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WHITE PAPER

Beyond Power Consumption: What It Really Means to Go Green

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IN THIS WHITE PAPER

"Going green" has become one of the most pervasive slogans in today's commercial marketplace. Growing awareness among policymakers, who are introducing more stringent environmental regulation and guidelines, and consumers, who are adapting buying habits and lifestyles toward more sustainable choices, is prompting businesses across the globe to enhance product sets and to build marketing strategies around the new metric of green credentials. Whereas the extent to which businesses are embracing going green varies from company to company and from segment to segment, the directional path toward greater greenness is evident.

In the communications and IT world, efforts have been centered upon and largely confined to the issues of power consumption and reducing the footprint of the equipment. Given the significant effect electricity and lease space costs have on operating expenditures, green initiatives around these two elements have resonated extremely well. Still, it is important to recognize that reducing power consumption and shrinking equipment footprints have been long-standing requirements from customers. These requirements existed well before going green or climate change issues became mainstream and a challenge communication and IT companies felt compelled to tackle.

The true nature of going green however goes well beyond power consumption and hardware footprint. In fact, advocates and nonprofit organizations on the subject matter see the issue of green as something that is even broader than the well-recognized carbon footprint measure. Going green is not just about power consumption, size, and greenhouse gas (GHG) emissions. In its truest form, going green speaks to the overarching impact an organization's behavior and products can have on the environment in general. This speaks to the extent that activities and products can lead to resource depletion, the introduction of harmful toxic materials to the environment, alteration of the local ecosystem, and, naturally, climate change.

This white paper examines the means by which communications and IT vendors are tackling the issue of going green. It looks to develop a framework that allows for a more comprehensive and broad-based evaluation of a firm's efforts — an evaluation that goes beyond the power consumption debate.

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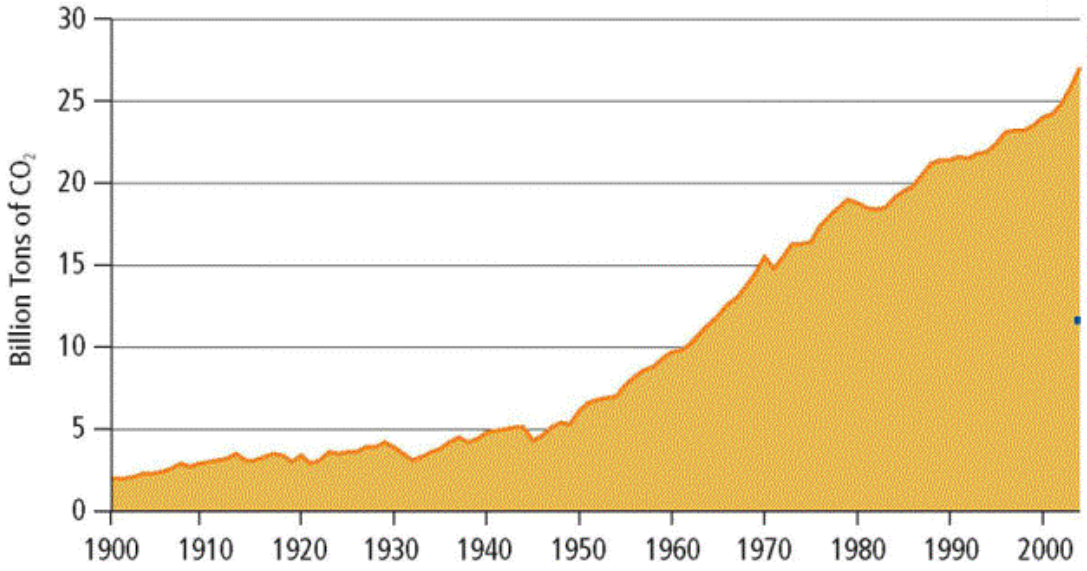
SITUATION OVERVIEW

Climate change has become a top-of-mind issue among public policy makers, businesses and consumers alike. Concerns revolve around the rise of GHG emissions, especially during the second half of the last century. For example, emissions of carbon dioxide from fossil fuels increased more than fivefold in the last fifty years (see Figure 1). This explosion in GHG emissions is believed to be the primary cause for rising average temperatures across the globe, a trend harmful to the very ecosystems that support life on the planet. It is also being linked to unpredictable and extreme weather patterns being experienced across the globe. As a consequence, climate change initiatives often revolve around programs that seek to limit or reduce GHG emissions. Though they are not only confined to matters related to carbon footprint, climate change efforts form the foundation for what it means to go green.

