

White Paper |

# **Green IT:** **Global Imperative. Good For the Planet. Good For Your Business.**



**MarketPOWER**  
Quantify. Innovate. Communicate. WIN™

## Table of Contents

SECTION	PAGE(S)
IT in the Cross Hairs: Part of the Problem	3-4
Green IT: Be Part of the Solution	4-5
Bankable Business Benefits	5-6
Benchmarks   Standards	6-8
A Company Making a Major Impact on Green IT	8-11
<i>Exhibit G-1: Green IT Checklist</i>	9
<i>Exhibit G-2: Green IT Power Savings</i>	9
Green IT Framework	11-12
<i>Exhibit G-3: Green Data Center Assessment Framework</i>	12
Green IT May Save the Planet...and Your Business	12-13



Regardless which side of the political aisle or which world region you may occupy, you have probably come to the conclusion that we as citizens of planet Earth have some big changes to make. Global warming may be the result of people driving gas-powered vehicles throughout the so-called “civilized” world...or perhaps, as some contend, the raising and consumption of beef cattle has a greater negative impact on the planet than all of the cars in the world combined...while others point to historical data showing eras of both global warming and cooling well before the advent of the automobile. Yet whether you buy into the concept of man-made global warming or not, one thing is certain: Our current lifestyle and, if you will, business style, is unsustainable. The ready availability of relatively inexpensive energy to run everything from our vehicles to our homes and businesses to our high-end electronics to our growing armada of IT devices is something much of the world has been able to take for granted. So carmakers, governments and the public at large have given lip service to the notion of energy efficiency—“We have to do something”—and for the most part done little or nothing.

Time’s up. The world is slowly running out of energy and the cost of the energy sources that remain is steadily rising—as we write these words, literally by the day. Yes, some of that is due to deliberate underproduction by those sitting on the world’s largest oil supplies, and uneven activist efforts that have shut down both oil production and nuclear power initiatives in nations like the U.S. while others like France derive the majority of their electrical power from nuclear plants. Yet the fact remains that we are, as any number of songs have plaintively intoned over the years, “Living on borrowed time.”

## **IT in the Cross Hairs: Right Now We’re A Big Part of the Problem**

Best available estimates are that data centers consume approximately 2% of the world's total electrical output, and the rate of energy usage continues to rise. Worse still, we have yet to achieve our full electrical usage potential(!): According to IT managers, about 70% of the

world’s data centers have overrun their existing rackspace, power and cooling capacity. Perhaps that should be no surprise considering that while over the past couple of decades IT equipment has evolved into ever faster (and hotter) forms, basic data center design and construction has barely changed at all.

Yet as outmoded as the designing of data centers may be, you can’t beat ‘em when it comes to being energy hogs. Scientists at Lawrence Berkeley National Laboratory in the U.S. reported that a typical 10,000 square foot data center uses more power than 8,000 60-watt light bulbs, or up to 10x the power required to run a typical office building during the height of the business day. AFCOM predicts that power failures and limits on power availability will interrupt data center operations at more than 90% of all companies over the next 5 yrs. The rising tide of devices and the computing power packed into each pushes cooling problems, well, through the roof. This problem demands serious attention as power and cooling accounts for a major chunk (48%) of power consumption in a data center. By today’s standards the servers we were running 25 years ago were huge...but also enormously easy to cool. While we’ve been busy congratulating ourselves on building them ever smaller—“small footprint,” less floor space—today’s white-hot speedburners are much tougher to cool and require more open space around them. Years ago a 6-foot rack of servers and networking equipment consumed a couple of kilowatts of energy, but now some racks literally “weigh a ton” and consume up to 15x as much energy as their predecessors.

But that’s just at peak loads, right? Surely there has to be a big power dividend when servers are idling along. Well...due to the growing number of always-on features and monitoring systems on board a typical server—and the fact that features or no features they were built from the ground up for speed, not energy efficiency—servers still draw from 40-80% of their normal power while in “idle” mode.

Here’s the kicker: For each watt of server power we voraciously consume in those data centers we must match it with nearly an equal watt of

cooling. Studies by the Lean and Green Consortium have shown that for every dollar a company spends on a new server, it spends an equal amount on energy to power and cool it.

