



# Green Doesn't Have to be Hard

IT departments today already have to struggle with a wide array of influences, pressures and goals. Now they have yet another thing to think about: the environment and how their technology decisions may impact our planet.



# A recent CIO magazine survey found that 54% of IT leaders said their organizations have environmental sustainability goals for information technology.

Another recent report from the information technology research firm Gartner predicted that in the future, “IT decisions will come under budget pressure as individual business units seek to have more freedom of choice in technologies.” In other words, many IT departments want to be “green.” They know it is the right thing to do, but they need to do so without the risk of spending additional funds.

The reality is that being mindful of the environment doesn’t have to be challenging from a cost-saving or implementation perspective. The two can be in harmony and allow companies to stay on—and oftentimes reduce—budgets while being environmentally conscious. Being green can be a welcome byproduct of saving money.

## **Five ways IT departments can save money while saving the environment include:**

- Consolidating Technology Assets
- Deploying Applications in a Virtualized World
- Evaluating Cooling Systems and Airflow in Data Centers
- Redeploying Technology Assets Internally and Externally
- Waste Management from Better Data Management

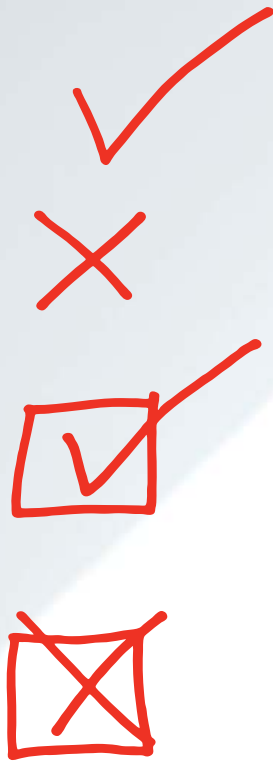
Read on to learn more about these “cost savings with a conscience” strategies.

## **Consolidating Technology Assets**

The typical IT department has a broad range of technologies that were added piecemeal as the company grew and is now faced with having to use all of these disparate and legacy systems as efficiently and effectively as possible. Some companies discover the need for consolidation when they evaluate their business continuity and disaster recovery solutions. Infrastructure that is in bits and pieces and not running well together can obviously result in major risk for an organization. In addition, mergers and acquisitions, data center relocations, and centralization all can lead to the need for consolidation. And now, with the onslaught of virtualization capabilities, consolidation is more imperative than ever before.

“IT consolidation is not any different than what we do at home when we consolidate. We may install low-flow showerheads to use water more efficiently, or reuse shopping bags or create our own compost bins. It is all about doing more with less and making sure the remaining items are used more efficiently.”

— Eric Linxweiler,  
VP Delivery, EC Services, Logicalis



## Logicalis Technology Assessment 2008

Year	Servers	KWH/Year	Cost of Power/Yr	CO2 Lbs	Consolidated Servers	KWH/Yr	Cost of Power/Yr	CO2 Lbs	Oil Barrels Saved	Equiv. Trees Planted
Year 1	221	1,117,049	\$91,598	1,496,846	19	114,411	\$9,382	153,311	1,836	1,840
Year 2	244	1,233,303	\$101,131	1,652,626	21	126,454	\$10,369	169,448	2,027	2,032
Year 3	269	1,359,666	\$111,493	1,821,952	32	138,497	\$11,357	185,586	2,237	2,242
Year 4	296	1,496,138	\$122,683	2,004,825	26	156,562	\$12,838	209,793	2,453	2,459
Year 5	326	1,647,774	\$135,117	2,208,017	28	168,605	\$13,826	225,931	2,709	2,715
Year 6	359	1,814,573	\$148,795	2,431,527	31	186,670	\$15,307	250,138	2,982	2,988
Year 7	395	1,996,535	\$163,716	2,675,357	34	204,735	\$16,788	274,345	3,282	3,289
Year 8	435	2,198,716	\$180,295	2,946,280	38	228,822	\$18,763	306,621	3,608	3,616
Year 9	479	2,421,115	\$198,531	3,244,294	41	246,887	\$20,245	330,828	3,982	3,991
Year 10	527	2,663,732	\$218,426	3,569,401	46	276,995	\$22,714	371,173	4,371	4,381
<b>Totals</b>			<b>\$1,471,785</b>	<b>24,051,125</b>			<b>\$151,588</b>	<b>2,477,176</b>	<b>29,487</b>	<b>29,553</b>

Assumptions: Starting number of servers is 221. Existing KW Rate is 0.577. Cost per KWh 0.082. Server Growth Rate/Year 10% Consolidation Ratio 11.71:1. Lbs of Carbon per KW/h 1.34. Rackmount KW Rate 0.6874.

“By nature, a virtualized infrastructure requires fewer physical assets that can be obtrusive to the environment. The more one-to-one relationships of applications to servers a company has now, the greater the amount of energy it will save by consolidating and deploying its applications in a virtualized world.”

