



NHS North Yorkshire and Humber Commissioning Support Unit Case Study

With VMware desktop virtualisation, NHS North Yorkshire and Humber Commissioning Support Unit (CSU) is providing the mobile working capability vital to delivering modern healthcare - at a lower cost than traditional desktop deployments

With the NHS undergoing a period of reorganisation, NHS North Yorkshire and Humber CSU is currently responsible for all health services delivered to the local community - over 500,000 people use its services.

As a forward-looking organisation with a track record of innovation, the vision of NHS North Yorkshire and Humber CSU is 'achieving the best health for all' with clear objectives set for priority areas - including the transformation of IT services.

Going Virtual

In 2005, as part of this innovation, NHS North Yorkshire and Humber CSU adopted

a virtualised server environment based on VMware vSphere to benefit from the operational efficiencies associated with this technology. Consequently, plans for a Virtual Desktop Infrastructure (VDI) strategy began soon afterwards.

NHS North Yorkshire and Humber CSU currently manages 4,500 client devices (mostly desktop PCs, but also laptops and tablets) for more than 600 NHS service areas within 20 different organisations at over 130 sites across West Yorkshire, including hospitals, support agencies and GP surgeries - some at very rural locations. The scope of the project, therefore, meant that very careful planning was necessary. ➔

KEY POINTS

Challenge

- Improve access and availability over a desktop solution for more than 4,500 users
- Create a solution which will scale quickly to new GP clients and/or partners
- Extend support to District Nurses and Health Visitors
- Eliminate the need for expensive SAN, power, maintenance and networking infrastructure costs
- Provide terminals which save resource and reduce power consumption

Solution

- Replace 4,500 desktops with HP servers, Fusion-io SSD and WYSE Terminals
- Deploy Windows 7, Office and multiple applications

Benefits

- Improved access and availability over a desktop solution
- Increased performance of desktop applications - provides a superior experience for GPs, clinicians and administration alike
- Established a managed desktop environment with easy provisioning of new images and applications via ThinApp

vmware[®]





The Challenges

The challenges of a VDI project within this diverse and geographically dispersed environment were considerable. To deliver a VDI deployment on this scale, NHS North Yorkshire and Humber CSU would face significant technical and financial obstacles.

These challenges were compounded by a number of issues specific to healthcare, such as specialist clinical applications untested within a data centre environment; applications uncertified by software vendors to run virtually; support of NHS smartcards for secure authentication; and medical imaging applications with high fidelity graphics required to view high resolution clinical images, such as patient x-rays and scans.

All applications supported by NHS North Yorkshire and Humber CSU were required to run within a VDI environment 'as good' or better than the current level of service, and without any complex or time consuming configuration. Crucially, the end user experience could not be impacted. Client login times should be less than one minute and the end user experience ultra-responsive regardless of application workload. Within a clinical environment, end users would not tolerate performance issues of any sort. Given the large number of diverse users, end user training also had to be minimal, or ideally, non-existent.

The Objectives

The use case for VDI within an NHS organisation is self-evident and key business objectives for the project were identified very early on. The main benefit of VDI was considered to be the reduction in operational costs incurred by supporting

such a large number of geographically disparate client devices. The need to reduce the number of field engineer visits was seen as a primary economic driver, as was the need to lower the number of service desk calls in general - something which would result from a more centralised desktop management. An additional bonus was seen as improved security by hosting end user data within a data centre - the loss or theft of a client device would not compromise data security as no sensitive data would ever be held locally on the device. Also, a need to simplify remote working beyond the restrictions of conventional Terminal Services and make better provision for business continuity was identified. Lastly, a reduced environmental impact was considered to be an important factor.

The Project

Once the business case for the project was agreed, a Proof of Concept was implemented on a relatively small scale and around 600 virtual desktops were deployed. This extended pilot ran for a significant period of time, thereby allowing NHS North Yorkshire and Humber CSU to work with a wide range of solution vendors and their partners (including technology partners that remained within the final implementation, such as VMware and Wyse) in order to trial different solutions and methodologies.

Significant effort was put into research and development of, not just virtualisation software, but related server and storage hardware, thin client devices, user profile management and security solutions. It was at this stage that Phoenix Software started to engage with NHS North Yorkshire

and Humber CSU as the Proof of Concept developed into a formal procurement exercise.

As an award-winning VMware Premier Solution Partner, Phoenix Software had accumulated a significant amount of technical experience of VMware solutions before being approached by NHS North Yorkshire and Humber CSU to discuss its VDI project. With an annual turnover in excess of £86m, Phoenix employs 120 people and has grown into one of the UK's most highly accredited partners for VMware virtualisation solutions.

Phoenix's capabilities around End User Computing have been recognised by VMware at a global level by a number of channel partner awards, including Global Desktop Partner of the Year 2012, EMEA Desktop Partner of the Year 2012 and Most Innovative Solution 2012.

The Phoenix VDI Solution

The innovative approach Phoenix has pioneered with VMware View has enabled organisations to run large-scale desktop environments with minimal in-house IT resource and modest IT budget. Phoenix was among the first VMware partners to realise that the use of Solid State Disk (SSD) technology could massively improve VDI solution performance while simultaneously lowering the price point for VMware View deployments. Prior to this, organisations looking to deploy VMware View with traditional SAN-based solutions were discouraged by the high cost and prohibitive storage requirements plus high operational (power usage and cooling) and maintenance costs. ➔





'The Phoenix VDI solution implemented for NHS North Yorkshire and Humber CSU is set to become the largest example of this technology anywhere in the world.'

