

Hitachi Storage Solutions at Work

National Library of Scotland

INDUSTRY Government: Public Sector Services

SOLUTIONS **Business Continuity: Data Replication and Backup**
Hardware — Hitachi Adaptable Modular Storage 1000 (2)
Software — Hitachi TrueCopy® Extended Distance software
and Hitachi ShadowImage® Replication software



“This solution has given us the resilience, scalability and security to expand our digitisation of Scotland’s literary archive. We look forward to leveraging Hitachi and Viglen Storage Group’s expertise to expand this pioneering tool in the future.”

*David Dinham
ICT Manager
National Library of Scotland*



National Repository Begins to Bring Hundreds of Years of the Written Word Online with Hitachi Data Systems Storage Solution

Scotland's legal deposit library for all publications produced in the United Kingdom needed to have the storage capacity to make all its collection-related data accessible to the public and develop a digital repository to keep its extensive archive safe for prosperity. It therefore developed a digital repository and chose to power it with Hitachi storage hardware and software. The advanced scalability and reliability of the solution mean that documents ranging from historical manuscripts to online magazines are now available to users across the globe, 24 hours a day.

Founded in 1689 as the Faculty of Advocates, the National Library of Scotland (NLS) holds almost 400 years' worth of the country's written history and culture. As the legal deposit library for Scotland, it is entitled to claim a copy of every publication released in the United Kingdom, amounting to over 6,000 items a week. It now has over 14 million printed items, 1.6 million printed maps and 100,000 journal, magazine and newspaper titles. Its manuscripts fill eight kilometres of shelves. The Scottish Screen Archive is also part of NLS.

In 2004, the library adopted a new strategy entitled "Breaking through the Walls" with the aim of making its collections more accessible to a wider range of people. Recognising that one of the best ways of doing this is to make more material available via its Web site, NLS was keen to develop a mechanism by which interested users both within and outside Scotland could have access. At the same time, the library wished to create a secure and scalable repository for all its existing records and texts as well as future ones to protect the nation's priceless literary resources for posterity. It therefore decided to invest in online repository systems which would result in a Digital NLS.

Demanding Excellence

In order to achieve this ambitious and innovative aim, NLS partnered with storage consultancy Glasshouse to develop a tender for purchase, outlining the key requirements for the storage system that would underpin Digital NLS services. Proposals were to include the design, supply, installation, maintenance and support of the storage system that would make up 50 percent of the overall budget assigned to the Digital NLS programme.

"The Digital NLS systems are intended to be the primary repository for the nation's cultural and literary heritage, so losing any of the data is absolutely not an option," explains NLS ICT Manager David Dinham. "We needed a fully reliable and scalable storage solution to keep safe the collections we have now, and grow as we acquire more."

As part of its strategy to ensure the safety and integrity of the data stored in the Digital NLS systems, the library needed its storage solution to enable remote replication and backup capabilities for large amounts of data, up to 100TB. It was keen to ensure these requirements were met with the highest quality products and services, at a competitive price. It was also essential that the time and costs administrators spent managing the storage system was minimised.

Despite having no previous relationship with the NLS, solution provider and Hitachi Data Systems reseller Viglen responded to the tender document, suggesting a storage solution based on a combination of Hitachi storage hardware and duplication software with an ONStor NAS Gateway. "NLS wanted to be sure that the high levels of service and capacity we offered in the proposal were realistic," explains Eddie Weremiuk, general manager, Viglen. "We therefore took the team to visit a similar deployed solution to demonstrate the benefits the solution could offer."

As a result of this visit, the NLS was convinced of the superiority of the proposed solution and chose to implement it. "We also liked the fact that Hitachi could offer us RAID-6 and guarantee storage rebuilding in case of failure," adds

Dinham. “Combined with the competitive price and our positive experience of visiting similar Hitachi projects, this persuaded us that we had found the right solution.”

The solution deployed consisted of two Hitachi Adaptable Modular Storage 1000 systems, each with 120TB of capacity. An additional 2TB is available on each for snapshots, which are taken using Hitachi ShadowImage® Replication in-system software. Data is replicated in line with strict service level agreements (SLAs) between the primary and secondary sites based in Edinburgh and Glasgow, respectively, using Hitachi TrueCopy® Extended Distance asynchronous remote replication software.

Most of NLS's digital repository hardware is stored in the Edinburgh site. The Glasgow site is used mainly for data replication and backup, as well as supporting the library's essential data checking algorithms. Due to the paramount importance of both types of data stored on the Adaptable Modular Storage

“The Adaptable Modular Storage 1000 systems store our important content safely and I know that our cultural heritage is being backed up securely, too — and that helps me sleep at night!”

David Dinham
ICT Manager
National Library of Scotland

1000 systems, an SLA of 99.9 percent availability was put into place from the outset.

As part of the solution developed for NLS, all infrastructure support is provided directly by Hitachi Data Systems, giving the team at the library the confidence that their storage system is being managed by people with the best skills and experience. The local Hitachi Data Systems support team in Edinburgh continuously maintains the solution in its optimal state. To offer further peace of mind, the system operates a 24/7 “phone home” facility, in which it sends an alert to the administration team if it spots any developing issues so that they can be addressed and fixed before they become a problem. A response time of four hours is guaranteed through another SLA agreed to prior to deployment.

