



KPMG ANALYSIS

Companies Taking Green-Tinted Look at Data Centers

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By Dave Pelland, Managing Editor, Digital Insider

As corporations become more environmentally aware, they're looking at their data centers and PCs to reduce energy consumption and carbon footprints.

"Data centers are being identified as carbon contributors, and most data center operators believe they will be challenged to help their organization achieve carbon reduction targets," says Neil Rasmussen, chief innovation officer for power-management and cooling equipment supplier APC. "Few companies today are linked into a formal carbon-reduction program, but they expect to be within the next two years."

Servers and the equipment needed to maintain optimal temperature and humidity levels are attracting attention because they use a lot of electricity. The U.S. Environmental Protection Agency estimates that data centers account for about 1.5 percent of the country's electrical use, and could reach 3 percent in a decade if current growth patterns continue.

Rising electric bills are also forcing companies to pay closer attention to data center energy use. While rates and increases vary, statistics from the U.S. Energy Information Administration indicate the average cost of a kilowatt hour nationwide rose from 7.4 cents in 2003 to about 9.5 cents today.

"Companies are seeing significant increases in energy costs, and expect to continue to do so for a while, so [data center power consumption] is getting on the radar screen," Rasmussen says. "People used to say, 'We want a reliable data center of [a specific] scale, and we don't care what it costs to operate.' Those days are over."

Brad Fisher, a partner in KPMG's IT advisory practice says that while sustainability issues are gaining momentum, cost savings remain the primary motivation for U.S. companies looking at their IT energy use. "Electricity savings go hand-in-hand with reducing a company's carbon footprint. When you can combine environmental, social and economic concerns, so much the better."

In addition, the rising number of Internet users is pressuring the IT infrastructures worldwide. According to research firm internetworldstats.com, 21 percent of the world's 6.7 billion people have access to Internet connections (a 290 percent increase between 2000 and 2008), with Africa and the Middle East reporting gains of more than 1,000 percent. Even in North America, Internet use has increased 128 percent since 2000.

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Sensors on the Rise

Rob Bernard, chief environmental strategist for Microsoft, said at an Executive Council breakfast in New York that tech companies are helping organizations look for effective ways to measure power use in their data centers, such as installing power, temperature and humidity sensors near IT equipment.

Similarly, Michael Murphy, senior manager of worldwide environmental affairs at Dell, said hardware and infrastructure equipment suppliers are designing efficient power supplies and cooling systems that are more efficient than previous systems.

To help data center administrators understand how electricity consumption translates to carbon production, APC, Dell and other data-center equipment vendors have introduced online tools that calculate the power use and carbon footprint of IT equipment. For instance, reducing electricity use by one kilowatt equals five tons of carbon each year.

"If you're in IT, you're going to be asked in a few years how much carbon, as well as how much energy, is being used in each of your data centers and by specific racks," Bernard said.

Microsoft and other companies are also considering energy issues in data center construction. For instance, Microsoft has opened a data center in the state of Washington that uses hydro-generated power, and is building a data center in Ireland that uses ambient wind to cool the facility.

"Companies are asking why they build data centers in places that are warm," says KPMG's Fisher. "Why not build them in the mountains?"

Competitors Cooperate

Tech companies are also working to reduce the electrical consumption of computers. Bernard said Microsoft, Intel, Google and other tech-industry leaders are cooperating to improve the electrical efficiency of PCs and educate consumers about energy-efficient practices such as powering down unused equipment. They have set a goal of reducing 52 million tons of carbon emissions in three years.

"We recognize that while we compete in other areas, addressing environmental sustainability isn't a competitive issue," Bernard said.

"We have to do something about this as an industry, because no one of us can solve this problem. The software can't do it, and the hardware can't do it with interacting without each other."

Companies are also using network software to identify connected PCs that have been left on overnight and weekends but aren't being used. Sumir Karayi, chief executive and chief technology officer of environmental consulting firm 1E, said turning off unused PCs can save an average of \$36 per machine annually.

While green initiatives today are aimed primarily at electricity use, APC's Rasmussen said companies are likely to examine the other materials data centers consume, including the water used by cooling equipment.

"We believe that in many locations, there could be restrictions placed on water consumption that would be more challenging than any electricity restrictions that may come, Rasmussen says. "People are talking mainly about power today, but we think in two years they'll be talking about reducing the consumption of water in their data centers."

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