



**REPORT TO:** POLICE AND CRIME COMMISSIONER FOR LANCASHIRE

**REPORT BY:** RICHARD ROBERTSHAW

**DATE:** 31 JULY 2013

**TITLE:** INVESTMENT IN THE VIRTUAL DESKTOP INFRASTRUCTURE AND MOBILITY PROJECTS

**Appendix A refers**

**EXECUTIVE SUMMARY**

In responding to the significant financial challenge and deliver key objectives the Constabulary is undergoing significant service transformation and business change. To ensure the Constabulary is able to respond to this challenge it is imperative that the organisation is supported by appropriate ICT arrangements. Two key strands to achieving this are the Virtual Desktop Infrastructure and the Mobility projects. Whilst some funding has been made available it is not sufficient to meet the needs of the organisation and additional one-off support is required if the projects are to be completed and the benefits realised.

**RECOMMENDATION**

The Police and crime Commissioner is asked to;

- Note the position in relation to the Virtual desktop Infrastructure and the ICT Mobility Projects
- Agree that the shortfall in funding of £1.3m be met in the first instance from the Transition Reserve however should there be sufficient slippage within the Commissioner's Capital programme that this be used.
- Agree that the Chief Finance Officers for the Commissioner and the Constabulary agree the final mechanism for funding once the financial position is known and that this be reported as part of the Commissioner's out turn report on the 2013/14 budget.

**Decision taken by the Police and Crime Commissioner for Lancashire:**

<b>Original decision, as set out in the attached report, approved without amendment</b> (please delete as appropriate)	<b>YES</b>	<b>NO</b>
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**Original decision required to be amended and decision as detailed below:**

**The reasons for the amended decision are as detailed below:**

**Police and Crime Commissioner: Comments**

**DECLARATIONS OF INTEREST**

The PCC is asked to consider any personal / prejudicial interests he may have to disclose in relation to the matter under consideration in accordance with the law, the Nolan Principles and the Code of Conduct.

**STATEMENT OF COMPLIANCE**

The recommendations are made further to legal advice from the Monitoring Officer and the Section 151 Officer has confirmed that they do not incur unlawful expenditure. They are also compliant with equality legislation.

<b>Signed:</b>  <b>Police and Crime Commissioner</b>  <b>Date:</b>	<b>Signed:</b>  <b>Chief Officer:</b>  <b>Date:</b>
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<b>Signed:</b>  <b>Chief Constable</b>  <b>Date:</b>	<b>Signed:</b>  <b>Chief Finance Officer:</b>  <b>Date:</b>
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## **Proposal for VDI and Mobility Projects**

### ***Background***

In responding to the significant financial challenge and deliver key objectives the Constabulary is undergoing significant service transformation and business change. To ensure the Constabulary is able to respond to this challenge it is imperative that the organisation is supported by appropriate ICT arrangements. Two key strands to achieving this are the Virtual Desktop Infrastructure and the Mobility projects. Whilst some funding has been made available it is not sufficient to meet the needs of the organisation and additional one-off support is required if the projects are to be completed and the benefits realised.

The Constabulary's ICT strategy sets out its main objectives as being;

- Sourcing a mobile working solution and other technology that meets staff role requirements, reduces duplication, enables efficient deployment of resources and provides single key entry of data wherever possible.
- Developing the SLEUTH family of products to support the delivery within the principles of neighbourhood policing, diversity, and protecting people within our communities.
- Providing and supporting Customer Relationship Management applications so as to enhance the service we provide to the public.
- Working with other internal departments and partners so as to identify a range of Constabulary business and information that could be shared and undertaken on line - such as keeping victims and witnesses better informed about cases. Where appropriate, we will provide the option of self-service so as to enhance overall service delivery and reduce costs.
- Providing IT solutions that facilitate joined up working and the sharing of information with partners, so as to reduce the risk and threat to the most vulnerable people within our communities.

Two key projects to support the Constabulary's strategy are;

- The rollout of Virtual Desktop Infrastructure (VDI) to all 4500 desktop computers in Lancashire Constabulary.
- The initial pilot of 300 laptop computers that will be deployed as part of the Constabulary's mobility and agile working strategy.

### **Virtual Desktop Infrastructure (VDI)**

It has previously been established that the Constabulary's network was at risk of not being nationally accredited and consequently a programme of work has been undertaken by the Constabulary, using specialist support through its relationship with Lancashire County Council and BT One Connect Ltd (OCL), to build a VDI infrastructure for desktop users of users of both its confidential (IL3) and restricted (IL4) environments. This work has been successful and has

significantly reduced risk and exposure. When the initial decision was made to support this work, it was recognised that a long term strategic investment was being made and that this would provide the foundation to secure significant efficiencies and enable a more agile and mobile service delivery which will underpin a greater visible policing presence in our communities. Consequently here was a requirement that the ultimate solution should be one which will be scalable across the Constabulary.