The creation of this unique Phoenix VDI solution has removed the main obstacle to user adoption of VMware View and allowed organisations like NHS North Yorkshire and Humber CSU to move beyond the Proof of Concept stage and start to deploy large scale VDI projects successfully.

The Phoenix VDI solution is designed to use commodity, off-the-shelf hardware and software components without being tied to any particular vendor. At NHS North Yorkshire and Humber CSU, VMware View 5.1 is hosted in the data centre on 20 x HP ProLiant DL580 G7 servers equipped with Fusion-io Duo Drives providing 1.2TB of available storage per host. This powerful specification allows an incredible 200 virtual desktops to be hosted per server - a total of 5,000 users across the entire server estate. The solution is fine-tuned for performance - the Fusion-io Duo Drives exceed the performance of an entire large SAN Array. With around 276,000 IOPS per host (or 5,520,000 IOPS for all 20 hosts), performance across the server estate is more than capable of catering for current and future requirements without any upgrade.

Importantly, the Phoenix VDI solution also incorporates two key enhancements - Teradici APEX2800 PCoIP acceleration cards and VMware Persona user profile management software. The Teradici cards are designed to offload tasks from the main host

CPU, so user consolidation ratio is effectively increased by 30-50% on average (and up to 100% at times of peak workload).

View Persona Management enables a dedicated desktop experience while actually deploying stateless desktops which preserve user profile settings between sessions.

On the desktop, Wyse Z90 PCoIP thin clients were selected after extensive research across a range of vendors. The Wyse Z90D7 was chosen as it features fast processing, accelerated multimedia graphics, good user connectivity and excellent energy efficiency. The Wyse thin client was deployed with a low energy LCD monitor and NHS Smartcard compatible keyboard.

The Benefits

Disposable Desktops – as good as new at each logon

The Phoenix VDI solution uses Stateless Desktops as the key to a successful deployment. In this method of delivery, pioneered by Phoenix, desktops are completely disposable and are 'wiped' at logoff, although end user settings are preserved - users have that 'new PC smell' every time they logon. The solution is as good as 'unbreakable' as the virtual desktop will never degrade or slow down over time, unlike a physical PC, and any application fault (or even malware infection) can be

simply corrected by logging out of the virtual machine.

VMware View Manager – ease of management

NHS North Yorkshire and Humber CSU's entire desktop environment can be managed via a single Web-based console using VMware View Manager.

View Manager provides automated provisioning of desktops from a desktop template that helps IT to standardise desktop images. Using templates reduces the time required to deploy new desktops by provisioning from a 'gold' master image. Patch management overhead is also eliminated by upgrading templates centrally, in a non-disruptive manner, for all users to benefit from when they next logon.

PCoIP Protocol – bandwidth reduction

Improvements to the underlying PCoIP protocol reduce bandwidth consumption and enable reliable delivery of applications over a WAN.

PCoIP is configured to deliver a fully lossless experience. Within a matter of milliseconds, screen images are transmitted to the client device to quickly build a perceptually lossless image. This is critical for medical imaging applications with high requirements for image quality. ➔





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Martin Powis, Head of IT, NHS North Yorkshire and Humber Commissioning Support Unit

For general users, it also provides support for Windows Aero and Office 2010 to enable a new rollout of productivity applications for end users. Client Side Caching is also enabled to prevent retransmission of persistent desktop components (i.e. background wallpaper, start menu) to optimise bandwidth usage.

Go Green!

Despite the power of the solution, green IT objectives were not missed. For example, the Wyse thin clients produce less than 15 watts, combined with monitor screens that output only 18 watts; even the very powerful Fusion-io cards require just 25 watts of power.

The Results

The VDI project at NHS North Yorkshire and Humber CSU was over five years in the making, but was delivered by Phoenix in less than four weeks. The project has achieved its aims and NHS North Yorkshire and Humber CSU has so far replaced three-quarters of its desktop PCs

with a virtual desktop solution based on state-of-the-art technology. The solution is built to last the next five years, even allowing for future growth, without any significant hardware upgrade.

NHS North Yorkshire and Humber CSU is ahead of its peers - by adopting the Phoenix VDI solution, they have enabled critical clinical applications and data to be served to any user, any device, anywhere.

Martin Powis, Head of IT, NHS North Yorkshire and Humber Commissioning Support Unit, concluded:

“Having provided a centrally managed support model for GPs and Primary Care clinical support staff for over 10 years with many different applications to manage, the next evolutionary step to meet these demands for us was VDI. Working with Phoenix as our technology partners has enabled us to

achieve our goals quickly and efficiently. NHS North Yorkshire and Humber CSU is both confident and proud of our tried, tested and trusted virtual desktop infrastructure.”

The Phoenix VDI solution implemented for NHS North Yorkshire and Humber CSU is set to become the largest example of this technology anywhere in the world.

NEXT STEPS

For further information on the products and services available from Phoenix Software, contact a member of our team on:

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