

## Thin-Clients Revisited

The future is green, Open Source and Nintendo!

My principle interest has always been the use of Open Source thin-client solutions in an educational context. Its worth stating, again, what is really the blindingly obvious - thin-client work stations use one twentieth of the power of a typical PC (10-20 watts versus 200-400 watts), require no maintenance or technical per-machine support and Open Source software is free of licence costs.

Thin-client networks should be 'no-brainers' for schools trying to meet carbon targets, giving value for money and eking out scant human resources.

Needless to say thin-client deployments in schools are as rare as hen's teeth!

But thin-client solutions just will not go away, and for good reason, it's just that it is very hard to dislodge the incumbent fat boy PC and their fatter still vendors.

Cries of the death of the PC are frequent and always come to nothing. The only major vendor who has doggedly beaten the thin-client drum is Sun Microsystems with their SunRay workstations.

Microsoft's RDP thin-client servers are admittedly ubiquitous but invariably they are used as remote (expensively licenced) add-ons to a conventional PC network.

The big software vendors fear loss of revenue from diskless low power work stations. Sun's premium 'blue chip' pricing hardly encourages new customers and MS fear the loss of revenue from their per PC licencing.

In other words the market for thin-clients is repeatedly announced and then killed by the interests of corporate business models. How thin-clients will change education (really)

You can't keep a good concept down however and there was a inevitability that the Open Source community would be at the cutting edge of innovations in this area.

However let's deal with recent hardware developments first as these impact on the whole scene: Thin-client Laptops

Even 18 months ago it was a difficult search to find thin-client laptops and notebooks. Today this market is overflowing with offers. Wyse, Lenovo, Comet and even Dell (supplied if not branded) offer disk-less wireless notebooks for businesses and schools. The compelling sales pitch is that these devices contain no persistent data that can be left in the taxi or lost in the T5 baggage handling void.

In other words serial data loss incompetence and the fear of future losses from public services, school databases and others has driven a huge change from the PC Laptop. This alone may ensure the rise of the thin-client solution.

Of course the data and applications for these notebooks has to be stored and supplied by a thin-client server. We will deal with this later. Cost

It is a while now since highly specified thin-client terminals with decent graphics broke the £99 barrier and became available with power consumptions below 10watts. This trend shows no sign of abating as Intel Atom chip is released and commodity hardware costs fall. £50 and 4 watts should be all an office needs for its everyday work station. As we said above this should be a no-brainer set against a £400 PC with 400 power packs and per seat licences. Gaming Consoles

Gaming consoles are very much overlooked technologies for those of a certain age. Computer games are played on high spec PC's, MS XBox, Sony's PS3 and Nintendo's Wii. PC's Xboxes and PS3's all use much the same power; 200 watts or so when gaming, 1-2 watts on standby. The tiny Wii however uses 10 watts when gaming and 1-2 watts on standby.

The Wii, which is currently the best selling console, is very much a graphics-competent web-facing thin-client. Opera indeed produced and support a version of its browser just for the Wii. This means that, in effect, regarding Web2 applications the Wii is a modern thin-client for everyone.

Forget 17" monitors and think HD TV instead. From an educationalist's point-of-view there are some very interesting downstream consequences of this development, more of that at the end of this post. Server Software

Thin client hardware is, of course, nothing without server-side software. In the world of Microsoft we are well used to the ageing RDP server and in the Open Source world we have the Linux Terminal Server Project (LTSP).

Other new server-side solutions are very exciting indeed:

- An Open-Source Hybrid Thin-Client Project from SafeDesk

Safedesk is a new Open Source project that uses Debian Live Net to create a Terminal Services Environment. It claims full local device support such as USB, and a full virtualisation of operating systems such Win XP.

- openThinClient

A free Java 6 product provides the server and client software which can be installed on any existing hardware.

- Xandros Server 2

The Linux distributor Xandros has collaborated with NX NoMachine to produce a thin-client server with powerful virtualisation features and a variety of boot options.

- Nydio and Useful

Two separate offerings based on Open Source software which effectively are PC replicators. One PC is used to run 2, 4 or 10 users using separate keyboards and monitors.

The products above are very intriguing in themselves. On one hand they represent a renewal in interest in the terminal server, with the added twist of the energy saving virtualised server suite, but they also show an innovative approaches to sharing out the excessive CPU power of the single PC.

Whatever the approaches it seems economic and environmental imperatives now mean that mindset has changed and the emphasis is on making best use of computing power rather than building gas guzzlers with huge operating system overheads such as demanded by Vista. Web 2.0 and Thin-Clients

The Net-pc came and went 10 years ago. Web applications and revenue models had not advanced to the point of usefulness but all that has changed emphatically now. Perhaps the most powerful illustration of how things have changed can be illustrated by the following (actual) scenario:

The home-educated student has logged onto the web and is using the Open Source program Second Life. She is using her Wii as a thin-client web terminal and her HD TV to attend 'school' where, in addition to accessing her teachers' avatars, she can access educational content through the Open Source VLE Moodle and Google's Apps.

Maybe the classroom of the future will come to you via be Open Source software and Nintendo's hardware! Summary

The death of the PC is predicted once again. Of course I will be wrong like all the others before me. Personal Computing is so seductive that it will morph into ultra-cheap low-powered devices that hybridise the web thin-client with the personal device. Even Dell are aiming to release a sub \$100 Linux (Ubuntu?) notebook. What I can say, however, is that the day of the big beige/black box is stone dead maybe it will take a major operating system vendor with it.