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## Success Stories

# Arup Achieves Reliable Disaster Recovery and Fast Restore Times, and Saves Millions with NetApp



## ARUP

### KEY HIGHLIGHTS

#### Industry

Professional Services

#### The challenge

Upgrade an unreliable direct-attached storage system, dramatically reduce backup windows, and deliver an effective disaster recovery solution.

#### The solution

Two NetApp® FAS3050 storage systems form the backbone of a mirrored disaster recovery solution located in Arup's primary data center in London and a remote facility.

#### Benefits

- Decreased time to recover mission-critical data by 99%
- Reduced time to restore files from 6 hours to under 10 minutes
- Achieved over U.S.\$3.6 million cost savings in hardware, software, and support costs

### CUSTOMER PROFILE

Founded in 1946, Arup is a world-renowned construction management and engineering consulting company with global revenues exceeding U.S.\$950 million. Headquartered in London, the firm has over 9,000 staff members based in the Americas, Australia, Southeast Asia, Europe, and the Middle East. Arup's mission is "to shape a better world," and, if its long list of award-winning projects is any indication, Arup is doing just that. Notable company projects include the Sydney Opera House, the Channel Tunnel Rail Link in the UK, London Heathrow Terminal 5, and the Seattle Central Library.

### THE CHALLENGE

#### Addressing critical storage needs

Key factors behind Arup's success are its depth of experience and its ability to leverage over 60 years of engineering work. With over 10,000 projects underway at any time, Arup places high value on its ability to deliver anytime, anywhere access to both active and historical project records. At one point, access to data storage was a problem because Arup's 86 distributed offices depended on an unreliable direct-attached storage (DAS) system. But consolidated access to engineering data was first achieved five years ago when Arup replaced 48 Windows® file servers across Europe with a single NetApp FAS system.

Arup has since continued to improve its storage network and revamp its disaster recovery (DR) capabilities. Recognizing the data risks associated with operating a decentralized company, Arup today stands as a model for how to achieve success with DR. But getting there didn't happen overnight.

#### Recognizing the risk

Arup depends on both structured database files and unstructured office files to run its business. Company financials, for example, run on the Oracle® E-Business Suite and JD Edwards software. Microsoft® Exchange e-mail files, CAD/CAM drawings, and office automation documents are also stored on the company's network. Meanwhile, tracking time and materials—both critical for billing purposes—is handled by a specialized package called Progression by RedSky.

With so much mission-critical data at stake, management started focusing on DR after a spurt of mergers in 2002 and 2003. At the time, Arup outsourced its DR operation to a third party with its own data center. Arup retained backup tapes and, in the event of a disaster, the vendor would attempt to restore Arup's data within 24 hours, using a mix of Windows and UNIX® hardware and software.

# “It became clear early on that NetApp was far and away more suitable for what we were trying to achieve than the other solutions.”

**Graham Bell**

Head of IT, Project Delivery, Arup

As Arup began to use a wider range of applications and operating systems, the company felt at risk relying on the vendor's equipment and skills. “We were never confident that we could get our systems up and running independently from backup tapes—at least not without a degree of pain,” says Graham Bell, Arup's head of IT, Project Delivery. “In addition, the cost for this service was high, well into six figures annually.”

To resolve the problem, Bell launched an initiative to both streamline Arup's server estate and implement an in-house DR plan. Approximately 90 older UNIX and Windows servers were replaced with 35 smaller, faster HP “pizza box” rack servers to save money and space. “We went from paying hundreds of thousands of pounds per year in hardware support to just several thousand pounds a year,” says Bell.

For DR, Arup followed a similar strategy of simplification and consolidation. The company evaluated two leading storage networking and DR vendors, NetApp and EMC. “It became clear early on that NetApp was far and away more suitable for what we were trying to achieve than the other solutions,” says Bell.

EMC proposed a Fibre Channel SAN system that would have required an expensive, complex switching system to overcome latency issues between the primary London site and the secondary site near Birmingham—approximately 100 miles apart. “The mirroring capability that we wanted would have struggled with this system over any distance,” says Bell. “Plus the proposed protocols and technology did not play to our company's strengths and skills.”

