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GREEN ENTERPRISE

red light, green light

MICHELLE NAQUIN, CEO & CSO of Green Technology Alliance, moderates a panel discussion with **ALBERT ESSER** of Dell, **SAM SOMASHEKAR** of CA, and **JOSH HENRETIG** of Microsoft, that gives insights and examples on the value of using green solutions to optimize your operations and infrastructure. One such example: running an operation completely on green energy

MICHELLE NAQUIN Everyone seems to be going green today. A common barrier to most companies is where to start, because green can mean so many things. It's important to define the term in order to help companies focus their green programs more effectively.
So, how do you define green?

ALBERT ESSER I define it as having your IT run with the least amount of renewable resources. One of the biggest low-hanging fruits is to turn off your unused servers and be mindful on what you are using in terms of power and cooling.

Green IT is different from other areas of green. Typically when you want to be green as an individual, it's always associated with some type of sacrifice. For instance, you may not turn your air conditioner on as high as you want to or take a shower for as long as you like, and so on.

In green IT, there is no sacrifice involved. In fact, if you don't have a green IT operation, you

are putting yourself at competitive risk, because people who are green will have lower costs and a more effective IT. In your peer group, they will be the ones that perform better, as opposed to the ones which are not.

SAM SOMASHEKAR As homeowners, we've always known the value of green, whether it's turning off the lights when they are not in use or weather-proofing your house to save on air conditioning or heat.

At CA, we have a chief sustainability officer in place, and his role is to oversee our sustainability efforts — not only from a customer-solutions perspective, but also from an organizational perspective. This includes optimizing our operations internally and our involvement with green community programs.

With respect to our customers, I believe that a primary definition of green involves improving IT efficiency. That means, from a green perspective, maximizing energy efficiency and minimizing waste, where the notion of saving



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– Josh Henretig

on the bottom line, which is also a driver to implementing green IT projects, is most paramount. This involves having full visibility into energy use, managing PC and server use, and maximizing the capacity for the servers that you have at your disposal. This also includes proper asset management: for example, seeking out the servers or machines that may be running which are not being used for any particular business purpose. Green also means supporting larger sustainability goals, and this is where you start to get into the business and compliance aspects of green, such as those around government regulations that are sweeping the world. For instance, look at what is happening in Europe around the carbon markets, particularly in the UK. Which companies are going to be affected by the government’s carbon reduction commitment, to be implemented in 2010? It will be interesting to see what the Obama administration will vow to enact in the U.S. In this context, green is also about examining and optimizing manufacturing processes; looking at everything from a whole and factoring in the carbon footprint of supply chains.

JOSH HENRETIG For Microsoft, environmental sustainability is about the responsibility we have and how we operate our company internally and globally. It’s also about how we design and produce products that our consumers will use, and ultimately how we give back to the Earth, so that we aren’t taking any more than we can return.

We’ve actually defined sustainability in three primary ways. The first is how we can leverage technology to enable energy efficiency. We effectively want to reduce energy used by the ICT industry broadly and wherever there are Microsoft-based systems. We also want to work with ICT to improve how energy is used in other facilities, like building and transportation, power grids or manufacturing. There is significant opportunity to improve energy efficiency as well as leverage the analytics and modeling capabilities of technology to really understand and dissect how different industries work and how different products are made, so that we have a better view of the sustainability aspects of those products. Lastly, we want to be able to build applications and services to be able to track and improve the world’s energy and carbon use.

The other area that we are looking at for sustainability is how we can leverage our Microsoft research center to partner with the scientific community, and enable them to drive fundamental breakthroughs in science. I think we all recognize that we cannot conserve our way out of the problem that we face today. At the end of the day, there are going to have to be some fundamental breakthroughs

in science. We want to be a part of those solutions, and work with those scientists and give them access to our labs and computational power, and some of our IT, so that those breakthroughs can happen.

The third area is demonstrating responsible leadership inside our company. We need to get our own house in order, and we’ve set some ambitious goals for ourselves. We will continue to invest to reduce our operational impact on the environment so that we can discuss best practices with our customers and share initiatives that work, or not, across operations and in our supply chain.