Now let's talk computers: Desktops and laptops that each serve a single user. Each one of these little beauties uses more than 2,000 kW of electricity every year while generating more than a ton of carbon dioxide. That's while they're "alive." When they "die" the real fun begins: Environmental group GreenCitizen estimates that a single computer monitor contains six pounds of lead, and that TV and computer screens account for more than 40% of all lead currently found in landfills around the world. Carnegie Mellon University has estimated that the number of computers currently in landfills in the U.S. alone totals more than 70 million.

That is the problem. We want to be part of the solution. "I want to go green!" But if you're like just about everyone else out there, you're not sure what it really means to go green when it comes to your IT operations. And you'd be hard pressed to learn about green IT from what passes for information out in the marketplace, where some companies have now taken to identifying each and every product they sell as "green." As we all know, "green" is now a generic term splashed around all over the place for virtually every type of product that can be packaged and sold down to a can of corn on the grocery store shelf. So it is to be expected that surveys of senior IT managers around the globe reveal that less than 30% understand what green IT even means. Further, energy management remains almost entirely outside the purview of IT managers. Most have no responsibility for energy usage and never see a utility bill; those bills go straight to purchasing or to facilities management.

All of which is why we are glad you're here. This document will describe what green IT truly is and provide a roadmap to the organizations who are establishing the best benchmarks available today to ensure that your organization measures up.

## **Green IT: Be Part of the Solution**

The three core components of green IT are equipment, power and cooling: Mainly desktops, laptops, servers, storage and networking hardware and the data center facilities that house it all.

The data center must be designed for energy efficiency. Industry groups such as Green Grid recommend so-called "closely-coupled cooling," which is a fancy, bureaucratic term that simply means placing the refrigerant and cooling systems closer to the heat sources (the devices being cooled). Longer distances strain the cooling systems, using more energy and money to do the same job that could be done far more effectively and efficiently with shorter cooling path design. Data centers should wherever possible use glass-walled design to drastically cut down on use of electrical lighting. No matter how much sunlight efficiency is built into use of energy-efficient lighting, however, data centers are 24/7 operations so lighting is a given. The more fluorescent lighting you can build into your data center plan—the normal long tubes for overhead lights but also compact fluorescents (that use up to 75% fewer kilowatts than standard incandescent bulbs) the better. One caveat, however, in our headlong rush to a glass-walled world: the best design is one that achieves an optimal mix of efficiency plus functionality.

Another ingredient in the green IT mix is virtualization: making a single physical resource (server, application, storage device or even an operating system) appear to be functioning as multiple virtual resources—or vice versa, harnessing multiple physical resources to make them work/appear as one. Platform virtualization involves simulation of a whole computer and resource virtualization simulates multiple disparate resources. Bottom line: Fewer computing resources serving a wider community of users, meeting the business need while paying business benefits in terms of capex, opex, energy usage and cost.

Another factor is client/server or thin client architecture: Client computers that depend on a central server for applications, processing and storage and themselves are focused on the simpler task of conveying input and output between the user and the remote server. If we think back, many of us in the business world used to work at thin clients, so-called “dumb terminals,” but today we have moved in greater numbers to “thick” or “fat” clients that either handle all of their own applications, processing and storage or share these components and functions with a central server. Fat clients use far more energy than their thinner counterparts and when you multiply this across all of the workers of the world who used to be using thin clients you begin to grasp the dramatic surge (no pun intended) in energy usage that our standalone laptop-wielding workforce has generated.

Our discussion would not be complete without mentioning some temporary quick-fixes that are emerging in the market as an alternative to companies continuing to launch full-scale data centers. Some have introduced what might be characterized as a Southwest Airlines approach to the IT business: Standardized/productized data centers using modular design to cut energy consumption. Yet to us these “data center (literally) in a box” solutions seem to make about as much long-term sense as automakers who have been offering carbuyers “discounted gasoline for two years” in exchange for buying their gas-guzzlers. We seek long-term solutions that do not force-fit your IT world into a cookie-cutter box. Yes, we are urging IT managers to think outside the box...

