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To:	Policy and Resources - Cabinet Committee
Subject:	Information and Communication Technology Enhancements

Summary: This report advises Members of current technology provision, investment or upgrades programmes and further proposed changes to the council's technical architecture to support the transformation and efficiency programmes shaping future operations.

1. Introduction

This report explains how ICT services are currently provided across the KCC estate; the current major change/improvements that are already planned or underway and finally the potential changes to the technology landscape that should be considered in response to the council's emerging plans for transformation and the shift in technology use by residents, businesses, members and staff.

2. Background – Current Technology Landscape

2.1 Personal Computers

2.1.1 KCC provides for the large majority of its staff a dedicated computing device or access to a shared device. These are typically either a desktop or laptop personal computer. 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 as well as access to network and business systems.

2.1.2 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. This ensures that devices remain up to date and to not present a constraint to the introduction of new hardware or software that might support service improvement and provides a fixed refresh cycle for both financial and technology planning.

2.2 **File storage**

2.2.1 The majority of our data stored outside of case management systems, E.g. Word, Excel, PDF , PowerPoint documents 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. Most of this information is stale in that it has not been referenced or updated in the last 6 months. A recent archive exercise resulted in approximately 81 million items being moved to our online archive service. Physically all of this data is in central storage devices in our data centres in Sessions House and Medway.

2.2.2 The amount of additional space needed to support user generated material continues to grow; extra space has recently been purchased 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 information is not available outside KCC offices except via:

- Access to Kent (A2K) a mobile solution that allows KCC equipment to use an internet connection to create a secure link to KCC systems comparable to that available from within KCC offices
- Secure Socket Layer (SSL) a means of supporting secure access from non KCC equipment.

Increased hardware and support costs are associated with both of these solutions.

2.3 **Mobility**

2.3.1 In general the view has been that mobility is achieved providing laptops for staff. KCC has rough parity between the number of desktops 4733 and laptops 5378. 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 not intuitive to use and is expensive in terms of license costs.

2.3.2 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.

2.3.3 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 take-up is generally low.

2.3.4 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 of OWA which we have yet to deploy is significantly more functional than earlier versions.

2.4 Email

2.4.1 An email account is provided for most KCC staff. Access to this is either via the Outlook program on a desktop/laptop or via OWA into our on premise Exchange 2010 service which holds the mailboxes. Mailboxes vary in size according to user need, from the small (250mb) to the large (5gb+). It has been identified that mailboxes have previously been used to divert KCC material to personal mail accounts by staff trying to be more productive/mobile. This practice is prohibited as it is unsecure as personal account or services such as Yahoo, Outlook or Google are frequently subject to attack and the council is not able to effectively discharge its data protection and information governance responsibilities once the data ceases to be internal.

2.5 Network Segmentation

2.5.1 In order to produce a better experience for users 14 of our larger sites have servers that handle key user data on a local basis. These sites also act as the local provision sites for a large number of smaller offices close to the larger sites.

2.5.2 Typically the servers contain the local profile information for staff configuration settings, a local authentication service, a local site for distributing upgrades and security updates (patching), application system loading and the printing service. The reasoning is that for a large number of users this provides access to these services at faster speeds than if these all had to be provided from the corporate data centre located in Sessions House, Maidstone and Gun Wharf, Medway. Despite this logon speeds can still prove problematic with our current architecture.

2.6 Telephony

2.6.1 Almost all offices have local telephony provision via local BT lines connected to that office. Each office has a local PABX device or standalone lines. KCC have a large number of mobile devices, 3051 Blackberries and another 3318 mobile phones.

3 Investment Strategy and Upgrade Programme

3.1 Unified Communications

3.1.1 This program is delivering a step change for our telephony and non-email communications environment. Telephony is being moved from an analogue basis to a modern digital platform (Voice Over Data or VOIP) and will come from a highly resilient central facility co-located in Sessions House and Medway. Local PABX devices and BT lines will be removed, new handsets will be deployed to all desks and all telephone numbers will be replaced with new numbers from the 0300 range to ensure lowest possible tariffs for our callers.

3.1.2 This service will provide full integration of mobile devices into the voice provision allowing a 'follow' me service. Voice mail will be provided for all staff as will access to Instant Messaging and easy access to voice conferencing and new services such as video, conference white boards etc. Production rollout for this service is currently timetabled to begin in June 2013. Both the customer services strategy and discussions around new ways of working have identified this as a key enabling technology. The associated financial savings on infrastructure are already reflected in the Medium Term Financial Plan and represent a considerable proportion of the savings being delivered by ICT.

