

Not just 'nice to do':
Efficient IT benefits the environment and bottom line



Table of Contents

Executive summary.....	2
Controlling spiraling energy use	2
Reduce costs without compromising performance	2
Corporations focus on the environment	3
'Greening up' the data center.....	3
Challenge for CIOs	3
New equipment, new opportunities	4
Energy efficiency comes to the desktop	4
A comprehensive approach	5
Casting a wider net	5
Consolidate and virtualize	5
Managing through the IT lifecycle	6
Optimize across the full portfolio.....	6
Refurbish, reuse and recover.....	7
Data security, residual value must be considered.....	7
Leasing makes it easy	7
For more information.....	8

Executive summary

For CIOs, aligning IT and business goals increasingly is emerging as a top priority. The days of focusing mainly on delivering processing capabilities are over. Today it's also imperative to manage how processing power is created—how much energy is consumed and how IT equipment is managed across its lifecycle—in addition to how it contributes to the success of the business.

Concurrently, environmental matters pose tangible—and growing—concerns for businesses executives.

Managing the IT infrastructure in an environmentally sensitive fashion has become more than just “nice to do”; it's good business and provides a profound bottom-line payoff. At issue are significant rewards for the organization—and control over risk.

Controlling spiraling energy use

Data centers and energy consumption offer a compelling case in point. In most corporations, data centers account for a major share of energy use. As energy costs climb steadily higher, data centers consume a growing share of the IT budget. Concern over greenhouse gas emissions associated with energy consumption has moved to the forefront of environmental issues. In some geographies, the very availability of sufficient power to run a major data center is in question.

The “risk” side of the equation is equally compelling. Safe and responsible disposition of older IT equipment remains a challenge. Equipment removed from service may contain important proprietary information that must be secured. Hardware containing potentially hazardous materials must be disposed of in a way that protects the environment.

Government is increasingly involved, backed by regulations mandating how electronic waste must be handled. Environmental watchdog organizations monitor and report on companies' compliance—or failures. Mishandling surplus equipment risks loss of trade secrets, litigation and adverse regulatory action, and potentially damage to the company's brand.

Concern about global warming and hazardous waste will be with us for the foreseeable future, so the focus we see today on corporate environmental performance is likely to continue. The IT organization must be part of the solution.

Reduce costs without compromising performance

With foresight and planning CIOs can further their core mission to deliver competitive IT capabilities at the lowest possible cost and enhance the company's reputation as a responsible corporate citizen. Happily, the very technology we use—with its continuing gains in speed and capacity—enables us to improve data handling, communications speed and energy efficiency all at once. It is indeed possible to help the bottom line AND the environment.

By incorporating stringent energy efficiency requirements into planning considerations for IT operations, upgrades and consolidations, CIOs can reduce energy consumption and operating expense without compromising performance goals. Careful management of surplus equipment guards against harms to the environment and may even generate revenue to support IT initiatives.

In each of these areas, intelligent use of IT equipment leasing can help greatly in achieving goals for the environment, security and profit.

Corporations focus on the environment

By today's way of thinking, all companies are "smokestack" industries. Directly or indirectly, their activities consume materials and energy, produce waste and create a carbon footprint. As the world looks more closely at the environmental impacts of economic activity, the focus is broadening from factory stacks and drain pipes to the entire supply chain, the lifecycles of products and infrastructure equipment, and the use of low-impact business practices, such as video conferencing and telecommuting.

The IT department, too, is now viewed as part of the environmental problem—and therefore an important potential piece of the solution. Much as computer-processing speed doubles every 18 to 24 months, energy consumption in data centers is climbing dramatically. According to an August 2007 report to Congress by the U.S. Environmental Protection Agency, power to run the nation's server farms costs \$4.5 billion a year. Data center energy consumption doubled between 2001 and 2006 and—unless energy efficiency trends are accelerated—it will double again by 2011, consuming 12 gigawatts of power and requiring the construction of 10 new baseload power plants.¹

'Greening up' the data center

The EPA study is just one contributor to a growing awareness that industry needs to "green up" the data center. *The New York Times* reported the problem in a November 2007 story, "Taming the Guzzlers That Power the World Wide Web."² Tech industry consultant Gartner focused on IT environmental issues in conferences and in studies such as *Green IT: A New Industry Shock Wave*. The UK environmental charity Global Action Plan raised the issue of IT efficiency in *An Inefficient Truth*, a report whose title plays off former U.S. Vice President Al Gore's watershed motion picture on global warming, *An Inconvenient Truth*.

