

## Brazil's low-carb computing solution reaches more schools



The 'virtual desktop' system has brought computer access to schools in cities and villages across Brazil, with a far lower carbon footprint than traditional PC computers. Useful

A relatively new technology known as 'desktop virtualisation' provides part of the answer to reducing the information technology (IT) sector's rising carbon footprint – around 2 per cent of the world's carbon dioxide emissions. It also revolutionises the economics of school computing. Could Australia's far-flung schools follow suit?

The technology enables multiple users to share one computer through separate monitors and keyboards – which become 'virtual desktops' that provide the same performance as a desktop PC, including streaming video and audio.

Brazil is leading the world in adopting desktop virtualisation, with its Ministry of Education having committed to installing more than 350 000 new 'virtual desktops' in schools across the

country, providing millions of schoolchildren with access to a computer.

According to Sean Rousseau from Canadian company Useful, which developed the system being installed in Brazilian schools, it will save 60 per cent in upfront equipment costs and 80 per cent in energy costs compared to traditional full desktop PC solutions.

As well as saving costs and energy, the Useful technology – which leverages one computer to support 10 virtual desktops – reduces computer 'e-waste' by up to 80 per cent, further decreasing the system's environmental footprint, says Rousseau.

'This deployment alone will save more than 170 000 tons [155 224 tonnes] of CO<sub>2</sub> emissions annually – the same as taking 28 000 cars off the road, or planting 41 000 acres of trees,' he adds.

Desktop virtualisation works by making use of the untapped processing power in today's high-speed computers, which only use a fraction of that power for everyday applications such as checking e-mail, surfing the web or typing documents.

'Since computer usage consists of short bursts of CPU [central processing unit] activity, each virtual desktop user is able to share the full power of the multi-core processor,' Rousseau explains.

'When more than one user needs the processor at exactly the same time, the computer splits its resources to perform all tasks equally quickly.'

The Brazilian Ministry of Education employed a non-proprietary 'open source' Linux operating-system in place of proprietary operating system software such as Microsoft Windows, to keep down costs.

Rousseau claims the Brazilian schools project is the world's largest virtual desktop deployment, and has set a new record low-cost for PCs, with the PC-sharing hardware and software costing less than US\$50 per seat.

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He says desktop virtualisation offers more cost and energy savings than a competing technology known in IT circles as 'thin clients', which 'use a central server computer and a separate "thin client" mini-computer for each user connected over a network'.

'Thin-client solutions start at around US\$150 per seat and typically cost several times this,' says Rousseau.

'Useful's solution also offers better streaming video and

audio – the same performance as a full PC – than thin clients.'

Brazilian company ThinNetworks, which is project managing the roll-out of the Useful technology in the schools, had to ensure the hardware for the project was designed to work reliably in less-than-ideal conditions.

The system is being deployed in schools in remote indigenous villages, where, according to Rousseau, infrastructure is minimal, electricity is unreliable and there is little physical space. The project's first phase has involved the installation of 18 750 workstations in rural schools.

'This project will bring access to information technology to almost every young student in Brazil,' says Luiz Ferreira, President of ThinNetworks.

'But this project will mean much more: it is the beginning of a cycle of children and adults who are socially integrated.'

Over the past decade, Brazil – with the largest population in Latin America and the Caribbean – has improved its financial and social standing

globally through a combination of stable macroeconomic management and progressive social policies.

According to the World Bank, the country has almost achieved universal basic education with 97 per cent of children between 7 and 14 years of age enrolled for school, up from 85 per cent in 1990.

● **Mary-Lou Considine**

More information:  
Useful, [www.useful.com](http://www.useful.com)