

BROWN UNIVERSITY

Ivy League university adopts EMC Data Domain deduplication storage systems to replace its aging tape backup process



ESSENTIALS

Challenge

Developing next-generation backup and disaster recovery capabilities

Solutions

- EMC Data Domain
- EMC Symmetrix®
- VMware®

Key benefits

- Eliminated costly, complex tape backup systems
- Reduced backup storage required for Oracle by 96 percent
- Improved disaster recovery speed and reliability
- Increased performance to meet backup windows
- Maximized onsite retention
- Significantly decreased costs
- Immediate ROI
- Easy installation and configuration

BUSINESS OVERVIEW

Located in historic Providence, Rhode Island, and founded in 1764, Brown University is the seventh-oldest college in the United States. An Ivy League institution with 20,000 undergraduates, graduates, and staff, Brown is also a leading research university that maintains a commitment to educational excellence.

Backup and disaster recovery (DR) processes are mission-critical for the university. These processes must support a diverse IT environment including multiple UNIX systems, Microsoft® Windows®, and many Oracle and Microsoft SQL® databases held within both physical and virtual infrastructures.

THE CHALLENGE

Nancy Magers, associate director for Disaster Recovery at CIS Storage Services for Brown, explains the many challenges that the university faced with regard to its backup and disaster recovery capabilities.

“One of the things that is inherent within an organization that has been around as long as Brown has is that there are many legacy systems and a diversified infrastructure to support,” she states. “Back in 2000, we had a number of issues that were converging on us. We had a data center that was over 30 years old and a degrading infrastructure. The power and cooling systems had not been updated in that time, and that 30 year old infrastructure could not keep up with new servers and the power and cooling required.”

In addition, Magers points out that Brown’s IT personnel were not confident in their legacy tape backup systems.

“We were doing all of our backups to tape and sending them offsite for storage,” she says. “We had never really tested this tape environment and its ability to recover. Our university audit committee identified business continuity as a critical issue for our organization.”

Brown’s CIS team developed a three phase plan to address the issues. Phase one was developing a next-generation backup plan by identifying critical applications that required improved backup processes. Phase two was developing a disaster recovery plan, which included building a second data center for DR. Phase three was the implementation of these plans, which included the construction of the secondary DR center.

“We needed to replace our infrastructure, but keep our systems up and running at the same time,” Magers explains. “In addition, we had five design goals for our new processes: improved quality of service, improved disaster recovery, improved performance, reduced

time spent managing the various processes, and the elimination of tape as our backup method.”

Replacing the tape solution was of particular importance: tape backup systems leverage analog technologies and therefore have reliability issues. They are also costly and complex to manage.

THE SOLUTION: EMC FOR BEST PRACTICE BACKUP AND DR

Initially, Magers and her team conducted a proof of concept, leveraging best practices using Oracle Recovery Manager (RMAN) and EMC® Data Domain® deduplication storage systems.

“We followed a white paper that had been provided to us by EMC, which focused on best practices for Oracle, and how we could effectively use EMC solutions to manage the recovery process,” Magers states.

The university subsequently purchased a Data Domain system.

“We installed Data Domain, and have one in our primary data site in Providence and another in our DR data center in New York,” says Magers. “We use Data Domain’s replication capabilities to replicate across a 10 gigabit network circuit between these two sites. Using this method, our Database Administrators (DBAs) will get the performance that they need.”

EMC DATA DOMAIN FOR HIGH PERFORMANCE DEDUPLICATION

One of the top benefits of Data Domain is its ability to deduplicate Brown University’s Oracle databases for backup requirements.

“We have one hundred Terabytes of data in our Oracle catalog, but that’s represented by less than 4 Terabytes of data,” says Magers. “Thanks to Data Domain inline deduplication capabilities, backup performance has been significantly enhanced, while data storage requirements have been reduced by 96 percent. It was easy to justify the Return on Investment regarding the budget buy-in because we were able to significantly decrease the storage requirements for our backups.”

This improved performance and storage efficiency enabled the university to significantly improve backup windows and data retention capabilities.

“Before we implemented Data Domain we had a mix of retention times,” Magers says. “We had a policy of retaining 6 weeks of production data, but in our development environments we were only doing 2 weeks retention because we couldn’t afford to keep everything that we wanted to for that 6 week period. With Data Domain, we are able to backup all of our production and development environments and have a consistent six week retention policy across all of those environments.

The window for backing up all data depends on specific applications but Magers states “... we have a four hour backup window, and we’re well within it.”

Magers also notes that Data Domain systems have greatly improved ease of management, resulting in cost-effective resource allocation.

“Our DBAs are now responsible for their own environment and don’t have to look for a storage administrator to help them expedite data recoveries,” she explains. “The DBAs have control of their backups and they’re very happy with that.”

Prior to implementing the innovative Data Domain system, Magers explains that they employed a two-step data backup process.

“In the past, the Storage Group was responsible for all of the database backups,” she says. “Our DBAs were responsible for the Oracle RMAN backup, but then the Storage Group was responsible for getting that RMAN backup onto our centralized tape backups. So we had this

two-step process. Now, we back up everything using Data Domain. This eliminates this two step process, and therefore a lot of work that the storage group was responsible for. We've created a better backup service for our DBAs at the same time."

EMC DATA DOMAIN: ELIMINATE TAPE COMPLEXITY WITH NEXT-GENERATION BACKUP

Magers points out that Brown University's backup processes are now virtually tape-free.

"Our open systems are completely tapeless," she says. "We have no tape in our data center except for a small tape library that's facilitating our mainframe."

"Tape is hard, very hard," she continues. "Today, with Data Domain disk and data replication, we don't have to pay for tape transport from one place to another. We don't have operators pulling tapes out of tape libraries. All in all, it's a much less complex environment."

Magers also describes how easy Data Domain was to install and configure.

"It was very simple," she states. "We installed Data Domain in our data centers, got them racked and ready, and plugged in the power and the network. Data Domain is very easy to configure. It comes preconfigured with NFS and the file systems are already on it. We just configured the NFS to the server, and we were off and running."

"We are looking forward to continuing our strong relationship with EMC and Data Domain," Magers concludes. "The majority of our data is stored on an EMC storage infrastructure and we have a very strong partnership with EMC."

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CONTACT US

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