A decision was made to invest in a VDI infrastructure which is a proven technology that has been successfully deployed in many large organisations around the world. The Constabulary currently uses Windows XP operating system and, following a decision by Microsoft, this will not be supported beyond April 2014. This means that Microsoft will no longer issue security patches and updates and therefore this issue would need to be addressed regardless of the roll out of the VDI project.

One of the benefits of VDI is that it uses Windows 7 as its operating system. So, whilst the VDI rollout will not have been completed by next April, it is projected to have migrated the majority of desktops over to Windows 7 and thereby greatly reducing the operational risk to the Constabulary due to its reliance on kit which could be considered 'end of life'.

The current position is that the core VDI infrastructure has now been built, penetration tested by external ethical testers, and accredited as fit for purpose. As per the strategic aims of the project, the next phase is to scale the VDI infrastructure for use by all 6500+ members of the Constabulary, i.e. police officers, police staff, specials and volunteers. The costs of this will be significant and are detailed in table 1. The main areas of expenditure and effort in 2012/13 and 2014/15 are as follows:

- Purchasing sufficient additional servers and storage to be able to run several thousand concurrent VDI desktop sessions.
- Purchase of sufficient CVAS (Client Virtualisation Access Solution) licences to provide access to a VDI session in either of the Constabulary's new Confidential or Restricted networks.
- Additional staffing resources and specialised external project management to support the rollout.

A partnering arrangement with OCL was agreed earlier in the year to provide specialist support to the project. OCL are currently finalising a VDI rollout strategy that it is estimated will take until the last quarter of 2014 to complete. Whilst it should be acknowledged that there have been previous legitimate concerns surrounding whether the VDI platform will work, the vast majority of outstanding technical issues have been successfully overcome and it is now a matter of scaling the existing platform. (For further information on the benefits of deploying VDI technology is set out at Annex 1).

**Table 1 - Costs Associated with VDI rollout during 2013/14 - 2014/15**

<b>Item</b>	<b>£m</b>	<b>Detail</b>
Project management costs during 2013/14 and 2014/15	0.250	Budget provision for £125k is already in place.
Purchasing sufficient additional servers and storage to deploy VDI throughout the Constabulary. (This cost includes the necessary storage, peripherals and implementation requirements for the servers.)	0.700	There is an flexibility to profile this expenditure over two financial years – the cost figure is based on 36 high performance Hewlett Packard ‘Blade’ servers purchased by OCL under the discount arrangement already in place for BT.
Purchase of sufficient CVAS licences to run sufficient concurrent virtual desktop sessions	0.147	There may be an option to profile this expenditure over two financial years.
Additional staffing resources	0.225	Based on the remaining 9 months of 2013/14 @ £25K per month.
Implementation of PKI security within the IL3 Restricted environment.	0.036	This will add to the overall security of the environment and enhance the user experience for legacy applications when used within the VDI environment.
Smartcards for staff.	0.048	Based on the purchase of a stock of 8,000 cards for ‘Access’ @£6.
<b>Overall Cost</b>	<b>1.406</b>	
<b>Cost not currently budgeted for</b>	<b>1.281</b>	

### **Mobility / Agility Pilot**

The second area of business that requires significant investment is the Constabulary’s mobility solution so as to provide an agile working environment for staff. As the Chief HMIC Tom Winsor has commented, 'the police service is years behind the private sector in the use of mobile technology to drive efficiencies and deliver a higher quality of service to the public'. The position in Lancashire is that there have been no advances or investment in this area for several years. The current Mobile Data Terminals (MDTs) that some of the vehicle fleet have fitted are, in a number of cases, over ten years old. The consensus of opinion is that the operating system the MDTs use cannot be developed further and is coming to the end of its operational lifespan. There are a number of ad hoc solutions in place to provide remote connectivity to Constabulary systems - for example, the IVPN system that PCC staff use to access the Constabulary systems. Unfortunately, this is over 10 years old, problematic to install and manage and, as with the other systems, is not easily scalable or fit for use by operational staff.

Having identified the need to address this gap as the Constabulary’s resilience is stretched over the coming years, a user requirement for a mobile solution was jointly formulated in late 2012 and specialist support through the partnering arrangement with OCL was obtained. Following

this, due diligence was conducted in terms of whether there was an 'off the shelf' technical solution in place in another police force that would meet our user requirement. No solution was identified. There were two reasons for this;

- although some forces had made good progress in the area of mobility for operational officers, only limited evidence could be found of a force that had implemented a system meeting our user requirements in a way that addressed the required security standards police forces are legally mandated to operate within.
- the concept of 'plug and play' does not appear to exist in the police service. Because forces have such different technical infrastructures that have usually evolved organically over many years, what works in one force cannot simply be picked up and implemented in another force without significant modification and expense.

