

Thin Client Business Case

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1 Management Summary

To support the New Ways of Working programme a substantial change in the way staff receive their ICT service is required. The requirement for a fully mobile workforce needing to access services from a variety of locations and different devices not all owned by KCC, means that a new approach is needed.

This paper sets out the ICT proposal to support this new way of working, principally by investing in a hosted desktop/thin client solution. This technology approach provides the necessary mobility and control needed in the mobile staff context.

The investment requirement is an outlay of approximately £4.5 million in year 1. This investment provides the necessary central infrastructure and purchase of licenses to establish the service for all KCC staff regardless of location. Year 2 also requires a smaller investment of approximately £500k. To complete the transition process before the cost savings from the switch in user devices takes full effect in year 3. The whole program achieves a positive payback in year 8 with a cumulative saving of £2.9million by the end of year10.

If instead of thin clients an increase in laptops substituted for desktops is used to support New Ways of Working this will give an increase in device costs of about £2.2million per thousand devices over ten years over the current situation

Hosted desktops and thin client devices have significant advantages compared to our current user device approach:

- Increased speed and flexibility to deliver new applications
- Better information security as the data always stays with our data centres
- Long term reduction in pour support costs, but this has not been quantified in our situation
- Reduced device deployment costs
- Increased accessibility to our full range of services, from a wide range of devices and locations not restricted to KCC locations or devices
- Enhanced opportunities for partnership working through providing hosted desktops to partner organisations.

2 Background

The original and revised New Workspace Space ICT approach (V1.0 in January 2013, Version 1.1 in February 2013) set out the ICT approach to support New Ways of Working. While it is considered that ICT is a core enabler for New Ways of Working the main ICT proposal, namely a move to a Thin Client delivery mechanism, is also considered to be justifiable on its own merits.

2.1 Current landscape

The following paragraphs give a description of how ICT is delivered to current office locations.

2.1.1 Desktop/laptop TRP

KCC provides for the large majority of its staff a dedicated user compute device or access to a shared device. These are either a desktop or laptop. The device is installed with a complete range of software necessary for individuals to perform their job functions. The software is physically installed on the device, a so called fat client install. The devices provide the necessary local compute capacity for applications such as Excel, Word etc.

Devices are not owned but leased for a period of 3 years and at the end of the lease are refreshed with new current models. Whilst ensuring that devices are always relatively up to date this is an expensive mechanism to provision computer access.

2.1.2 File storage

With a few small exceptions (most notably Schools Personnel Service using Idox) the vast majority of our file type data, (Word, Excel etc.) is stored on shared drives/folders. This information is not catalogued or indexed, nor is any information about business ownership or expiry dates held for the files. The huge majority of this information is stale in that it has not been referenced in the last 6 months. The recent archive exercise resulting in approximately 81 million items being moved to our online archive service.

All shared folders are now held in central storage devices in our data centres in Sessions House and Medway.

The amount of additional space needed to support user generated material continues to grow; ICT have recently purchased extra space for shared files stores, archive stores and backup facilities to meet the continuing upward spiral in demand. It is likely that this trend will continue unless patterns for the retention of material are redefined.

Access to this this information is not available outside KCC offices except via the A2K mobility program or SSL mechanism.

2.1.3 Mobility

In general the view has been that mobility is achieved by giving out laptops to staff. KCC has rough parity between the number of desktops and laptops provided under the TRP program. Laptops can access the KCC network and all the services provided therein using the A2K connection facility. This has proved a tremendous success but it is somewhat clunky to use and is expensive in terms of license costs.

Laptops represent significant cost uplift in comparison to desktop provision; the device is more expensive, higher levels of service calls are associated with laptop devices and usage, and they are marginally more prone to failure than desktop devices. Laptops represent an ever present security problem in that they often contain sensitive information. Even though these devices are encrypted the Information Commissioner normally takes a harsh view in relation to lost devices containing sensitive data.

For non laptop users access to a small range of KCC services via a web based service, SSL, is provided. The service is limited and expensive to provision and takeup is generally low.

Finally almost all staff can access standard KCC mail services via Outlook Webb Access, OWA. This has proved very popular, particularly in times of adverse weather conditions. However it provides access to email only. The latest version OWA 2010 is significantly more functional than earlier versions.