MN A question that I hear the most is: Where do I start? People are obviously looking for areas with the most opportunity for business benefits. **Where would you suggest they start?**

SS When you think about going green, especially from an IT perspective, it has to be an innate part of your existing business processes and practices. Once you start to develop a silo approach, somewhere down the line, there is going to be a need for integration with other solutions. The bigger the silo, the harder it becomes to integrate.

With respect to the data center, virtualization and server consolidation have had the biggest impact. Anything that can reduce the energy footprint of servers, whether that’s better utilizing what you have or actually consolidating to reduce what you physically have on the data center floor, can be of great benefit.

Over the last five years, virtualization has come to the forefront, and the natural byproduct of that is green: using less energy, curbing waste and better managing upgrades. You can also implement better automation techniques to optimize processes. For example, the ability to have an automated process govern how you actually add more capacity, whether that involves leveraging virtualization or adding more physical servers, can now be done instead of an ad-hoc approach, where people have manual tasks that accomplish the same objective.

The other area to think about is PC power management. PCs are actually the worst offenders in terms of electricity use. You can leverage some solutions that manage them intelligently as a whole across the organization. Even consider something as simple as clearing the vents that are in the data center or reducing the amount of physical waste. All of these techniques help to be green.

MN It is very important to look at your PC; in fact, in a lot of our events, we discuss things like



screensavers and powering off before you leave as a business policy or process improvement.

JH One place to start is to identify a person or team in the business that is accountable for identifying both those quick-wins as well as long-term environmental business investments. I am amazed at the technical-end audiences that I talk to, and when I ask for a show of hands of how many people currently receive and understand their monthly power bill, only between 7 and 10 percent of them raise their hands. Fundamentally, there is an incredible opportunity to drive accountability in the business and designate someone to both understand and manage the amount of energy that they are currently using. Certainly, if there is an opportunity to align the energy use with the energy spend — that is, give someone like the CIO responsibility for not only paying the power bill, but also for reducing power consumed — that is a great place to start.

A lot of companies are looking to base-line their existing environmental performance and take meaningful action. So being able to measure and manage their energy, carbon and other greenhouse gases is very critical to their success. Many people are not even doing the simple things like tracking their monthly bill, and most of the customers that I talk to are looking to optimize sustainability to demonstrate ROI within a 12-to 18-month timeframe.

Virtualization is a great opportunity to make better use of existing resources in your IT department. I don't think anyone can imagine a scenario today where it is completely paperless, but there are certainly opportunities to reduce the amount of paper and consumables that are available. Lastly, look for opportunities to reduce the amount of travel that you have to take. We have an incredible amount of technology today that allows us to connect and collaborate and share in equally meaningful ways.

MN You mentioned facilities management-type areas. That critical component of alignment between organizations and understanding the relationship between the power bill and the changes that you are making is a great way to start benchmarking. Even when you take the low-hanging fruit, if you are looking at the power bill before you take them, then you start to see some immediate benefits.

AE A good place to start is to create a vision statement of what you want to be in terms of green. For us, it was really simple. We wanted to become carbon neutral by the end of 2008. We wanted to be the greenest technology company on the planet. To achieve neutrality, which we did last year, it was not a case of continuing "business as usual" and making a couple of convenient changes, but it was fundamentally looking at how we do business, how we produce products and how we use our products. So, not only are you creating a vision, but you are also tracking it. Green IT is associated with physical infrastructure, and that's clearly a good place to look, but in our estimate, anything you can do there (old versus new) will give you about a 40 percent improvement on your energy usage on a facility level.

Policies are the best way to implement a green program, which will require enforcement. Anything new coming into the data center has to be virtualized. The second thing is that everything in the data center should not be more than three years old. Your server refresh rate becomes a real instrument in coping with your IT growth.

In terms of CO₂, 23 percent comes out of the data center and 40 percent comes out of your desktops and laptops. Just by turning off desktops and laptops at night, we had a 30 percent saving on energy



DR. ALBERT A. ESSER
VICE PRESIDENT
DATA CENTER INFRASTRUCTURE, **DELL INC.**

Dr. Esser is responsible for enhancing Dell's enterprise-class IT solutions, providing insight gained from customers to the Server, Storage, Data Center Solutions (DCS) and Services product leaders to maximize the value of Dell solutions. He published a book on wireless transmission of electric power and signals for robots; 10 papers; received an Outstanding Prize Paper Award jointly from the IEEE/Industrial Application Society and the IEE Japan (1993); received a post Doc scholarship from the German Research Foundation (DfG); and holds 12 US patents.



