



IT Infrastructure Review – Phase 2

Presentation of Findings - DDC





- Overview of Technology Areas
 - Application Deployment (Citrix)
 - Data Centre Strategy
 - Network
 - Telephony
 - Printing
 - Security
- Investment Model
- Timescales



Application Deployment - Current Arrangements

- Citrix Used in existing CT localities, but not extensively in Bridgend
- 3,356 IGELs, 1,520 of which are end of life
- Other Windows Devices (including Bridgend)
 - ~2,900 Desktops
 - ~3,400 Laptops
- Applications
 - CT 43 via Citrix, 24 Directly Delivered
 - Bridgend 9 delivered by Citrix 36 directly delivered
 - How many of the Citrix delivered apps can't be delivered by other means?

Key Issues / What's Changed..?



- Some User Frustration / Perception issues – although Windows 10 Citrix Image now Rolled-out, an improvement over the previous version.
- Windows Desktops & Laptops
 - Have reduced in cost by comparison
 - Are more power efficient
- Shift to web-based apps / services
- Evolution of Windows
 - General Security / Bit locker
 - User interface, user interaction
 - Use of Teams, Voice, UC, video etc
- Not widely deployed in Bridgend locality – overhead of both delivery methods
- Overall benefit of Citrix has reduced
 - Still useful for some uses
 - Reduction in other areas?



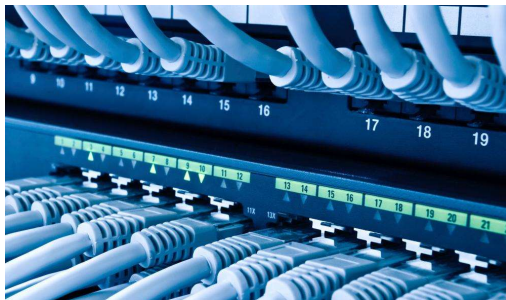
- Option 1 – “Continue As Is”
 - Investment in older IGELs needed
 - £11.9m over 10 years
- Option 2
 - Reduce to 1,000 Citrix Users & 250 IGELs
 - £10.9m over 10 years
- Option 3
 - Reduce to 200 Citrix Users & no IGELs
 - £10.0m over 10 years



- Adopt Natural Reduction in Citrix / IGEL use
 - Adopt strategy of decline in Citrix use
 - Reduce IGELs over 3 year timeframe
 - Acknowledge the additional funding required to achieve this strategic recommendation, against current operational affordability
- Confirm Specific use-cases for Citrix to remain
 - Applications that can't be delivered directly
 - Remote locations with bandwidth constraints
 - Remote access for IT support providers
 - BYOD access and other home users
- Re-validate Staffing / Support Model, changes to skillsets
- User Education / Training
- Confirm Licencing Position for Citrix use with National Apps
- Continue to progress the implementation of Imprivata single sign-on and leverage benefits
- Review all organisational assets and reprioritise their allocation, e.g. the devices deployed during COVID



- Current Mixture of Failover / DR arrangements
- Re-model / Consolidate
 - Adopt a total site failure resilience model for all services
 - Stretched Virtual Data centre between PoW and PCH
 - Adopt same model for all other service provision
 - Extend use of Dell VX-Rail as existing equipment needs replacement
 - Revisit DR / Business Continuity Planning / Prioritisation
 - 10 Gbps inter-site connectivity required, delivered as improved PSBA and also point to point links, as enabling infrastructure
- Consider future planning / pilot of hybrid cloud service provision. Back-up to cloud / cloud DR would be a good place to start.



- 460 Cisco LAN Switches
 - Mixture of Models
 - 182 Switches are End of Life
 - Network Upgrades Required
- Swansea Bay Detachment issues (covered later)
- Standardise Core Network Architecture at the 3 Acute Hospital sites
 - Two physically separate core locations at each site
 - PSBA connections split between both locations
 - Dual-homed 10Gbps fibre backbone to all local cabinets
 - Consolidate IP addressing
- Significant Upgrades to physical cabling infrastructure required
- Configure Future of Management Platforms



- Access Points
 - 2,100 access points
 - 960 access points are end of life
 - No current support for newer Wi-Fi 6 standards
 - Significant qty of APs at Bridgend to support Cisco Wi-Fi handsets
 - Upgrade / Replacement of APs required
- Current Controllers will not support later versions of Cisco APs
- Recent Internet Bandwidth upgrades for Public Wi-Fi implemented
- Wi-Fi Surveys - generally good coverage but with some patches of poor coverage.
- SSID Rationalisation / Use case review

Network: WAN / PSBA Connections



- Dual PSBA Links at Larger sites. Not in diverse locations at all sites
- Links generally do not appear to be overused / flooded
- Single PSBA at some smaller sites – consider additional resilience for some sites?
- PoW linked back to Morriston Hospital – needs to be addressed as part of detachment plan. Orders placed for 10 Gbps PSBA links for PoW
- 10 Gbps low latency links beneficial between PCH & PoW to support future data centre strategy