3.2 **SharePoint as electronic filing cabinet**

3.2.1 In support of the Customer Services strategy replacing current use of shared folders has been identified as a priority. Based on our ability to access SharePoint licences under our enterprise agreement with Microsoft, this tool will be used to develop a basic document management service for the Council. No workflows or associated business processing is within the scope of this provision. It will provide the ability so save documents for teams, provide basic information such as expiry dates and document sensitivity but that is all. It is envisaged that shared calendars and team areas will be provided as part of this deployment, however advanced collaboration features and my sites are not in scope for this deployment. The potential benefits of a more extensive implementation are considered in section 4.5 below.

3.3 **Windows 7/Office 2010 Rollout**

3.3.1 As part of the on-going rolling program of technology refresh, Windows 7 and Office 2010 is to be deployed rather than Windows XP and Office 2003. This is largely driven by Microsoft planning to end support for our existing products, including essential security updates. Although there are improvements in the software to be deployed, the council in common with many other organisations has struggled to identify a compelling business case for upgrading, with benefits realisation from a revenue perspective being particularly challenging.

3.3.2 For the present the program will continue to deliver high specification devices to provide local processing at the user desktop/laptop. The likely introduction of new ways of working to support further organisations efficiencies has prompted extensive review of this aspect of our architecture and this is outlined in section 4.3 Below.

3.3.3 The Access to Kent (A2K) service will be changed to use new facilities available in the latest Windows server release allowing KCC to move away from the current standalone security 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.

3.4 **Server Virtualisation**

3.4.1 The on-going program to rationalise the server estate will continue. On the Windows side as servers come to the end of their supported life span they will be virtualised and hosted on the central VMWare server farm, to date this strategy has reduced our server population by a total of 300 devices. It is expected that this process will be largely complete by end of 2014. For servers providing Oracle based services a program is underway to rationalise the 70+ servers to 4, it is expected that migration will commence in April 2013 with a completion sometime in mid-2014.

3.5 **Members ICT**

3.5.1 Members ICT requirements are periodically reviewed to update provision in advance of elections. For the current term a more flexible approach was adopted where rather than a mandated solution, members were offered a range of technology options. This allowed members to select technology based on the profile of equipment that best suited their individual needs.

3.5.2 With the pace of change in technology new devices have emerged since ICT for members was last updated, most notably tablet devices. Following decision by the Selection and Member Services Committee the menu of equipment from May 2013 will comprise:

- A Tablet device (iPad)
- Or a Laptop computer (HP)
- Or a smartphone

3.5.3 As there are already arrangements in place for members to securely connect personally owned equipment, where this is convenient, this will allow for choice and flexibility to suit individuals circumstances. Advice and support will be available during member induction in May to facilitate equipment selection.

A member ICT focus group has been undertaking trials of iPads which have been extremely promising. When combined with the Modern.Gov application paperless meetings become a viable option. If the council were to consider this option for the future, a considerable saving might be realised from current expenditure on printed materials.

4 Enhancement

4.1 The following proposed changes to technical architecture reflect the requirements of the introduction of greater mobility and new ways of working.

4.2 **Thin Client**

4.2.1 Thin Client computing essentially moves the point of processing from the end user device to a central server. It is generally considered to offer a more flexible and agile mechanism to rollout new business systems and reduce future upgrade costs.

Getting a thin client project underway involves a considerable commitment to ensure applications will run in this environment.

4.2.2 The principal advantage of a thin client solution is 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 also normally access the service via any device capable of displaying an internet browser; this introduces the ability to allow our services to be used from a wide variety of locations and on devices both inside and outside of the corporate network. Thin Client would also be a key technology to allow use of personally owned devices securely, overcoming the issue highlighted in section 2.4, as data is held centrally and not on the local device.

4.3 User Devices

4.3.1 The thin client approach would remove our existing dependency on the local user device and the software it requires. If adopted a disciplined and focused approach to the allocation of equipment will be required. It is essential that this reflects the requirements of the role which should be the sole criteria for determining the allocation of equipment.

4.3.2 The proposed architecture represents a radical change to the way KCC deploys end user devices, partitions the network, and how security is achieved. 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 network. This will allow freer access by non KCC devices to office networks 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.

- Use of personally owned devices or equipment of partner agencies will be fully accommodated by ubiquitous wireless provision across all offices of any size. It is not intended to provision wireless at every office but any over say 50 seats would be fully wireless enabled.