Given that this was the case, a technical design that met the user requirement was subsequently produced and tested in lab conditions by OCL. Whilst the obvious conclusion to reach is that any mobile device should be some form of tablet, the reality is that despite the investment in our infrastructure this would be too great a technical jump for the Constabulary to confidently make. The key principles around the OCL designed solution is that it must use proven secure technology and not require expensive reconfiguration of existing Constabulary IT applications to make them useable on a mobile touch screen device. For these reasons, the mobility solution has the following design features and principles:

- It will be a Windows 7 laptop - either an off the shelf standard design, or semi ruggedised for operational officers.
- It will access Constabulary systems via a remote VDI session - either over the internet on Wi-Fi or via the 3G network.
- It will use standard commercial 3G connectivity that can be purchased from any of the mobile phone operators.
- It will use AEP X-Kryptor (a CESG approved encryption product) to ensure any data sent remotely over the internet is secure.
- The device will not store any data on itself for any longer than is necessary so as to reduce the significant financial and reputational risk to the Constabulary should a laptop be lost or stolen.

The advantage of taking the above approach is that there is a high degree of confidence that the devices will be highly functional with minimal reconfiguration, or require further investment in the Constabulary's infrastructure. This is something that would not be the case if we attempted to make the jump straight to a Windows 8 or similar tablet device. In effect, the laptop is simply providing staff with a remote VDI session. It should be stressed that the technical route agreed for connectivity does not preclude changing devices in the future since the connection solution is both device and bearer agnostic.

Obviously, there are cost and resource implications associated with the pilot, which has been technically scoped for 300 devices. The costs are set out below and are summarised in Table 2;

- Purchase of AEP X-Kryptor equipment with capacity for 300 concurrent sessions. As it is doubtful that we will have all users accessing the system at the same time, this specification will leave capacity for a larger rollout of devices in the future.
- Purchase of 300 laptops for the pilot. The price will vary depending upon the specification and level of ruggedisation of the device. The agreed plan is to pilot small numbers of two specifications of laptop; one being non-ruggedised for mobile and home workers, the other<sup>1</sup> being ruggedised for front line officers.
- Purchase of 3G connectivity for devices that are being deployed to front line operational officers.
- OCL project management costs.
- Temporary additional staffing resources to support configuration and rollout.

**Table 2 - Costs Associated with the Mobility Pilot**

Item	£m	Detail
AEP Encryption Product	0.036	Already ordered due to a two month lead time for the product.
300 laptop devices	0.180	This could alter depending on the specification of laptop used - this figure is based on £600 per device.
300 3G SIM cards	0.065	Based on 300 SIMs at £9pcm over a two year period.
Project management costs	0.048	Includes costs of other third party suppliers who will be required to implement the solution.
<b>Overall Cost</b>	<b>0.329</b>	

### **Business Benefits of the Mobility Investment**

Quantifying the benefits of what this significant investment in mobility will deliver for the Constabulary is problematic and would be highly speculative. Unfortunately, there is very little reliable data or research available nationally on the subject of police mobile data (IT companies frequently make significant claims about the impact of their products but with limited supporting evidence). This being the case, it is safer to focus on what an operational officer will be able to use the device for without the need to return to a police station<sup>2</sup>, thereby maximising their productivity and visibility. Although the following list is not exhaustive, it is intended to illustrate a number of opportunities that will be rigorously tested by the pilot:

- Direct input of crime reports.
- Direct input of intelligence, domestic violence risk assessments, vulnerable person (PVP) referrals etc.



- Search and check intelligence and crime systems so as to self brief.
- Complete routine administrative tasks such as e-mail.
- Complete routine paperwork including witness statements, prosecution files and prisoner handover reports.

It is recognised that introducing new technology without a matching focus on the cultural change in terms of existing working practices, is likely to be unsuccessful. Once the solution is stable and proven, there will be a need to drive compliance with the new practices and efficiencies it will enable. How these changes will be driven is not detailed in this report, but it is clearly recognised by the Chief Officer Team that there will need to be strong governance around the pilot and any future extended rollout. It is also envisaged that the current investment being made in the Automatic Resource Location System (ARLS) will provide important data that will greatly assist targeted management action to improve compliance and thereby increase officer visibility within our communities. Contact has been made with all police forces in the North West region to check that the strategy being proposed is not out of step with the other forces. Reassuringly, although the technical solution varies from force to force, everyone is working towards the same aim of delivering a device that maximises the efficiency and productivity of operational officers.