2.2 Windows 7/Office 2010 Rollout

As part of the ongoing TRP program Windows 7 and Office 2010 are being deployed rather than Windows XP and Office 2003. The program will continue to deliver high specification devices to provide local processing at the user desktop/laptop. No change to the way the devices are provisioned or deployed is currently planned.

The A2K service will be changed to use new facilities available in the latest Windows server release allowing KCC to move away from the current Checkpoint product, with its expensive licenses, to a facility provided by the Windows 7 operating system called DirectAccess. This product is more functional and provides a seamless logon experience for the user, allied with better security and control.

It should be noted that the move to Windows 7, Office 2010 and Internet Explorer 8+ is dictated by Microsoft as they are withdrawing support for Windows XP and its associated components Office 2003 and Internet Explorer 7 in accordance with their published life cycle support for systems. Beyond April 8th 2014 for these products MS will not provide any free support or provide security fixes, problems patches etc., they are prepared to continue this support on a paid for basis. KCC has received an indicative quote to continue support; this comes to \$2m per year for 7000 devices plus a per incident cost of \$50k-75k. This comes to £190 per year per device at current exchange rates, a very significant cost and a strong incentive to move to a supported platform as soon as possible. Failure to move to a supported platform also

puts us in breach of commitments to central government and PCI-DSS and the scale of fines for non compliance with PCI-DSS is increasing. Once Windows XP is de-supported KCC can expected substantial fines for remaining on this platform.

3 Overview of proposal

3.1 Thin Client remote Apps/remote desktop with thin clients devices or laptops

Thin Client computing essentially moves the point of processing from the end user device to a central server. This technology can be implemented in a variety of ways but there are two main models: remote (virtual) desktops or remote applications. It is generally considered to offer a more flexible and agile mechanism to rollout new applications and operating systems. Getting a thin client project underway involves a considerable commitment to ensure applications will run in this environment. The two different deployment models both provide the ability to do away with the compute device at the desktop and replace it with a cheaper, more robust and longer lasting device. A user can normally receive the service via any device capable of displaying an internet browser. However for increased performance most vendors also provide clients for different device platforms (Windows, Android, iOS etc). The browser basis brings in the ability to allow our services to be used from a wide variety of locations and devices both inside and out the corporate network. Thin Client would be a key technology to moving towards a Bring Your Own Device policy. The major vendors in this space are:

