



Minimising PC Energy

Personal computing uses around 10% of all electricity consumed in universities and colleges. The average unmanaged desktop PC uses around 10 kWh electricity a week so if it is only actively used for seventy hours 6 kWh is wasted. Switching computers off, or putting them into low power states (e.g. hibernate or sleep), when not in use can therefore create significant savings. This can be done by encouraging individual action – for example, Swansea Metropolitan University won a Green Gown Award for “You’ve been carbonned!” calling cards which caretaking and cleaning staff left in offices where computers (and other devices) hadn’t been switched off. The boxes also describe several ways of doing this automatically. These are usually eligible for support from the Revolving Green Fund and similar schemes (see Briefing 2).

Powering Down Liverpool Computers

Lisa Nelson, a Senior Systems Analyst at the University of Liverpool, developed PowerDown, a simple Windows solution based on simple batch files and freeware utilities, in 2005. This shut down around 3,500 managed computers when no-one was logged in after a set time interval. In the scheme’s first year, it avoided £64,000 of electricity costs, and 500 tonnes of carbon dioxide emissions. Overheating of computer rooms was also reduced. PowerDown has since been adopted – as Liverpool has made it freely available – in many other universities and colleges, and won a Green Gown Award in 2010. Details are available at www.liv.ac.uk/csd/greenit/powerdown/index.htm.

Although the original solution remains adequate for many institutions, Liverpool itself wanted more options, including a greater ability to differentiate between different computers and states, and better reporting. It has therefore worked with Data Synergy to develop a second generation, commercial, package, PowerMAN. It can set individual policies and exceptions for different groups, vary settings by state, e.g. running on AC versus DC, and provide automatic reporting, including identification of ‘rogue’ PCs. Lisa Nelson says that “its’ use has doubled the amount of avoided idle time, and would have a payback of under a month in most institutions.”



Rob Bristow

Views

“With so many university computers, particularly student PCs, left on all the time, the scope for saving energy using some form of powerdown on computers is immense. It is also one of the quickest wins in terms of payback. This is why JISC has funded a number of universities to develop different versions of powerdown software. In 2011 there should be no university without some form of powerdown. Salix funding is available to pay for proprietary software or development time.”
Rob Bristow, JISC Green IT Manager

“A survey of ICT in London’s Higher Education Institutions found that PCs and servers accounted for the highest amounts of energy use. A case study from the London School of Hygiene and Tropical Medicine shows how PC powerdown can be used to produce behaviour change by providing online summaries and graphics.”
Paresh Shah, Research Manager, London Higher

SustelT Briefing No. 10: Powering Down Personal Computers

JISC Funded Power Down Projects

The University of Oxford's Low Carbon ICT project involved development of [open source FiDo software](#) to provide PC power management monitoring (PMM) and wake on LAN (WOL) facilities. The latter enables university users to switch computers on remotely.

Aberystwyth University's [Powerdown and Wake System \(PAWS\)](#) builds on the work at Oxford and Liverpool (see other boxes) and a pilot project involving the power management of PCs in student workstation rooms at Aberystwyth itself - PAWS Mark 1. It works by installing a client which reports the host computer's state to a server. The server sends instructions back according to the usage state, or pre-configured parameters, such as the time of day. It also detects lack of keystrokes and includes an auto-logout feature for inactive computers. PAWS Mark 2 – which will be made freely available to universities and colleges - will include a web page to enable staff to configure the power management settings of their own desktop PC to suit their personal working habits. This should save the university over £50,000 and 380 tonnes of CO₂ a year, based on deployment on all public computers, with 700 tonnes of CO₂ and £100,000 of additional savings if deployed on all staff PCs.

Liverpool John Moores University (LJMU)

LJMU has deployed 1E's NightWatchman® and WakeUp™ to 4,500 computers in several stages coinciding with hardware refresh. Over 12 months this has avoided electricity costs by £150,000 and prevented CO₂ emissions of 890 tonnes. Ann Thornham, Client Systems Manager, notes that: *"Since PCs were first installed at the university, users were always advised that they should be left powered on overnight so that essential updates could be applied to them over the network. It became clear that this policy had to change radically to reduce costs and carbon emissions and to demonstrate that we take our corporate social responsibilities very seriously. We now centrally manage the shutdown of the networked PCs and their automatic power on for overnight patching."*



Paresh Shah

Other Solutions

Verdiem Surveyor – Installed on 3,500 staff and student PCs at the University of the West of England, at a cost of £47,000 (including 5 years maintenance). Annual electricity consumption was cut by 30%, saving 112 tonnes of CO₂ and £20,000, with a 2.5 year payback. As with a number of other powerdown installations this was financed by the HEFCE/Salix Rolling Green Fund (see SustelT Briefing Paper No 2).

Verismic Power Manager - Loughborough University has – in conjunction to an upgrade to Windows 7.0 – installed this on all its 1,500 centrally managed student and lab computers. It uses the Wake on LAN functionality to power machines up for patches and upgrades and powers them down when completed. The rollout will be extended to 4,500 staff PCs.

Other vendors include BigFix, Faronics, Granola, PerSmart, Powerminder and Promisec.

Further Information - see www.goodcampus.org. Version 1.0, August 2011.

Disclaimer – Every effort has been made to ensure accuracy, but readers should verify all information.