

Data Storage and Recovery SOS

A man in a dark suit, light blue shirt, and striped tie stands in a server room. He is holding a red and white umbrella over himself. The server room is filled with racks of servers and a dense network of colorful cables (yellow, blue, red, orange) hanging from the racks. The floor is light-colored wood. The background is slightly blurred, focusing on the man and the umbrella.

Hinsdale Township High School District 86 answers the call with a strategy to store and safeguard data.

Tim Hohman
Director of Technology
Hinsdale, Ill., Township
High School District 86

At one time or another, many IT administrators have, unfortunately, experienced the heart-racing, muscle-tensing, panic-inducing moment after realizing that valuable data, such as administrative records, e-mail messages or students grades, was lost.

It may arrive in the flickering blue screen of a computer system error, the random crash of a fledgling hard drive as a result of insufficient backup capabilities, or because of a power outage or natural disaster. Regardless of how the moment occurs, the loss of data can be devastating.

As director of technology at Illinois' Hinsdale Township High School District 86, Tim Hohman knows only too well that disaster can strike in a matter of seconds. That's why the IT professional chose to implement a comprehensive data-storage and disaster-recovery plan within his district last summer.

"We're in the business of educating students," Hohman explains, "so any amount of downtime that affects the classroom is really too much."

Hinsdale Township is among a growing number of districts that are recognizing the importance of data management and recovery. In fact, K-12 schools are expected to spend more than \$7 billion on new technologies this year, with an increasing amount earmarked for building and protecting data systems, according to a recent study by market research firm Quality Education Data Inc. Furthermore, a Gartner Inc. study predicted that the worldwide storage-management software market alone was slated for double-digit growth last year.

With students now having access to an ever-expanding range of technological education tools — from participating in distance-learning curriculums to video streaming within the classroom to being granted file storage on a school's network — the ability to effectively manage data has become critical to a district's long-term success and vitality. Yet deploying the latest and greatest technologies can greatly affect an organization's storage requirements.

Flexibility Is Key

In the case of Hinsdale Township High School District 86, which serves approximately 4,600 students at two high school campuses, a storage area network (SAN) solution from LeftHand Networks was implemented as the cornerstone of its storage and disaster-prevention strategy. Hohman reports that a number of factors contributed to this decision, including the district's desire to consolidate storage between its administration office and two high schools; the fact that its aging Novell-based servers and entry-level SAN were scheduled for replacement; and Hinsdale's wish to migrate to a Windows-based network operating system because of its increasing focus on tablet PCs and other cutting-edge instructional technologies.

"It was a huge project for us, especially because we converted from one operating system to another," Hohman explains, noting that in addition to the SAN, the district also acquired 26 Hewlett-Packard (14 DL360 G4 and 12 DL380 G4) servers, an HP StorageWorks 1/8 Tape Autoloader LTO tape drive and more than \$100,000 in software products. So far, 8 terabytes of storage capacity have been purchased by the district, which backs up and stores "just about everything," according to Hohman, including all of its servers, student records, grades, financial information, and data from both students and teachers.

Flexibility was a key factor in the district's selection of the LeftHand Networks SAN, which delivers a robust and

scalable storage solution that is extremely easy to use.

"One advantage of the LeftHand solution is that you can do things on the fly," notes Hohman. For example, when the technology director recently acquired an additional terabyte of storage capacity, he simply plugged in the module and assigned an IP address to it.

"With the click of a button, we were able to add more space where we needed it," he explains. "The product is really flexible."

Another benefit is the SAN's patented software, which provides grid-like storage clustering capabilities. Multiple small-storage modules are combined into a single cluster, enabling one pool of storage to be managed from a single intuitive GUI (graphical user interface). Each storage module maintains its own controller, network connections and power supplies, which allow the SAN to simultaneously scale performance, capacity and availability. To further increase availability, users may install storage modules anywhere on the IP network.

Unlike the district's previous SAN, which required processors and memory to be bolstered every time storage capacity was increased, the scalability inherent in the new model is a welcome change at Hinsdale. Considering that the district plans to keep the SAN for the next three to four years, Hohman reveals that the ability to add storage capacity and to "keep up with the times" was imperative.

"When you give each student a little bit of storage, it adds up in a hurry," he says, explaining that each high school student is provided 100 to 200 megabytes of storage, with some allocated additional capacity based on their data requirements.

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With storage modules installed at both high school campuses, as well as within the district's administrative building — and plans to add more modules at each location this summer — Hohman reports, "This solution has the flexibility to let us reconfigure how things are allocated, so we don't have to buy a new server to accommodate more storage.

"The LeftHand solution is different than other technologies," adds Hohman. "It's faster, it's better and it offers more redundancy. And, even though the devices are physically located in different places, they are fully redundant."