Terry Strohecker,  
Director of IT,  
Logicalis

A study completed for a large enterprise in the financial industry showed that server and storage consolidation reduced the total cost of ownership (TCO) of its IT environment from \$12.8 million over five years to \$5.2 million. These are significant savings, but what is not immediately obvious is that this type of consolidation also leads to a reduction in power use and therefore helps the environment.

Logicalis itself was able to realize a 10:1 server consolidation ratio and experienced much lower power consumption as well as lower cooling costs for its data center. “Although we consolidated our technology primarily to save money and run more efficiently, it was exciting to see the positive environmental impact of our consolidation effort,” said Terry Strohecker, Director of IT at Logicalis. “There is less energy being expensed, less scrap, fewer physical assets to manage and fewer trips to the data center because there is less to go wrong.”

IT consolidation also encompasses practices such as server virtualization, storage virtualization, network virtualization, and operating system virtualization.

“The car-sharing analogy is very relevant here,” says Linxweiler. “Most of us have cars that sit idle for at least 80% of the day. There are companies now that are providing cars that can be rented by the hour, creating a model where cars are being used efficiently and to capacity.”

There are many different ways of consolidating IT resources, and each enterprise consolidation effort is unique. Each model should include a detailed analysis of the current IT infrastructure and take into account the future needs of the organization.

### Deploying Applications in a Virtualized World

As mentioned earlier, virtualization is closely tied to consolidation. Whereas companies in the past used a separate server for each application, they are now creating virtualization farms that put many applications on each server to make more efficient use of system resources. Simply put, when some applications are not using server resources, those resources can be allocated to another application. By putting applications on “virtual machines,” they can share these resources.

“A company might have a mission-critical application sitting on a server, but it might be an application that is not used a lot,” said Shaun Olsen, Vice President, Portals/Application Development at Logicalis. “On the other hand, the company may have other applications that are used frequently. So, rather than have countless servers, the busy applications can borrow server cycles from the less busy servers.”

By using virtualization, companies are saving money and also saving energy. They are creating a smaller footprint of servers, using fewer UPSs (uninterrupted power supplies) and drawing on less energy to cool their data centers because they have fewer data center sites. These are all good things for the environment.

One powerful point of hesitation when deploying assets in a virtualized world is the uncertainty associated with the reduction of physical assets. As Strohecker explained, “It sounds good, but there is an underlying uncertainty because it isn’t tactile.” Once effectively put into practice, however, a virtualized infrastructure can melt seamlessly into the background, saving on energy costs and sheer mass of hardware that “won’t have to end up being scrapped.”

### **Evaluating Cooling Systems and Airflow in Data Centers**

Another area for companies to save money and also help the environment is temperature control in data centers. Evaluating the cooling systems and airflow in data centers is a step that is easy to overlook, but is a smart—and green—path to save companies money.

One of the challenges of IT consolidation is the higher density of racks, which makes them tougher to cool. Server consolidation creates a smaller footprint on data center floors, but may require high ceilings—some companies even have ceilings that are 20 feet high—and other measures to bring down temperatures in the data center housing facility.

## **How Consolidation Can Lead to Green It**

SAN FRANCISCO - Pacific Gas and Electric Company (PG&E) wanted to postpone the construction of a large and expensive infrastructure of power it needed to meet the increasing demands of its customers. To do this, PG&E announced the first-ever utility financial incentive program to support virtualization projects in data centers, with industry support from VMware, Intel Corporation, and other high-tech leaders.

“Virtualization technology is helping our customers realize significant energy and cost savings, while addressing critical data center capacity issues,” explained Helen Burt, Senior Vice President and Chief Customer Officer for PG&E. “By providing financial support, we hope to increase industry adoption of this technology.”

PG&E customers in northern and central California who are interested in earning financial incentives for virtualization projects must apply for the rebate prior to pursuing a project. The incentives are based on the amount of energy savings achieved through data center consolidation. Qualifying customers can earn a rebate amount of as much as \$4 million per project site.

In addition to the rebate, customers can expect to save \$300 to \$600 in annual energy costs for each server that is removed. Those savings can almost double when reduced data center cooling costs are also taken into account. You may not be located in PG&E’s service area, but it wouldn’t hurt to ask your own power company about similar incentives.

## Saving Green While Going Green = A Real-Life Example

Savings In Power Costs In Year One After Consolidation	=	\$82,216
Savings In Power Costs Over 10 Years	=	\$1,320,197
Number Of Oil Barrels Saved Over 10 Years	=	29,487
Savings In CO2 Output Over 10 Years	=	21,573,949 Pounds

**Savings Over 10 Years Of CO2 Output is the Equivalent To 29,553 Trees Planted**

According to a white paper by Peter Hannaford at American Power Conversion (APC), the Critical Power and Cooling Services business unit of Schneider Electric, "Vendors are now designing servers that can demand over 40 kW of cooling per rack. With most data centers designed to cool an average of no more than 2 kW per rack, innovative strategies must be used for proper cooling of high-density equipment." These cooling methods can be anything from arranging aisles so that hot air output from one rack isn't being used to cool other racks, to arranging servers so that the power supply and temperature stays fairly homogeneous throughout the facility.