FIGURE 1

Global Emissions of CO2 from Fossil Fuels, 1900–2000



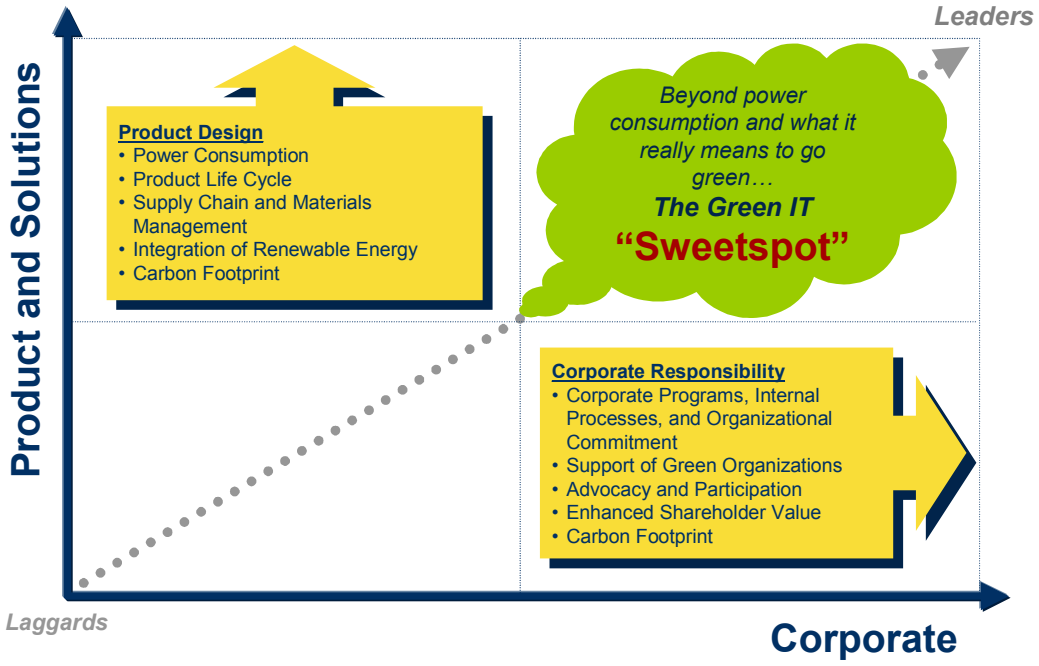
Source: World Resources Institute

Regardless of where one stands on the debate, it is evident that climate change concerns will continue to influence and shape public policy and consumer choice.

For the IT and communications industry, going green has become an increasingly important priority. These industries have embraced going green and are aligning product development and marketing strategies to be consistent with and capitalize upon it. Companies are also increasingly seeking to do their part in reducing their carbon footprint. IDC has developed a framework that examines going green — relating a broader context encompassing metrics that go beyond simple power consumption. The framework examines an equipment provider's products and solutions and places it in the context of its own operations and demonstrated commitment to address climate change issues. The framework therefore has two axes. The first axis plots the product and solutions offered by the technology vendor. The second axis examines the organization's processes and own efforts related to going green (see Figure 2).

FIGURE 2

Going Green: An Analytical Framework



Source: IDC, 2009

Products and Solutions Strategy

The first axis assesses products and solutions delivered by the technology vendor. Relevant factors include product power consumption, life cycle and supply chain/materials management, efficiency, and integration with renewable energy:

- **Power consumption:** Electricity production, especially from coal-fired power plants, is one of the most significant contributors to GHG emissions. Consequently, power consumed by a technology vendor's products has become the most prevalent metric for determining green credentials. It is important to recognize that this measure relates only to a specific point in time and that ongoing innovation will mean that this metric will be a regularly moving target.