In addition to the SAN's grid-like clustered architecture and easy scalability, the solution also offers some key features that ease the day-to-day management of Hinsdale's data. One such benefit is the SAN/iQ Snap, which creates a point-in-time copy of a data volume to simplify potential restores and improve storage utilization. This enables Hinsdale to rely on a single backup tape drive at Hinsdale Central High School, with data from Hinsdale South High School and ▶



Disaster Prevention: *What's Your Plan?*

Do you know what you would do if a power outage shut down your servers? What if a storm flooded your data center? Server failures, hard-drive damage, physical damage to a PC or notebook, and file or e-mail deletions can significantly impact a school or district's uptime and the availability of key data to its students. If you do not yet have a disaster-prevention plan in place, consider the following steps to get there:

Step 1: Analyze the Risk

The first step in drafting a disaster-recovery plan is to conduct a thorough risk analysis of your IT equipment. List all of the possible risks that threaten system uptime, and evaluate the likelihood of them occurring in your particular IT environment. Keep in mind that anything that can cause a system outage is a threat, from relatively common manmade occurrences such as viruses and accidental data deletions to more rare natural threats such as floods and fires.

Step 2: Establish the Budget

Once you have determined your risks, you need to figure out how much it will cost to properly safeguard your school or district from them. Are there threats that can be detected before they hit? Are there ways to reduce the potential of them occurring? How can the impact to the school or district be minimized? The more preventive measures established upfront, the better, as dollars spent in prevention tend to go much further than those spent in recovery. A good place to begin is by assessing the cost of downtime to your school or district. How long can they afford to be without their computer systems should a threat occur? While disaster-recovery budgets vary, industry experts report they typically comprise between 2 percent and 8 percent of the overall IT budget.

Step 3: Develop the Plan

The recovery procedure should be written in a detailed plan or script, which establishes a recovery team among the IT staff and assigns specific recovery duties to each member. Define how to deal with the loss of various aspects of the network, such as databases, servers, bridges/routers, communications links, etc., and specify who arranges for repairs or reconstruction and how the data recovery process occurs. The script also should outline priorities of the recovery effort, including what needs to be recovered first and the communication procedure for the initial respondents. To complement the script, create a checklist or test procedure to verify that everything is back to normal once repairs and data recovery have taken place.

Step 4: Test the Plan

Take the time to frequently test your disaster-prevention plan, which should change as your school or district environment changes. It is prudent to re-examine the plan annually on a comprehensive level. Determine whether you still need every part of the strategy; if there are elements that should be added; or if the budget needs to be adjusted to accommodate any changes. Additionally, as applications, hardware and software are added to your network, they must be incorporated into the plan, while new employees need to be trained on recovery procedures. New threats are ever present to networks, equipment and data — make sure you have a sound disaster-prevention plan that takes all of them into account.



the Administrative Center seamlessly transferred across the network for backup.

“My network administrator at the high school can just mount the snapshot onto a desktop and copy the files so he can view everything at any location,” Hohman explains. “It’s a very convenient way of doing things. Before, we had to have two sets of everything, which was very problematic.”

Passing the Test

Hinsdale Township backs up all of its data on a daily basis, with weekly rotations of tape stored in an administrative vault. And just how well does the new system perform? The district did not have to wait for a network hiccup or a natural disaster to analyze its reliability. Instead, earlier this year, “we had an inadvertent disaster recovery test,” Hohman reports.

Misfortune struck when one of the drives was being replaced in a failed SAN module. Although the standard timeout period is generally configured for 10 minutes, Hinsdale’s system had unknowingly been set for just one minute. As a result, the district’s clustered servers lost connection to the exchange, file-and-print and SQL drives, with all volumes becoming corrupted. However, Hohman was able to recover virtually all of the data from the system’s backup tape drive. “This is the first time I’ve ever really had a data-recovery effort at this level be this successful,” reveals the technology director, now in his 15th year in the industry.

Being able to experience that peace of mind is what makes Hohman especially grateful for the new SAN solution, a project that — coupled with the complementary backup and storage equipment — totaled more than \$300,000. Yet, it is hard to put a price tag on the value of continuous uptime and data protection provided by the solution, which Hinsdale was able to fund out of its general IT budget.

“Everything we do is based on network access,” Hohman explains, noting that 10 tablet PC labs and 20 traditional computer labs are facilitated between the two high schools. Furthermore, many of the district’s classes are computer-driven and rely on network access at all times.

“If you have a 50-minute class and a server goes down and it takes 30 minutes to restore, you’ve lost more than half of the class time,” Hohman points out. “Now, because of the clustered servers and the SAN, it only takes us about five minutes to restore.”

Meeting the Challenges

Equally swift is the response time the IT director receives from CDW•G, which is just one of the reasons why Hinsdale Township High School District 86 trusts the company for all of its IT requirements. “If I need something, I can place the order and it shows up the next day,” Hohman reports.

Meeting the challenges posed by special circumstances is another benefit CDW•G provides to the district, including having arranged for the delivery of the SAN solution prior to the district’s budget start date of July 1.

“CDW•G enabled us to buy all of the equipment earlier so we could set it up and get it configured before school even got out, leaving us the summer to convert workstations,” Hohman explains. “That was really helpful.”

Being able to access a comprehensive range of products further enhances ease of business, says Hohman, noting that CDW•G not only handled his hardware and software purchases but also oversaw Microsoft School licensing agreements, antivirus software and other service-related issues.

“It’s so convenient having one place where I can get it all,” he concludes. “With CDW•G, it’s seamless and it’s easy.”



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