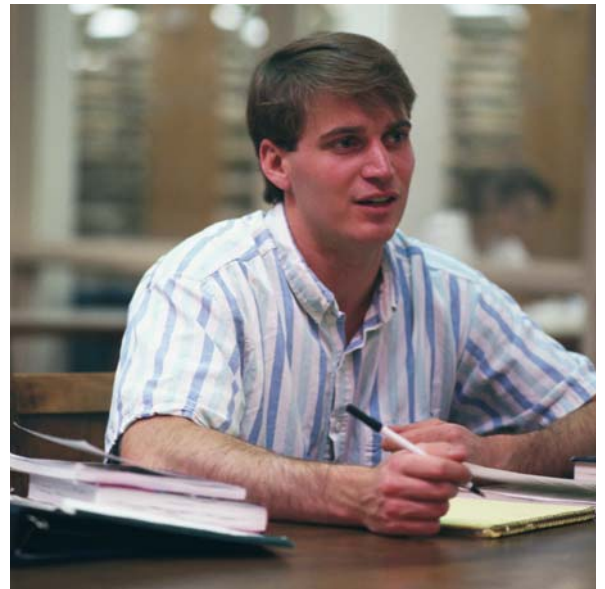


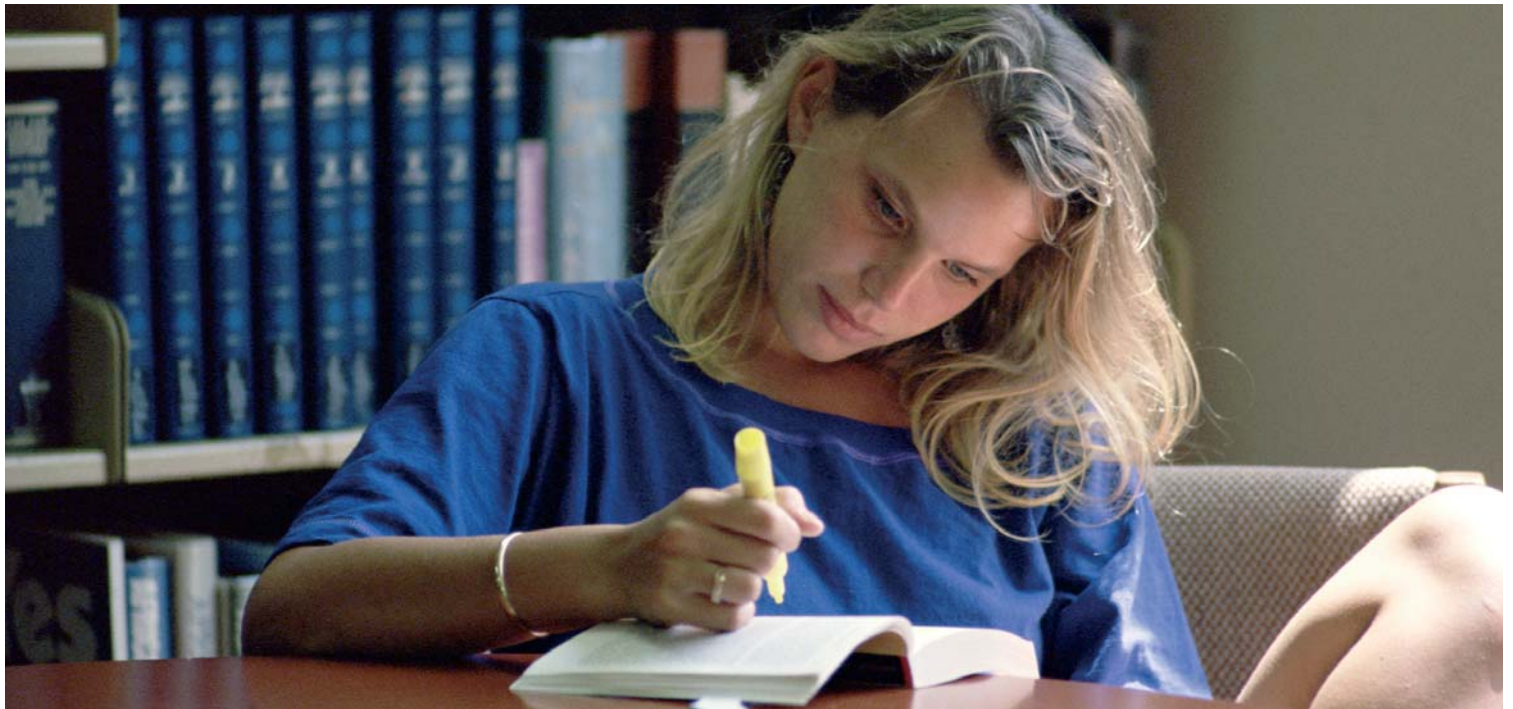
HP technology supports one of the  
UK's most dynamic universities