## THE SOLUTION

### Finding the right DR solution

Arup selected two NetApp FAS systems running CIFS and NFS protocols. Both NetApp systems were upgraded to FAS3050 storage servers in 2006. One system is installed in Arup's data center campus in London, the other is located at the firm's DR site. The NetApp solution's ease of use, compatibility with Arup's existing IP network and skill set, and comparative low cost factored heavily into the selection process. Bell estimates Arup's return on investment from NetApp hardware alone is approximately nine months.

Bell says NetApp's software distinguished it from other vendors in the DR space. Determined to improve upon the 24-hour recovery window, Arup was quickly won over by NetApp SnapMirror® technology. With this technology in place, and by utilizing application-specific SnapManager® for Exchange and SnapManager for SQL Server™, Arup can fully utilize the NetApp Snapshot™ solution to replicate mission-critical data stored on local volumes to its DR site several times per hour.

“NetApp SnapManager products allow us to recover quickly and easily, with almost instantaneous file recovery,” says Bell. The NetApp SnapMirror technology is the core of Arup's DR strategy and extends Arup's business resilience by mirroring critical corporate data to remote sites in Australia and the United States. “Over the last two years we've been mirroring data from headquarters to give our international consultants universal access to the same corporate information wherever they reside,” says Bell.

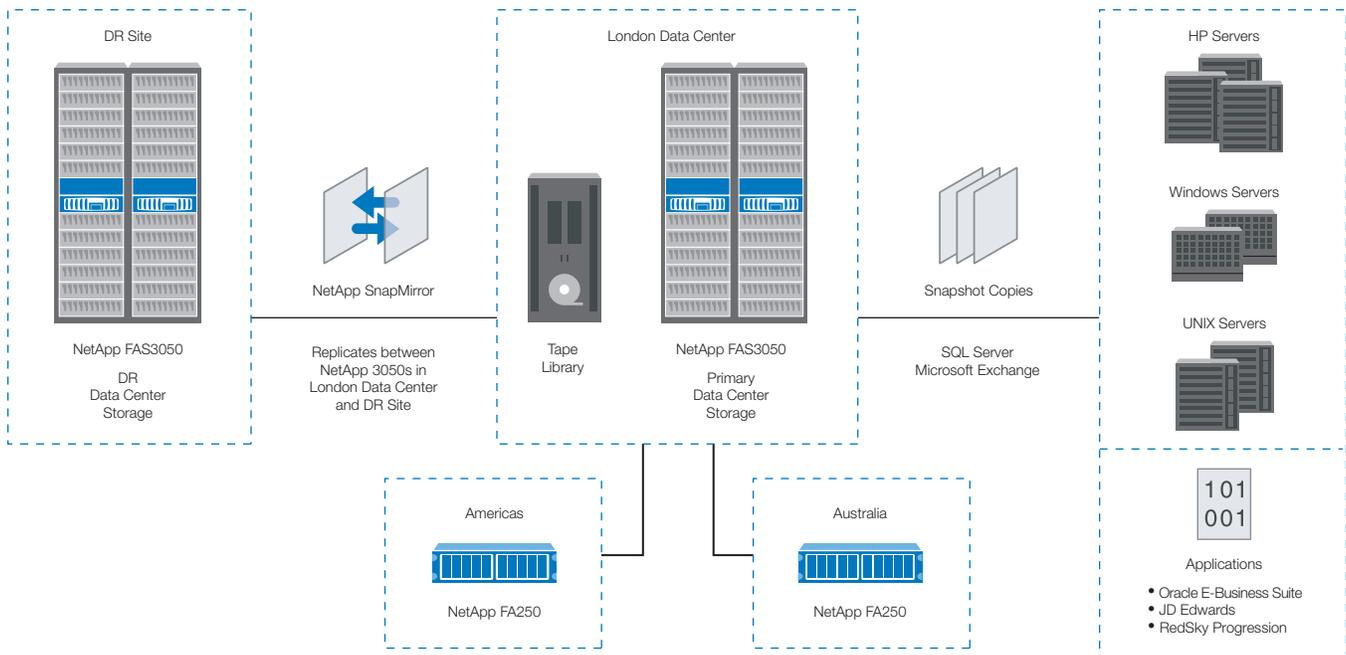


Figure 1) Two enterprise-class NetApp FAS3050 storage arrays form the core of a mirrored DR solution using SnapMirror to replicate mission-critical applications and files among Arup data centers. Additional disk-to-disk storage is handled by NetApp NearStore R200 systems in Arup's European offices.