## **Bankable Business Benefits**

Green IT is not just about saving the planet; it may cut closer than you ever imagined to saving your company and your job. Going green goes straight to your bottom line. It forces us all to plan, build, think more efficiently than we probably ever have in our careers, and if you ask us, that is a welcome thing.

By increasing your organization’s energy efficiency you can pick up potentially massive savings on utility costs, or at minimum hold the

line on monthly expenditures as energy costs skyrocket. According to the Green Grid and other industry environmental groups, optimizing your physical infrastructure to the workloads at hand can reduce your organization’s electrical bills by up to 50%. Go green and you will inevitably reduce the sheer number of data centers you are operating as well as the footprint of each center and the equipment it houses, hence enabling improved manageability of data center operations. You will also be stepping up to corporate social responsibility and, frankly, getting ahead of the drumbeat of government mandates on business energy usage that are still off in the distance but marching steadily this way. And believe it or not, one of the other products of your green IT initiative will be the opportunity to truly differentiate your company and its offerings because they will be emanating from a company as committed to being a responsible citizen of planet Earth as it is to The Almighty Dollar (or Deutschemark, Dinar, Franc, Guilder, Kronur, Lira, Peseta, Peso, Pound, Riyal, Ruble, Rupee, Schilling, Won, Yen...you get the idea).

Committing to green IT going forward is doing something of real substance that helps your business as opposed to some of the questionable window-dressing called for by some environmental activists. Those negative aspects of “the movement” are unfortunate because they drive conservatives and many business leaders crazy, and more importantly drive them away from the very solutions that could be the key to their business survival.

A holistic approach to IT transformation can reduce the electrical use of data centers better than individual site improvements. Data centers built or updated to reflect green IT have been empirically tested and verified as achieving nearly 80% infrastructure efficiency.

Following Energy Star guidelines issued by the U.S. Environmental Protection Agency (EPA), computer manufacturers are now building highly-efficient, low-power-draw desktops and laptops. While most server chips today can execute four computation “threads” or as few as one, new multi-core processors using chip multiprocessor (CMP) technology are emerging

that can simultaneously execute up to 32 threads—substantially boosting performance while using 30-50% less power. Those developments provide energy-efficient solutions for “thick” client manufacturing, but wholesale replacement of individual desktop PCs with thin client/server architecture can drastically reduce electrical power consumption and carbon dioxide (CO<sub>2</sub>) emissions in ways that no thick-client efficiency campaign can achieve. New LCD monitors are also emerging that offer energy savings of 45% over the old models.

Another perhaps surprising source of energy savings is direct current (DC) power. Alternating current (AC) power is easier to transport over long distances, but the majority of servers, clients and PCs run on DC power. So in much the same way that digital networking signals must be converted to analog at the user premises to provide service to the majority of the world’s still-analog telephones, the utility company’s AC current must be converted to DC at the customer premises and that causes substantial energy loss. Other power-based solutions to the power crisis include uninterruptible power supplies (UPSs) that slash energy loss by more than 70% compared to existing UPSs. Yet another solution that electrical engineers are suggesting is to operate IT equipment at higher voltage, 208V instead of the normal 120V found in much of the world, because this alone can improve the energy efficiency of devices by up to 3%.

IBM claims that over the course of 2,000 client engagements its standardized data-center-in-a-box offer has reduced energy consumption by up to 50%.

## **Benchmarks | Standards**

Every important market trend first came to life as “anecdotal evidence”: We as researchers may not have been able to immediately quantify what was happening, but our analytical antennae detected an uptick that over months or years developed into quantifiable market change. So it is encouraging to see some studies claiming that from 30-50-80% of the world’s IT leaders now consider green IT important or a key factor in buying decisions. But as mentioned earlier in this

document, a lot of the so-called information being disseminated in the marketplace today about “green” products is self-serving and frankly untrue. So while many of us are eager to keep our organizations in the black by going green, where is the roadmap to let us know we’re headed for the right destination or at least in the right direction? Start here: These organizations are continuing to establish the most credible guidelines/benchmarks/standards for green IT:

- The U.S. Green Building Council (USGBC) <http://www.usgbc.org/> has as its mission statement: “A non-profit community of leaders working to make green buildings available to everyone within a generation.” The USGBC has established the Leadership in Energy and Environmental Design (LEED) Green Building Rating System that encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria. LEED certification requires an audit of more than 60 parameters; those who earn it are receiving an independent, third-party verification that a building project meets green building and performance measures. Facilities that earn LEED certification:
  - Have lower operating costs and increased asset value
  - Reduce waste sent to landfills
  - Conserve energy and water
  - Are healthier and safer for occupants
  - Reduce greenhouse gas emissions
  - Qualify for tax rebates, zoning allowances and other incentives in hundreds of cities
- Over the course of the previous sections we have mentioned in several places an organization known as The Green Grid <http://www.thegreengrid.org/>. Green Grid is a global consortium dedicated to advancing energy efficiency in data centers and business computing ecosystems. It is focused on defining meaningful, user-centric models and metrics; developing standards, measurement methods, processes and new technologies to improve data center performance against the defined metrics; and promoting the adoption

of energy efficient standards, processes, measurements and technologies. Green Grid is the source of the Power Usage Effectiveness (PUE) power metrics that are important in implementing power management as part of green IT.

- The focus of the Green Electronics Council <http://www.greenelectronicscouncil.org/> is to inspire and support “the effective design, manufacture, use and recovery of electronic products to contribute to a healthy, fair and prosperous world.” This non-profit organization has developed something called the Electronic Productivity Assessment Tool (EPAT) using standards set forth by the Institute of Electrical and Electronics Engineers (IEEE) to measure a product’s environmental performance. Using the EPAT one can see how desktops, notebooks and monitors from a variety of manufacturers rank in terms of their environmental and performance attributes. The Council’s approach to green IT is refreshing in that it addresses, if you will, the full “Green IT life cycle”: Not only the manufacture of energy-efficient computing devices but also the responsible disposal of those devices when they come to the end of their useful life.
- The U.S. Environmental Protection Agency (EPA) <http://www.epa.gov/> has as its mission to establish and enforce environmental protection standards consistent with national environmental goals. The EPA conducts research on the adverse effects of pollution and on methods and equipment for controlling it and assists the U.S. Council on Environmental Quality in developing and recommending to the President new policies for the protection of the environment. The EPA has issued what arguably has been the most important set of standards to date governing not only IT devices but the vast majority of the other appliances for home and business use: Energy Star, mentioned earlier in connection with the newest energy-efficient computer manufacturing.
- 
- The European Commission Directive on the restriction of the use of certain hazardous

substances in electrical and electronic equipment, commonly known as the Restriction of Hazardous Substances (RoHS), bans new electrical and electronic equipment containing more than agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants from the EU market. The EC’s Directive on waste electrical and electronic equipment

[http://ec.europa.eu/environment/waste/weee/index\\_en.htm](http://ec.europa.eu/environment/waste/weee/index_en.htm), or WEEE, is “designed to tackle the fast increasing waste stream of electrical and electronic equipment and complements European Union measures on landfill and incineration of waste.” These directives provide incentives to design electrical and electronic equipment in an environmentally more efficient way taking waste management more fully into account. Among other provisions, they allow consumers to return their used equipment to designated collection centers free of charge.

- The International Organization for Standardization (ISO) <http://www.iso.org/> is the world’s largest developer and publisher of international standards. ISO spans a network of the national standards institutes of 157 countries, one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the system. The organization enables a consensus to be reached on solutions that meet both the requirements of business and the broader needs of society. The ISO 14001 standard requires that a community or organization implement a series of practices and procedures that, when taken together, result in an environmental management system.
- The Energy and Resources Institute (TERI) <http://www.teriin.org/>, headquartered in New Delhi, India, was formally established in 1974 to “tackle and deal with the immense and acute problems that mankind is likely to be faced with in the years ahead” due to the depletion of the earth’s finite, largely non-renewable energy resources and the pollution that results from current use.