- **Product life cycle and supply chain/materials management:** Proper disposal and recycling of hardware when it reaches the end of its operational life is an important element of going green. As some hardware may contain materials harmful to both humans and the environment, proper planning and procedures must be developed, and customers must be educated in order to mitigate any potential negative impact decommissioning and disposal of the equipment may have. In addition, product development and manufacturing should take into consideration use of materials that are the most environmentally benign (nontoxic, abundant, etc.) and are provided by suppliers that are similarly sensitive to green-related concerns.

- **Network efficiency:** The power consumed by an individual hardware element does not necessarily speak to the overall electricity consumed by the network infrastructure as a whole. It is important to couple best-of-breed equipment with best-of-breed network design and architecture capabilities in order to deliver the maximum power consumption benefit. To this end, a technology vendor's capabilities in terms of network optimization and design can play a significant role in maximizing the performance and capacity of a network, while at the same time minimizing the power consumed by the network as a whole.

- **Integration of renewable energy:** Utilization of renewable energy sources to power communications and IT hardware provides an immediate means to reduce GHG emissions and thereby improve green credentials. Equipment manufacturers developing and deploying solutions in partnership with, for example, solar power or fuel cell technology vendors, lead in this measure.

- **Carbon footprint and overall environmental impact:** The four elements described above combine to determine the overall carbon footprint and environmental impact of a technology vendor's product set.

To be sure, networking technology is playing a significant role in enabling GHG-reducing behaviors and practices (i.e., telecommuting, videoconferencing). This axis, however, looks specifically at product attributes and not what the products themselves do.

Corporate Strategy

The second axis considers elements encompassing the operation and behavior of the technology vendor itself. Corporate programs, support of green organizations, advocacy, and an overall enhanced shareholder value are important elements in this measure:

- **Corporate programs:** Corporate programs speak to the in-house efforts by an organization to address climate-sensitive issues and to enact programs that reduce the overall impact operations can have on the environment. These may

include comprehensive recycling programs, purchase of renewable energy credits or offsets, and enactment of workplace processes and policies that mitigate impact on the environment. In many respects, these efforts have traditionally fallen into the corporate responsibility and sustainability programs already in place. Commitment to these programs is demonstrated by the extent to which individuals tasked with the oversight carry real authority (senior-level executive management) and answer to concrete, measurable goals.

- **Support of green organizations:** Outside of corporate programs, a firm's activities related to the direct and indirect support of other green organizations provide another measure of going green. This involvement can encompass financial and technical assistance as well as the actual deployment of human resources.

- **Advocacy and participation:** Extending from the support of green organizations is advocacy and participation in policy and standards (both public and private initiated) setting processes. The Global Reporting Institute (GRI), for example, is an organization seeking to coalesce industry players to create common and measurable metrics for corporate sustainability programs. Engagement with organizations such as the GRI demonstrates a firm's commitment to addressing sustainability in a consistent, measurable, and truly meaningful manner.

- **Enhanced shareholder value:** Ultimately, overall efforts related to going green must still speak to enhancing shareholder value and creating an organization that is both environmentally and fiscally sustainable.

- **Carbon footprint and overall environmental impact:** The breadth and scope, coupled with the effectiveness of, corporate programs determine the overall carbon footprint and environmental impact of an organization.

CISCO OVERVIEW/CASE STUDY

Cisco provides an effective case study of an organization that has embraced the notion of going green and is indeed among the leaders in the area. The company has demonstrated one of the strongest levels of commitment by a technology vendor and several commendable achievements are already in place. Still, the firm needs to address several factors to truly put itself at the forefront of and lock in a leading position in going green:

- Cisco has faced several challenges regarding its product lines' power consumption performance. For example, in an aggressive marketing campaign, Nortel touted the "Cisco Tax" that results from the higher power consumption of Cisco's Catalyst product line. Cisco has responded and rightly pointed out that real-world operating environments vary significantly from the lab environment and that variances, such as port capacity and other feature sets, place in question the comparisons being made. Nonetheless, the ad campaign gained much attention, and it remains unclear what the real-world differences between the product sets are. In some respects, Cisco simply needs to provide greater transparency and metrics in this area. However, it is also evident that greater R&D and resources aimed at improving the power consumption performance of its product lines are warranted.