The before and after design are presented in appendices A and B

4.4 SharePoint collaboration

4.4.1 A further more sophisticated implementation of SharePoint is being designed subject to a formal business case and benefits realisation plan. This implementation would see the workflows and document handling implicit in existing business processes implemented as automated processes within SharePoint. The development would be targeted at migrating as many business processes as possible to make the system

attractive to business users by matching existing/re-engineered processes from individual business units, rather than providing a basic document holding facility.

4.5 Wireless Networks

4.5.1 All buildings need to be equipped with high grade wireless networks. These will be used to provide connectivity for both KCC and non KCC devices both to the internet and also KCC systems for authenticated users. 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, 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 and a replacement solution is proposed.

4.6 Mobile Device Management (MDM)

4.6.1 MDM will be required for any mobile device that could potentially hold KCC data. Whilst the thin client design outlined above considerably reduces the footprint on user devices accessing our data nether the less there will be some mobile devices that hold KCC data. These devices will need to have a degree of control, this will vary from managing a complete device, full MDM, to managing KCC specific areas on mobile devices such as tablets and smart phones.

4.7 Security –two factor authentication

4.7.1 The move to allow access from a wider range of devices to KCC services implies that a much higher level of user authentication will be required to ensure that data remains appropriately protected. A rollout of two factor hardware tokens is currently underway for all laptop users. It is proposed that this will be extended to all KCC ICT users, removing the distinction between fixed and mobile access because in the new model all access will be deemed to be remote.

4.8 Tier 1 Site Servers

4.8.1 As described in section 2.5 above many larger sites have servers that are geared to improving the user experience when logging in and printing. Whilst it may be possible to merely “lift and shift” these back to Sessions House, we would need some re-engineering of the network to replace local provision with additional network capacity which is becoming a more cost effective solution due to decreasing cost of network provision.

4.9 Scanning and indexing for paper documents.

4.9.1 To support mobility a solution that converts both existing paper to electronic files and also a mechanism to convert newly received paper documents will be required. This normally consists of a scanning device and associated indexing mechanism. The scanning of existing material can be a major undertaking but many organisations scan some and archive the rest on a get when needed basis. However new material will need to be turned into electronic files and distributed on receipt. The distribution

mechanism can be incorporated with the SharePoint usage described in 4.5.1 above but the scanning and indexing will require a structured approach. Existing MFDs and photocopiers can often provide the scanning mechanism but the indexing and document distribution will need to be incorporated into the business process.

4.10 **Storage**

4.10.1 The removal of paper storage in offices, replacing it with electronic storage for documents and scans implies that significant extra space will be required in our disk storage arrays. At present no details are available of likely volumes but for the purposes of this exercise ICT would recommend expanding the file storage area and ancillary services by about 50%.

4.11 **Follow me printing**

4.11.1 Most users have local printers defined, e.g. the printers close to where they sit. If a user sits in a variety of locations then a mechanism will be required to automatically choose the most appropriate printer by function and distance at the time to printing. Alternatively all prints can be held in a central queue and the user calls up their documents when standing at a printer.

4.12 **Remote patching/Remote Maintenance**

4.12.1 Currently our patching and maintenance services for laptops are dependent on the laptop being on the KCC network. In a situation where large numbers of devices do not connect directly to our network for significant periods of time then an alternative patch/anti-virus mechanism needs to setup. The proposed way forward is use an online service that ensures that corporate standards are enforced on remote devices whenever they attach to the internet.

5 Business Case and Benefits Realisation

5.1 The enhancement to the council's technical architecture proposed in section 4, reflect the requirements of the future needs of the council, informed by the transformation and efficiency programmes designed to support the council's strategic objectives and current budget pressures. Associated investment in technology infrastructure is being considered within the scope of those programmes. The major elements described such as 'thin client' will require initial capital expenditure but once implemented incur lower support and refresh costs and it is expected that the business case will put forward an invest to save argument.

5.1 There are no direct ICT savings to be derived from the use of SharePoint as the basis of an electronic document management system. The business case for this element of the proposed technical architecture will need to base benefits realisation on service and productivity gains. This work is being undertaken by a cross directorate working group.