SAM SOMASHEKAR
ADVISOR OF PRODUCT MANAGEMENT
CA INC.

Mr. Somashekar has over 15 years of experience demonstrating success in enterprise software product management and development, business development, strategy, marketing, and market research. His current responsibilities include defining CA's strategy and vision around key technology paradigms such as Green IT and Cloud Computing. He is on the board of AFCOM's Data Center Institute, has authored several articles and whitepapers, and has been quoted in articles appearing in leading industry publications.



JOSH HENRETIG
SR. ENVIRONMENTAL FIELD MANAGER
AND BUSINESS MANAGER
MICROSOFT

Mr. Henretig has been with Microsoft for seven years and has held positions in Sales, Business Strategy and Management, and Environmental Sustainability. He is responsible for working with customers on the role of technology to reduce their energy demands, manage their energy use and environmental footprints and rethink business practices that impact the environment. Mr. Henretig is also responsible for working with Microsoft's worldwide sales and marketing organization to reduce their environmental impact and to meet Microsoft's goal to reduce its carbon emissions per unit of revenue by at least 30 percent compared with 2007 levels by 2012.



MICHELLE NAQUIN
CO-FOUNDER AND CEO
GREEN TECHNOLOGY ALLIANCE (GTA)

The GTA is the first green technology initiative to focus on building implementable solutions that offer real business benefit to every sector of the industry. At the GTA, Ms. Naquin is responsible for the strategic direction of the organization. She focuses on developing programs for all stakeholder tiers within the alliance that drive successful adoption of green, clean and sustainability across the enterprise. She is a frequent speaker at industry and vendor-sponsored events on the topics of green, clean and sustainability from a business advancement perspective.



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— Michelle Naquin

— that’s a big step to carbon neutrality.

In IT, you have multiple contingencies competing for resources, but there are also different business alignments. The first contingency is the facility manager in charge of keeping the servers running. The second contingency is the IT Resource Manager, who provides the IT resources and maintenance. The third one, which has the most influence on power consumption, is the CIO. These groups will only align if you have an enforceable common goal to achieve the lowest footprint possible.

MN Do you see customers using technology as a tool for going green, or do you see customers requiring that the technology itself has to be green?

JH We see some of both. We see technology playing a central role in transitioning our society into a low-carbon economy, and what many customers are realizing is that “smart technology” can be good for the planet as well as for the bottom line. We are also hearing from a more sophisticated customer base, who frankly is annoyed, and in some cases confused, about all of the green washing that exists out there. In many cases they are looking for proof points and demonstrable business benefits,

as well as a company commitment around the environment.

MN While technology creates some of the carbon footprint, it’s that same technology that can be used to help reduce it, to help you be greener — and when you do that, you are actually saving money.

AE A lot of these technologies are already in existence. Today, there are a number of power sources available: wind, solar, methane gas [from landfills], and so on. Our headquarters in Austin, Texas uses 100 percent green energy, and that wasn’t easy, but it is a testament that you can achieve it. You can also make it a part of your specifications when you buy things. For example, you can ask for markers such as the performance per watt and specification power on certain configurations which are important to you. You can go to the vendor’s Web site and look for the energy calculator or ROI tools that will give you the best footprint for the work you’ll be doing.

Don’t look at it as one homogenous environment. You have storage, networks, telecoms, which are low-power, and then you have servers, which are high-power. Lay out your facility in a way where your capabilities match your needs. I don’t think you can actually forecast how your IT landscape will look five years from now, so go step-by-step.

SS Before doing anything, it is important to sit down and have an understanding of what your green objectives are, and prioritizing those objectives. When talking about technology solutions, there are three areas that intersect: hardware, software and services. Given my background, I am predominately speaking from a software angle.

For example, you can use workload automated solutions to help distribute workloads according to peak and off-peak energy times, so that you are pushing the heavy loads toward evening execution when energy prices are lower versus, some of the other tasks that can be used during more peak times.