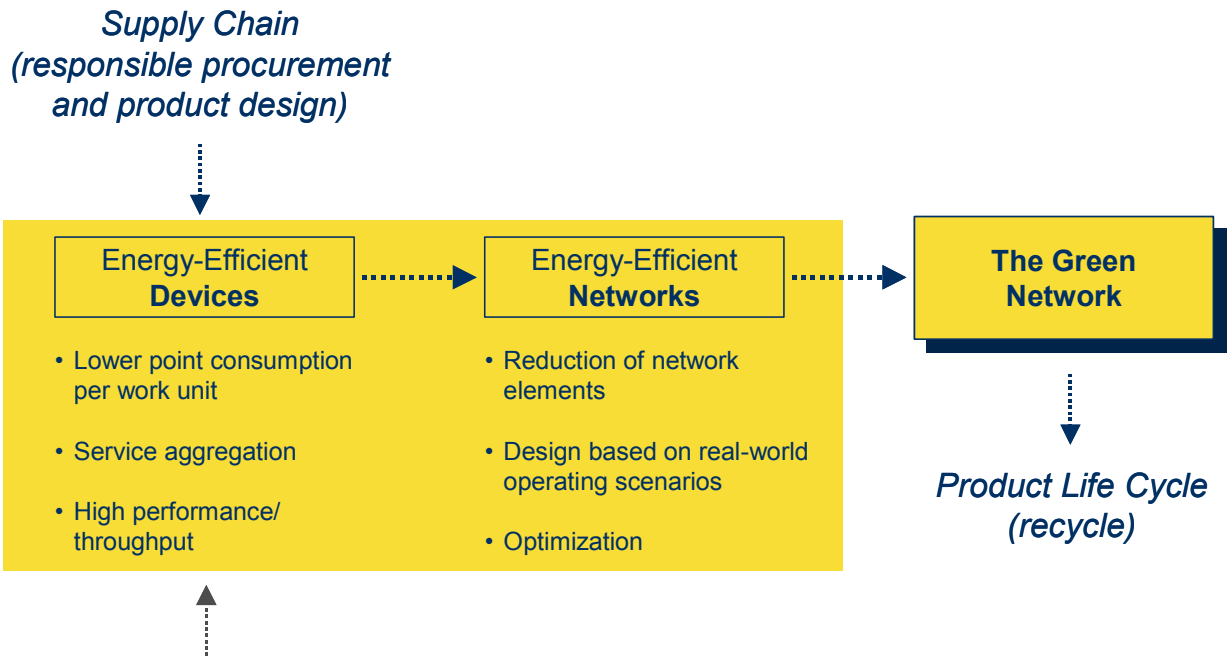
- To be fair, Cisco does place a significant level of emphasis and resources on its network optimization capabilities. The evaluation of power consumption should not be confined to individual hardware elements. Rather, it should be viewed in a holistic manner, taking into consideration an entire solution and performance of the network as a whole. Network optimization services aim not just to accomplish improved network performance and reliability but also to minimize the power requirements of the entire network.

An important aspect of Cisco's product-related efforts is captured in what the company describes as Product Innovation and Stewardship. Within this area, Cisco identifies a number of important priorities, including Design for Environment, Reduction of Hazardous Substances, Accessibility, Energy Efficiency, Product Takeback and Recycling, and Supply Chain. These categories clearly demonstrate Cisco's holistic approach, an approach that in IDC's view forms an important foundation for the firm's position among the green leaders.

Still, industry and customer emphasis on power efficiency warrants that a closer look be taken at Cisco's effort in this particular area. Captured under Energy Efficiency, Cisco examines such elements as power utilized, watts consumed, throughput capacity, and service capability. At the core is the notion that, while the path to power efficiency does begin with network elements that consume the least amount of electricity as possible, it is overall design, real network operating environments, and how everything works together that matter most. For example, one area of emphasis is consolidation of services into common devices to accomplish a simple reduction in the number of hardware that needs to be powered. Efficient networks, coupled with services that support and create systems and environments that promote environmentally friendly practices both at work and at home, encompass the Cisco product vision for green (see Figure 3).