- The International Council for Local Environmental Initiatives (ICLEI) <http://www.iclei.org/> has established the “triple bottom line”—also known as TBL or 3BL—to represent the three-part business goal of “People, Planet, Profit.” The TBL standard is becoming important in urban and community approaches to public sector full cost accounting.

## **Which Company May Have the Greatest Impact Across the Green IT Spectrum?**

Recent studies claim that IT users in India are among the most favorably disposed to preferring green IT alternatives if they appear to positive impact both the environment and their budgets—and to “Put their money where their mouths are” by paying a small premium to go green. From this fertile green IT ground, India-based HCL, one of the world’s leading IT service providers, is also fast becoming a world leader in terms of not

just talking about green IT but actually deploying it for customers. HCL is rapidly building subject matter expertise on the whole picture: The data center, the devices in it, the building where it all resides and the usage/collection/recovery systems that support it all.

HCL’s Green Data Center Solution features virtualization, consolidation, data center structural changes and facility non-structural changes including asset relocation; consolidation, upgrade and rebuilding of facilities and assets; rack optimization; hot and cold aisle setups; audit and gap analysis and green compliance and certifications consultancy. Key technology inputs include Sun Solaris 10 platforms, EMC’s VMware and Microsoft’s Hypervisor solution.

Exhibit G-1 shows best practices assembled from industry groups and providers across the industry including HCL when it comes to establishing and quantifying the various components of a green IT approach.



**Exhibit G-1: Green IT Checklist**

<input checked="" type="checkbox"/>	<b>DATA CENTER:</b>
	Consolidate data centers
	Revamp data center architecture and infrastructure
	Optimize rackspace
	Optimize light, heating and cooling in the data center: use air-side or water-side economizers Improve data center airflow – hot aisle/cold aisle, raised floor, plenums, blanking panels
	Simplify data center cabling
<input checked="" type="checkbox"/>	<b>COMPUTING ARCHITECTURE and PLATFORMS:</b>
	Consolidate and virtualize applications, servers, network and storage devices
	Move from distributed computing based on individual PCs [back?] to thin client (client/server) architecture
	Deploy energy-efficient servers including multi-threading processors and CMP technology ( )
	Deploy new low-energy-consumption desktops, LCD monitors and laptops
	Implement server and PC (or Mac) power management
	Automate server switch-offs/switch-ons: - Collect power usage data from servers - Track shifts in usage and variations in Internet traffic - When usage or traffic spikes up or down, automatically switch servers on or off accordingly
	Implement power management techniques: Workload management software to meter power usage and trending data Power caps on servers to optimize energy use and application performance
<input checked="" type="checkbox"/>	<b>POWER MANAGEMENT:</b>
	Implement energy-efficient power metrics*
	Deploy modular uninterruptible power supply (UPS) system design or Flywheel battery operated UPS
	Implement DC power in place of AC power wherever possible
	Operate equipment at higher voltages: 208V instead of 120V
<input checked="" type="checkbox"/>	<b>OTHER RESOURCE MANAGEMENT:</b>
	Harvest rainwater for use in cooling operations
	Site selection to ensure not to use sensitive site elements and restrictive land types
	Obtain as much power as possible from renewable resources
	Institute Waste Electrical and Electronic Equipment (WEEE)-compliant policy*

\* Benchmarks | Standards section of this document



The results of HCL’s adherence to green IT best practices, reflected here and in Exhibit G-2 below, speak for themselves:

- Near zero downtime: “Six 9’s” of availability
- 6-month ROI for the majority of customers
- Enhanced security and disaster recovery
- Regulatory compliance
- A 30-40% reduction in data center space and power usage, yielding capex and opex savings through not only IT and utilities but rental space cost. Some of the initiatives that yield these savings include:
  - Server compression ratios from 6:1 to 15:1 and reductions in rebuild and application load from 20-40 hours to 15-30 minutes as a result of VMware server virtualization
  - 15-20% space savings on relocation of data centers that have been in operation for 5-8 years
  - 30% reduction in upfront execution costs vs. do-it-yourself or working with other providers
  - Energy savings of 27% through use of liquid/pumped refrigerant rather than relying on air-cooling alone