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"The HP solution is highly reliable and scalable and we have more confidence that we can provide the level and quality of service that students expect today, which is access to whatever they want, whenever they want it."

Kevin Walsh, technical director, computing and information services, Liverpool John Moores University.





Liverpool John Moores University (LJMU) has more than 24,000 students from all over the world, around 22,500 of whom study in Liverpool and the university has played a vital role in the cultural renaissance of Liverpool. LJMU is a very dynamic and rapidly evolving institution, and this has resulted in a growing demand for data storage and availability that the university's old IT infrastructure could not meet.

"Our previous system didn't operate effectively as a Storage Area Network (SAN)," said Walsh, technical director for computing and information services at LJMU. "Simply expanding the disk was not an option. Scalability was a problem and that was affecting availability."

#### **Greater demands**

The problems were made worse because LJMU has been moving away from a traditional nine to five, Monday to Friday environment to become a 24x7 organisation. Students expect constant access to IT, with Learning Resource Centres open 24 hours a day and peak use of the Virtual Learning Environment occurring at 2am. Also, LJMU has a very large franchise operation, running courses in China, Greece and Malaysia, which demands round-the-clock access.

"All aspects of the university's day-to-day activities have become more dependant upon IT - continuity and availability has become absolutely essential" added Walsh. Users are not just the 24,000 students but also the 2,500 staff and they now expect the IT environment to be as reliable as a telephone. They pick it up and the dialling tone is always there."

"We wanted a new system that would remove the limitations on growth that we had experienced, providing high availability as well as business continuity options. The recovery times we were able to achieve were failing to meet increasingly demanding requirements."

LJMU approached a number of suppliers to get an understanding of what the market could provide, narrowing it down to a choice between HP and Dell. With the help of its trusted partner Compelsolve, the university chose HP because it perceived the technology to be much cleaner and better engineered in terms of its capabilities and because LJMU was a long standing satisfied HP/Compaq customer.

#### **Replicated sites**

LJMU purchased an HP StorageWorks Enterprise Virtual Array (EVA) 5000 with 10Tb capacity and an EVA 3000 with 8Tb - the enterprise class, high performance, high capacity and high availability "virtual" RAID storage solutions.

These have enabled LJMU to create a second computer room in a different building one mile away, with one EVA in each, thus providing two SANs with the storage replicated across both sites. There is also a third site connected to the SAN infrastructure containing an HP MSL6060 Ultrium tape library providing off-site backups; all three sites are linked by the university's own private fibre network.

The university's overall IT infrastructure is provided by over 200 servers, the vast majority of which are HP ProLiant industry standard x86 machines. The 40 servers hosting the mission critical systems are now connected to the SAN and distributed between the two main data centres. These SAN-connected systems include the central file store, Exchange email system, the Student Management System, the Library Management System, the media and video streaming servers, virtual learning environment, Extranet and Intranet facilities and servers running Microsoft SQL. LJMU also decided to replace its Sun servers with HP.

"We've been migrating away from Solaris over the last year because we believe commodity hardware provides much better overall value", said Walsh.

### Customer relationship management

LJMU runs the Oracle Student System and Customer Relationship Management modules of the Oracle E-business Suite and in the future intends to bring in the Human Resources and Finance applications. The university's Oracle applications, which include the Ex-Libris library system, all run on Red Hat Linux 3.3.

This decision was based on the fact that using Intel servers provides a single hardware platform for all the university's central servers (both Windows and Linux) thus providing it with more flexibility for server redeployment and for simplifying disaster recovery.

LJMU had no confidence in Solaris because it felt that Sun's claims for Solaris on Intel were inconsistent. Also, the fact that Linux is the primary development platform for Oracle and Oracle provides support for the entire software stack, including Linux, gave LJMU a high degree of confidence in deploying Linux.