Citrix

Microsoft

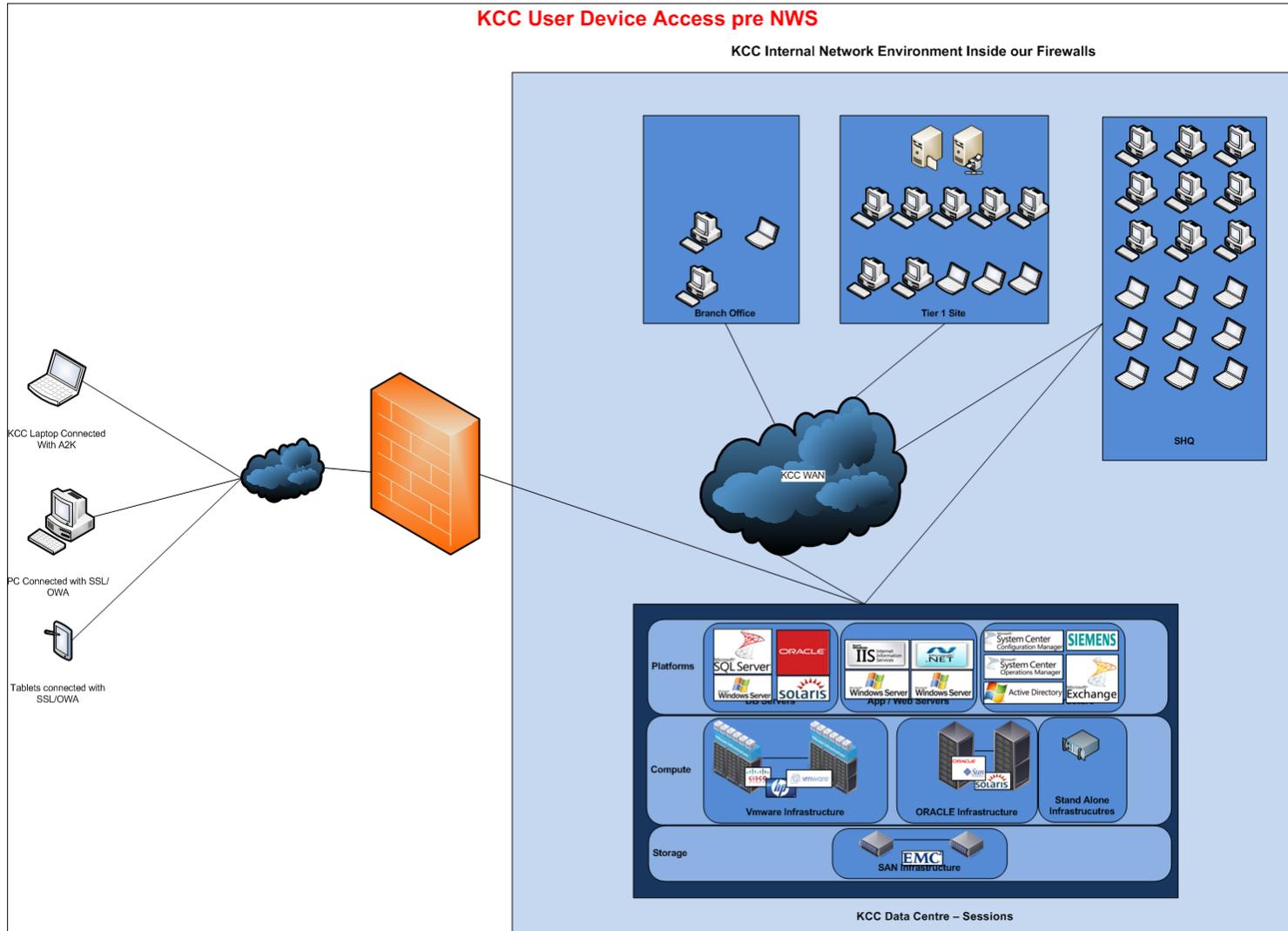
VMWare

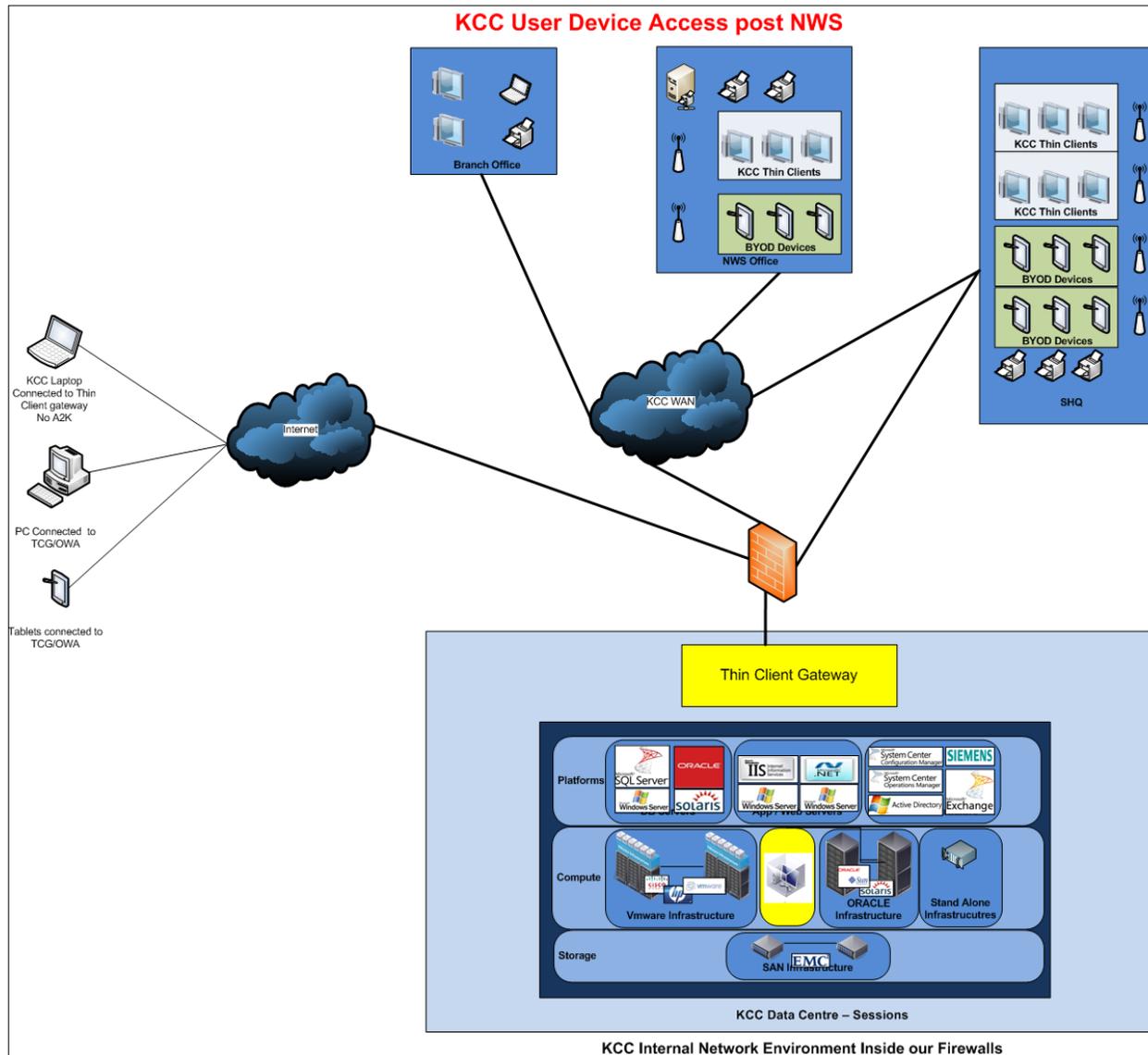
Minor players include Oracle, Redhat and others

The different deployment models have significant effects on licensing and pricing. Whilst there are some savings to be had on user devices significant investment will be required in servers, storage, licensing and ensuring sufficient network performance. In addition to licensing the technology from particular vendors eg Citrix or VMWare additional license fees are payable to Microsoft, which can be considerable.

It should be noted even where users retain laptops for offline working most applications and storage will be delivered via a thin client approach as this reduces the maintenance overhead in deploying new applications or upgrades.

The before and after design are presented below:





The post NWS design represents a radical change to the way KCC deploys end user devices, partitions the network, and the areas which we defend. The key points to note are as follows:

All delivery of the KCC corporate desktop environment will be via the thin client/virtual desktop environment. This implies a major investment in data centre servers with a commensurate long term reduction in spend at the user device level.

The firewalls will be focused to defend the data centres rather than the whole KCC WAN. This will allow freer access by non KCC devices to office LANs to connect to the internet and also KCC services. KCC devices will be rigorously defended through patching and other mechanisms to ensure they are not compromised.

BYOD will be fully accommodated by ubiquitous wireless provision across all offices of any size. It is not intended to provision wireless connectivity at every office but any over say 50 seats would be fully wireless enabled.

3.2 Wireless Networks

All buildings need to be equipped with high grade wireless networks. These will be used to provide connectivity for both KCC and BYOD devices both to the internet and also KCC systems. An efficient mechanism to allow non KCC devices access to the network will be required. The current GUEST and Membernet authentication mechanisms are too cumbersome to be used by potentially large numbers of staff using their own devices, and hence a new means to enable this connectivity must be provided. The existing mechanism supporting wireless networks cannot easily be expanded to handle the likely numbers of access points required in this usage model.

An approach document has been prepared to support a new design which provides expanded capacity.

3.3 Proposal Streams

The NWO/NW proposal contained a complete technology proposal and was presented as an overall solution. This document provides a more nuanced approach and presents the overall solution as a series of component parts that can be implemented in whole or in parts.