**Exhibit G-2: Average power savings, HCL data center consolidation/migration customers**

Technique	% Savings	Detail
Rackspace optimization	10-15	Use optimal tools to allocate rackspace
Server virtualization	10-40	Consolidate applications onto fewer (often blade) servers
Efficient air conditioning (A/C) architecture	7-15	Row-oriented cooling more efficient for high density; shorter air paths require less power
Air conditioning economizer modes	4-15	Substantial savings while still doing the job
Efficient floor layout	5-12	Hot/Cold aisles for optimal A/C placement
Efficient power equipment	4-10	New DRUPS with 97% power efficiency vs. 80% legacy
A/C coordination	1-10	Eliminate “warring A/C systems” that reduce each other’s performance
Vented floor tiles	1-6	Reduce/eliminate hot spots
Energy-efficient lighting   Glass-wall construction	1-3	Use daylight; coordinate and optimize electrical lighting
Blanking panels (including new snap-in panels)	1-2	Decrease server inlet temperature, increase CRAC return air temperature

If they were asked to name the world’s largest manufacturers of servers, desktops and laptops, most users name Dell, Apple, Sun, Toshiba and HP, and a surprising number still name IBM—either not knowing or mentally transitioning to Lenovo’s \$1.27 billion acquisition of IBM’s PC division in 2005. (In that deal IBM also snagged just under 20% ownership of Lenovo, so in that way the users are correct: IBM indeed still is, if tangentially, in the computer manufacturing business.) Here is the point of our exercise: Few users would name HCL. Yet HCL is now the #1 manufacturer and seller of desktops and laptops in one of the world’s hottest and fastest-growing IT markets: India. This means that HCL is in perhaps the best position of any company on the planet to impact what is shaping up as the entire

end-to-end green IT equation: Not only the data center design and environmental, power and resource management but also “green manufacturing” of the computing architecture and platforms that are at the heart of the matter.

HCL is a member of the USBGC and an active supporter of ISO 14001. Noting that the USBGC’s LEED certification is about buildings, HCL has devised its own LEED-like ratings for the data center and the devices that reside within it. HCL was the first company in India to adopt a comprehensive policy for compliance with WEEE and to launch a line of RoHS-compliant laptops, and in point of fact all HCL laptops are RoHS-compliant.

HCL has implemented internal green policies companywide:

- Water conservation and rain harvesting
- State-of-the-art power backup
- Glass-walled facilities to use natural light
- Eco-friendly construction and interiors
- Stringent e-waste policies

The company is working along with TERI as member of the India Council for Sustainable Development (ICSD) headed by Dr. R K Pachauri, Director-General, TERI, Chairman-Intergovernmental Panel on Climate Change (IPCC) and Noble Peace Prize 2007 winner. ICSD is working towards Government of India's national Green Goal, and as part of that effort HCL is leading the MegaForestation project that has planted 100,000 trees in cities across India.

## **HCL's Green IT Framework: Helping Organizations Go Green**

The data center is a significant energy efficiency focus area (and pain point) for any CIO. Data center facilities must respond to the demands of increasing computational capabilities while at the same time reducing environmental impact and complying with regulations. This puts the onus on an organization to ensure that its physical and IT infrastructure is in optimal shape to address these demands while (Oh, by the way) supporting the future growth of the business.

HCL has developed a Green Data Center Assessment Framework called DGQ (Data center Green Quotient). As shown in Exhibit G-3, this framework evaluates the data center but beyond that the overall facility/site, power, cooling, IT infrastructure and fire detection and suppression systems. HCL delivers DGQ through its expertise in using best practices and methodologies to identify optimal computing and data operations and green IT opportunities. Based on the results of the assessment, HCL makes recommendations to the client to bring it into step with regard to green IT best practices while also extending the life of the data center. The process can help organizations get a handle on problem areas and prioritize implementation strategies to address them, as well as reducing both financial and operational risks through optimizing the data center environment. The result is a more efficient, cost-effective data center environment that builds in best practices in IT operations as well as energy-efficient, regulatory-compliant technologies and initiatives.