Network - Swansea Bay Detachment



- Physical PSBA Connection Migration
- IP Subnetting (Splitting of Network address ranges)
- Migration away from current Inter-site link to Morriston and live services
- Considerable work / detail required to ensure minimum service disruption (for both Health Boards), plus funding

Telephony – Current Arrangements



- Current Separate Telephone Systems
 - Mitel Systems at PCH / RGH
 - Hi-Path4k at RGH for Cordless Phones
 - Cisco Call Manager at PoW / Bridgend
- Bridgend Cisco Detachment
 - New SIP Trunks / SBCs required (telephone lines)
 - Telephone Numbering Issues
 - Network requirements

Telephony – Recommendations



- Conduct UC Pilots
 - Mitel UC / MiCollab
 - MS Teams (new MSEA)
 - Cisco Jabber
- Complete Paging System Consolidation (Multitone)
- Switch Board / Directory Consolidation (Mitel/NetCall)
- Contact Centre Consolidation (Mitel/NetCall)
- Conduct review wider rationalisation of fixed extensions
- Consider wider review of move from DECT / Wireless IP to MS Teams Client usage

Printing - Current Position



- ~150 Canon devices (CT)
- ~115 Konica Minolta devices (Bridgend)
- Copy and scan extensively used as well as print
- Contracts mainly out of term / non co-terminus
- Large management overhead of current billing / devolved budgets
- ~1,500 other print devices many with multiple trays
 - A5 WCP Labels for blood samples etc
 - A4 Labels for Myrddin
 - Wristbands
- Hidden current cost?
- Specialist Printers (Card printers, print rooms, etc)

Printing - Observations from Stakeholder Sessions



- Opportunities for print reduction
 - Opt-in Electronic Patient Communication
 - Appointment Letters
 - Referral Letters
 - Discharge Letters
 - Appointment Reminder letters
 - Duplicate Patient Referral Letters
 - Duplicate GP Referral Letters
 - Duplicate Discharge Letters
 - Printing off of Patient Notes
 - Streamlined Business Processes / Application workflow
 - Pharmacy Picking lists
 - Printing off Patient notes for clinics / consultant review
 - Some HR forms
 - Opportunities for Electronic Forms
 - Some Referrals are still paper-based
 - General Culture shift / Awareness
 - “it’s my printer”

Printing - Future Strategy / Opportunities



- Establish Governance / Steering Groups
 - Must have Board Level buy-in and representation from Clinical and non clinical departments
- Develop Workstreams for Print reduction
- Centralise Budgets
- Conduct Detailed Audit
- Re-procurement
 - Improved Market Rates
 - Consolidation
 - Move all devices to single managed service
 - Eradication of FAX machines



- Access to services and applications protected from External access
- End of Life Network and end user devices
 - Network security risk
 - Opportunity to introduce NAC / security improvements
 - Improve network segmentation
 - Replacement of end of life network estimated at £6.5m
 - Replacement of >6 years old end user devices estimated at £2.3m
- Endpoint Protection – Move to Microsoft Defender and ATP
- Improved protection / access of Mobile Devices by moving to InTune/MEM
- Cyber Essentials / NIS Compliance work on-going
- Resource constraints, e.g. £300k capital available in 2022/23 for rolling replacement of network and end user devices



	2022 - 2023	2023 - 2024	2024 - 2025	2025 - 2026	2026 - 2027
Network					
LAN Edge	£550,000	£550,000	£550,000		
LAN Core	£100,000				
Wi-Fi	£400,000	£350,000	£350,000		
LAN / Wi-Fi Third Party Resources	£200,000	£100,000	£100,000		
PCH - Accommodation & Cabling					
Establish 2nd Network Core Location	£50,000				
RGH - Accommodation & Cabling					
Establish 2nd Network Core Location	£50,000				
Cabling Upgrades	£200,000	£200,000	£200,000	£200,000	£200,000
PoW - Accommodation & Cabling					
Cabling Upgrades	£380,000	£380,000	£380,000	£380,000	£380,000
Server Room Enhancements	£50,000				
Inter-site 10gb Connectivity					
Inter-site 10gb Connectivity	£57,000	£57,000	£57,000	£57,000	£57,000
Swansea Bay Detachment					
Logical Network detachment	£50,000				
SBCs / SIP trunks for PoW	£30,000				
Cisco call manager detachment	£80,000				
Contact Centre detachment	£25,000				
Telephony					
Switchboard Consolidation	£50,000				
Total	£2,272,000	£1,637,000	£1,637,000	£637,000	£637,000

Timescales / Future Plan / Final Points



- High Level Plan.
- National reduction in capital funding in 2022/23 and the following two years. £839k available to ICT for all schemes.
- Consequent impact on the application deployment strategic recommendation versus the current operational position.
- There is also a reduction in the capacity to fund the various replacements and also innovations noted in the IMTP.