FIGURE 3

The Cisco Approach to an Energy-Efficient Network



Source: IDC, 2009

Where Cisco is to be most commended is its activities and efforts in the corporate strategy axis. The following items provide a sampling of its activities:

- **Senior management commitment and responsibility:** At the heart of Cisco's green efforts is the EcoBoard. The EcoBoard is a group of senior-level executives tasked with and accountable for bringing Cisco's vision of sustainability forward. Working with the EcoBoard is the Green Engineering Task Force (GETF). The GETF helps to realize the Cisco vision and strategy via specific projects and initiatives. It is a cross-functional group that also plays a significant role in product development and planning, ensuring that current- and future-generation products adhere to key sustainability guidelines. The GETF is also composed of senior-level managers.

- **Advocacy and support:** Cisco has provided key submissions in leading standards efforts already moving forward, such as ATIS and the ITU-T, which ultimately also have an influence on Cisco's product development. These efforts have entailed working with other vendors and customers. Cisco is also a member

of organizations such as the U.S. EPA Climate Leaders Program and has also participated in the Clinton Global Initiative (CGI). It actively participates in and is committed to a wide variety of environmental and standards-setting bodies. These include the World Resource Institute; green grid solutions; IEEE; Energy Star; U.S. Department of Energy (DOE); U.S. Environmental Protection Agency (EPA); and Ministry of Economy, Trade, and Industry (METI).

- **Measurable goals and achievements:** At CGI, the firm committed to reduce carbon emissions from air travel by 10% as well as $20 million for collaboration technologies. Cisco also purchases green power. In 2007, purchases were 229% greater than the year before. Purchases in the United States and United Kingdom alone combined to avoid a total of 69,000 tons of carbon emissions. Overall, the U.S. EPA ranked Cisco as the seventh largest Fortune 500 purchaser of renewable energy.

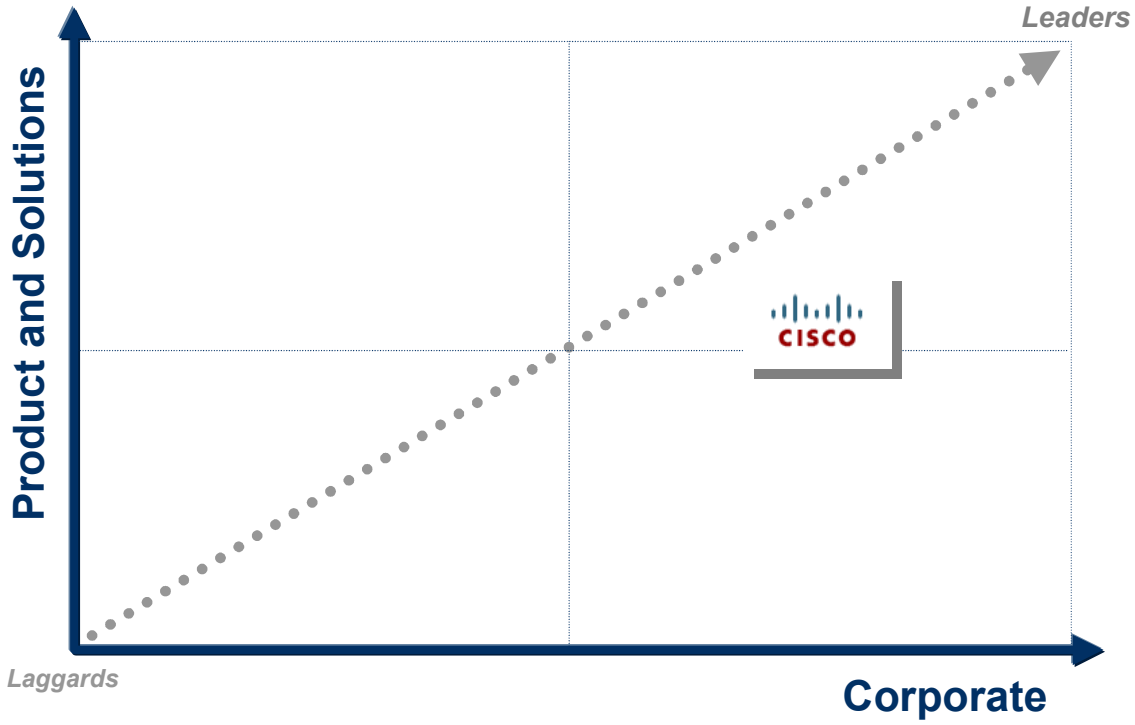
- **Use of technology, including its own, to reap green-related benefits:** Cisco does not only sell technologies such as TelePresence, it also uses it. The company has conducted nearly 13,000 TelePresence meetings in place of travel. The company estimates this has had the impact of reducing 15 million cubic meters of carbon. At a more basic level, the company is also instituting technologies, such as waterless urinals and energy efficient lighting, to reduce corporate power and water consumption. Naturally, it is also promoting use of these technologies to create more environmentally sustainable workplace practices and behaviors (through its Connected Work and Connected Cities concepts for example).