Specifically the components can be viewed as follows:

1. Hosted Virtual desktops

This represents the cost of building an infrastructure and acquiring the necessary licenses to run our desktops as virtual machines on a set of central servers. These server hosted desktops can be accessed on our existing user devices or alternatively by other devices in other locations.

2. Change the user access devices; replace desktops with thin client terminals and move laptops to a 5 year refresh cycle from a 3 year cycle.
3. Wireless rollout in buildings
4. Security upgrades.
5. Demo rooms to showcase the approaches to New Ways of Working

Item 5 the Demo rooms can be considered as a standalone one-off targeted solely around the NWW program.

Item 1-4 are somewhat interlinked, item 1 should proceed with item 4, item 2 must be preceded by item 1 but is optional and item 3 is more independent.

4 Costs

The costs associated with the delivery of hosted virtual desktops are set out in Appendix 1. The numbers are slightly different from those presented in earlier papers but reflect further discussions with vendors to reflect potential additional discounts.

The costs can be broken down into the associated work streams.

4.1 Server Hosted Desktops

Citrix has been used as the example here but as noted elsewhere in this paper other solutions are available. Citrix is a common choice for local authorities and 4 of the SE7partners use this (Hampshire, Surrey, East Sussex and Brighton and Hove).

This stream by itself does not imply a change in the way we deploy user access devices but rather the point where processing takes place and accessibility to KCC systems. The benefits to this are discussed below.

Establishing the necessary hardware and purchasing the licenses will cost approximately £3m in year 1 with an infrastructure refresh in year 6. Ongoing support costs are estimated to be around £570k per year after year 1, mainly support charges and annual license fees. The hosted desktop component will always be a significant expense.

KCC have discussed with Citrix the issue that our headcount may be subject to changes over times. A possible way forward would be to buy perpetual licenses for a base number of staff and then buy shorter term licenses for a proportion of staff where it is unclear what the longer term numbers might be. Citrix suggested for instance that we might buy 9000 perpetual licenses and then buy short term licenses for another 2000 staff. In the event of a different product choice we would look to get a similar arrangement.

4.2 Thin Client terminals and laptops

The move to hosted desktops will allow simpler and cheaper user access devices to be used and these can be deployed as desktops are replaced in the current renewal program. Thin clients would replace the current leased desktops as their leases expire, due to the extended life of the thin client devices it is expected that these would be purchased not leased, only being replaced when they break. This can be seen as a complimentary process and would, over a three year period, replace desktops with thin client terminals and move to a smaller number of laptops replaced on a 5 year not 3 refresh cycle. The cost for this are shown in Appendix 1 based on current costs for our 10766 IBM/HP devices moving to a base of 6000 thin client terminals and 4500 laptops. This proportion has been put forward based on the split that Hampshire County Council operates.

As can be seen from the table in Appendix 1 from year 3 onwards there are significant saving in the user device costs. These cost savings will be consistent for the foreseeable future once they have plateaued in year 4. This is because when the existing desktops have been replaced and laptops moved to a 5 year cycle, thin clients will only be replaced when they break so saving on purchase and deployment costs.

4.3 Overall Costs for items 1 and 2

Combining the costs from items 1 and 2 shows that from year 6 there is a complete payback of the investment to create the thin client proposal. This is based purely on the savings associated on the cheaper user access device model allowed by the hosted desktop mechanism. For the purpose of this analysis no staff cost savings have been calculated except the removal of the deployment cost at £100 per device which is essentially a staff cost.

4.4 Security Costs

As outlined above the need to use a more robust security method in what is essentially remote access model for all devices will necessitate extra security costs, principally hardware token and their associated distribution. The token typically last 3 years so based on a distribution in year 1 they will need replacing in years 4, 7 and 10. The costs are shown in Appendix 1 and have a component included in year 1 to cover initial implementation.

4.5 Mobile Phones

KCC currently has a large number of Blackberries and mobile phones, approximately 2800 and 4900 respectively at the start of 2013. Blackberry has recently significantly upgraded its mobile platform, but it is incompatible with the previous offering and this has led to a move away from Blackberry as the cost of supporting two different infrastructures will be significant. It is expected that Blackberry use will decline over the next few years to be replaced with Apple iPhones and Android smartphones. Smartphone tariffs from O2 our mobile phone supplier are considerably cheaper than Blackberry tariffs so it is expected that the change will be broadly neutral (about £500k cumulative increase over 10years).

