CASE STUDY

Demonstrating Proven Business Value Through Backup Redesign: Ordnance Survey and EMC Next Generation Backup and Recovery Solutions

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It is exciting for us at IDC to encounter an organization that commits to a modernization project, and turns it into a striking set of business benefits. Such an outcome has been created by Ordnance Survey by replacing an aging tape infrastructure with an EMC next-generation backup and recovery solution.

Ordnance Survey was one of ten companies recently interviewed by IDC in order to quantify the business value of customers using EMC backup and recovery solutions. It has achieved significant efficiency gains and financial savings through adoption of EMC solutions as part of its wider IT modernization strategy. Many of the interviewees had common challenges as they sought to improve the backup, recovery, and availability of their data and applications.

Ordnance Survey's move from tape to disk as a backup medium illustrates a common modernization project for companies faced with rapidly growing datasets to protect. This case study describes a highly successful project to modernize the company's data protection capabilities, resulting in significant business and financial value, as well as overcoming technical obstacles that were potential constraints on the growth of the organization.

IDC believes that Ordnance Survey is a representative example of the significant operational and financial benefits that a mid-size company can realize when transitioning away from tape as a backup medium.

SITUATION OVERVIEW

Organization Overview

With 1,100 employees, the UK mapping agency, Ordnance Survey, fits the profile of a midsize company dealing with high levels of data growth and struggling with a legacy tape-based backup and archive infrastructure.

Despite being more than 200 years old, Ordnance Survey's data growth is driven by the same kind of rich-media, high-resolution imagery and graphical content that is seen in most modern technology-driven organizations. More than 300 surveyors and 100 base stations capture geophysical mapping information that enables the company to perform thousands of updates each day. Aerial imagery is a vital source of information, and the resolution of the aerial optics is constantly on the rise. A single aerial image file has risen from a few megabytes to around a gigabyte in size, a major factor in the exponential growth of data that Ordnance Survey must protect, secure, and archive.

Over the last three years, the total data volume at Ordnance Survey has grown from around 60TB to 600TB, a rate of about 100% per year. This is well above what IDC
normally sees from midsize companies in Europe, which is more typically between 30% and 60% per year. It was therefore imperative for Ordnance Survey to find a data protection solution with high throughput performance and the ability to scale for significant future growth.

**Challenges and Solution**

Many of the challenges faced by Ordnance Survey are common to users of legacy tape backup:

- **Administration:** About 25 man-hours a week were spent monitoring and managing unreliable backup and recovery processes, accounting for 15% of total IT administration time. It was also difficult to assess the backup success/failure rates and to monitor system reliability.

- **Backup process:** Backups were taking too long, and were not guaranteed to complete as intended. It was often difficult to meet performance commitments around backup and recovery. Multiple copies of the same files were being backed up.

- **Recovery:** Recovery of data was difficult or impossible if a tape in the sequence was damaged. Recovery often meant driving to the tape vault location 30 miles from the Ordnance Survey datacenter to retrieve the required tapes. Although most recovery requests were for backups less than 30 days old, there was too much data to hold recent backups online for more than seven days.

- **Tape-related:** Tape drives and libraries needed regular mechanical maintenance. The need for maintenance was often triggered by a failed backup or recovery process. Failed tape drives were often replaced with reconditioned units, which were also prone to failure. It cost time and money to move tapes between sites.

"Backups took too long and were prone to failure if a drive needed maintenance," said Mark Hunt, Enterprise IS Support Engineer. "And a restore request could mean driving 30 miles to the secondary site to recover the required tapes. We came to realize that continued investment in tape wasn't a viable strategy for Ordnance Survey."

**Making the Transition to a Next-Generation Backup Solution With EMC**

Ordnance Survey made its first evaluation of Data Domain appliances in 2008, when deduplication was still relatively new to the market. The team found the throughput performance and deduplication ratios exceeded (somewhat skeptical) expectations, and integration with backup software was straightforward. Based on the promising test results, Ordnance Survey purchased two Data Domain backup targets, one for the main datacenter and one for the remote DR location with asynchronous replication between the sites.

