GREEN COMPUTING, A SMART COMPUTING

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ABSTRACT

Green computing and green technology is the study and practice of using the computers and other related resources of technology in an environmentally responsible manner. The aim of green computing is to implement best practices to maximize energy efficiency during the product's lifetime. Further green technology aims to reduce resource consumption by reducing hazardous materials, and promoting recyclability or biodegradability of the computer waste. The plan towards green IT should include new electronic products and services with optimum efficiency and all possible options towards energy savings. Green computing is a very emerging topic these days, not only because of rising energy costs and potential savings, but also due to the impact on the environment. Energy to manufacture, store, operate, and cool computing systems has grown significantly in the recent years, primarily due to the volume of systems and computing on which the companies rely upon. Green technology plays a very important role in terms of computing. Smart computing plays a role in energy efficient coding to save power by getting software to make less use of the hardware, rather than continuing to run the same code on hardware that uses less power. In this paper the smart computing is discussed to reduce the energy while maintaining the required performance of computing.

Key words: hardware, green computing

INTRODUCTION

Green computing is the study and practice of using computing resources efficiently. The primary objective of such a program is to account for the triple bottom line, an expanded spectrum of values and criteria for measuring organizational and societal success. The goals are similar to green chemistry; reduce the use of hazardous materials, maximize energy efficiency during the product's lifetime, and promote recyclability or biodegradability of factory waste. Modern IT systems rely upon a complicated mix of people, networks and hardware; as such, a green computing initiative must be systemic in nature, and address increasingly sophisticated problems. Elements of such as solution may comprise items such as end user satisfaction, management restructuring, regulatory compliance, disposal of electronic waste, telecommuting, virtualization of server resources, energy use, thin client solutions, and return on investment (ROI). The computers, electronic goods, energy issues are a serious problem, as the public debate on carbon emissions, global warming and climate change gets hotter. Hence a revolution has started to induce green technology in the IT industry.

In IT world the business runs 24/7 and transactions are made every possible channel to request, read, and store and analyze huge data. The IT industries need to maintain this information in databases which are maintained in servers. Due to the advent of social networks the data is increasing day to day enormously, in space of volume, variety and viscosity. Hence there is a need for soft computing green technology reducing the hardware by maintaining the data on packed servers, providing better cooling, and combination of new database technologies expressly designed for analysis of massive quantities of data. Organizations can even save money and become greener by using open source projects making affordable, resource-efficient.

Organizations can do so in the following three key areas: reduced data footprint, reduced deployment resources, and reduced ongoing management and maintenance. [1].This technology is beneficial as it:-

- ➢ Reduce energy consumption of computing resources during peak operation.
- ➢ Save energy during idle operation
- ➢ Use eco-friendly sources of energy
- ➢ Reduce harmful effects of computing resources
- ➢ Reduce computing wastes

Hence, businesses and consumers can embrace environmentally sustainable products that offer low-carbon solutions that can not only reduce their global greenhouse gas (GHG) emissions, but can achieve more efficient energy consumption and lower costs.

PROGRAMS, PRACTICES AND PROCESSES

Many IT organizations are looking at Green IT programs to achieve objectives that include improving energy efficiency and power management practices, increasing hardware utilization, reducing life-cycle costs and looking for ways to cut down on computer waste. The major areas of activity associated with these programs fall generally into three categories [2].

Energy efficiency programs: These programs aims to reduce energy use and increase computing efficiency reduce electric utility costs and global greenhouse gas impacts.

Power consumption: The green technology infrastructure management offer electromechanical improvement program combines methods, processes and energy-focused solutions for power and cooling efficiency leading toward energy conscious and cost-saving solutions.

Cooling: By leveraging local climates and using chilled loop and free cooling strategies, IT organizations can decrease energy consumption through cooling practices. For example, the gmail, stores it servers near the sea shore which acts as a natural cooling agents.

Effective hardware procurement: On purchasing computing equipment that is more energy efficient and environmentally friendly, recyclable and reducing hazardous materials in their manufacturing, packaging and factory waste management programs can tremendously increase green computing.

IMPLEMENTING OF GREEN COMPUTING

EPEAT is a federally sponsored initiative that uses 51 environmental product compliance requirements that were developed through an industry group led by the Institute of Electrical and Electronic Engineers (IEEE). Under the program, suppliers can register their desktop, laptop and monitor products in 23 mandatory and 28 optional categories. Products that meet the appropriate combinations of mandatory and optional criteria can then be registered in either the basic, bronze, silver or gold rating categories.

However, the IEEE standards currently cover only PCs and monitors; the program is reportedly being extended to cover other devices such as servers, routers and printers. In addition to the product registry, EPEAT also provides an assessment tool to help purchasers compare and select equipment best matching their procurement needs. The tool can be used to compare power costs between devices.

CLEI is an international association of local governments as well as national and regional local government organizations that have made a commitment to sustainable development. Over 955 cities, towns, counties, and their associations worldwide comprise ICLEI's growing membership Units.

GREEN COMPUTING FOR GREEN TECHNOLOGY

Green computing in computers:
- Switching off PCs and laptops when not in use can tremendously reduce the energy.
- Avoiding the usage of screen savers and large screen computers can also save energy.
- 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 printers according to need.
- Use liquid-crystal-display (LCD) monitors rather than cathode-ray-tube (CRT) monitors.
- Use notebook computers rather than desktop computers whenever possible.
- Use the power-management features to turn off hard drives and displays after several minutes of inactivity.
- Minimize the use of paper and properly recycle waste paper.
- Dispose of e-waste according to federal, state and local regulations.
- Employ alternative energy sources for computing workstations, servers, networks and data centers.

Green computing in mobiles:

Surfing Internet, chat, gaming, social networking, downloading, desktop computing including documents, spreadsheets or presentation making or just watching your photos and videos can be done with mobile phones. The technology has moved where laptops are better than computers due to less power consumption and moving to mobile will even reduce a lot. When the phone is idle, it takes 0.18 watts on average while navigating the menu and viewing simple content like photos on the phone screen, its consuming 0.23 watts on average. When the phone is being used for a voice +video call over a wi fi network and the battery usage is at its top, that is around 2 watts. Hence it time to move towards mobiles rather than using computers.

CONCLUSION

Green IT programs practices and process need to be embraced by the IT industry. The Green IT programs are demonstrating fundamental economic as well as environmental sense; it is understandable why organizations are exploring green computing options with such intense interest across the IT industry. There is a growing awareness among business leaders that greening their IT practices offers the double-win of reducing costs while demonstrating a positive environmental commitment. Use mobile phones for your computing needs whenever and wherever possible leading to better world.

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