5 Benefits

The benefits associated with virtual hosted desktops primarily arise in the following categories:

5.1 Flexibility and speed to deliver new applications and upgrades.

At present the upgrade from Windows XP to Windows 7 is dependent on the TRP hardware refresh cycle, a 3 year refresh cycle, and it seems that we will need to run on an unsupported platform for some time after April 2014. This is because we only change operating system when we refresh user access hardware. Hosted desktop computing breaks the link between the end user device and the applications and operating systems. As mentioned above KCC can get support for the old platform but at a punitive cost, hence the need to explore how to deploy a new operating system and up to date applications quickly. Desktop virtualisation is acknowledged to be most practical mechanism to allow the repaid deployment of new platforms and applications in our widely dispersed geographic model.

In addition to new operating systems, new applications or major upgrades can be deployed very rapidly in this scenario. Changes are made to the central server, normally overnight and the new application or upgrade is available to users the next morning. This provides for a rapid and controllable deployment approach that will overcome some of the existing issues KCC has in deploying new applications quickly.

The Ovum consultancy have stated that increased business agility through the ability to rapidly deploy new applications is among the top drivers to move the hosted desktop model.

5.2 Information Security

The hosted desktop model provides a step change in our information security. This is because data does not leave our data centre, it can be viewed and edited on user devices but the data does not reside on the user device. Hence should a user device be lost or stolen there is no data security risk as no data is on the device. Fines from the Information Commissioner are considerable and this provides a mechanism to eliminate this risk. Additionally the ease of access across different locations and devices should negate the need for the use of USB sticks or uploading of information to services such as Dropbox again preventing potential information losses.

5.3 Reduction in cost to support the user device

Studies by Cisco and IDC have indicated that the cost of supporting the desktop can be reduced in the hosted desktop scenario. There are a number of distinct variables in this and it is difficult to be precise. It is expected that there would be a reduction of calls to the service desk and the desktop support team. However this is balanced by an increase in workload for the server and storage teams in supporting the

centralised infrastructure. The nature of the thin client devices means that, no moving parts, in general they have significantly longer expected life cycle than desktops or laptops. The normally quoted life cycle is 7 years plus but some organisations run with 10 year old devices, as they still deliver the most up to date desktop experience due to the hosted desktop provision.

While the cost to support a particular device instance may be reduced it is expected that other support costs will increase. The increased flexibility of access will probably necessitate that the service desk opens for longer hours as staff are no longer bound by normal office hours. Current support hours of 8am to 5.30pm might be extended to provide 7am to 9pm or even 10pm cover. In order to extend support for applications as well as the service desk will mean having application and infrastructure staff available in the extended hours mode.

Given the reduction in some areas and probable increases in other areas ICT consider that it will be possible to hold the support cost broadly flat and hence are not including in the proposal any additional revenue requests to support increase levels of service.

5.4 Deployment Costs

The centralised nature of the design means that deployment is rapid and straightforward. Once the central infrastructure is in place and applications made available users can access the central service. Individual configuration of machines is no longer necessary and it will be a case of distributing devices, laptops to users and thin client terminals to desks. All devices will have a standard configuration and deployment costs should fall substantially.

5.4.1 Accessibility

Currently access to KCC services is mainly through our physical devices, some services are available via our SSL system but to use the main desktop service requires either KCC laptop or desktop. Hosted virtual desktops will allow access from a wide range of devices either directly connected to our network (where we own them) or across the internet. This brings the much talked about BYOD model into play but securely and without licensing problems as the applications and data remain in the data centre. BYD may allow cost savings because KCC will no longer provide a device for all users, a user may choose to use their own device to access the hosted service. This is viewed as a major trend in the US and is expected to also have an impact in the UK. Device choice and cost is user driven providing our choice of delivery mechanism supports a wide range of endpoints.

5.4.2 Partnership working

The creation of a large hosted desktop service to meet the needs of KCC will allow this service to be extended to use by other organisations. Sunderland City Council have recently done exactly this; create a large desktop service which is now available to other local public sector organisations.

