



WHITE PAPER

CITRIX AND THIN CLIENTS

A SUSTAINABLE IT SOLUTION FOR SCHOOLS

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BACKGROUND

Citrix was formed in the late 80's with the goal of developing a more efficient and sustainable desktop and application delivery solution than having the OS and applications hard coded onto the PC. Now Citrix offer a range of technologies that form the Citrix Delivery Centre, a powerful desktop and application delivery suite that enables organisations to control and manage their desktops with a much lower cost of ownership, especially when combined with the use of thin client devices.

Thin client technology has existed since the dawn of computing. Starting as green screens, connected to giant mainframes, thin clients enabled organisations to benefit from the early mainframe computers, which spread throughout industry in the 1970s. The 1980's saw the arrival of the PC with its own operating system and applications held locally. Graphical user interfaces proved popular with users and the PC became the standard desktop for many organisations. In the 90s the thin client began to make a comeback. No longer just able to deliver green screen, thin clients could now display the latest Windows applications and once again the benefits of centralisation lead to a mini revolution in application delivery.

Today thin client technology continues to develop and is utilised by all market sectors, including education. Continual improvements in the Citrix Delivery Centre have lead to the growing replacement of PC networks with thin client, as organisations strive to reap the benefits of reduced cost of ownership, lower power consumption and flexible working.

Many of the new build education projects, including the academy program and BSF are utilising thin client technology to provide a more sustainable computing platform and enable staff and pupils to access the network from any location, securely.

OVERVIEW

This short whitepaper will aim to address some of the many questions asked by schools in relation to Citrix and thin clients. We shall begin by re-capping the benefits that the Citrix Delivery Centre and thin client can bring to a school and then focus in more detail on the common questions associated with the technology.

BENEFITS SUMMARY

HIGH LEVEL BENEFITS OF THE CITRIX DELIVERY CENTRE

- Reduced cost of ownership of desktop and application delivery
- Extend the life of older PCs
- Provide remote access to the school desktop
- Create an enterprise desktop and application delivery strategy
- Run Windows applications on non Windows devices such as PDA's, smart phones, thin clients etc.
- Enable pupils and staff to connect using their own devices. Using XenClient they can switch between their personal desktop and the school's desktop.
- Create on demand classrooms using wireless networks. Mobile devices connect to the school's desktop via wireless.
- Provide IT for feeder primary schools by hosting their Citrix Delivery Centre.
- Enable pupils to use their own devices to connect to the school's secure desktop.
- Move to a cloud computing model.

EXTEND THE BENEFITS BY USING THIN CLIENTS

- Quicker to boot. Thin clients are much quicker to boot up than PCs. This means that pupils can be logged on and using applications quickly.
- Greener and cheaper. The school's computers now consume nearly 90 percent less electricity, with a similar reduction in the school's CO2 footprint.
- Longer life expectancy. As thin clients have no moving parts they have a much higher mean time between failure, compared with PCs. Therefore a thin client device should last twice as long as a PC.
- Thin clients are more compact. Some thin clients can be fixed on the back of a standard TFT creating more desk space, enabling more devices in each classroom.
- Perfect for wireless. Most thin client solutions are low in bandwidth requirements and are therefore perfect for deploying in wireless environments. Schools can IT enable classrooms with no cabling in minutes using web books and wireless access points.
- Better security. Users can't install their own software on a thin client. Thin clients are not worth stealing because they don't work without the server connection.
- Quieter classrooms. Thin clients have no moving parts to get hot, so they don't need a fan. This means they run silently for a higher quality learning environment.
- Data security improved. In a thin client environment all data is stored and remains on the central file servers.
- Longer battery life – if mobile web books or thin clients are used.

COMMON QUESTIONS ANALYSED

CAN WE RE-USE OLDER PCS?

In a word Yes. The server based methodologies; Application Virtualisation and Desktop Virtualisation are perfect to extend the life of older PCs. As all the processing is done on the servers, the older PCs simply draw the graphical updates on the screen.

Igel have an excellent software product called UDC:

http://www.igel.com/igel/live.php,navigation_id,3752,_psmand,9.html

This enables an older PC to be managed in the same way as a thin client. When the PC fails it can be swapped out with a thin client and managed in the same way.

WHAT APPLICATIONS CAN THEY RUN?

Schools often run a wide range of software applications some of which can be old. The Citrix Delivery Centre is capable of running all software applications by utilizing its various delivery methodologies. These include:

- **Application Virtualisation** – each user shares a desktop. The application server runs all the applications for the users and sends the display to the Citrix receiver software. This is the cheapest method and should provide a solution for the majority of users.
- **Desktop Virtualisation** – each user runs a virtual desktop where their applications execute. Some users may require their own operating system to run bespoke software or to run 3D applications. These can be delivered by sharing the servers GPU. These sessions can be run on the servers, or run locally on the device. For more information on local VDI sessions please go to: <http://www.citrix.com/English/ps2/products/product.asp?contentID=2300325>
- **Desktop / Application streaming** – Citrix can also stream a local OS to run on a PC or diskless PC, along with the applications when they are used. This ensures a fresh OS build each time the PC is used.
- **Local Virtual desktop** – Citrix now have a product called XenClient which enables a virtual desktop, built from a standard image to run locally on a user's device. This can run alongside the user's personal desktop and will synchronize when the device connects to the network.

