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TECH TRENDS

Power Down

Institutions look to latest management tools to shave costs off of hefty electric bills for desktops and data centers.

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Rick DeVries and Kevin VanSchepen estimate that power management software will save Calvin College \$30,000 annually in desktop electricity costs.

Photo Credit: Andy Terzes

IT leaders at Calvin College had been considering how to improve power management for its Grand Rapids, Mich., campus for several years. But it didn't move forward until 2008, when an engineering professor assigned his class a project to determine where the college could save the most money on energy costs.

Soon after the engineering project concluded that desktop power management was the most efficient energy-saving option, the IT department performed its own analysis and came up with the same answer.

"It's been our goal to reduce energy for about six years because we really do want to be more responsible with the earth's resources, as well as save money," says Rick DeVries, assistant director of technology integration for Calvin's IT department.

DeVries says that for a variety of reasons, desktop power management never got to the top of the list. However, when the engineering class and the IT department both confirmed that more efficient desktop management was the best course, the college decided it was time to take action.

Building a Case

The first step was to gather information about how much energy the college's nearly 3,000 end-user systems consumed. The IT staff bought power meters to plug into computers and monitors, as well as demo copies of Faronics Power Save. The Faronics software measures a desktop's energy consumption under heavy and light activity, sleep and hibernation mode, and when turned off.

Power Save generates reports for individual units that show the incremental savings each unit has achieved, both in kilowatt and energy costs. Its audit mode offers a baseline measurement of the energy being consumed and can display projected annual savings. Using this information, Kevin VanSchepen, project manager and technology integration specialist for the college, estimated it could save about \$30,000 annually in desktop electricity costs.

"We knew we needed something that was flexible and powerful because we have so many different types of users with different needs," he says.

With those criteria in mind, the IT department bought 951 copies of Faronics Power Save. Over time, DeVries and VanSchepen want to expand their energy-saving efforts to the campus data center as well.

Power Priorities

University of Phoenix, North America's largest private university with nearly 460,000 students working toward degrees online and at more than 200 campuses nationwide, also makes power management a priority. Because online coursework is central to the university's operations, it must be up and running 24x7.

50 percent

The percentage by which power costs and carbon dioxide emissions can potentially be reduced by better managing the power usage of PCs, monitors and printers

Source: EDUCAUSE, *Powering Down: Green IT in Higher Education*

For years, the Phoenix-based university operated out of several disparate data centers, but recently it chose to consolidate into two large facilities, one in Phoenix, the other in Las Vegas.

Data Center Manager Rick Oliver wanted the new sites to have the latest, most energy-efficient equipment as well as technology that delivers real-time visibility into the college's power and cooling use.

"We have thousands of servers and virtual servers, which makes it extremely important not to waste efficiency in the power supply," he says.

"If you save 1 watt on the data center floor, you save a total of 4.5 watts as you follow it backwards through the data center food chain," Oliver explains, mainly because the data center needs less air-conditioning, and AC is roughly 40 percent to 50 percent of a data center's power bill.

Oliver and his team kept that metric in mind when designing the new data centers. In addition, the organization — run by parent company Apollo Group — standardized on Liebert technology from Emerson Network Power.

The new centers use Liebert MPH power distribution units. The PDUs let the staff monitor power consumption down to the rack, offering information on power usage that lets IT shift resources. Oliver estimates that this capability delivers a 1 percent to 1.5 percent power savings over the older generation PDUs at the existing centers.

John Testa, data center manager for Temple University and its Health System Joint Data Center, is consolidating multiple data centers into a single facility.

The new center will carry over some of the power-saving methods of the existing data centers and add a few new ones. For example, Testa says Temple's Avocent PDUs have worked well. The new data center will use more than 300 Avocent PM 3000 PDUs. There are two PDUs in every rack, and every PDU is connected to the network. The units work in conjunction with Avocent's DSView 3 software.

There are also several new power-saving features. For instance, Temple installed a more efficient 30-amp, 208-volt power distribution system from Liebert, as well as a Liebert DS precision cooling system, which monitors computer room air-conditioning and turns on additional units if predetermined thresholds are met.

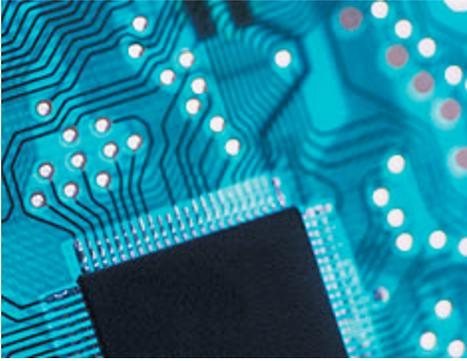
The team didn't focus just on technology. Testa says the physical design of a data center also greatly affects how much power it consumes. The new facility takes advantage of a hot- and cold-aisle layout that conserves energy and lowers cooling costs by managing airflow.

Finally, Temple built the data center with fiber directly to the racks, with no copper wiring in the overhead racking. Although that might seem high-tech but power-agnostic, Testa says it actually will make a difference.

"If we had followed the traditional copper infrastructure design, we would have had to raise the ceiling and put three levels of racking in, which would have greatly increased the cubic volume of the room," he says.

And more volume means Temple would have to spend more on airflow management, another reason the new data center is saving the college money on power costs.

New Chips Maximize Power



PC chip manufacturers are doing their part to improve energy efficiency. Industry leaders Intel and AMD now ship chips that reduce power consumption at the processor level. The new chips automatically evaluate which parts of the system core and memory are needed at specific times and then reduce power to those areas when idle.

“Both Intel and AMD are starting to have the processors control more of the system, so they can turn off parts of the system when they aren’t being used,” says Jim McGregor, chief technology strategist for market research firm In-Stat.

Remote device management at the chip level also goes a long way toward managing power efficiently. Both Intel’s vPro technology and AMD’s remote power control and Advanced Platform Management Link capabilities let organizations remotely power on, power off, power cycle and reset systems.

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