Solutions around data center automation can be used to make on-demand resource distribution decisions that help maximize resource utilization. At CA, we have a lot of different products with associated development and testing groups. There was a lot of hardware that was spread across these groups, and we wanted to lower that footprint and optimize the use of newer technology platforms. So we utilized a lot of our own solutions to develop an internal IT resource self-service reservation system, which is based upon virtualization and resource pools. This allowed our development and testing groups to go into a Web application and choose the platforms and software that

they needed, which was then available to them within a matter of minutes. What this paradigm did was take advantage of development peaks and troughs that happen throughout development cycles for different products. In essence, it caused CA to be greener. We were able to relinquish several lab locations, which meant that we did not need to provide power and cooling facilities to each of these centers. That amounted to a lot of square feet of floor space that we were able to get rid of. This also eliminated approximately 450 metric carbon tons, which also incorporated the travel that was required for the personnel to go to those sites and perform maintenance and upgrades. From a facilities perspective, we estimated that we saved over \$2 million over a five-year span.

This internal solution also helped to solve some overheating situations that we were having throughout these locations. Overall, we were able to save about 25 percent from our lab electrical consumption. After we enacted our plan, there has been a continuous cycle of analysis and updates as needed, so that we could truly optimize the entire software development process.

JH The customers that I am talking to are looking at sustainability as a way to help them save money, create new business opportunities, and help them reduce their impact on the environment. Today, we are helping customers reduce their energy demand, manage their energy and environmental footprint, and re-think their business practices that are impacting the environment as well as their bottom line. When we talk about reducing energy demands, we are working with companies like Continental Airlines, who have leveraged power management across 18,000 desktops to save \$2 million a year in energy — simply by enabling and enforcing power management at the desktop level. That goes a long way in justifying the technology spend, as well as meeting the environmental goals that the company has.

When we talk about managing energy in an environmental footprint, we’re working with companies like Seventh Generation, who produces environmentally sustainable household cleaners and other supplies. They are leveraging our dynamics platform to better understand their supply chain and to provide better insight into their supplier environment and the type of metrics they need to drive sustainable products into the marketplace.

We also work with companies that are rethinking some of their traditional, paper-based processes. For instance, Volvo was trying to reduce the number of travel miles that their teams were using to meet with dealerships around the country. As a result of leveraging some of the unified communications and

collaboration technologies, they've been able to save about 900 tons per month of carbon with limited deployment. In summary, we are leveraging this framework of reduce, manage and rethink, and helping companies use technology to help them meet their environmental needs.

MN Process improvements are a major theme in greening an organization, and almost seem to be a requirement. **Can you provide some examples of how your technology or solution helped change a process and what the result was of that change?**

AE One simple process change that we made is how we remotely managed and serviced our desktops. We have over 50,000 desktops for our own use here in the company and implemented 1E as a management tool, which allowed us to do effective SMS management through the network. We also enforced PC policies including power management, which saved up 30 percent of our [client] energy spend, so we saw a great benefit.

The majority of our energy spend comes from the data center. Our policy is, if it works virtually in pre-production, then we use it virtually in production in the data center, and over the last two years that has allowed us to keep

our costs constant. We check out the power efficiencies on our equipment and our vendors. Part of our quarter review of our vendors is to look at their carbon emissions.

MN I think it sets a precedent that while you are growing your organization, you've been able to keep cost and energy consumption stable. It's an important lesson for all of us that green should not be a sacrifice, because if you're not growing your business, then you are not being competitive.

SS CA has produced a corporate sustainability report. It documents a lot of the things that we've done internally. For example, we've optimized our purchasing processes so that we are looking at green vendors that are the most cost-effective.

From a technical perspective, our internal IT resource self-service reservation system is now available as a solution for clients to purchase as well. From a process perspective, it also helped to automate processes around server reservation, server provisioning, change and configuration management, and capacity management.

When you think about green, it's not just about the technology, but it's also about the people. For example, these process

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— Sam Somashekar

improvements allowed our staff to focus less time on some of these mundane tasks that could be achieved through automation and spend more time on strategic initiatives.

CA also has an eco-metering solution, which provides a consolidated view into the consumption of resources such as electricity, gas and water. Through integration of that with our eco-governance solution, projects can now have insight into the actual environmental spend, which strengthens future investment decisions on those projects, as well as manage specific sustainability projects. The net result is the ability to incorporate environmental factors into existing projects and decision making.

