Evolving power supplies, batteries address energy management concerns

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By Heather Clancy, Contributor

The power inefficiencies associated with many older desktops and servers start with the lowly power supply. But now these components are getting a makeover, giving value-added resellers (VARs) at least one short-term answer for customers' burgeoning concern over energy management and power costs.

Many older systems use power supplies that waste an enormous amount of electricity -- sometimes more than half the amount being drawn -- in the conversion from high-voltage alternating current (AC) to the low-voltage direct current (DC) that is used by the circuitry in most office equipment, according to the Electric Power Research Institute (EPRI). The organization estimates that power supplies in use today consume up to 2% of U.S. electricity production. Using more efficient power supply designs could cut that usage in half, saving an estimated $3 billion per year, EPRI estimates.

"Power efficiency is *the* major problem facing the data center today," said Rory Sanchez, president and CEO of SL Powers, a VAR in West Palm Beach, Fla. "A single CPU today has an incredible amount of computer power, and we've taken those CPUs and compressed them down into multiprocessor blades, but the way we power them has not changed significantly from the early PCs."

The changes can't come fast enough, said Manuel Villa, president of VIA Technology, a San Antonio-based reseller. "Clients are looking for ways to decrease their energy consumption even with temperatures close to 100 degrees here in San Antonio," he said. "With that in mind, they are taking a close look at the data center, what is mission-critical and what is not. Can we turn this piece of hardware off, or does it have to run 24/7?"

"Fortunately, I think this is on every manufacturer's radar," Villa continued.

One effort to reduce power usage and heat is being spearheaded by 80 Plus, a program run by Ecos Consulting in Portland, Ore., which provides incentives and certifications around "80% efficient" power supplies. Its specification requires that multi-output power supplies be at least 80% energy-efficient across their usable spectrum, according to Jason Boehlke, channel manager for Ecos. A typical supply runs from 65% to 75% efficiency.

Ecos Consulting works with utility companies to offer incentives to manufacturers and systems builders on desktops and 1U servers that use 80 Plus-rated supplies; utilities that work with the 80 Plus program supply power to 20% of the North American population, according to Boehlke.

Boehlke said that aside from the efficiency improvements associated with individual systems -- which can range up to 33% -- 80 Plus-rated computers have the additional advantage of allowing a company to run twice as many 80% power-efficient supplies off the same branch circuit as you could with more inefficient components. This is especially useful in buildings with older wiring, he said.

Hewlett-Packard (HP) was early to embrace the call for 80%-plus efficiency, said Nancy Bowman, product portfolio manager for North America business PCs with HP in Houston.

HP was one of the first Tier 1 hardware original equipment manufacturers (OEMs) to embrace the 80 Plus specification, and Bowman says the company's strategy has been to build in flexibility, so that customers can opt for 80% efficient power supplies when they're configuring 7000- and 5000-series desktops, at a price premium of about $15 to $20 per system depending on the model. "In some of the models, the efficiency is even higher," Bowman said. "We're looking toward 85% in the future." Indeed, the external power supply for the HP Compaq dc7800 ultraslim system already offers higher levels of efficiency, Bowman said.

Dell earned the distinction of having the first server systems to garner the 80 Plus Gold rating last month, and one of its desktop power supplies earned the Silver rating. That means the supplies operate at efficiency levels that are up to 8% higher than what is accounted for in the Energy Star 4.0 specification.

Boehlke said the first Gold-level desktop power supplies rated by 80 Plus should hit the market in late 2008 or early 2009.

For those who need power supplies that work outside the traditional power grid, both HP and Dell are among the companies that offer solar-charged power sources for their desktops. Indeed, solar options are required to earn the Gold rating under EPEAT, or the Electronic Product Environmental Assessment Tool. "The overall efficiency of turning solar into electricity is compelling in underdeveloped countries," said Albert Esser, vice president of power and infrastructure solutions for Dell, based in Round Rock, Texas.

There's plenty of work going on in the notebook arena, as well. One company that's building momentum with its approach to next-generation battery technology is Boston Power, a startup based in Westborough, Mass. It has raised $68 million in venture funding and expects to ship about 1 million units in conjunction with OEMs by the end of this year. The company's lithium-ion battery technology is touted as having the longest lifecycle of any lithium-ion options on the market. Basically, it's supposed to hold its charge longer over a longer number of years -- plus, it can be used with existing notebook platforms, although not much is know about which OEMs have decided to invest in its technology.

Lenovo has taken a stand on power supply efficiency by redesigning the charger for its ThinkPad notebooks with a $120 combination AC/DC adapter that works with the ThinkPad, IdeaPad or Lenovo 3000 series. Not only is this one of the thinnest laptop chargers you have ever seen, but it can work with an outlet, a car charger or on an airplane. It comes with an optional dual-charging capability that lets you juice another peripheral (like a mobile phone) at the same time you're charging your notebook.

Another player hoping to shake up the world of power supplies is Green Plug, which is touting an open standards approach to power sources and converters. Frank Paniagua, founder and CEO of the San Ramon, Calif., company, is advocating the adoption of standard intelligent power supply hubs that can communicate with the device they're being asked to charge and adapt to handle its needs.

Not only would these power hubs be able to charge multiple types of electronics and technology products, but they would charge them only as much as necessary and then shut down so as not to waste power, Paniagua said.

To date, Green Plug hasn't signed any deals with the Tier 1 OEMs, but it has inked a deal with Westinghouse Digital Electronics, which plans to use the company's design for a smart power interface that can be used across multiple electronics products, Paniagua said.

According to Green Plug, there will be about 3.2 billion power chargers and converters shipped in 2008 to go with all the consumer electronics devices and computers hitting the market. "Consumers are sick of this. They are tired of different plugs for different products," he said. "You should be able to plug in whatever device you have with one standard charger and charge it in the most efficient way."

About the author

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