Chapter 47
Adopting Green ICT in Business

Chitra Subramanian
Independent Scholar

ABSTRACT

Information Communication Technology (ICT) is playing an increasingly important role in professional and private lives worldwide and is thus also increasingly becoming a significant energy consumer and CO_2 emitter. Green IT benefits the environment by improving energy efficiency, lowering greenhouse gas emissions, using less harmful materials, and encouraging reuse and recycling. The explosion of information and communication technology (ICT), including personal computers, servers and data centers, handheld and telephonic devices, and printers, over the past few decades has led to a particular focus on ICT's environmental impact. Green computing refers to the practice of using computing resources more efficiently while maintaining or increasing overall performance. IT services require the integration of green computing practices such as power management, virtualization, improving cooling technology, recycling, electronic waste disposal, and optimization of the IT infrastructure to meet sustainability requirements.

RELEVANCE TO "GREEN ICT" THEME

Information Communications Technology (ICT) industries are currently responsible for about 2% of total greenhouse emissions worldwide. This is set to increase substantially over the next 10-15 years as the adoption of ICT increases exponentially in developing countries (The Climate Group, 2008). Many of the solutions being introduced for reducing the carbon footprint via more efficient energy use worldwide are heavily dependent on Information Technology — for example, improvements in the power grid, "energy-smart" buildings and cities, and so on. In this chapter we address, how we can make our ICT infrastructure products, services and application environmentally sound.

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ADOPTING GREEN ICT IN BUSINESS

Measuring Environmental Impact of IT

Most respondents and organizations are considering planning, executing a measurement program to better understand environmental impact of IT. Dramatically increased energy use driven by the rapid expansion of data centers has increased IT costs, and the resulting environmental impact of IT, to new levels. Enterprise data centers can easily account for than 50 percent of a company's energy bill and approximately half of the corporate carbon footprint. In the U.S., the power consumption costs for data center computing and cooling doubled to $4.5 billion between 2000 to 2006. It expected to double again by 2011. Although energy use and its associated cost has been the key driver for green computing, a growing appreciation of the risks of climate change and increasing concerns about energy. In addition to corporate self interest, government regulations will increasingly drive the adoption of green computing and sustainable IT investment and practices. Ecological issues involving IT product and service design, supply chain optimization, and changes in processes to deal with e-waste, pollution, usage of critical resources such as water, toxic materials, and the air shed will need to be more fully addressed. Although these first-wave activities are driven more by cost-reduction-based business value there is growing potential for green IT products and services being the deciding factor in terms of the intangible benefits of "greenness" to the customer. Vendors are now able to position products and services in terms of energy consumption and lower costs, but the real benefit over time may be in positioning on environmental and social responsibility of the company itself.

FACTORS DRIVING ADOPTION OF GREEN COMPUTING

The following trends are impacting data centers, and to a lesser degree, desktop computers, and driving the adoption of green-computing practices:

1. Rapid growth of Internet
2. Increasing cooling requirements
3. Increasing Energy Costs
4. Restrictions on energy supply access
5. Lower Server Utilization Rates
6. IT impacts on the environment

1. Rapid Growth of Internet

The increasing reliance on electronic data is driving the rapid growth in the size and number of data centers. This growth results from the rapid adoption of Internet communications and media, the computerization of business processes and applications. Internet usage is growing at more than 10 percent annually leading to an estimated 20% compound annual growth rate (CAGR) in data center demand Dr. Kerry Hinton of Melbourne University's Department of Electrical and Electronic Engineering has said, "It has now become clear that the exponential growth of the Internet is not sustainable." His concerns relate to Internet equipment energy efficiency and the growing carbon footprint needed to sustain high-speed Internet traffic - especially with growth curves projected for video-on-demand-like services. Dr. Hinton says that while power consumption supporting the Internet today accounts for only 0.5% of the total annual budget, by 2020 it could be 1% (Rick C. Hodgin, 2008). "This will place a major burden on [Australia's] power infrastructure as well as significantly contribute to green house gas production."