000.

Obviously, there are the running costs of the servers too, and they need to be replaced every three or four years, but they are also very energy efficient, adding only 7 watts per thin-client to the total energy consumed.

Steve Scott, Director of Estates and Facilities at QMU, says:

'The integration of IT into the estate design process has enabled us to build one of the most sustainable campus developments in the UK. Thin-client

produces little heat, which allowed the building to be predominantly naturally lit and ventilated. This allowed for more efficient room layouts and importantly, meant that we saved around £1 million in capital build costs for building services that were not required. As a result of this, annual building energy costs have been reduced by an estimated £60,000 and when this is combined with the lower energy costs of thin-client itself, the university is saving over £100,000 per annum.'

Further Information

A cost and carbon comparison tool for thick- vs thin-clients is now also available from the SusteIT project website, along with a longer version of this case study, which was originally produced by Grid Computing Now!

SusteIT project: www.susteit.org.uk
Green ICT at JISC: www.jisc.ac.uk/greenict