A Scalable Digital Vault

The solution that Viglen and Hitachi Data Systems have delivered to NLS enables centralised storage of data and fast replication to ensure data integrity. “With this cohesive storage platform, we don't need to keep buying extra boxes and adding them on every time we need to digitise a new piece of content,” says Dinham. “We can rely on the Adaptable Modular Storage 1000 systems to store important content safely, and I know that our cultural heritage is being backed up securely, too — and that helps me sleep at night!”

In addition to fast and easy scalability, which will enable the repository systems to continue growing as more content is published, the system has met its reliability demand, with 100 percent uptime since deployment. This means that not only can customers access the information they need at any time, but staff at the library are also able to stay productive with constant access to key business applications.

The Library of the Future

The library is currently finalising the migration of its existing digital assets onto the Hitachi Data Systems/Viglen storage solution. The capacity it now has available means that the repository can be opened up in the future to include all electronic content created within the UK, not just Scotland. The team at NLS also plans to offer hosting services for small organisations in Scotland to store their digital content in a safe and reliable environment.

The library's key aim of giving the Scottish public wider access to its rich cultural heritage has already been met as well. Some of its most fascinating historical documents, such as the first nine books ever printed, in about 1508, and a copy of *The Murthly Hours*, written and illuminated in the 1280s, are already available to be viewed online.

“This solution has given us the resilience, scalability and security to expand our digitisation of Scotland's literary archive,” concludes Dinham. “We are excited to be able to offer citizens access to publications now through this pioneering tool, and look forward to expanding the resource further over time.”

Viglen Storage Group

Over the last three decades, Viglen has developed a reputation for excellence in IT innovation, delivery and service. Working hand-in-hand with some of the world's leading companies, like Hitachi Data Systems, Viglen delivers leading-edge hardware systems and networks, software and storage solutions combined with the highest levels of customer service and support.

A major solution supplier to the education and public sectors, Viglen supplies IT solutions and support to two thirds of Britain's universities.

Viglen has achieved Hitachi Data Systems Platinum Partner status, designed for premier solution providers that provide the highest service levels and technical capabilities, and offer custom development/consultancy services. This attainment demonstrates Viglen Storage Group's thorough understanding and professional approach in offering bespoke and end-to-end dedicated storage and backup systems.

Corporate Headquarters 750 Central Expressway, Santa Clara, California 95050-2627 USA
Contact Information: + 1 408 970 1000 www.hds.com / info@hds.com

Asia Pacific and Americas 750 Central Expressway, Santa Clara, California 95050-2627 USA
Contact Information: + 1 408 970 1000 www.hds.com / info@hds.com

Europe Headquarters Sefton Park, Stoke Poges, Buckinghamshire SL2 4HD United Kingdom
Contact Information: + 44 (0) 1753 618000 www.hds.com / info.emea@hds.com

Altrincham Hamilton House, Church Street, Altrincham, Cheshire WA14 4DR, United Kingdom
Contact Information: + 44 (0) 161 928-4243 www.hds.com / info.uk@hds.com

Bristol 100 Park Avenue, Aztec West, Bristol BS32 4TS, United Kingdom
Contact Information: + 44 (0) 1454 625 511 www.hds.com / info.uk@hds.com

Edinburgh 11 Rutland Square, Edinburgh, Scotland EH1 2AS, United Kingdom
Contact Information: + 44 (0) 131 228-4343 www.hds.com / info.uk@hds.com

London Hitachi Data Systems, St Martin's House, 16 St Martin's Le Grande, London EC1A 4EN, United Kingdom
Contact Information: + 44 (0) 20 7397 8670 www.hds.com / info.uk@hds.com

West Midlands (Birmingham), 6220 Bishop's Court, Solihull Parkway, Birmingham Business Park, Birmingham B37 7YB, United Kingdom
Contact Information: + 44 (0) 121 717 4000 www.hds.com / info.uk@hds.com

Hitachi is a registered trademark of Hitachi, Ltd., and/or its affiliates in the United States and other countries. Hitachi Data Systems is a registered trademark and service mark of Hitachi, Ltd., in the United States and other countries.

TrueCopy and ShadowImage are registered trademarks of Hitachi Data Systems Corporation.

Microsoft is a registered trademark of Microsoft Corporation.

All other trademarks, service marks and company names are properties of their respective owners.

Notice: This document is for informational purposes only, and does not set forth any warranty, express or implied, concerning any equipment or service offered or to be offered by Hitachi Data Systems. This document describes some capabilities that are conditioned on a maintenance contract with Hitachi Data Systems being in effect, and that may be configuration dependent, and features that may not be currently available. Contact your local Hitachi Data Systems sales office for information on feature and product availability.

Hitachi Data Systems sells and licenses its products subject to certain terms and conditions, including limited warranties. To see a copy of these terms and conditions prior to purchase or license, please go to <http://www.hds.com/corporate/legal/index.html> or call your local sales representative to obtain a printed copy. If you purchase or license the product, you are deemed to have accepted these terms and conditions.

© Hitachi Data Systems Corporation 2008. All Rights Reserved.
SS-148-00 DG October 2008