

Green Computing: An Eco-friendly Technique

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Abstract -

Green computing, the study and practice of efficient and eco-friendly computing resources. Green computing i.e. green technology, is the environmentally sustainable to use of computers and devices.

The principle behind energy efficient coding is 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. It has also given utmost attention to minimization of e-waste and use of non-toxic materials in preparation of e-equipments. We use Green Computing because it- reduced energy usage from green computing techniques translates into lower carbon dioxide emissions, stemming from a reduction in the fossil fuel used in power plants and transportation. Conserving resources means less energy is required to produce, use, and dispose of products, saving energy and resources saves money. Green computing even includes changing government policy to encourage recycling and lowering energy use by individuals and businesses. In this paper focus on some aspects of green computing i.e. approaches and implementation.

Keywords: Green Computing, E-waste, Toxic, Recycling, Energy Efficient Coding.

I. INTRODUCTION

Basically now days, its emerging challenge to save earth, we apply numbers of processes to how to save earth from unwanted and harmful things. When we think about computing there is a challenge about waste and how to be convert computing as a green computing. Green computing is the study and practice of efficient and eco-friendly [4] computing

Energy-efficiency in monitors, In 1992, [1] the U.S. Environmental Protection Agency launched Energy Star, a voluntary labelling program that is designed to promote and recognize climate control equipment, and other technologies, Green Computing [2] is the study of designing, manufacturing/engineering, using and disposing of computing devices in a way that reduces their environmental impact. When we use computers it consumes lots of energy to create, package, store, and move. Conventionally, manufacturing computers includes the use of lead, cadmium, mercury, and other toxics in general. Usually, computers can contain 4 to 8 pounds of lead alone, according to green expert and increasing population in whole world and everyone depends on computing technologies results is e-waste, increasing Toxic

II. EMERGING CHALLENGES OF COMPUTING:

As we know computing also one of the big reason or source of e-waste or generation of number of harmful toxic result is they all are very harmful to environment, it is very necessary to do something to protect our environment. Electronics giants [1] are about to roll out eco-friendly range of computers (like desktops and laptops) that aim reducing the e-waste in the environment. They are likely to be free of hazardous materials such as brominated flame-retardants, PVCs and heavy metals such as lead, cadmium and mercury, which are commonly used in computer manufacturing.

As we know in 1992, the U.S. Environmental Protection Agency launched Energy Star, a voluntary labeling program that is designed to promote and recognize climate control equipment, and other technologies one of the main technology is go green i.e. green computing.

III. WHY GREEN COMPUTING?

Reduce energy consumption [4] 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

Global warming.



Fig. 1 Green Computing

IV. APPROACHES TO GREEN COMPUTING:

To convert approach of computing to green computing means roll out Electronics to eco-friendly [4] range of computers (like desktops and laptops) that aim at reducing the e-waste in the environment. They are likely to be free of hazardous materials such as brominated flame-retardants,

PVCs and heavy metals such as lead, cadmium and mercury, which are commonly used in computer manufacturing. Reliability about the use of green materials [2] in computer is perhaps the biggest single challenge facing the Electronics industry.

Here's how designers plan to make future computer more eco-friendly [3] across its entire life span, from manufacture to recycling:

- energy-intensive manufacturing of computer parts can be minimized by making manufacturing process more energy efficient
- by replacing petroleum-filled plastic with bioplastics—plant-based polymers—which require less oil and energy to produce in comparison to traditional plastics with a challenge to keep these bioplastic computers cool so that electronics won't melt them
- landfills can be controlled by making best use of the device by upgrading and repairing in time with a need to make such processes (i.e., up gradation and repairing) easier and cheaper
- avoiding the discarding will not only control e-waste out of dumps but also save energy and materials needed for a whole new computer
- power-sucking displays can be replaced with green light displays made of OLEDs, or organic light-emitting diodes
- use of toxic materials like lead can be replaced by silver and copper making recycling of Computers (which is expensive and time consuming at present) more effective by recycling computer parts separately with an option of reuse or resale.