The installation process went smoothly and the units were accepting backup data and replicating between the sites within a few hours.

As more systems were backed up to the Data Domain targets, more throughput and capacity was required. Ordnance Survey now runs five units, one at the headquarters and four at the lights out datacenter. The systems have undergone capacity upgrades through additional drive shelves, taking usable capacity to 108TB.
Business Value Outcome

The transition from tape to disk-based targets in Ordnance Survey has delivered a dramatic overall improvement in backup and recovery capabilities. The key factors driving business value for the project are as follows:

- Significantly faster recovery, especially from backups that occurred more than a week previously: Due to the average compression ratio of 20:1 on operational and user data, 12 month's worth of backups can be held online in order to speed up recovery requests. From both compression and deduplication, Data Domains are currently storing 1.76PB of data on 88TB of storage, saving 1.67PB of capacity in addition to other operational costs including power, cooling, and floor space. Small files are now typically recovered in minutes rather than hours, reducing delays and improving user productivity.

- Faster backups: The backup window for some backups was cut by a factor of eleven, from 19 hours to less than two. This better positions the organization to deal with ongoing growth in data volumes.

- Fast remote synchronization, with secure transfer of data: Prior to the Data Domain deployment, Ordnance Survey did not replicate data to a remote location. In the worst case, a site outage would require rebuilding the datasets and server images from many backup tapes. Replication allows a rapid failover and failback with minimal loss of time or data, thereby minimizing the potential disruption for its customers.

- Elimination of tape for backups/restores (for 95% of policies, assuming backup took place less than a week previously): If Ordnance Survey continued with tape as a backup medium, a major capital investment would have been required for its drives and libraries. By moving to EMC’s next generation backup solution, Ordnance Survey avoided this investment along with the ongoing cost of service, maintenance, power, cooling, and additional media.

- Cost savings on tape media and transportation: Ordnance Survey was spending about £14,000 per year on tape media and over £5,000 per year on software licenses for the tape libraries. Savings have also come from reduced tape transportation costs between locations.

- Cost savings from reallocation of primary storage: Approximately £45,000 has been saved through freeing up space on fiber-channel primary storage arrays and provisioning it to production applications and users.

- Reduced administrative costs: Ordnance Survey reduced the time associated with managing backup and recovery by 80% from two dedicated staff members to less than a full time job.

In addition to the ‘hard’ savings mentioned above, Ordnance Survey offers significantly higher levels of SLA performance to its internal clients, leading to an improvement in productivity for IT users right across the business.
ESSENTIAL GUIDANCE

A number of key findings and observations can be taken from Ordnance Survey’s experience with replacing its legacy tape infrastructure.

- **Realize when tape has reached its limit:** When tape was its primary backup medium, Ordnance Survey was obliged to compensate for the shortcomings with additional operational and management effort. Rather than have tape serve the business, the business was forced to accommodate the needs of tape. Ordnance Survey is a good example of a company breaking out of that mindset.

- **Conduct a proof of concept to plan correctly in the long run:** The Ordnance Survey performed rigorous testing in order to evaluate system performance, compatibility, ease of use, and reliability. The positive outcome allowed it to size the solution correctly and to deploy the production system with confidence.

- **Use replication to enhance disaster resilience:** Prior to the deployment, a datacenter outage would have resulted in major disruption and probable loss of data. By using the EMC systems to replicate only changed blocks to a remote site, Ordnance Survey could establish a powerful and cost-effective disaster recovery solution. A next-generation backup solution incorporating deduplication makes replication cost effective, allowing more companies to reap the benefits of incorporating disaster recovery planning as part of their backup and recovery strategy. EMC’s realization of the importance of replication as part of its solution, in IDC’s view, is one of EMC’s key differentiators.

LEARN MORE

Related Research

- **Generating Proven Business Value With EMC Next-Generation Backup and Recovery** (N. Sundby, D. Bizo, R. Perry, IDC #IDCWP40T, October 2011)


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