

Moving the library systems at the University of Westminster to a hosted service

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Context

The university of Westminster uses the Ex Libris applications ALEPH (integrated library management system), MetaLib (federated metasearch), SFX (openURL link resolver for scholarly linking) and Primo (discovery and delivery layer) to support the library service. The university is experienced at supporting the Ex Libris products, being the second UK customer for ALEPH in 1998, having used SFX and MetaLib for more than ten years and Primo since 2010. Prior to moving to a managed hosted service the applications were housed on servers at the university and were supported by in-house infrastructure and application teams in the Information Services Department, from 08:00 to 18:00 Monday to Friday (excluding periods of university closure).

Identifying the need

Our discussions about a possible move to a hosted service began in late 2011 in an environment in which the university was moving from wholly in-house infrastructure and support to a hybrid cloud / in-house environment and had already moved a number of key services out onto a managed services / cloud basis. This included Google mail for our students, the Virtual Learning Environment (Blackboard) and the corporate website (the CMS running on Squiz Matrix). There were competing demands on infrastructure and on our human resources, coupled with a demand for increased availability of the services with a requirement for 24x7 support and better capacity for fixing faults. An increase in staff numbers was unlikely, so there was a pressing need to free resources from routine tasks and allow their redeployment to the development of the service. Given that a replacement library management platform was not on our immediate planning horizon, a cloud-born solution was excluded in the medium term, so it was timely to consider whether there were benefits to a move to a hosted service.

Options and decision-making

A working group was established, consisting of the Director of Information Services, the library systems team and managers from library services, infrastructure and applications teams; there was additional input from the security team.

Our requirement was to retain the flexibility of being able to customise and configure the service, to free up time for staff to enhance the service or work on other projects, and to create extra resilience. We considered key areas in respect of both in-house and managed services, based on two options:

Option 1 – Do nothing

- **Activities:** All activities are performed in house.
- **Availability:** Service availability (as calculated from the statistics of the previous 12 months) 97%
- **Support and fix:** 08:00 – 18:00, Monday to Friday (excluding university closure periods)
- **Disaster recovery:** Replication to another site and, provided both sites are unaffected at the same time, near to no downtime in case of disaster.

Option 2 - The application is installed and hosted on a server located at the Ex Libris Data Centre.

- **Activities:** Split between in-house activities and the managed service. Time saving across the applications and infrastructure teams
- **Availability:** Service availability 99.5% (equal to 1.83 days of downtime in any calendar year) as per contractually guaranteed Service Level Agreement (SLA)



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- **Support and fix:** 24x7 x 365 as per agreed SLA
- **Disaster recovery:** Up to 7 days of data update loss for ALEPH (medium impact, very low risk)

We analysed statistics of downtime from May 2011 to May 2012 and compared this to the contractual SLA for service availability offered by Ex Libris. We also analysed the number of staff and the activities involved in supporting the service. Our security and records management team examined the hosting agreement to make sure it satisfied our security needs and for legal compliance in respect of data protection and security.

In meetings with Ex Libris we concentrated on clarifying the terms of the proposed agreement, for example: 'was database management part of the agreement'? We also asked for changes to the contract in the event of the SLA not being met.

In-house activities	Managed activities
<ul style="list-style-type: none"> • Access to the servers • SQL reports • Customisations • Application-related administration tasks • Connections of third party products • Management of local peripherals • Authentication 	<ul style="list-style-type: none"> • Application hosting on data centre servers • Version upgrades and service pack installations • Hardware maintenance • Database management • Backups • Disc space monitoring • Service availability monitoring 24/7 • SFX knowledge base updates

Table 1 Division of activities for the hosted option

Option 1 (doing nothing) would not prejudice the service, and past experience suggested that there had not been any catastrophic failures or instances of failed delivery connected with the library systems infrastructure; however, this option had no human resource savings. Option 2 (application is installed and hosted on a server located at the Ex Libris Data Centre) would free internal resources in both infrastructure and applications teams, which could be used to develop additional functionality and services. The 24x7 coverage of supporting and fixing would contractually guarantee a level of availability higher than that achieved in the previous twelve months. The technology and practice were established. The cost comparison was favourable. Upgrades would be streamlined and would be implemented during off-peak times. It met our needs for data protection and security.

