IMPLEMENTATION OF SOFTWARE DEFINED NETWORKING SOLUTION AS PART OF SHIRE HALL DATA CENTRE MOVE

To:	**General Purposes Committee**
Meeting Date:	**28th January 2020**
From:	**Director: Customer and Digital Services**
Electoral division(s):	**All**
Forward Plan ref:	**2020/012** *Key decision:* **Yes**
Purpose:	**To advise the Committee of:**

- **The recommended approach to support the migration of the Shire Hall Data Centre utilising a networking solution that will support the future strategic alignment of Cambridgeshire County Council and Peterborough City Council.**

- **That the costs of the procurement of networking equipment to support the move might exceed £500k.**

This paper is informed by the joint Move of IT Systems from Shire Hall Data Centre paper approved by General Purposes Committee on 28th May 2019 and the joint IT Strategy approved by both Peterborough City and Cambridgeshire County Councils in July 2019.

Recommendation:	**General Purposes Committee is requested to:**

a) **Agree the spending for this approach from the budget allocated to the project by GPC on 28th May 2019.**

b) **Delegate approval for procurement of Software Defined Network to the Section 151 Officer, in consultation with the Chairman of General Purposes Committee.**

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1. BACKGROUND & STRATEGIC CONTEXT

1.1   In May 2019 General Purposes Committee (GPC) approved the move of IT Systems from Shire Hall Data Centre to the Peterborough City Council data centre in Sand Martin House (SMH). As part of that work some IT systems will be moved to appropriate cloud services and others will be migrated to SMH.

1.2   As part of that migration it is necessary to reconfigure the core network (Core LAN) that allows all the servers to connect and be used to deliver services. That reconfiguration will require procurement of new equipment which may cost more than £500k.

1.3   In line with the Vision for shared IT services for Cambridgeshire County Council and Peterborough City Council (see below) and the Cloud First Strategy and the transformative approach to the work that was approved by GPC in May 2019, the Core LAN will utilise 'software defined networking' (SDN), an architecture which makes the provision of computer networks more flexible and responsive to business needs. It is the architecture employed in Cloud solutions.

1.4   The Vision for shared IT services for Cambridgeshire County Council and Peterborough City Council:
- 'Simplify, Standardise and Share',
- Shared IT infrastructure delivered by a single provider,
- Alignment/convergence of key business systems,
- Shared web and digital platform between both authorities.

1.5   The judgement of the technical team working on the data centre migration is that the migration of the Cambridgeshire County Council core LAN to Peterborough City Council SMH is the right time to lay the foundations of shared infrastructure and this has been approved by the DC Migration Project Board.

2. SOFTWARE DEFINED NETWORKING

2.1   Software defined networking enables automation and orchestration of the network. It supports the agility of IT services by providing an agile implementation of network services. Repetitive tasks involving the configuration of individual switches can be automated, reducing human error, increasing speed of deployment and reducing costs.

2.2   Some technologies, including those already in use by Peterborough City Council can provide a secure 'multi-tenancy' environment which is similar to public cloud infrastructure. It also provides support for multi-cloud integration (with Amazon Web Services, Microsoft Azure and Google) and is therefore a foundation for the 'Cloud first' strategy. This integrated environment would provide a consistent hybrid cloud experience for the end user.

2.3   A post 2020 implementation of 'software defined networking' would involve a large project following on the data centre migration and involving equivalent investment to that proposed in this paper. All of the networking equipment in the Core LAN would need to be revisited to consider whether it needed to be replaced. New equipment

would need to be implemented and the mode of operation of retained equipment changed. Retesting would be necessary to ensure that other infrastructure attached to the network would still operate.

3.   RECOMMENDED APPROACH

3.1   The recommended approach is to procure and implement 'software defined networking' fully compatible with equipment already used by both Cambridgeshire County Council and Peterborough City Council.

3.2   The rationale for this approach is to:
Support the shared Cambridgeshire County Council and Peterborough City Council strategy for shared services across Cambridgeshire County Council and Peterborough City Council:
- By using the opportunity of the data centre migration project to implement technology which will support it.

Improve future responsiveness and efficiency of networking services:
- By implementing the most up to date technology intended for this purpose.

Minimise future risk:
- By providing resilience for Cambridgeshire County Council and Peterborough City Council in the future.

4.   COST AND GOVERNANCE

4.1   The procurement and implementation of SDN would be within the established governance of the Data Centre project board with reference to the Section 151 Officer and Chair of GPC.

4.2   The costs of this work sit within the overall figure approved by GPC for the migration of the Shire Hall Data Centre. No additional budget is being requested.

4.3   A full procurement exercise is currently underway to ensure that the council gets best value for money and this will include technical design work to finalise the solution. Indicative costs have been received which suggest that the overall cost of the solution, including hardware, design costs and implementation may be more than £500k.