### Virtual learning

The university's virtual learning application is Blackboard, which delivers content and service to students in a very personalised way. This runs on a dual-node Windows 2003 system and uses SQ Server database.

For its Library Management system, LJMU uses two SAN connected servers configured as a 9iRAC, both also running the Applications tier. Non-database files are accessed via NFS from resilient, SAN attached, NAS servers

The CRM and Student Management Systems run on a three

server 9iRAC for the database tier and two additional servers provide the load balanced application tier.

LJMU uses stretch clustering between its two datacentres, and in particular Oracle 9iRAC. As well as providing vital scalability, this is designed to give high availability and to increase reliability as well as being more easily managed and producing higher levels of performance.

### Recovery times slashed

"Our Windows clusters fail over automatically in seconds," added Walsh. "Using Dataguard for the Library system, we plan to keep the copy database up to date but rely on manual failover. For the Student system, we are considering the pros and cons of using the copy database for reporting purposes and thus may only apply change logs on a daily basis; hence we envisage two hours recovery time while Dataguard processes change logs."

Everything is maintained by Compelsolve with four hour response, 24x7, but the systems have proved extremely reliable and have provided continuous availability since installation.

Walsh continued: "The HP storage solution is highly reliable and scalable and we now have a lot more confidence that we can provide the level and quality of service that students these days expect, which is access to whatever they want, whenever they want it."

"Previously, we were spending too much time trying to manage our file store. Now, we can concentrate on adding value to the services we offer rather than managing discs, which is vital."



## Challenge

- Liverpool John Moores University (LJMU) is a dynamic and rapidly expanding institution whose students and staff now demand 24x7 access to learning and other applications.
- The university's old system was no longer suitable to its needs with limits on scalability that were also affecting availability.
- LJMU needed a new answer that would remove limitations on growth, provide higher availability and also provide much needed business continuity.

## Solution

- LJMU created a second computer room and installed new HP StorageWorks Enterprise Virtual Arrays in each - with a third site for its HP Ultrium Tape Library.
- Two SANs are replicated across each of the main sites with HP ProLiant servers connected to run many applications including Exchange, media and video streaming and the Blackboard virtual learning environment, Internet and intranet. It also runs the Oracle Student System, CRM and Library Management system on Linux.
- Sites are connected by the university's private fibre network and stretch clustering is used across the two centres.

## Results

- Recovery times have been slashed from five days to two hours, or even seconds.
- In line with the dynamic development of LJMU, the 24,000 students and 2,500 staff now have much quicker access to vital learning resources and data 24x7.
- The system is highly reliable and scalable, has increased availability and significantly reduced disk management demands, giving IT staff more time to add value to the organisation.

## Customer at a glance

- **Industry sector:** Higher Education
- **Company:** Liverpool John Moores University
- **Headquarters:** Liverpool
- **Founded:** 1825
- **Telephone:** +44 (0)151 231 2121
- **Number of employees:** 2,500
- **URL:** [www.livjm.ac.uk](http://www.livjm.ac.uk)

## Partner at a glance

- **Company:** Compelsolve
- **Headquarters:** London
- **Telephone:** +44 (0)20 8961 6777
- **Number of employees:** 400
- **URL:** [www.compel.co.uk](http://www.compel.co.uk)
- **Business:** Provider of integrated IT solutions
- **Product:** Business, Data Management and Infrastructure solutions from leading suppliers

## Why HP?

- LJMU found HP's technology was better engineered in terms of its capabilities.
- It identified limitations with systems from competing suppliers, which would not have supported its legacy systems.
- LJMU already had a long relationship of using Digital, then Compaq and HP as its supplier.

## Hardware

- 1 x HP StorageWorks Enterprise Virtual Array (EVA) 5000
- 1 x HP StorageWorks Enterprise Virtual Array (EVA) 3000
- 30 x HP ProLiant DL 380 and other DL level Intel servers running Windows
- 10 x HP ProLiant DL 380 and other DL level Intel servers running Red Hat Linux 3.3

## Software

- Blackboard virtual learning
- Microsoft Exchange
- Ex-Libris library management system
- Oracle E-Business Suite CRM
- Oracle E-Business Suite Student System
- Oracle 9iRAC

## HP Services

- Consulting and Integration Services

For more information on how working with HP can benefit you, please contact your local HP sales representative or reseller, or visit [www.hp.com](http://www.hp.com).

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