No surprise, then, that many companies work hard to create a "green" image. A 2007 survey of the 100 top companies in the Fortune Global 500 found that all but three publish corporate social responsibility reports online. The most-reported areas of action are resource management, efficiency and waste management, with more than 90% of reports touching on these three areas.³ Such leading companies already understand the reputational benefits of protecting the environment.

IDC, a leading provider of global IT research and advice, says building or planning for a green data center remains an early adopter phenomenon—for now. "But it's expected to be an increasing focus over time for many large datacenters under mounting governmental regulations and external pressure from media, investors, partners and competitors."⁴

For other stakeholders, internal measures such as improved efficiency and cost savings will be more persuasive. The potential is great; the EPA estimates that simply altering operating methods, a relatively low cost approach, could cut data center energy consumption in 2011 by 20%, generating savings of \$1.6 billion. Implementing "state of the art" efficiency measures by 2011 could roll back data center energy usage to year 2000 levels and save 74 billion kWh, cut CO2 emissions by 47 million metric tons and trim energy bills by \$5.1 billion.

Challenge for CIOs

The drive for green IT presents CIOs with issues of organization structure, budgeting and cost justification—and more. Adding energy efficiency to an already long list of organizational demands is not easy. For many in IT, responsibility for energy use has been someone else's job. "In many data centers, those responsible for purchasing and operating the IT equipment are not the same people

that are responsible for the power and cooling infrastructure, who in turn typically pay the utility bills,” the EPA told Congress. IDC agrees.

A 2007 IDC survey of IT professionals showed “an organization disconnect between the IT and facilities departments within companies. According to IDC surveys, IT department budgets have not been responsible for electricity expenses associated with IT equipment. The expense has been the responsibility of facilities departments, corporate budgets, or landlord/lease agreements.”⁵

The CIO’s traditional focus has been to provide the computing and communications power to run the business. It was up to facilities managers to power and cool those banks of servers—and to pay the bill. To deal with green IT issues in a comprehensive way, companies must bridge this division of responsibility.

Another hurdle is the continuing pressure on IT budgets. IDC reports that “eco-responsibility for the datacenter is real, however, cost savings are a prerequisite to justifying building a “green” data center.”⁶

The potential savings from improved energy efficiency is significant. IDC says that worldwide non-consumer IT spending (excluding staff) exceeds \$1 trillion annually, with more than \$425 billion spent just for IT equipment.⁷ And according to Gartner, “Most U.S. enterprise data centers will spend as much on energy (power and cooling) as they will on hardware infrastructure.”⁸ And what company wouldn’t want a piece or all of the 55% savings in energy use projected as possible in the EPA report to Congress?

New equipment, new opportunities

New generations of IT equipment put such gains within reach. For example, on average, racks of servers require as much energy for cooling as to run the servers. But HP BladeSystem c-Class Server Blades require 70% less power for cooling than conventional rack mounted servers.

In 2006, HP introduced Dynamic Smart Cooling (DSC), a new approach to data center cooling. DSC complements the company’s efforts in AC conversion and server efficiency, two other areas of focus for improving data center efficiency. It addresses the growing challenge of cooling high-density data centers that house hundreds or even thousands of racks of servers. As data center densities continue to grow, efficient cooling is increasingly important.

Most data centers can use DSC, which incorporates standard interfaces to most air conditioning and building management systems. DSC can cut cooling costs by up to 40%, giving customers the option to lower energy consumption or—while keeping energy use constant—add servers.

Energy efficiency comes to the desktop

Efficiency counts on the desktop, too. In January 2008, HP introduced two new energy-efficient desktop PCs, including the first to feature a solid-state hard drive. The machines meet the most stringent requirements of the Energy Product Environmental Assessment Tool Gold registry and meet the EPA’s latest Energy Star efficiency requirements.

Does desktop efficiency matter? A recent study underwritten by HP found that the U.S. federal government could save more than \$82.4 million in energy costs—the equivalent to conserving more than 1.3 million barrels of oil in just one year—if its more than 10 million existing Energy Star 3.0 PCs were updated to the new 4.0 standard.

A comprehensive approach

Whether they think of themselves as early adopters or just smart operators, CIOs setting out to “green up” their IT operations and infrastructure will benefit from taking a comprehensive approach to the issues of energy efficiency and environmental protection.