4.4   In light of the indicative costs and the need to ensure that the work can continue at pace to meet the deadlines of the exit from Shire Hall, the project team is prudently requesting GPC permission to spend in excess of £500K from the project budget on the basis of the indicative costs received. The procurement exercise may bring this cost below the threshold. Additionally, given the nature and scale of the project i.e. a fixed scope and timescale with potential high impact on business services, the design and approach may need to change as analysis and design for the project progresses. GPC is requested to allow changes to the approach and delegate spending on Software Defined Network to be made to the Section 151 Officer in consultation with the Chairman of GPC.

5. RISK AND IMPACT

Risks

5.1 The implementation of SDN at the same time that the Shire Hall Data Centre is migrated does present an element of risk to the overall project. The introduction of new technology to LGSS and Cambridgeshire County Council *could* delay the project through:
- the procurement exercise that is necessary,
- the implementation and integration of new hardware and
- through the soft aspects of change for LGSS Networks and LGSS IT Services at Cambridgeshire County Council i.e. training and changes to working practices.

5.2 The above risks will be mitigated in part by careful project planning but also by completing all of the migrations that are not dependant on this software during the early part of the year.
- The procurement of the SDN solution will follow standard procurement processes and will run in parallel with other project activity to ensure that it is complete in sufficient time for implementation to start when required.
- The implementation of SDN solution has been factored into the overall data centre migration project timescale.
- The risk from the introduction of new technology will be mitigated by the use of expertise from Peterborough City Council where software defined networking has previously been implemented as well as third party resource from key suppliers.

Business Impact

5.3 There should be no separate business impact. A successful implementation of SDN would be transparent to the services. This has been demonstrated at Peterborough City Council.

Technical Impact

5.4 The technical impact would be to any infrastructure which is specific to Cambridgeshire County Council. This infrastructure would be connecting to a core network operating in a different way.

Opportunities

5.5 The implementation of SDN may enable the migration team to take advantage of automation in the migration of Cambridgeshire County Council infrastructure thereby reducing the effort and time involved for some items in the migration.

6. ALIGNMENT WITH CORPORATE PRIORITIES

6.1 A good quality of life for everyone

Frontline services will inevitably be impacted by any extended downtime of IT systems, every effort will be made to mitigate any effect of the move on the delivery of services to the citizens of Cambridgeshire.

6.2 Thriving places for people to live

Frontline services will inevitably be impacted by any extended downtime of IT systems, every effort will be made to mitigate any effect of the move on the delivery of services to the citizens of Cambridgeshire.

6.3 The best start for Cambridgeshire's children

Frontline services will inevitably be impacted by any extended downtime of IT systems, every effort will be made to mitigate any effect of the move on the delivery of services to the citizens of Cambridgeshire.

7. SIGNIFICANT IMPLICATIONS

7.1 Resource Implications

The implementation will be procured as a package including consultancy services to supplement in-house resources.

7.2 Procurement/Contractual/Council Contract Procedure Rules Implications

The suggested approach would involve a procurement exercise i.e. a mini-competition to be completed using either the 'Think IT' framework or Crown Commercial Services framework. The IT Services Procurement team and Corporate Procurement team have been engaged for advice and support.

7.3 Statutory, Legal and Risk Implications

There are no significant implications within this category.

7.4 Equality and Diversity Implications

There are no significant implications within this category.

7.5 Engagement and Communications Implications

There are no significant implications within this category.

7.6 Localism and Local Member Involvement

There are no significant implications within this category.

7.7 Public Health Implications

There are no significant implications within this category.

Implications	Officer Clearance
Have the resource implications been cleared by Finance?	As this procurement is part of the 'Move of IT Systems from Shire Hall Data Centre' approved on 28th May 2019, there are no new implications to consider.
Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?	As this procurement is part of the 'Move of IT Systems from Shire Hall Data Centre' approved on 28th May 2019, there are no new implications to consider.
Has the impact on statutory, legal and risk implications been cleared by the Council's Monitoring Officer or LGSS Law?	As this procurement is part of the 'Move of IT Systems from Shire Hall Data Centre' approved on 28th May 2019, there are no new implications to consider.
Have the equality and diversity implications been cleared by your Service Contact?	Not applicable
Have any engagement and communication implications been cleared by Communications?	As this procurement is part of the 'Move of IT Systems from Shire Hall Data Centre' approved on 28th May 2019, there are no new implications to consider.
Have any localism and Local Member involvement issues been cleared by your Service Contact?	Not applicable
Have any Public Health implications been cleared by Public Health	Not applicable

Source Documents	Location
Documents relating to the Move of IT Systems from CCC Shire Hall	https://cambridgeshire.cmis.uk.com/ccc_live/Meetings/tabid/70/ctl/ViewMeetingPublic/mid/397/Meeting/917/Committee/2/Default.aspx