Optimized cooling strategies allow more racks to be stored in less space, which often means fewer data centers requiring less total energy than numerous facilities would necessitate. This saves on the overall cost of cooling the data centers, reduces the amount spent on creating new data centers and also saves the environment.

### Redeploying Technology Assets Internally and Externally

Companies can also save money by thinking through how they can redeploy technology assets such as older computers, servers and other hardware to various areas within their company, or even sell them to external companies. Older technology assets do not have to hit landfills in an early death, but can be redeployed in disaster recovery centers, or used as lab equipment or in testing centers. The tough part is figuring out what can be redeployed where and how to make that happen.



### Further Reading

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[www.us.logicalis.com/green](http://www.us.logicalis.com/green)

### IT Carbon and Power Consumption Calculator

In late 2007, Logicalis developed an easy-to-use online tool, the Logicalis IT Carbon and Power Consumption Calculator (at [www.us.logicalis.com/green](http://www.us.logicalis.com/green)), to enable IT managers to quickly determine the current amount of energy consumed by their data centers and the potential savings they may achieve through server and storage virtualization and consolidation.

The online tool helps IT departments assess their power consumption and related carbon (CO<sup>2</sup>) emissions and demonstrates that significant carbon footprint and energy cost savings can often be achieved through virtualization. This calculator can serve as a starting point to determine an IT department's greenness and where there is room for improvement.

## Ride-Matching with eCommuter.com

Logicalis developed an Internet-based application that simplifies the process of finding shared rides by enabling people to search for partners, map routes and email other users directly. Not only does this help commuters, but it helps the environment.

eCommuter.com is licensed to Metro King County in Washington State, which uses the application in its Metro Rideshare Operations (<http://transit.metrokc.gov/tops/van-car/van-car.html>). The eCommuter.com application is also being used in parts of Oregon, California, Idaho, Arizona, New York, and Connecticut.

Due to eCommuter.com, there are fewer single-occupancy vehicles on the road, reducing pollution and improving traffic. Individuals using the application not only realize the financial benefits of carpooling, but may receive incentives from employers, parking benefits and shorter commute times using carpool lanes. Employers of carpoolers may also see the benefits of their employees sharing rides through a reduction in the number of parking spaces they need to reserve.

In addition to the environmental impact of the carpooling itself, Logicalis delivers the eCommuter.com application in a virtualized environment. This means that the application resides on one server rather than occupying separate server space in each state.

Another way to positively impact the bottom line of an IT department is to sell the unused or outdated technology assets to another company. For example, what may be an outdated server for a mid-sized company may be perfect for a smaller company that is just getting started. The large or mid-sized company brings in some money, while the smaller company saves some money—and nothing hits a landfill, so everyone can sleep well.

The difficult and time-intensive part of redeploying assets is identifying a smaller company that will buy used and outdated technology assets. Another area where companies may need help is in extracting these assets and ensuring that the technology that remains isn't disabled in the process. Fortunately, there are companies and consultants that can help a business manage both of these challenges.

For companies that are feeling altruistic, there are also non-profit organizations that are thrilled to accept "older" technology assets. School districts are a great example of where a company's legacy technology assets can be deployed and where they are welcomed with open arms.

When hardware cannot be repurposed or reused because it is simply too old, recycling IT assets may be the best route. There are a variety of IT recycling resources around the country, and some will even break servers and computers into metals, glass, and plastic to be reused elsewhere.

## Waste Management from Better Data Management

Sometimes positive environmental impacts are just a wonderful side benefit to another project. This was the case in a database project that Logicalis took on for a major corporation. The company wanted to clean up its customer data stores, and in doing so it gained the side benefit of reducing its mailings. The corporation says that the now-synchronized addresses and merged customer database saves it at least \$15,000 a month. The added benefit is that this also ended up being a waste reduction activity.

In a similar case, a large, well-known non-profit organization whose business relies even more heavily on direct marketing is saving a significant amount of money after removing duplicate contact points from its databases. Not only have they improved their communication methods with important audiences, they are reducing waste by decreasing the number of touch points with each person.

"Companies cannot continue to discard at will," said Chris Rafter, Vice President of Consulting Services at Logicalis. "Right now, they are still making decisions based on if it will help them save money, but an investment with green roots is starting to look more attractive."

Chris Rafter  
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The Logicalis Group has annualized revenues of \$1 billion, from operations in the UK, US, Germany, South America and Asia Pacific, and is fast establishing itself as one of the leading IT and Communications solution integrators, specializing in the areas of advanced technologies and services.

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