The outside world is evaluating the environmental impacts of corporate activities from an increasingly broad perspective. In the words of UK business and IT analysis firm Quocirca, environmental action “needs to take into account the entire supply chain from component vendor to end of life, especially considering the legislative directives around waste and hazardous substances (WEEE and RoHS), and whether resources being used are sustainable or not.”⁹

Casting a wider net

The net is being cast ever wider, to include supplier activities, transportation networks and the product lifecycle in determining who’s green and who is not. CIOs need to take a similarly broad approach, reaching out to business units, the CFO and facilities managers to develop green goals that serve the interests and win the support of the entire organization.

Green IT means more than just installing newer, more efficient servers and desktops. The comprehensive approach begins with reviewing the energy implications of the core processes of the business. Though an in-depth discussion is beyond the scope of this paper, replacing inefficient business processes is a major part of evolving into a greener business. For instance, substituting video conferencing for physical travel and distance learning for classroom training is not new. Yet in addition to saving time and money, these approaches can help cut energy consumption and carbon emissions. They bring both operational and environmental benefits.

No amount of streamlining or stripping down processes will eliminate the need for IT support. Indeed, our ability to substitute digital processing for physical processes has produced remarkable gains in efficiency, and will in the future. So CIOs who optimize business processes to save money and the environment still face the task of optimizing the efficiency of their IT infrastructure.

Consolidate and virtualize

IT infrastructure planning today should include goals for minimizing energy consumption, as well as measures to ensure responsible disposition of surplus equipment. These green parameters will be new considerations for some organizations, and they should be viewed not as roadblocks but building blocks toward a better, more sustainable IT solution. For instance, energy saving and equipment disposition goals fit together well in plans for data center transformation, a major trend for business.

Mergers, acquisitions, local IT initiatives and the simple passage of time have left many companies with IT infrastructure that is cumbersome and outdated—and energy inefficient. Data centers are scattered across the country, or even around the globe. Acquired subsidiaries limp along on legacy infrastructures. Some servers may be maxed out while others sit idle, consuming energy but delivering little value.

Transformation offers the opportunity to solve multiple problems in a single (though admittedly complex) initiative. It may focus on one or more of these areas:

- Application consolidation (reducing the number of licenses, standardizing to cut the number of applications in use, transitioning to next-generation applications)

- Server and storage consolidation (moving to new hardware, consolidating from several platforms to one). A recent trend to blade servers helps trim space requirements, reduce cabling, and reduce power and cooling costs.
- Server virtualization makes it possible to run more applications on fewer devices and eliminate under-utilized, energy-wasting single-function servers. By extracting maximum processing power from every watt of energy consumed, virtualization can cut both capital expense (fewer servers to buy) and operating costs.
- Geographical and physical consolidation—reducing the number of physical data center sites and migrating equipment to sites with lower operating costs and state-of-the-art power and cooling infrastructure.

Data center transformation can be a major strategic initiative, but viewed long term it is just another point on the continuum of IT support for the enterprise. Needs continue to evolve, infrastructure ages, and vendors roll out new equipment and applications.

Managing through the IT lifecycle

Though it is a watershed event, a data center transformation will not refresh the whole IT equipment inventory.

Desktop equipment, local servers and storage devices across the enterprise, as well as legacy equipment relocated to the data center will range from brand new to near-obsolete. Managing this equipment to maximize its cost effectiveness through the whole lifecycle, from purchase through deployment, maintenance and retirement, requires a framework for measuring obsolescence and related costs, such as energy efficiency, that makes it possible to replace equipment over multiple technology lifecycles.

Optimize across the full portfolio

“The opportunity is not simply to minimize the cost profile of a single PC or server but to optimize the *portfolio cost* of a type of IT equipment through multiple generations,” said IDC analyst Joseph C. Pucciarelli, Program Director, Technology Financing & Management Strategies. “Few organizations have established a formal, repeatable life-cycle investment process to optimize the total cost of ownership for their IT equipment portfolio.” The simple financial amortization schedule used by more than 70% of organizations to establish the useful life of IT equipment is not sufficient, according to Pucciarelli. Instead, firms should establish and manage a multiyear capital plan and forecast capital requirements for at least three years beyond the current budget.

