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WHAT'S NEW

College on Demand

Karen D. Schwartz

Doug Ruschman knows that his job is as much about understanding how college students think as it is about knowing how technology works.

Ruschman, director for web services at Xavier University, a medium-sized Jesuit university in Cincinnati, is realistic when assessing his customers' psyches. He knows that students today have been raised in a world where access to information is instantaneous, and that downtime — even a small amount — might turn them off permanently.

"If a student visits our website and it's not running efficiently or it's down, they might never visit the site again," Ruschman says. "That's the new reality, and that mind-set isn't going away."

Exacerbating the pressure to keep websites up and running is the ever-expanding growth in traffic, says Hyoun Park, an Aberdeen Group analyst, who points out that universities experienced a 26 percent increase in recreational traffic over the past year as opposed to organizations in general.

All of this means that high availability of everything online — from web apps to interactive social media to bill paying — is more important than ever. Without high availability, universities could suffer a loss of reputation, fewer potential applicants and disgruntled alumni and students, all of which can translate into smaller donations and fewer tuition dollars.

"The days of it being fine for a website to be offline for maintenance or patching at 2 a.m. are over," says Xavier CIO David Dodd. "You have to be up 24x7 because if you are down, you don't know what you have lost."

Full-Court Press

Colleges and universities are doing everything possible to ensure constant availability. For many, the process starts with creating as much redundancy in the system as possible, so if there is a problem with a server or an application, another server can pick up the slack.

That's the approach at Oakland University in Rochester, Mich. The university has many servers, but two are dedicated to the website and they back each other up. The servers rely on Cisco Content Switch Module to manage the load between the two servers, as well as VMware for failover.

"All of the traffic can be automatically routed to the other if something were to happen," explains CIO Theresa Rowe. "The load is always balanced as long as both are available. But if one is down, all of the traffic is sent to the working server."

Server redundancy is also a cornerstone of Xavier University's high-availability strategy. Xavier

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Xavier's Doug Ruschman and Judy Molnar say students' high expectations for the website keep the IT staff striving for 24x7 uptime.

Photo Credit: Stephen Webster



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has two clustered servers running SQL Server for its major databases, and is in the middle of installing two physical server appliances for the web tier of its infrastructure. The server appliances will run F5 Networks' BIG-IP load balancer.

But that's just the beginning for Xavier.

"We're considering using VMware more extensively to create a virtual web server as well, so it could back up the physical servers," explains Judy Molnar, Xavier's director of technology support. "It's the next step in our focus on high availability."

For some universities, virtualization is the cornerstone of a high-availability strategy. At Elon University in North Carolina, the main campus website virtualized its IBM X-Server with VMware. As a result, that server can house eight to 10 servers, creating plenty of redundancy.

"It gives us peace of mind, because we can always roll a server over to another server in case of a hardware failure without anyone ever knowing we had a problem," says Jerry Williams, system administrator for information systems and technology.

Another critical part of the redundant infrastructure at Elon is an EMC CLARiON CX400 Fibre Channel storage area network, where the servers actually reside. "With the right connection, we can actually push services out to another box while the data is still accessed on the local SAN," Williams explains.

Elon has also used a similar strategy for another campus website for distance learning. The website has three web interfaces that will deploy load balancing, most likely from Barracuda Networks.

"We need the load balancing because when students come to the site, they need to log in and do their courses, turn in their homework, chat and visit the virtual classroom, and we need something that keeps the system up for that user continuously," Williams explains.

Prepare for Disaster

Another major factor to achieve high availability is an effective disaster recovery strategy. For Xavier University, that means two geographically dispersed entry points to the Internet on the campus and an agreement with an outside provider, OARnet (the networking division of the Ohio Supercomputer Center), to provide backup for the school's website. OARnet can provide a bare-bones backup site in case of disaster, but under a pilot program, the university is working with OARnet's VMware infrastructure to replicate its exact website, Ruschman says.

Ruschman says Xavier's web services team also uses Adobe Dreamweaver to develop sites that run as efficiently as possible, minimizing the load on the web server while creating a site that is interactive and user-friendly. Xavier's approach has been quite successful: The university just received the highest award from the Council for Advancement and Support of Education — the 2009 Grand Gold Award, for best website.

Starting Over

For some colleges and universities, achieving the type of high availability that's necessary today requires a complete overhaul of the web infrastructure. That's the route Buffalo State College in New York is taking. Later this year, the college is replacing its existing cadre of five servers with three newer servers supported by load-balancing technology from Barracuda Networks.

"We're not where we want to be and we know where we need to go — to a smart environment that is seamless for the user and takes into consideration disaster recovery as well as increased load," says Melissa Meehan, Buffalo State's web administration director.

"For example, we need to serve up robust virtual tours that really show prospective students what it's like to be here, and things can't hang up or crash," she says. "We're doing what we have to do to get there."

Clearly, colleges and universities have their work cut out for them — and it's not a static situation. "We know we have to keep striving for the most responsive website, and for the highest availability, because the rules keep changing," Xavier's Ruschman concludes.