6 Conclusions

Moving to a hosted desktop service and associated thin client hardware is a considerable undertaking. Significant investment is required and considerable effort will be needed to make all our applications and services available via this platform. However the advantages are considerable and this mechanism is a popular choice in the public sector where many local authorities and increasingly government departments, the Flex program, use this technology approach. KCC will position its application delivery mechanism as a flexible and responsive service necessary to meet changing business requirements.

7 Appendix 1

Summary	£000 2013-4	£000 2014-5	£000 2015-6	£000 2016-7	£000 2017-8	£000 2018-9	£000 2019-0	£000 2020-1	£000 2021-2	£000 2022-3	£000 10 year Total
Central provision											
Software											
Citrix named user licenses 12000	1,320										1,320
Citrix maint		240	240	240	240	240	240	240	240	240	2,160
Citrix premier support	132	132	132	132	132	132	132	132	132	132	1,320
MS RDS licenses all users	160	160	160	160	160	160	160	160	160	160	1,600
MS Data centre licenses	38	38	38	38	38	38	38	38	38	38	383
Total Software	1,650	570	6,783								
Implementation Estimate	500										
Hardware											
Network switch uplift	200					200					400
Load Balancing	160					160					320
Blade server chassis	80					80					160
Blade servers	350					350					700
Storage	654					654					1,308
Total Hardware	1,444					1,444					2,888
Total Citrix Cost	3,594	570	570	570	570	2,014	570	570	570	570	10,171
Citrix Capital Cost	3,264					1,444					4,708
Citrix maint Cost	330	570	570	570	570	570	570	570	570	570	5,463
Total Citrix	3,594	570	570	570	570	2,014	570	570	570	570	10,171

Other Central Components

Business case for Thin client

March 2013

Wireless infrastructure	150.5	0	0	0	0	150.5	0	0	0	0	301
Security and Patching	122.6	0	0	0	105.6	0	0	0	105.6	0	333.8
AD Redesign	45.5										45.5
Citrix Central Infrastructure including security	3,913	570	570	570	676	2,165	570	570	676	570	10,852
Cumulative Citrix Central Infrastructure including security	3,913	4,483	5,054	5,624	6,300	8,465	9,035	9,605	10,281	10,852	
User Access Devices											
Current UAD Cost (see Appendix 2)	3,118	3,118	3,118	3,118	3,118	3,118	3,118	3,118	3,118	3,118	31,178
Move, over 3 years, to 6000 Thin Client terminals replaced on a break/fix cycle 4500 laptops refreshed on a 5 year cycle	3,661	3,090	2,519	1,046	1,046	1,196	1,196	1,320	1,170	1,170	17,412
Summary											
Central Infrastructure	3,913	570	570	570	676	2,165	570	570	676	570	10,852
TC UAD Device Costs	3,661	3,090	2,519	1,046	1,046	1,196	1,196	1,320	1,170	1,170	17,412
Total for thin client solution	7,574	3,661	3,089	1,616	1,721	3,360	1,766	1,890	1,846	1,740	28,263
Current spend on UAD	3,118	3,118	3,118	3,118	3,118	3,118	3,118	3,118	3,118	3,118	31,178
Net Cost of Thin Client solution over current costs	4,456	543	-28	-1,502	-1,396	242	-1,352	-1,228	-1,272	-1,378	-2,915
Cumulative Spend	4,456	4,999	4,971	3,469	2,072	2,315	963	-265	-1,537	-2,915	

Appendix 2

Current User Access Device Costs and Funding

	2013-4	2014-5	2015-6	2016-7	2017-8	2018-9	2019-0	2020-1	2021-2	2022-3	10 year Total
Current UAD costs	3,118	3,118	3,118	3,118	3,118	3,118	3,118	3,118	3,118	3,118	31,178
Funded by											
Current corporate funding for devices	1,326	1,326	1,326	1,326	1,326	1,326	1,326	1,326	1,326	1,326	13,260
Directorate Funding for devices	1,433	1,433	1,433	1,433	1,433	1,433	1,433	1,433	1,433	1,433	14,330
Deployment costs met by ICT from the AMR	359	3,589									