**Exhibit G-3: HCL's Green Data Center Assessment Framework**

DC Site Level Assessment	Activities
	Floor plan and layout
	Cabling/Patch Panel provisioning
	Indoor Environment quality
	Lighting
	Environmental contamination
	Site Selection
	Water efficiency
	Materials and Resources

DC Consolidation Assessment	Activities
	DC Site
	Service Details
	Growth
	Managed Services
	Migration Capability
	Compliance with the roles and responsibility

DC Power Cooling/Thermal/ Others Assessment	Activities
	UPS capacity and utilization
	Generator capacity and redundancy
	IT Utilization
	Air Management Techniques
	Hot aisle/Cold aisle placement
	Procurement management
	Fire suppression

Virtualization Assessment	Activities
	Server Utilization
	Business Application mapping hosted on servers
	Already implemented virtualization environment
	EOL status for all assets

**Conclusion: Green IT May Help to Save the Planet... and Your Business**

The world is running out of energy, the cost of the energy sources that remain is steadily rising, our current business/energy models are unsustainable —and right now we in the IT business are a big part of the problem. Data centers consume about 2% of the world's total electrical power, and for every watt of server power we use to operate our data centers we consume another watt to cool them. Desktop and laptop computers each consume more than 2,000 kW of electricity every year and generate more than a ton of carbon dioxide, and computer monitors (along with television screens) account for more than 40% of the lead in landfills.

All of us (or most of us) want to be part of the solution, but in an era where more and more companies are questionable labeling everything they sell as “green” it’s hard to know where false market hype ends and green reality begins. That is in great part why fewer than 30% of the world’s IT managers feel they have a clear understanding of how to even define what “green IT” means.

One phrase that we may find useful in these confusing times, interestingly enough, uses a more natural energy source to make an important point: “Instead of cursing the darkness, light a candle.” And so it is that some good efforts are being made to implement green IT. The first area of focus is designing the data center for energy efficiency through techniques such as “closely-coupled cooling,” glass-walled design and fluorescent lighting. The second is virtualization, whereby we make a single physical resource appear to be functioning as multiple virtual resources or combine multiple physical resources to make them function as one. The third is client/server or thin client architecture, reversing the trend toward energy-gobbling single-user laptop and desktop computers.

We in the technology markets have looked to consortia and working groups as places where we can combine our best thoughts and efforts with those of our customers, partners and competitors to move entire industries forward together, and to provide objective measurements of what it means to be compliant with technology standards and best practices. So it is when it comes to green IT, where a variety of groups operating across

world regions or indeed around the globe stand ready with quantifiable measures and guidance about how to move toward a green IT future, including the U.S. Green Building Council (USGBC), The Green Grid, the Green Electronics Council, the U.S. Environmental Protection Agency (EPA), the European Commission (through its energy and recycling directives), the International Organization for Standardization (ISO) and The Energy and Resources Institute (TERI). Even the U.N.-sponsored International Council for Local Environmental Initiatives (ICLEI) has some useful guidelines and theories to contribute to this effort.

Yet public policy only really works if put into practice in the private sector, and one company that is helping our IT industry implement green IT best practices is HCL. The company, one of the world's largest MSPs, is also the largest manufacturer of computers in India, which means that it now has a hand in building computers for a more energy-efficient future, and its green data center assessment framework (Data center Green Quotient) helps companies ensure that the data centers much of that computing equipment runs in are energy-efficient themselves.

The best news is that by implementing green IT your business is not only doing its part to transform IT from a big part of the energy problem into the leading edge of our planet's energy solutions, you are also positioning your organization to reap massive cost-savings on utility costs that go straight to your bottom line. Doing so will make your business a far better corporate citizen of your nation, region and world while giving you an entirely new framework upon which to position your company and its offerings in the markets in which you compete.



