

Survey of Green Computing Technologies used in Computer Industries

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Abstract— Green Computing, the study and practice of efficient and eco-friendly computing resources. In recent years, Companies in computer industry have come to realize that green going is their best interest, both in terms of public relations and reduced cost. This article will look at several green initiatives currently under way in the computer industries and regarding their initiative.

Key words: Green Computing, E-Waste, Solar, Energy

I. INTRODUCTION

Green computing focus on reducing the environmental impact of industrial processes and innovative technologies caused by the growing population, it has taken upon itself the goal to provide societies needs in ways that do not damage or deplete natural resources.” Green Technologies “focus to creating recyclable products to reducing pollution, proposing alternative technologies in various fields, and creating eco-friendly products that benefit that benefit the environment.

II. ORIGIN

In 1992, the U.S Environmental protection Agency launched Energy Star, a voluntary labeling program that is designed and recognize energy efficiency in monitors, climate control equipment and other technologies. This result is widespread adoption of sleep mode among consumer electronic. The Swedish organization TCD development launched TCO certifications program to promote low magnetic and electronical emissions from CRT based computer displays.¹

All over the world, large amount of computing manufactured companies are directly impact on environment issues, and scientists are conduction numerous studies in order to reduce negative impact of computer technology on our natural resources. Companies are addressing e-waste by offering take- back recycling programs and other solutions, with lower-energy consumption and less wasted hardware.

III. GREEN COMPUTING TECHNOLOGIES

A. Carbon-Free Computing

This idea is to reduce the “carbon footprint” of users the amount of greenhouse gases produced, measured in units of carbon dioxide (CO₂). Greenhouse gases naturally blanket the earth and are responsible for it more or less stable temperature. After the 1997 Kyoto Protocol for the United National Frame work convention on climate change , the world has finally taken the first step in reducing emissions .Carbon –emissions control has been a key issue for many companies who have expressed a firm commitment to sustainability.

Dell is a good example of a company with a green image, known for its free worldwide product-recycling program, Dell’s Plant a Tree for Me project allows customers to offset their carbon emissions by paying \$2 or \$4,

depending on a project purchased. AMD, a global Microprocessor manufacture is also working toward reducing energy consumption in its products, cutting back on dangers waste and reducing eco-impact. The company use “dual – stress linear “technology to reduce power consumption in its products.

B. Solar Computing

Solar is an alternative energy resource. Many companies support solar power. Solar cells require very little maintenance throughout their life time, once initial installation costs are covered; they provide energy at no cost. Worldwide, most of the governments and companies realize and recognize the benefits of solar power and the development of photovoltaic technologies goes on cost are expected to reduced. VIA ‘s “PC-1 initiative “ the company established the first ever –solar- power cyber community center in the south pacific ,fully powered by solar technology.

C. Energy –Efficient Computing

Green computing initiative is the development of energy-efficient platforms for low-power, small-form-factor (SFF) computing. Intel, the world largest semiconductor maker revealed eco-friendly products at a recent conference in London. The company use virtualization software a technique that enables Intel to combine several physical systems into a virtual machine that runs on a single powerful base system, thus significantly reducing power consumption.

Intel, Google, and Microsoft and other companies in the launch of the climate savers computing imitative that commits businesses to meet the environmental protection agency’s energy star guidelines for energy effective devices.

Kevin Fisher, Intel’s EU standards director, says that whole company is decided to its green computing plans, the IT industry alone for carbon emissions worldwide, He argues that the industry also helps in saving huge amounts of power due to internet, enabling for online shopping and billing.

D. Cloud Computing

Cloud computing address two major issues related to green computing, one is energy usage and another is resource consumption. Virtualization, Dynamic provisioning environment, multi-tenancy, green data center approaches are enabling cloud computing to lower carbon emissions and energy usage up to great extent.

Large enterprises and small business can reduce their direct energy consumption and carbon emissions by up to 30% to 90% respectively by moving certain on-premises application into the cloud.² One common example including online shopping that helps people purchase product and services over the internet without requiring them to drive and waste fuel to reach out to the physical shop, which on turn, reduces greenhouse gas emission related to travel.³

IV. COMPUTER USER PARTICIPATION IN GREEN COMPUTING

The work habits of computer users and businesses can be modified to minimize adverse impact on the global environment. Here some of the steps follow by the people, also make them to support green computing .⁴

- Power-down the CPU and all peripherals during extended period of inactivity.
- Try to do computer-related tasks during contiguous intensive blocks of time, leaving hardware off at other times.
- Power-up and power –down energy intensive peripherals such as laser printer according to need,
- Use LCD monitor rather than CPU monitor.
- Use Notebook computer rather than desktop computers whenever possible.
- Use the power management features to turn off hard drives and displays after several minutes in activity.
- Minimize the use of paper and properly recycle waste paper.
- Employ alternative energy sources for computing workstation, servers, networks and datacenter.

V. CONCLUSION

Green computing is how the companies can satisfy the growing demand for computing products without putting pressure on the environment. There is an alternative way to design the products without increasing damage on the environment, but also satisfy their business needs. Green computing is not about going out and designing biodegradable packaging for products. Now the time came to think about efficiency use of computers and the resources which are nonrenewable. It opens a new window for the new entrepreneur for harvesting with e-waste materials and scrap computers.

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