“IDC believes that establishing and managing a multiyear capital plan create important opportunities for CFOs and CIOs to achieve their shared goal: deliver an appropriately sized IT capability at the lowest possible total cost,” he added.¹⁰

Preparing such an analysis could strain the capabilities of many organizations, but help is available from firms such as HP Financial Services, a unit of HP. HP Financial Services is a long-standing provider of a full range of financial and asset management services designed to manage “consumable” IT assets and allow organizations to achieve maximum efficiency and benefit from their IT investments.

Refurbish, reuse and recover

The most visible side of IT life cycle management is deciding what new technology to deploy, how to finance the purchase or lease, and how to capitalize on the expected enhancements to capabilities and productivity. Yet the other end of the cycle—the disposition of obsolete IT equipment—presents both significant risks and important opportunities. As IT managers improve their environmental performance, end-of-use planning must be integral to the program.

Environmental concerns are important. Electronic equipment contains heavy metals and other hazardous substances, and must be disposed of properly. Careless recycling can endanger people and the environment, and expose the enterprise to legal liability and damaging publicity.

Data security, residual value must be considered

Data security and residual value are also important. Surplus equipment may contain customer account information or other proprietary data that must be secured, then thoroughly erased or destroyed. Loss of asset value too poses a significant risk. Even near the end of its lifecycle, much IT equipment is still usable. As time passes its value continues to decline and the cost to warehouse these assets mounts. Fast action can reduce holding costs and return maximum value to the bottom line.

CIOs must decide whether they can spare the resources to inventory, store, ship and market reusable gear, and properly dispose of the rest. Should they invest time and money on processes that, while critically important, are far from their core competency? A professional asset recovery program managed by a reliable partner provides a golden opportunity to find value in older equipment and enhance the organization's reputation for environmental care and management skill.

New generations of IT equipment typically outperform their predecessors in outright processing speed, performance per dollar and labor savings, and deliver other operational benefits—such as new or improved software applications. Now manufacturers have added better energy efficiency to the list. As business demands ever more energy-efficient IT equipment, new generations of IT equipment are likely to be both more powerful and more efficient.

Leasing makes it easy

High performance is equally important in the method used to finance and manage new, high-performance equipment.

Those same adjectives—powerful and efficient—apply equally to the equipment leasing option. Leasing enhances the organization's buying power by eliminating the need to deplete budgets or borrow for a cash purchase. Leasing also makes it much easier to operate a program of equipment lifecycle management and regular technology refreshes that can ensure energy efficiency goals are met.

In addition, most lease arrangements free the enterprise from worry about disposing of old equipment at end of use—that's up to the lessor. Even the initial transition from owned to leased equipment is easy.

HP Financial Services can manage disposition of old equipment, possibly generating revenue, and provide equipment to support the business during a transition, such as a data center transformation. Equipment not refurbished will be scrubbed, dismantled and recycled under strict environmental controls.

For more information

www.hp.com/hpfinancialservices

Asset Recovery: Balancing risk and opportunity

http://h20330.www2.hp.com/hpfinancialservices/downloads/Asset_Recovery_Balancing_Risk_and_Opportunity.pdf

Data center consolidation: Financing options address more than just costs

<http://h20330.www2.hp.com/hpfinancialservices/downloads/DCC.pdf>

Small and midsized companies: Smart choices solve financial challenges

http://h20330.www2.hp.com/hpfinancialservices/downloads/Smart_choices_solve_financial_challenges.pdf

¹ *Report to Congress on Server and Data Center Energy Efficiency*, page 7, August 2, 2007

² "Taming the Guzzlers that Power the World Wide Web," *The New York Times*, November 7, 2007

³ *How the World's leading Businesses Address Corporate Social Responsibility*, by Chris McClean, page 5, ©2007 Forrester Research, Inc.

⁴ *Power and Cooling in the Datacenter 2007: Challenges, Impacts, and Forecast*, page 4, by Michelle Bailey and Jed Scaramella, September 2007, ©2007 IDC

⁵ *Power and Cooling in the Datacenter 2007*, page 12

⁶ *Power and Cooling in the Datacenter 2007*, page 4

⁷ *Strategies for Managing IT Equipment Renewal and Replacement*, by Joseph C. Pucciarelli, page 2, November 2007, ©2007 IDC

⁸ "Gartner Says Energy and Floor Space Constraints Will Cause Significant Disruptions to U.S. Enterprise Data Centers During Next Three Years," news release, October 2, 2007

⁹ *How green is my vendor?* By Rob Bamforth, principal analyst, ©2007 Quocirca Ltd.

¹⁰ Pucciarelli, page 1