

AGENDA ITEM 10

POLICY, FINANCE & ADMINISTRATION COMMITTEE

25 JANUARY 2012

REPORT OF IT CLIENT MANAGER

DISASTER RECOVERY BACKUPS

1.0 PURPOSE OF REPORT

- 1.1 To consider improving the Council's backup facilities following the move to Parkside.
- 1.2 Backups are essentially taken for two reasons.
 - o To enable data to be recovered in the event of major disaster.
 - o To create a point in time snapshot of the Council's data.
- 1.3 As a result of the move to Parkside and the virtualisation of the Council's servers to create the Melton Cloud, the backup processes previously used are no longer viable.

2.0 RECOMMENDATIONS

- 2.1 **The Project Mandate attached as Appendix 1 and the Business Case attached at Appendix 2 are approved.**
- 2.2 **A supplementary estimate from the Corporate Priorities Reserve is approved to fund the installation of the solution at a cost of £33,910.**
- 2.3 **A supplementary estimate from the Corporate Priorities Reserve is approved to fund the first year running costs at a cost of £3,000.**
- 2.4 **A supplementary estimate from Melton Special Expenses Reserve is approved to fund half the WAN installation at a cost of £1,000.**
- 2.5 **A supplementary estimate from Melton Special Expenses Reserve is approved to fund half the first year WAN running costs at a cost of £2,100.**

3.0 KEY ISSUES

- 3.1 There are a number of issues with backups, where to store backup tapes, the length of time it is taking to produce backups, the time it takes to restore data from tapes in the event of a disaster.

Why Backup

- 3.2 Backups are taken to allow the Council to recover its data in the event of a disaster such as a fire. The backup data is used to re-instate the IT systems back to the point at which they were last successfully backed up.
- 3.3 Backups are also taken to create a point in time snapshot of known good system states and configurations. This allows systems to be restored in the event of corruption or deletion of data.

- 3.4 There are a number of options available to improve the backup facilities.

Current Backup Provision

- 3.5 Backups are currently achieved by backing up the data on the Council's servers to tape every night. The backups of the virtual server infrastructure are currently taking nearly 24 hours to run. 24 hours is the maximum backup window.
- 3.6 The backup tapes are transported every day from Parkside to Phoenix House by the caretakers. The tapes are stored in a fire safe at Phoenix House.
- 3.7 The tapes need to be transferred securely as the data on the tapes is not encrypted and could be read by third parties if they were lost in transit.
- 3.8 The Council has a large volume of data and it is proving increasingly difficult to backup all of the data on a regular basis. ICT Services are spending a large amount of time to ensure that backups finish successfully.
- 3.9 A disaster recovery test was undertaken in December 2012 which highlighted issues with using tapes for backup purposes. The time to restore virtual server data from tape was unacceptable. Work is ongoing with suppliers to try and improve this.
- 3.10 The Council's Sun servers can currently be adequately backed and restored using tapes.

Future Backup Provision

- 3.11 Business continuity best practice suggests that tapes should be stored offsite, ideally 2 km away from the data centre.
- 3.12 Consideration has been given to utilising a specialist tape storage company such as Iron Mountain. These companies have special tape storage locations and can securely transfer the tapes. This would reduce the workload on Melton staff and ensure the secure transport and storage of tapes.
- 3.13 The estimated cost of the Iron Mountain service is £9,000 per annum.
- 3.14 The offsite tape storage solution would not address the problems of producing backups in a timely manner and reducing the return to operations time in the event of a disaster. This would be a short term solution only.
- 3.15 The Council's virtual server infrastructure, 'Melton Cloud', contains a considerable amount of data. The volume of data is likely to increase in the future and it is likely that the current practice of backing up to tape will no longer be viable. The virtual server infrastructure currently contains 2.5 TB of data it is estimated that in 5 years time the Council will be using 12.5 TB of data.
- 3.16 It is likely that in future it will be necessary to mirror the Council's data offsite in real time. Large organisations such as Leicestershire County Council already have to do this. The data at County Hall is mirrored to a facility at the Meridian in Leicester.
- 3.17 Discussions have taken place with a number of organisations about the viability of creating a real time offsite storage facility for Melton Borough Council. There are two potential options. These are to backup to storage in the cloud such as at ICM the Council's disaster recovery suppliers or to mirror the data directly from the Council's storage array to another storage array offsite.

