



The Color of Money

“Green” value in thin clients translates into real dollars and sense

As business computing reaches new proportions, many CIOs are deploying thin client strategies in lieu of traditional desktops. The thin client environment offers many key benefits, but energy efficiency is quickly bubbling to the top as enterprises strive to do their part in the “green” movement. With virtual PCs delivering the same user experience as mainstay PCs, there’s nothing to lose in migrating—but much to gain.

With the growth of technologies such as virtualization and software as a service, thin client strategies are decidedly on the rise. In fact, analyst firm IDC forecasts a steady 20 percent per year growth in thin clients, with shipments expected to reach 7.3 million units in 2011.

“The business case for thin clients as virtual PCs is fairly persuasive,” says Ken Hertzler, director for NEC Corp. of America in Santa Clara, Calif. Personal computers that used to sit on thousands of desktops across the enterprise are now consolidated and neatly contained within the confines of the corporate data center. CIOs can rest easy knowing that their assets are secure. And management and support becomes a lot simpler and less costly. “The numbers are compelling and the limitations previously associated with the technology are all but gone,” he says.

But it’s the virtual PC’s contribution to the “green” movement that has many forward-thinking CIOs taking heed. Virtual PCs utilizing thin clients are much more energy-efficient than their traditional PC desktop counterparts—and that translates into big savings. Indeed, industry estimates show that enterprises are saving from 30 to 90 percent on their energy bills by switching to a thin client strategy.

That certainly has CIOs seeing a whole new shade of green.

GOING GREEN IN IT

Progress in the machine-based business has taken a nasty toll on our environment in the form of energy consumption, pollution and global warming. And that has government agencies, environmental advocacy groups and even celebrities sounding the battle cry, urging everyone to do their part today for a better tomorrow.

Although it may sound a bit cliché, CIOs are in a unique position to make a real difference. The technology industry happens to be one of the greatest contributors to environmental angst, so the government—the Environmental Protection Agency (EPA) in particular—is calling on IT decision-makers “to adopt best practices for



Virtual PC Center

GREEN COMPUTING AT ITS MOST EFFICIENT

NEC's Virtual PC Center is a comprehensive thin client product line designed from the ground up to replace PC desktops, bringing with it a wide array of green benefits—most notably improved energy efficiencies. The NEC approach combines its thin client device with a full Windows® environment that supports existing PC applications from the data center.

Many existing thin client solutions use low-end devices or terminal emulation, so multimedia content cannot efficiently reach the desktop through existing network bandwidth. This is not acceptable for general purpose business usage. NEC, however, uses an enhanced device that gives users full functionality and performance at a fraction of the energy cost.

NEC's ready-to-use virtualization appliances connect to the NEC SigmaSystemCenter (SSC) management system to provide a unified and scalable solution that achieves flexible, dynamic and robust IT infrastructure with minimal operational complexity and cost. These plug-configure-play appliances are built using NEC's powerful and reliable servers providing high availability and optimal performance.

The bottom line: NEC's Virtual PC Center is transforming the desktop with breakthrough performance gains, including high-speed multimedia graphics and sound support, data security and integrated VoIP, as well as long-term energy and cost reductions.

managing power usage, install new energy-saving technologies, and make going green a priority.” For the government’s part, that commitment starts at home. With Executive Order 13423 (Jan. 24, 2007), President Bush is asking all federal agencies to “lead by example in advancing the nation’s energy security and environmental performance” by achieving specific eco-friendly goals.

As good corporate citizens—and, in their own right, stewards of the environment—CIOs can easily do their part. After all, there are many no-brainer moves that will make a sizable dent in this otherwise daunting challenge. Long-distance support programs utilizing the Web and videoconferencing, for example, help cut fuel consumption and pollution. Also, RoHS-compliant (Restriction of Hazardous Substances Directive) product choices ease environmental burdens, from manufacturing through disposal. And recycling programs, as with toner cartridges, have been a mainstay for years.

CIOs TARGET PC POWER USAGE

But for CIOs, the single greatest point of green impact lies in energy conservation. Data centers, in particular, are monstrous consumers of energy. In its Report to Congress on Server and Data Center Energy Efficiency, the EPA indicates that the IT industry consumed about 60 billion kilowatt-hours in 2006, which is 1.5 percent of the total electricity consumed in the United States. And that’s expected to nearly double in the next five years. The report makes recommendations with the potential to save up to \$4 billion in annual electricity costs through broad implementation of best practices and state-of-the-art technologies in data centers. Perhaps the strongest response to date has been server consolidation. Virtualization has already demonstrated dramatic value to CIOs while slashing their utility bills.

Now, desktops are under fire, too. According to the EPA, products with Energy Star ratings—those with more efficient power supplies and lower idle power—can save in the neighborhood of 80 percent on energy. For example, if “used widely, new power management tools in the Microsoft Vista operating system [i.e., sleep mode] could shave \$500 million off the nation’s energy bill and eliminate three million tons of global warming pollution,” says the National Resource Defense Council. However,

the wildcard in that approach is the user, on whom CIOs must rely to adhere to such energy-saving policies.