## About the Author



Jeffrey Paul Cotrupe is a former practice leader at Gartner (NYSE: IT) and director at ADC Telecommunications (Nasdaq: ADCT) who has launched more than 15 products to help organizations generate hundreds of millions of dollars in revenue, acquisitions and investment capital in:

- ▶ Technology/B2B areas such as cable broadband, video, SDPs, IT, telecom/wireless, CRM, software, OSS/BSS, SaaS, cloud, networking, equipment and mobile apps/widgets
- ▶ Consumer markets including automotive, electronics and hospitality

## About HCL

HCL's Infrastructure Services Division (ISD) is India's leading IT services provider and one of the world's leading managed service providers (MSPs) delivering remote infrastructure management (RIM) services. A focused player in the IT services arena, HCL ISD seeks to provide simplified infrastructure solutions through delivering high-performance management services for complex, distributed infrastructure environments encompassing the Internet, client and legacy based infrastructures. HCL addresses the growing demand for the cost-effective management of technology infrastructure across geographically dispersed locations. With a mission to develop innovative solutions for enterprises worldwide, the company has developed and pioneered a unique model for RIM that enables customer organizations to achieve superior infrastructure performance and significantly reduced costs. HCL provides infrastructure management services to more than 145 clients worldwide, including more than 60 Global 1000 (G1000) companies. Founded in 1993, HCL ISD today has a highly experienced and established leadership and delivery team across key geographies with 27 offices in 17 countries. HCL has nine global delivery centers in India with one each in Poland, Malaysia, China, Ireland, Singapore and Saudi Arabia, and has alliances with more than 30 prominent technology providers, institutes and consulting firms. HCL ISD is a wholly-owned subsidiary of HCL Technologies, the \$1.7B international unit of HCL Group (the latter a technology giant in India with annual revenues of US\$4.3 billion).

HCL leverages its "offshore + near shore" outsourcing model to provide extremely competitive pricing, but while low cost is undoubtedly a factor in its customer wins, we believe its aggressive stance to build itself into the world's premier MSP delivering RIM services—and the fact that it is one of the few major technology players that can say "we deliver BSM solutions" with a straight face—are greater contributors to its success than price alone. The flexible ownership and engagement terms it offers its customers are a decided advantage in a market where competitors often tout their wide-ranging product and service lineups but in actual practice tend to place the same arrow in their quiver every time. The company refers to its services model as "co-sourcing," reflecting a true partnership in which the customer can outsource discrete activities in stages that meet its business requirements while HCL manages day-to-day IT operations and adds value by applying technology and process expertise and best practices. Under the hood, HCL has also developed a global reputation as a company that is willing to undertake remote management of a customer's IT infrastructure regardless of where the infrastructure is located. The main reason is that the company has established a jaw-dropping nine delivery centers in India alone and another half-dozen across EMEA and APAC, including a center in Poland that opened in 2007.

## About MarketPOWER™, LLC

MarketPOWER™, LLC has been helping clients win market share, boost customer retention and build thought leadership since 2003, unlocking areas of innovation and synergy to help companies achieve their financial objectives. MarketPOWER has provided analyst services to Yankee Group and strategic consulting services from the Silicon Valley to a spinoff of Telecom Italia; relaunched companies and helped others win tens of millions in Series A-B-C venture capital funding; and conceived, designed, named and launched products/features/companies including respected research firm *Stratecast* (a unit of Frost & Sullivan).

MarketPOWER provides expert insight in these areas and more: Operations and business support systems (OSS/BSS) | Managed service providers (MSPs) and remote infrastructure management (RIM) | Wireless services, infrastructure and management including location-based services (LBS) and virtual and mobile virtual network operators (VNOs/MVNOs) | Enterprise management including SMB, mid-tier and large enterprises | Next-generation asset management (NGAM) and the configuration management database (CMDB).

## **NOTICES**

This document may not be duplicated, reproduced, stored in a retrieval system or retransmitted, in whole or in part, without prior written permission of MarketPOWER, LLC. All opinions, estimates and related content herein constitute MarketPOWER's judgement as of this date and are subject to change without notice. MarketPOWER name and logo are trademarks of MarketPOWER, LLC. Other trademarks property of their respective owners.

**©2003-09 MarketPOWER, LLC. All rights reserved.**

<http://marketpowerLLC.com> | +1 760 643 0921 | +1 760 583 4079 | [action@marketpowerLLC.com](mailto:action@marketpowerLLC.com)