Citrix have developed a combination of features to continue to improve multimedia on all server based delivery methods. These are grouped under the term HDX. More information can be found at

<http://hdx.citrix.com/>

HOW CAN CITRIX AND THIN CLIENTS PROVIDE REMOTE ACCESS?

Citrix has been providing remote access capabilities since it was first released. The Delivery Centre can offer server based remote access solutions and local solutions if the user requires offline working. Thin clients can be utilised for the server based access methods. The Citrix Delivery Centre includes software to provide a web interface into the school's desktop or applications. It also includes a more advanced product called the Access Gateway which adds more functionality and advanced access control options.

Thin clients are ideal as remote access devices as they are simple to support, robust and use very little power. Many schools have benefited from providing pupils with remote access to the school's applications and data via thin client devices for the following reasons:

- Devices are locked down and supported with central management software
- Devices are robust and have little theft value
- Internet access is managed via the school's gateway
- Thin client's draw low amounts of power, generate very little heat and are quiet

Igel are one of Europe's leading thin client manufactures and they have developed a piece of software which converts any device into a thin client, in terms of its management. Therefore if a school has any legacy PCs or web books it can add this software to enable the IT team to support and manage all the devices via the Igel management server. This is enabling schools to maximize their investment in web books.

For more information go to <http://www.igel.com/>

HOW CAN THIN CLIENTS REDUCE COSTS & CO2?

Thin clients offer a number of ways to reduce costs which we shall outline below:

- Easier to support than PCs – require less support time
- Use on average about 1/10th of the electricity consumption of a PC
- Generate very little heat, so no need for air conditioning
- Last on average twice as long as PCs

Thin clients can enable a school to significantly reduce management costs. In a thin client environment the admin staff can support most of the system centrally without the need to travel to the desktop. Many of the fire-fighting tasks of PCs are avoided and schools have found that their IT support technicians have time to work on other areas, such as developing the VLE.

Thin clients also offer significant savings in electricity costs as they typically run on 1/10th of the power of a typical PC.

The following web site contains more information on the electricity cost savings associated with Igel thin clients: http://www.igel.com/igel/live.php,navigation_id,3584,_psmand,11.html

Thin clients are a step towards a school becoming carbon neutral. The significant reduction in electricity used, reduces the amount of CO2 generated. Also as thin clients generate very little heat, schools do not require air conditioning. In fact some new build schools are not including air conditioning as thin clients have been decided as the main method of delivering IT to pupils and staff.

HOW DO WE DETERMINE HOW TO BEST USE THE CITRIX DELIVERY CENTRE?

The best way to determine how best to utilise the Citrix Delivery Centre is to draw a diagram of your ideal network showing where access points should be and the types of applications they should deliver.

In order to reduce costs and maximise the benefits of reduced cost of ownership it is vital to utilise the application virtualisation method with thin clients as much as possible.

WHAT PRODUCTS MAKE UP THE DELIVERY CENTRE?

Citrix have a combination of products that make up the delivery centre. Citrix XenDesktop includes many of the required products and has two commonly used versions, Enterprise and Platinum. This product is licensed per desktop or per user and is discounted by 40% for education.

For more information on XenDesktop go to:

http://www.citrix.com/English/ps2/products/product.asp?contentID=163057%20&ntref=prod_top

XenDesktop is also available as a campus license at a massive 80% discount. This is an annual license with a minimum purchase of 1000 licenses.

CONCLUSION

For more information please go to:

<http://www.citrix.com/site/resources/dynamic/salesdocs/Citrix.Education.Program.Guide.pdf>

If a school is purely looking at Citrix to provide a remote access solution XenApp is a good solution as it is licensed per concurrent user. Although XenDesktop includes this functionality, unless the schools has enough licenses to cover all the remote users XenApp could be a cheaper solution.

Until recently Citrix has typically been used as a tactical solution to enable schools to either:

- Re-use old PCs
- Provide remote access
- Use thin clients

It is now more than capable of delivering a school's enterprise desktop and applications. By embracing the Citrix Delivery Centre schools can:

- Reduce desktop TCO by up to 40%
- **Provide a sustainable IT solution for the school**
- Provide flexible 24/7 access to the school's IT resources

USEFUL LINKS

www.citrix.com

www.citrix.com/tv

www.igel.com

www.nviron.co.uk



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