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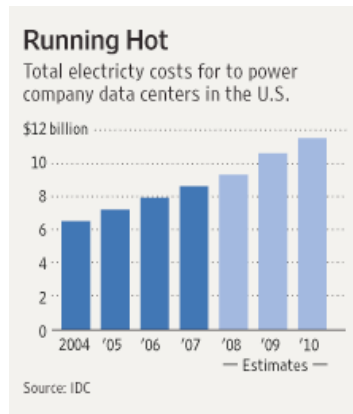
Cutting Tech's Energy Bill

Computer Makers See Profits in Retooling Clients' Data Centers

By WILLIAM M. BULKELEY
 September 9, 2008; Page B6

[International Business Machines Corp.](#), [Hewlett-Packard Co.](#) and other big computer makers are spotting opportunity in customers' desire to curb electricity usage in large corporate data centers, where energy use has soared in recent years.

Rising electricity prices, coupled with new computer servers that run hotter and require more power, has corporate technology buyers looking for ways to cut back. Power use in data centers -- the large, climate-controlled rooms that house a company's computer servers, storage devices and communications switches -- doubled from 2000 to 2006 and now accounts for about 1.5% of U.S. electricity consumption, according to the Environmental Protection Agency. A recent McKinsey & Co. report says that world-wide, the centers' carbon emissions exceed those of Argentina.



Somewhat ironically, the companies that designed and sold those computers are now able to capitalize on the higher power bills the machines rack up.

IBM surprised Wall Street this year when it said its new "Green Data-Center Services" business -- which redesigns customers' data centers and sells energy-efficient products -- signed \$300

million in orders in the 2007 fourth quarter. The company has declined to release figures for 2008.

IBM Chief Executive Samuel Palmisano recently told analysts that IBM expects more than 70% of the world's biggest companies "will modify their data centers significantly in the next five years" to deal with energy shortfalls and rising costs.

H-P last November bought EYP Mission Critical Facilities Inc., a 350-person engineering firm that specializes in designing data centers. EYP President Rick Einhorn says that while energy efficiency used to be an afterthought when customers requested quotes, today "every request we see has a requirement for energy-efficient design."



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Savings can be significant. [EMC Corp.](#), a Hopkinton, Mass., provider of storage systems that also has an energy-consulting business, redesigned its own computer rooms to eliminate unneeded equipment and use air-conditioning more efficiently. EMC projects that over three years it will avoid \$4 million in costs of energy and expanded floor space.

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[Huntington Bank](#) -- an EMC customer based in Columbus, Ohio -- says it is saving \$30,000 a year in electric power costs after redesigning one of its data centers.

[Hartford Financial Services Group](#), a Connecticut-based insurer that hired IBM to help it redesign its computer rooms, decided to shut down six of its seven data centers and put its back-up site inside a "green" IBM data center in Boulder, Colo. The new configuration is saving electricity costs and was also "appealing as a good corporate citizen caring about the environment," says Elaine Martinelli, the insurer's senior vice president for technology shared services.



Philip Brooker

Some competitors wonder whether computer makers have an inherent conflict in selling services to curb energy usage while at the same time selling more energy-consuming hardware.

IBM and H-P have introduced water-cooled servers, renewing a technology that was abandoned years ago in favor of fans and air-conditioning. [Dell Inc.](#) makes a refrigerated server that saves energy by requiring less external air conditioning.

Hardware makers are also pushing blade computers that condense processing power into compact boxes on refrigerator-size racks. Such designs reduce the floor-space required for data centers, and the volume of air that needs to be cooled. IBM recently unveiled a blade computer called iDataPlex that it said uses 40% less power than traditional servers for huge data centers used by companies offering email and other services over the Internet.

The vendors say they sometimes recommend steps that don't involve new purchases -- such as reconfiguring the placement of equipment to prevent hot air from one server blasting another.

Virtualization software is another big trend in power-efficient computing. In the past, companies used a separate physical server for every software application. Frequently, each ran at only 10% of its capacity, while using a full load of electricity. With virtualization, many jobs can be run on a single computer using more of its capacity, which cuts power needs.

Albert Esser, head of power and infrastructure solutions at Dell, says that advising customers how to cut power use through virtualization is an increasingly important part of Dell's \$6 billion-a-year services business. He declined to disclose specific amounts.

EMC's [VMware Corp.](#), the biggest maker of virtualization software, says that a company that virtualizes 100 servers to run on 20 physical servers can save nearly \$67,000 a year in energy costs.

Savings can also be increased by taking advantage of electric utilities' energy-savings rebates, such as those [Pacific Gas & Electric Corp.](#) offers in California, says Bogomil Balkansky, a VMware marketing executive. PG&E gives rebates of \$100 to \$300 for every server retired from a data center, depending on its power consumption, according to Mark Bramfitt, program manager for customer energy efficiency at PG&E.

Companies also find that having a few large data centers is more energy-efficient than maintaining hundreds of smaller centers, because the larger centers are designed to minimize air-conditioning costs. H-P consolidated 80 of its own sites around the world into six data centers in Houston, Atlanta, and Austin, Texas.

[Citigroup Inc.](#) is scaling down to 14 major data centers from 52. The financial giant has been building so-called green data centers, including one in Frankfurt, Germany, with an earth-topped, green roof and exterior

wall planted with sedum, a dense, succulent plant that retains cooling water in its leaves, shielding the building from the sun's rays and reducing the need for air conditioning.

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