Having looked at the pros and cons and clarified the terms of the contract it was agreed that we would choose option 2 and move to a hosted service. The move to the Ex Libris hosted environment would continue to deliver to the university's then evolving strategy of using external providers to host and manage services where it was clear that there was a functional or economic benefit and the provision of the service stood to benefit.

We accepted that running the service would still be dependent on some university systems (namely the authorisation and authentication systems) and the university network for access to the LMS via clients and self-issue machines. This would reduce some of the advantages of hosting externally. These services could still be adversely affected by either a scheduled or unexpected outage at the university.

Implementation

Our project team consisted of librarians and members from the library systems support, information security, communications and infrastructure teams. The university and the supplier (Ex Libris) each assigned a project manager.



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We were moving four products, all of which were linked to each other. We still had dependencies at the university. We also had a need to transfer data securely between the university and the Ex Libris data centre. In addition, both ALEPH and Primo were to be upgraded as part of the move to a hosted service.

We decided to move the products during vacations. SFX and MetaLib moved at Easter and ALEPH and Primo in the summer. The planning for the move needed to take into account all services communicating or interacting with the library systems. These are many and varied. ALEPH is both a Z39.50 client and server, Google Scholar crawls our electronic serials subscriptions, vendors have links to our OpenURL link resolver and we send EDI orders to vendors. There is also a need to take data from other systems: borrower data from the identity management system and bibliographic data harvested from the archives database (CALM) and our research repository, WestminsterResearch stored in Eprints.

A specific area of discussion was around the borrower data feeds. The Identity Management System (NetIQ Identity Manager) supplied borrower data directly to our LMS server. In the hosted environment it is not permissible to load third-party software on to the hosted servers. Instead we used a local server to load the identity management software and transferred the data to the hosted server from there.

The applications were successfully moved in the vacations and there was very little disruption to the service for staff and students. Moving on different dates and on a timeline of several months reduced disruption to the service and decreased risk, but meant additional complications as temporary firewall rules were needed to ensure that the applications that had moved could still communicate with those yet to move.

Outcomes – a mixed picture

Our requirements were to retain the flexibility of customising and configuring the service, to free up time for staff to enhance the service or work on other projects and to create extra resilience.

We have retained the same flexibility to customise and configure the service. There have been no problems accessing the servers. Regular Knowledge Base updates to the OpenURL link resolver are automatically done now. Staff no longer spend time discussing how to do backups or analysing server level problems. Staff time has been released and one member of staff has been moved full time to the library team to lead projects, and is currently working to implement a new reading-list system (Talis Aspire).

The creation of additional resilience is much more of a mixed picture. The move of all applications to the hosting centre was completed at the end of August 2013. There was an outage across all applications for approximately one hour in September 2013 and also several outages for SFX up to January 2014 and another for approximately one hour in October 2014. Although the overall availability was within the agreed SLA, the initial instability of SFX was a retrograde step and a surprise because it was a service that had rarely failed when supported in house. Most recently, we have had periods in both January and February this year (2015) when the Aleph client has been too slow to use.

On the plus side, support from Ex Libris is much simplified. Having all our applications hosted with the company providing support means that ExLibris has simple access to our servers in order to advise on configurations and customisations. We now have out-of-hours detection of service availability. The statistics for our original analysis of downtime for 2011 were adversely



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affected by several days' undetected loss of our discovery service Primo over the Christmas period. This will not happen within the new model. Another advantage, although infrequently needed, is the availability of Oracle support. We previously had access to just one person with Oracle knowledge to do ad-hoc support; now this is available at all times from Ex Libris.

We have only just taken advantage of the managed upgrades, to upgrade Primo to version 4.8.2 on the 15 December 2014. This upgrade began at 02:00, reducing the amount of downtime for an upgrade which we would otherwise have had to carry out during normal working hours.

Conclusion

When we first started the discussions about a hosted service in 2011, the Information Services department had an evolving strategy on hosting. The decision to move our library management platforms to external hosting was not taken lightly, but with our longer-term replacement strategy not yet fully in place, it was seen as a good 'halfway house' to enhance availability and resilience to the benefit of our users. Since then a Service Evaluation Framework has been created with a requirement that *'for each service that is introduced or reviewed an all-inclusive supply-host-manage solution should be sought in the first instance'*. As and when we decide the future of our library management platforms this will be a key issue to address and our current experience will help inform that.

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