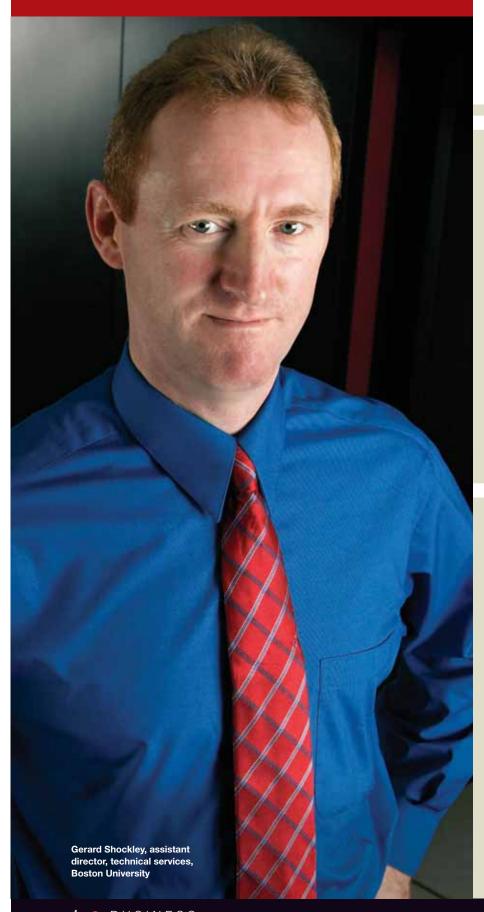## Boston University Gets Help From INNOVATION to Back Up Disparate Data

CHALLENGE: Boston University Administrative Computing Services provides 60,000 or so educational-institution customers with human resources, payroll and financial back-office functions as well as unique student, faculty and alumni support, including classroom scheduling, student and faculty advising, and degree auditing.

Making communications and information gathering a snap, e-mail and online research are the norm as colleges and universities encourage faculty, staff and students to take advantage of an online environment. Several virtual Linux* partitions operate on the mainframe, including one running a Java* technology-based administrative browser that allows users to view their reports through the Internet and customize columns and views, export data in a graphical format, and translate the data to a number of different formats so they can massage it.

The university relies heavily on its IT underpinnings to make this possible, but with these blessings also comes overhead, not the least portion of which is increased need for both computing power and data storage. The challenge becomes finding the right combinations of reliable hardware and software to lessen the burden on the IT staff. If not, they risk possible meltdowns and mounds of overtime, with IT personnel working late into the night to put out fires and make sure everything is back online in time for peak computing periods.

Additionally, because its data is vital to everyday operations, Boston University has put great effort into making sure that data is available around the clock. To that end, it backs up its data, whether from the mainframe, the mainframe's virtual Linux partitions or the distributed servers, to disk for quicker data access and to tape for archival and disaster-recovery purposes. The key was to find a way to move all of its disparate data, whether from server disk or mainframe DASD, to that tape. The challenge: finding the right combination of reliable hardware and software for an unattended computing environment.

Gerard Shockley, assistant director, technical services, Boston University

SOLUTION: "The university uses FDR, the mainframe count key data (CKD) volume backup [product] from INNOVATION Data Processing, for its mainframe backup," according to Gerard Shockley, assistant director of technical services with Boston University. Different methods, however, were needed to back up AIX*, Windows* and the servers. The university chose the INNOVATION FDR/UPSTREAM product, a dual-component system, to do this. The mainframe acts as the central point of administration. An FDR/UPSTREAM backup server piece resides on the mainframe, and clients reside on the Linux on System z*, Windows and AIX file servers. The mainframe backup server using TCP/IP connects to the client and performs the backup to mainframe storage. Using an FDR/UPSTREAM feature called full-merge backup, the university saves a great deal of time.

As Christine Ciocca, storage-management technician with Boston University, explains, "This feature will look at the server, send a directory listing up from the client, compare it against the mainframe database to see what's been backed up and then, if a file has been changed or added, request that that file be sent up. Then, on the mainframe, those incremental changes will be merged with the full, giving you an exact image of the server at that point in time without having to deal with all of the unchanged files. This saves a great deal of time, because you don't have to perform multiple full backups."

The decision of whether to perform full or incremental backups is made depending on the criticality of the server function, server recovery requirements and the amount of data expected to change. The more critical the data is, the more likely it is to undergo a daily incremental with a weekly full merge backup. If the data isn't as critical, a weekly full backup will serve the purpose.

Currently, with its IBM* disk storage, automated IBM tape libraries and FDR/UPSTREAM, manual chores have essentially been eliminated. "Now," Shockley says, "I have two people, and they never have to leave their chairs to initiate a backup or restore." This paradigm shift has allowed storage administrators to become "engineers," as Shockley puts it. Automation of the backup processes means they can now contribute more fully to the organization, being repurposed to other, more interesting, more meaningful tasks.

"We've actually created a different shop here, with IT staff members now becoming much more productive," Shockley points out. "For example, they can now construct rules of new data using storage-management utilities; design, implement and verify disaster recovery and business resumption; and review performance and capacity planning of storage across all platforms. We're now much more proactive than reactive."

Boston University shows more data does not necessarily mean more work. In fact, its automated IT environment, which uses an IBM zSeries* mainframe, Linux on System z, several AIX technology-based servers and more than 20 Windows technology-based servers along with data-protection and business-continuance software from the likes of INNOVATION, stands as a lesson to other organizations about how best to handle increasing data volumes, whether in the private or public sector.

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