JH With the launch of our software-plus-services approach to data centers, we determined that we needed to grow our data center presence to meet the needs of our customers and partners around the world. We are presently working on our fourth-generation data center design. We started that process by questioning everything, from the roof and walls to the actual definition of a data center. There is a lot of work underway today in other parts of the world around modularization. There are some great examples of this — particularly from the military, in the way they deploy portable ground stations with servers and solar communications equipment that will support troops for years, if

not decades, in a self-sustainable way.

This principle and design process has been applied to our latest generation of data centers. For example, in our first generation to our second generation, we saw a 22 percent increase in efficiency. Today, we have over 50 percent efficiency increases in the last few years in our data centers in terms of energy use and efficiencies. In line with our partnerships, we seek to drive more transparency into the operation of data centers.

In terms of the paperless office, when we audited our own internal practices and operations, one of the biggest contributors to paper use in the office was executive meetings. As a simple practice and process improvement, we've put a limit on the amount of paper that can be used. We also introduced name-assigned cover sheets to every print that was made from our central printing unit — which may sound counter-productive — but we've increased printer efficiency by 30 percent, as people were able to easily identify their print jobs.

MN Are there current trends in your customer base that you see as the future of green?

SS CA's customers are mainly concentrating on reducing the bottom line. For some of the more advanced companies, they are also focusing on their carbon footprint, and I think this will become the normal standard. Also, the advances in Web 2.0 with online collaboration will go towards reducing carbon. Green is going to become less of a silo effort and be more ingrained as part of your existing businesses processes and practices. This involves the integration between IT and non-IT equipment, as well as incorporating proper governance techniques that are based on a continuous improvement life cycle, which encompasses areas such as strategy, risk and compliance management, project and portfolio management, and performance management.

JH We see different approaches across the different segments of business based on the type of industry or geographic location. Governments around the world, automotive manufacturers, industrial manufacturers, utilities, chemicals, travel companies, and so on, are more scrutinized and regulated. They have to respond faster to not only reduce their impact, but bring sustainability into a core part of their business. Other industries, like transportation and logistics or retail and hospitality, where they have large supply chains and buildings, or communication companies that have large data centers, or consumer goods companies, are also dealing with environmental regulation, but they are more focused on carbon cost and optimizing for cost-saving opportunities. There are also industries that are simply responding to consumer demand

and following consumer opportunity to drive their business forward. Over time, you are going to see that shift. Sustainability will move from a fringe strategy of reducing waste and optimizing cost to a core segment of their business.

AE The economic environment that we are in right now was an acid test to business processes and behaviors. The one thing that is surviving is green, as it fosters the notion of “renovation” and the reuse and reduction of resources instead of always new. In three to five years, people will think of their data centers as their factories and treat them in the same vein.

MN What you said falls in line with the Green Technology Alliance's mantra, which is reduce, reuse, recycle. Each of you as an organization, with your products, services and solutions, have been leaders in this area. Do you have any final advice for organizations going green?

JH It's about setting goals and understanding your current state, so you have a benchmark to improve on. You can start with the low-hanging fruit, something that delivers ROI that will help you through this tough economic time, and some of the things that we've talked about collectively as an industry. Lastly, have green as a core part of your business and build it into its regular rhythm, and you think about sustainability as a part of doing business. Technology will inevitably follow.

AE Articulate what green means for you. For us, it meant that we wanted to be carbon neutral and we wanted to be on totally renewable energy. Your goals must be tough but obtainable, and you need to be specific. It needs to be a collaborative effort from all departments, from facilities to the data center.

SS In summary, my advice is to measure, measure and measure. It's so important to have a baseline into what is going on. I can't stress that enough, as I've spoken to so many clients who don't even know what their energy or electricity spend is — let alone what they are actually paying for it. It's important to have that understanding before you go off and decide what you want to do. Set your goals clearly and understand and research the technology that will help you achieve your objectives.

Going green is a journey; it's not a one-time event. It's important to have a pragmatic approach for evaluating and implementing green goals. Identify goals that are clear, realistic and measurable. This allows you to focus your efforts and to clearly define what green actually means to you and your business. It shouldn't be painful to go green, because otherwise it will deter you from going green. **BTQ**