## **Funding**

As already highlighted, the VDI and Mobility projects are inextricably linked. It is anticipated that roll out of the projects will cut across both the 2013/14 and 2014/15 financial years at a total cost of £1.7m of which £0.4m is already available within the capital and revenue budget. This leaves £1.3m still to be identified.

As part of the Spending Review 2013 in June, the Chancellor announced that a £50m Innovation Fund was being made available to Police Forces to assist with joint working with other forces and local authorities to assist with preventing crime and making people feel safe. Whilst there is no detail on the criteria to be used to distribute the fund, steps will be taken to determine whether the fund may be available to assist with the delivery of the mobility solution. This will be pursued as and when more detail becomes available.

There is also the possibility that there may be slippage within the 2013/14 capital programme. At this early stage in the financial year it is not possible to establish this with any great certainty. In the meantime it is therefore proposed that the Transition Reserve be used to fund the additional investment on the basis that the investment will assist the constabulary to drive out efficiencies in the future. Should there however be sufficient slippage within the 2013/14 then this will be used. The position will be reviewed at year end by the Chief Finance Officers for the Commissioner and the Constabulary at year end and will be reported as part of the out turn report.

## **Financial Implications**

The cost of the project is £1.7m of which £1.3m is currently available the remaining £1.3m will be provided from the Transition Reserve which is at a sufficient level to meet these costs.

### **The Benefits of VDI and Mobile Working.**

The primary benefit of mobile working within the police service is that of reducing the need for staff to return to the station and thereby maintaining a greater visible presence within the community. The following has been extracted from the mobile working / VDI project initiation document, as prepared by OCL, and outlines some of the key benefits of the VDI approach which provides the foundation for our mobile working.

- **Desktop Flexibility.** The virtual desktop isn't tied to physical desktop hardware, so users can access the same desktop from different devices in different locations. This provides them with a more flexible and maintained experience.
- **Security.** The physical desktop is always a concern to the security team. It's hard to know what data people have stored locally and how up-to-date they are in terms of antivirus software and security patches. With a virtual desktop, the desktop itself is held centrally, meaning that sensitive data doesn't have to leave the secure data centre environment.
- **Updates.** Automated patching of virtual desktops has a greater success rate because you do not rely on the end device to be powered on.
- **Management and Support.** By having a centralised virtual desktop environment, management tasks such as provisioning, updating and patching, are made simpler for the IT team. There are fewer requirements for onsite presence as many tasks can now be done centrally from the data centre.
- **Support.** A new VDI workstation can be set up in less than 15 minutes compared to hours or days for a traditional workstation. Service desk IT technicians can also perform tasks from within the data centre; thin clients require little or no desk side support. One support technician can handle 5 times as many VDI users compared to PC users.
- **Cost Savings.** Fewer desktop-related problems, support calls can be reduced by up to 70 per cent.
- **Management Efficiency.** More scalable management by storing and managing thousands of virtual desktop images on fewer centralised physical servers, accessed from a single management console.

- **Security.** There is no need for local data on the desktop devices - data is centrally stored within the data centre. Without specific rules or user permissions, data cannot be downloaded from the desktop onto a portable storage device.
- **Cost Saving.** As the VDI desktop client lasts longer, refresh is typically 7 years, compared to 4-5 years for a traditional desktop.
- **Performance.** The VDI desktops and applications will run on faster server-class hardware.
- **Support.** Problem resolution will be quicker as everything is located within the data centre.
- **User Experience.** Configuration of desktop resources (memory, applications and storage) can be modified more quickly, with no interruption to the end-user.
- **User Experience.** There is no user-training required as the experience is exactly the same as a traditional PC.
- **Environment.** With the VDI clients typically having no hard-drives or CPU fans, the environment is quieter.
- **Versatility.** By installing this virtualization in place of a more traditional operating system, network administrators can provide end users with 'access anywhere' capabilities and a familiar desktop experience, while simultaneously heightening data security throughout the organization.
- **Security.** Because VDI hosts the desktop image in the data centre, organizations keep sensitive data safe in the corporate data centre—not on the end-user's machine which can be lost, stolen, or even destroyed. VDI effectively reduces the risks inherent in every aspect of the user environment.
- **User Experience.** One of the most obvious user benefits of VDI is the ability to walk up to any device in the Constabulary and log in to the same personalised desktop. As users travel from office to office, or switch to a loan device while their usual device is being serviced or replaced, they can always have the same consistent experience: the same data stored the same way, the same applications and configurations, the same personalisation.