6. Recommendation

6.1 Members are asked to note the contents of this report.

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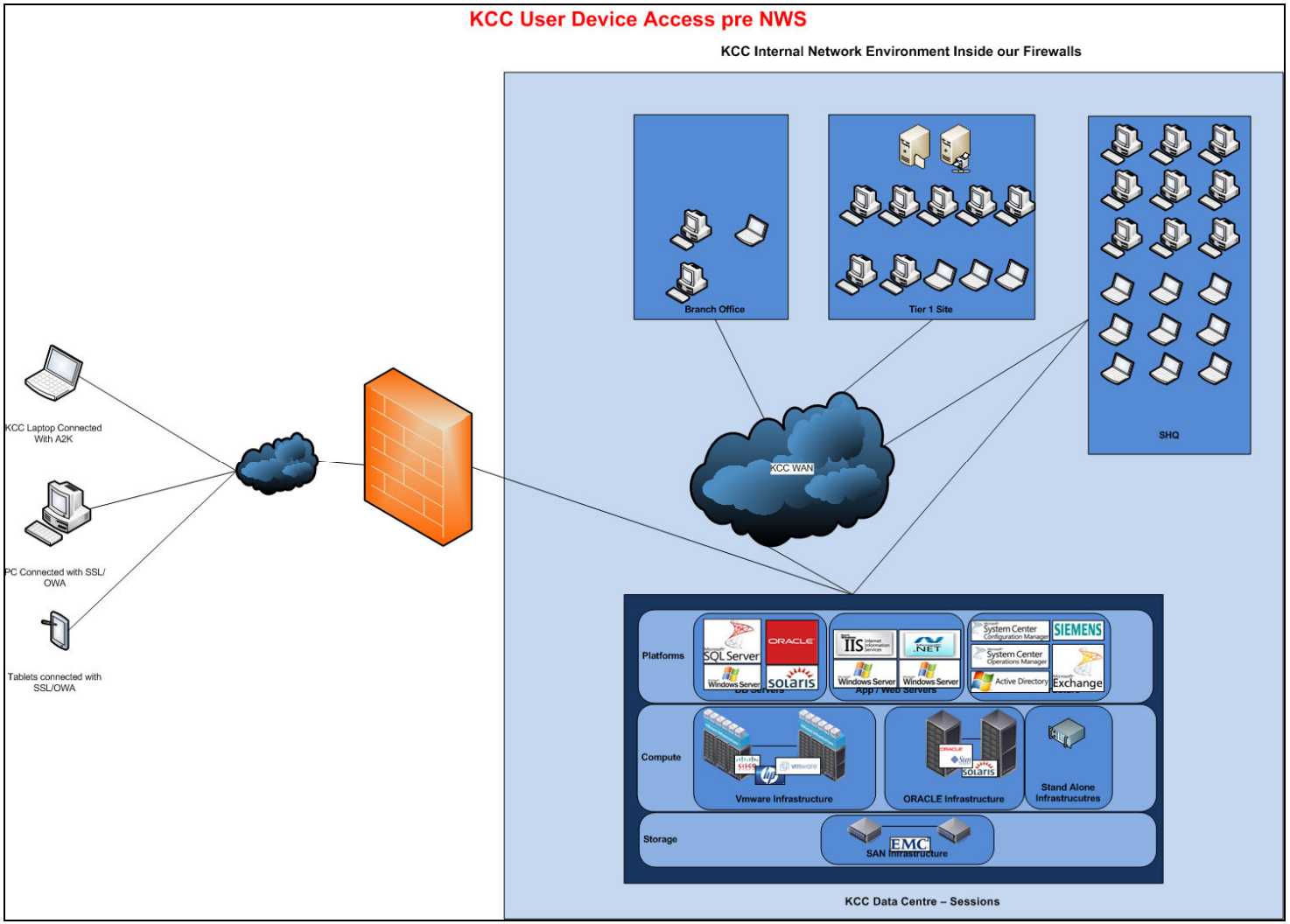
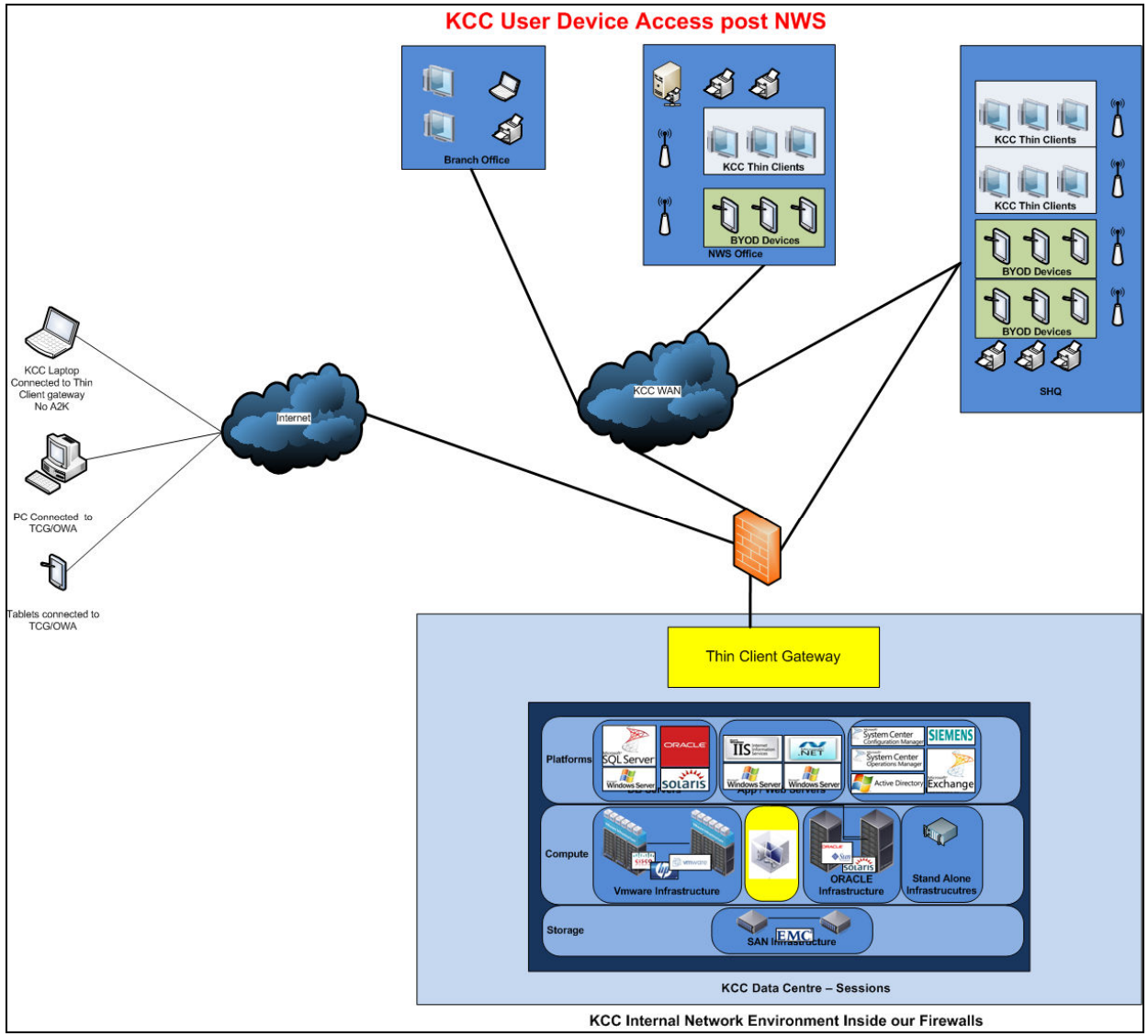