Arup's London campus is still using tape to back up its enterprise systems for long-term storage. Other European offices outside the UK, however, are using NetApp NearStore® R200 systems to back up local data to inexpensive SATA drives. To provide complete data redundancy, NetApp R200s also employ SnapMirror to replicate data back to the UK DR site for storage.

"Thanks to NetApp, I can't remember the last time we had to recover anything from tape," says Bell. "We regard it as a last line of defense that we've never had to use. The next step for us may be to say that we just don't need the tape backups any longer."

## BUSINESS BENEFITS

### 100% reliability

Arup has had no major network outages as a result of a problem with NetApp storage servers. "The number of storage issues we have now is an order of magnitude less than five years ago, when we depended on disparate DAS systems," says Bell. On the rare occasion when an individual disk drive in the RAID cabinet needs servicing, the NetApp software automatically sends out an e-mail alert, resulting in the dispatch of a new drive that arrives by express service within four hours of first notice.

While Arup's DR implementation keeps the business protected from catastrophic failure, NetApp protects it from smaller data losses that can add up to big money over time. Accidental file deletions by users are no longer the problem they once were. "Our financial users sometimes deleted files inadvertently that had been stored on tape," says Bell. "For us in IT, managing those tapes, finding the tapes, and then getting them into a machine to read would cost us half a day or more in staff time. Now, with NetApp SnapManager products, we can easily recover almost any file in 10 minutes or less."

Arup's strategy of modernizing its data center and gaining control of its DR operation continues to pay dividends for the firm. Bell estimates savings from the NetApp storage network amounts to about U.S.\$3 million over a three-year period for hardware and software alone. Factor in another British £300,000 for savings in support—a figure Arup attributes to streamlined operations and reallocation of support engineers to other business tasks—and Bell says the total savings are closer to U.S.\$3.6 million.

### A matter of confidence

Arup has dramatically improved its storage and DR infrastructure, giving the company high confidence that its mission-critical information is secure. Part of that confidence is reflected in the service-level agreements (SLAs) that Bell's IT team keeps with Arup's business units. "We have written SLAs with our clients that guarantee we will test our DR facilities at regular six-month intervals," says Bell. "Every test has proven our ability to successfully recover business data from what used to be 24 hours to 15 minutes or less."

Meanwhile, Arup's comfort level with its DR solution continues to increase. "We still call upon NetApp's Professional Services team when we're doing something tricky, but we've become largely self-sufficient in terms of supporting our storage systems. NetApp systems are easy for us to manage and inspire a high level of confidence."

When Arup does need access to NetApp technical support, Bell says his team is always able to get it quickly. "My experience with some U.S. suppliers is that they don't

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**Graham Bell**  
Head of IT, Project Delivery, Arup

always get back to their UK clients in a timely fashion,” says Bell. “That’s not an issue with NetApp. We’re very comfortable with the quality of services and technical skills available to us. That’s why we view NetApp as a partner rather than a supplier.”

## SOLUTION COMPONENTS

### NetApp Products

NetApp FAS3050 storage system  
NetApp FAS3050c storage system  
NetApp NearStore R200 storage systems  
NetApp SnapMirror software  
NetApp SnapManager for SQL Server  
NetApp SnapManager for Exchange

### NetApp Services

NetApp Global Services

### Protocols

NFS protocol  
CIFS protocol  
iSCSI protocol

### Environment

Applications: Oracle Database, Oracle E-Business Suite, JD Edwards Financials, RedSky Progression, Microsoft Exchange  
Operating system: Microsoft Windows Server 2003, UNIX

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