MAKING A GREEN CASE FOR VIRTUALIZED PCS

That said, smart CIOs are taking control by leveraging a new way to conserve desktop power usage. “Virtualized PCs have emerged as the next logical wave in green initiatives,” Hertzler explains. In a thin client strategy, traditional desktop configurations—personal computers with hard drives and monitors—are replaced with client-server technology housed in a central location such as a data center. Computing and storage is done on the server rather than the desktop. As a result of less hardware and more efficient computing, virtual PCs draw significantly less power. In fact, preliminary testing shows that thin clients yield as much as a 55 percent decrease in power requirements for business computing.

Here’s a quick look at the numbers. On average, a traditional desktop environment may use as many as 200 watts of power—10 times the 20 watts used by a thin client. A typical server accommodates as many as 20 virtual PCs, so the energy savings add up as follows:

- Traditional computing environment:
 - 20 PCs [20x200 = 4000] + 20 monitors [20x65 = 1300] = 5300 watts
- Virtual computing environment:
 - 20 thin clients [20x20 = 400] + 20 monitors [20x65 = 1300] + 1 server [1x700 = 700] = 2400 watts

Total savings = 2900 watts, or a 55 percent decrease in power consumption

“Then, as you extend these savings across the growing population of PCs within a typical enterprise, the impact on energy consumption is exponentially more significant,” says Daisuke Yamada, product manager, Virtual PC Center for NEC Corp. of America.

What’s more, virtual servers are generally more efficient in CPU cycles. PCs are turned on whether users are working or not, so there’s too much idle time. But with thin clients, idle PCs can be reassigned. So the server may be idle for one application while processing for another. “We’re talking about computing environments that are four to seven times more efficient,” Yamada adds.

Of course, with thin clients, there are other green benefits that extend beyond energy conservation. For starters, the emissions associated with power generation adversely affect the environment, so reduced energy usage will positively affect smog, acid rain and global climate change. There are life cycle benefits, too. Fewer moving parts, such as disk drives and cooling fans, translate into less landfill and fewer toxic materials upon retirement. And when it comes to e-waste, the EPA says that electronics are the fastest-growing portion of municipal solid waste stream.

CUTTING GREENBACKS

If the green value of going virtual doesn’t make the case, CIOs can always fall back on the benefit of server consolidation: Virtualization offers significant savings in total cost of ownership (TCO). According to Gartner, the TCO of server-based computing is 12 percent to 48 percent less than for comparable PCs.

First, consider the energy savings previously discussed. “Conservatively, you can assume that energy makes up roughly 20 percent of TCO,” Hertzler says. “So if you

reduce energy costs by 50 percent, you're looking at a 10 percent reduction in TCO." Then, add to that the savings one naturally derives from virtualization: upfront capital costs go down, and efficiencies in ongoing management make for further savings.

To encourage energy conservation, utilities and government agencies are ponying up with incentives such as tax credits, rebate programs and other financial kickbacks. For example, the Pacific Gas and Electric Co. (PG&E) rewards energy efficiencies within data centers through rebates on server replacements and consolidation projects. With this program, CIOs can expect a payoff of up to 50 percent of their hardware investment. Yamada indicates that these types of rebates offset the upfront capital investments for server consolidation. And, he says, incentive programs around thin client strategies are the next practical step, one for which PG&E and NEC are already in discussions.

NOTHING TO LOSE, EVERYTHING TO GAIN

Through all of this, one question begs to be answered: Does cutting so much power mean something else has to give?

Not necessarily. New-generation thin clients, such as those offered by NEC, won't negatively affect the end user or the IT organization.

End users won't have to give up anything. CIOs can deploy virtual PCs that offer all the capabilities of the traditional desktops. Unlike their predecessors, thin clients include full multimedia high-speed graphics and sound functionality and can be integrated with voice-over-IP (VoIP) telephone systems. And today's thin clients live up to the high-performance expectations of power users. We're talking about real-time computing, with no lag time between the desktop and the server, even when dealing with audio and video content.

Perhaps more telling is the fact that the IT organization stands to gain, too. Thin clients can be deployed and managed as appliances. The software and hardware are bundled for plug-and-play deployment. One server installation can equate to 20 PC deployments, resulting in a much better use of resources. "Obviously, the installation of a single PC takes a certain amount of time and effort, while a server installation may take more time," Hertzler says. "But even with 10 times the effort, you're still spending half the resources."

Of course, centralized management is another bonus. Virtualization makes management and support more efficient, especially for things like backups, application updates and general maintenance. Servers are centrally located, and a single task results in volume software changes across multiple virtual PCs. And fewer moving parts to support means fewer service calls to the desktop. That leaves IT with more time to focus on strategic initiatives that will affect the company's top line.

With everything to gain and nothing to lose, it seems high time to migrate toward virtual PCs. A proactive approach to energy-efficient computing is an ideal way to affect change and go green. The savings are real, and the impact significant.

"And, even if your green conscience doesn't haunt you, the numbers will," Hertzler concludes. "PC virtualization simply makes strong business sense."●

FOR MORE INFORMATION about how NEC can help you leverage virtual PCs for green computing, please visit www.virtualpccenter.com