KCC User Device Access pre NWS
KCC Internal Network Environment Inside our Firewalls
Branch Office
Tier 1 Site
SHQ
KCC WAN
KCC Laptop Connected With A2K
PC Connected with SSL/ OWA
Tablets connected with SSL/OWA
Platforms
SQL Server
ORACLE
Windows Server
Solaris
IIS
.NET
Windows Server
Windows Server
System Center Configuration Manager
SIEMENS
System Center Operations Manager
Active Directory
Exchange
Compute
Vmware Infrastructure
ORACLE Infrastructure
Solaris
Stand Alone Infrastrucutres
Storage
EMC
SAN Infrastructure
KCC Data Centre – Sessions

Appendix A

Appendix B


KCC User Device Access post NWS
Branch Office
KCC Thin Clients
BYOD Devices
NWS Office
KCC Thin Clients
KCC Thin Clients
BYOD Devices
BYOD Devices
SHQ
KCC Laptop Connected to Thin Client gateway No A2K
PC Connected to TCG/OWA
Tablets connected to TCG/OWA
Internet
KCC WAN
Thin Client Gateway
Platforms
Compute
Storage
Vmware Infrastructure
ORACLE Infrastructure
Stand Alone Infrastrucutres
SAN Infrastructure
KCC Data Centre – Sessions
KCC Internal Network Environment Inside our Firewalls