- 3.18 The ICM solution is an appliance which copies data to an offsite storage facility at ICM's office at Birmingham. The cost is £8,000 per terabyte per annum. To backup the current virtual server infrastructure would cost £20,000 per annum.
- 3.19 The other solution for the virtual server infrastructure is to purchase a second storage array and mirror data from the live storage array to it. The cost of the equipment to enable this is estimated to be £28,000. The equipment could be hosted at a number of locations.
- 3.20 Discussions with Leicestershire CC indicated that to host a real time offsite backup facility in their data centre at County Hall would cost £20,000 per annum for a wide area network connection and £10,000 per annum for data centre space, i.e. £30,000 per annum.
- 3.21 A more cost effective solution would be to use The Cove. It would be necessary to install air conditioning and a new rack at an estimated cost of £5,000. A WAN link would also have to be installed at a cost of £2,000 and £4,200 per annum.
- 3.22 Utilising The Cove for backups has the benefit that it would improve the experience of staff and customers using the building. Issues are currently being experienced due to the poor performance of the broadband connections to the site. The WAN required for the backup solution could also be utilised by staff at the Cove. This would overcome the current issues of poor performance of the existing WAN. In this scenario the Children's Centres are prepared to fund half the cost of the WAN.
- 3.23 It is recommended that option of utilising The Cove as a backup facility is pursued.
- 3.24 The Sun servers would continue to be backed up to tape. Periodic backups of the virtual servers would also be taken to create a point in time backup. These tapes would need to be stored offsite. The Council's disaster recovery contract would need to be amended to reflect the changes.

4.0 POLICY AND CORPORATE IMPLICATIONS

- 4.1 The Council is committed to ensuring that it has an adequate Business Continuity Plan in place. The Council's backup solution forms part of this.

5.0 FINANCIAL AND OTHER RESOURCE IMPLICATIONS

- 5.1 ICT Services have a significant amount of work to undertake to optimise the backup solution and implement the new processes.

5.2 Offsite Tape Storage Costs

Item	Install	Annual	5 year cost
Tape storage	n/a	£9,000	£45,000

5.3 ICM Offline Backups

Item	Install	Annual	5 year cost
Current 2.5 TB	n/a	£20,000	£100,000
Future 12TB	n/a	£96,000	£480,000

5.4 The Cove SAN

Item	Install	Annual	5 year cost
Cisco 3650 Switch	£3,910	£100	
3 days WAN config	£3,000		
Dell Equallogic SAN	£18,000		
SAN Config	£3,000		
Infrastructure Total	<u>£27,910</u>	<u>100</u>	
100Mb/s WAN	£2,000	£4,200	
Server rack	£1,000		
Air conditioning	£4,000	£800	
TOTAL	£34,910	£5,100	£60,410

5.5 Leicestershire CC Data Centre SAN

Item	Install	Annual	5 year cost
Cisco 3650 Switch	£3,910	£100	
3 days WAN config	£3,000		
Dell Equallogic SAN	£18,000		
SAN Config	£3,000		
Infrastructure Total	<u>£27,910</u>	<u>100</u>	
100Mb/s WAN	£5,000	£20,000	
Server rack		£10,000	
TOTAL	£32,910	£30,100	£183,410

5.6 The most advantageous option in terms of cost and reducing restore to operations time is the The Cove SAN. This will need to be funded by a supplementary estimate from the General fund, and supplementary estimate from Melton Special Expenses to pay half for half of the WAN.

6.0 LEGAL IMPLICATIONS / POWERS

6.1 The Council has a duty under the Data Protection Act to adequately protect its data.

7.0 COMMUNITY SAFETY

7.1 Not directly applicable.

8.0 EQUALITIES

8.1 Not directly applicable.

9.0 RISKS

9.0 There are currently a number of risks relating to backups which are shown below.

Probability					
Very High A					
High B			1, 6		
Significant C			2,4	3	
Low D				5	
Very Low E					
Almost Impossible F					
	IV Neg- ligible	III Marg- inal	II Critical	I Catast- rophic	
	Impact →				

Risk No.	Description
1	Up to date backups not available.
2	Insufficient staff resource to undertake the backup process.
3	Backups not available in the event a disaster.
4	Tapes too heavy to move safely.
5	Loss of unencrypted data on the tapes
6	Lengthy Return to Operations

9.1 The proposals in this report will help to mitigate the risks identified above.

10.0 CLIMATE CHANGE

10.1 The use of offsite tape storage from Iron Mountain would have a negative impact on climate change as a result of increased CO2 emissions to transport tapes back and forth to Birmingham every day.

11.0 CONSULTATION

11.1 A number of external organisations have been consulted, including ICM Disaster Recovery, Logicalis, Dell, Leicestershire County Council and Iron Mountain.

12.0 WARDS AFFECTED

12.1 Not directly affected.

Contact Officer: Chris Stone
Date: 24th November 2011

Appendices : Appendix 1 Disaster Recovery Backups Mandate
Appendix 2 Disaster Recovery Backups Business Case
Background Papers: None

Reference : PFA 25/01/11