- **Enhanced shareholder value:** At the end of the day, green efforts must coincide with the creation of a sustainable business able to deliver positive shareholder value. Amidst the economic turmoil and hypercompetitive technology environment, Cisco continues to grow, remains profitable, and is a leader in many segments. Many of its green-related corporate efforts are efficiency and cost enhancing, while products that promote green behaviors are sources of revenue growth. Ultimately, TelePresence is, for example, a business opportunity in and of itself.

Figure 4 summarizes IDC's initial view on Cisco's green progress.

FIGURE 4

Cisco and Going Green



Source: IDC, 2009

CHALLENGES

While green initiatives are proliferating in the communications and IT segment, these developments are still in their earliest stages and therefore likely to evolve further. Priorities as well as attitudes may change. To enhance the debate and ensure continued progress, stakeholders and industry players need to address several significant challenges — challenges that have confused and narrowed the meaning of going green. These include:

- **Power consumption — a moving target:** Going green is disproportionately dominated by the power consumption debate. As a concrete operational expense for consumers of technology, it is the most relevant metric and therefore it is no surprise that discussions have centered upon it. The challenge however is that product development efforts will mean that it will be a constantly moving target — a target that, with the heightened attention upon it, will be moving even faster as companies prioritize R&D efforts to address it. Cross-product comparisons will therefore have a "point-in-time" relevance. Comparisons will change quickly as enhancements and new products are released in a more rapid manner.

- **Common standards and metrics:** Applicable to many aspects of going green is the issue of insufficient common standards and metrics. This spans many areas and even includes the power consumption debate. Often, power efficiency claims are made against a backdrop of unclear operational assumptions and benchmarks (i.e., What exactly is the product more power efficient against?). To this end, Cisco's efforts with ATIS and ITU-T have seen the submission of a standard that seeks to incorporate varying device requirements resulting from network location and type of use, as well as creating measures that look at real-world operating scenarios. For example, rarely is networking gear utilized at full capacity. Testing products at full utilization levels therefore would not provide an accurate reflection of their power consumption in the real world. Beyond power consumption, the issue of common standards and metrics is even more profound. The equally important corporate strategy behind going green offers measures that are less concrete. To this end, organizations such as the GRI are offering a means to systemize and standardize ways in which organizations can evaluate and report their sustainability efforts. Industry participation in and commitment to efforts at standards setting will be a key element in moving the green debate forward.

CONCLUSION

The true nature of going green goes well beyond power consumption and hardware footprint. In its truest form, going green speaks to the overarching impact an organization's behavior and products can have on the environment in general. Cisco, in recognizing this, has developed a multifaceted approach to addressing climate change and green concerns, and has tasked its senior-level management to implement it. The end result is a company that has one of the most all-encompassing programs and commitment among technology vendors.