Process:

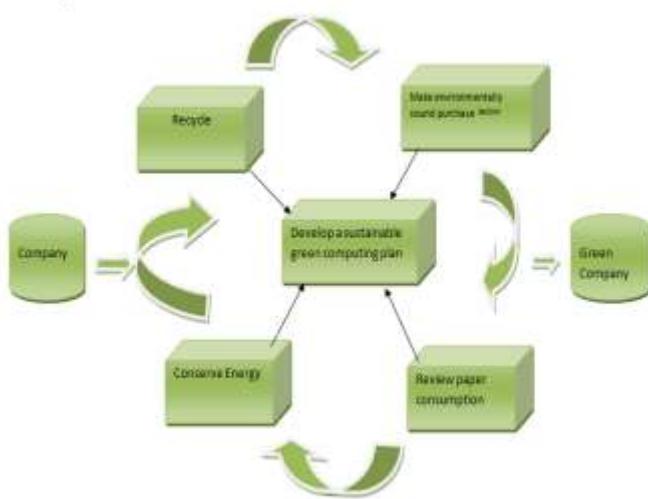


Fig. 2 Green computing Process

V. RECENT IMPLEMENTATIONS OF GREENCOMPUTING

A. Blackle

Blackle [3] is a search-engine site powered by Google Search. Blackle came into being based on the concept that when a computer screen is white, presenting an empty word or the Google home, and your computer consumes 74W. When the screen is black it consumes only 59W. Based on this theory if everyone switched from Google to Blackle, mother earth would save 750MW each year. This was a really good implementation of Green Computing. The principle behind Blackle is based on the fact that the display of different colors consumes different amounts of energy on computer monitors.

B. Fit-PC:

A tiny PC [3] that draws only 5w: Fit-PC is the size of a paperback and absolutely silent, yet fit enough to run Windows XP or Linux. fit-PC is designed to fit where a standard PC is too bulky, noisy and power hungry. If you ever wished for a PC to be compact, quiet and green then fit-PC is the perfect fit for you. Fit-PC draws only 5 Watts, consuming in a day less power than a traditional PC consumes in 1 hour. You can leave fit-PC to work 24/7 without making a dent in your electric bill.

C. Zonbu Computer

The Zonbu [3] is a new, very energy efficient PC. The Zonbu consumes just one third of the power of a typical light bulb. The device runs the Linux operating system using a 1.2 gigahertz processor and 512 meg of RAM. It also contains no moving parts, and does even contain a fan. You can get one for as little as US\$99, but it does require you to sign up for a two-year subscription.

D. Sunray thin client

Sun Microsystems [3] is reporting increased customer interest in its Sun Ray, a thin desktop client, as electricity prices climb, according to Subodh Bapat, vice president and chief engineer in the Eco Responsibility office at Sun. Thin clients like the Sun Ray consume far less electricity than conventional desktops, he said. A Sun Ray on a desktop consumes 4 to 8 watts of power, because most of the heavy computation is performed by a server. Sun says Sunrays are particularly well suited for cost-sensitive environments such as call centers, education, healthcare, service providers, and finance. PCs have more powerful processors as well as hard drives, something thin clients don't have. Thus, traditional PCs invariably consume a substantially larger amount of power. In the United States, desktops need to consume 50 watts or less in idle mode to qualify for new stringent Energy Star certification.

E. The Asus Eee PC and other ultra portables:

Compact screen, low cost and innovations such as using flash memory for storage rather than hard drives with spinning platters. These factors combine to enable them to run more efficiently and use less power than a standard form factor laptop. The Asus Eee PC is one example of an ultraportable. It is the size of a paperback, weighs less than a kilogram, has built-in Wi-Fi and uses flash memory instead of a hard drive. It runs Linux too.

The "ultra-portable" class of personal computers is characterized by a small size, fairly low power CPU,

VI. CONCLUSION

As we know our generation is most of the time depends on computers, i.e. without a computing we won't survive as a normal life so consider a need of computing it is necessary to be protect environment i.e go green using green computing, this approach really more effective to go with computing with ecofriendly , so consider the need of green computing, start use of green computing approach, our one step will be help to save earth.

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